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7. Prognostic factors for pancreatic neuroendocrine neoplasms (pNET) and the risk of small non-functioning pNET. [▶](#)
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# TİROİD

## DERLEME / METAANALİZ

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1. [Cancer Treat Rev.](#) 2015 Jan;41(1):9-16. doi: 10.1016/j.ctrv.2014.10.009. Epub 2014 Nov 11. IF: 7.01

### Is outcome of differentiated thyroid carcinoma influenced by tumor stage at diagnosis?

[Clement SC](#)<sup>1</sup>, [Kremer LC](#)<sup>2</sup>, [Links TP](#)<sup>3</sup>, [Mulder RL](#)<sup>4</sup>, [Ronckers CM](#)<sup>2</sup>, [van Eck-Smit BL](#)<sup>5</sup>, [van Rijn RR](#)<sup>6</sup>, [van der Pal HJ](#)<sup>7</sup>, [Tissing WJ](#)<sup>8</sup>, [Janssens GO](#)<sup>9</sup>, [van den Heuvel-Eibrink MM](#)<sup>10</sup>, [Neggers SJ](#)<sup>11</sup>, [van Dijkum EJ](#)<sup>12</sup>, [Peeters RP](#)<sup>13</sup>, [van Santen HM](#)<sup>14</sup>.

#### [Author information](#)

#### Abstract

##### BACKGROUND:

There is no international consensus on surveillance strategies for differentiated thyroid carcinoma (DTC) after radiotherapy for childhood cancer. Ultrasonography could allow for early detection of DTC, however, its value is yet unclear since the prognosis of DTC is excellent. We addressed the evidence for the question: 'is outcome of DTC influenced by tumor stage at diagnosis?'

##### METHODS:

A multidisciplinary working group answered the sub-questions: 'is recurrence or mortality influenced by DTC stage at diagnosis? Does detection of DTC at an early stage contribute to a decline in adverse events of treatment?' The literature was systematically reviewed, and conclusions were drawn based on the level of evidence (A: high, B: moderate to low, C: very low).

##### RESULTS:

In children, level C evidence was found that detection of DTC at an early stage is associated with lower recurrence and mortality rates. No evidence was found that it influences morbidity rates. In adults, clear evidence was found that less advanced staged DTC is a favorable prognostic factor for recurrence (level B) and mortality (level A). Additionally, it was found that more extensive surgery increases the risk to develop transient hypoparathyroidism (level A) and that higher doses of radioiodine increases the risk to develop second primary malignancies (level B).

##### CONCLUSION:

Identification of DTC at an early stage is beneficial for children (very low level evidence) and adults (moderate to high level evidence), even considering that the overall outcome is excellent. These results are an important cornerstone for the development of guidelines for childhood cancer survivors at risk for DTC.

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##### KEYWORDS:

Childhood Cancer Survivors; Differentiated thyroid carcinoma; External radiotherapy; Radiation damage; Thyroid ultrasonography

PMID: 25544598

[Makale sayfası](#)

2. [Cancer](#). 2014 Nov 1;120(21):3287-301. doi: 10.1002/cncr.28858. Epub 2014 Jun 18. IF: 4.90

## Medical management of metastatic medullary thyroid cancer.

[Maxwell JE](#)<sup>1</sup>, [Sherman SK](#), [O'Dorisio TM](#), [Howe JR](#).

### [Author information](#)

#### Abstract

Medullary thyroid cancer (MTC) is an aggressive form of thyroid cancer that occurs in both heritable and sporadic forms. Discovery that mutations in the rearranged during transfection (RET) proto-oncogene predispose to familial cases of this disease has allowed for presymptomatic identification of gene carriers and prophylactic surgery to improve the prognosis of these patients. A significant number of patients with the sporadic type of MTC and even those with familial disease still present with lymph node or distant metastases, making surgical cure difficult. Over the past several decades, many different types of therapy for metastatic disease have been attempted with limited success. Improved understanding of the molecular defects and pathways involved in both familial and sporadic MTC has resulted in new hope for these patients with the development of drugs targeting the specific alterations responsible. This new era of targeted therapy with kinase inhibitors represents a significant step forward from previous trials of chemotherapy, radiotherapy, and hormone therapy. Although much progress has been made, additional agents and strategies are needed to achieve durable, long-term responses in patients with metastatic MTC. This article reviews the history and results of medical management for metastatic MTC from the early 1970s up until the present day.

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#### KEYWORDS:

MEN2; RET proto-oncogene; kinase inhibitors; medullary thyroid cancer; neuroendocrine

PMID: 24942936

[Makale sayfası](#)

3. [Crit Rev Oncol Hematol](#). 2014 Nov 1. pii: S1040-8428(14)00172-3. doi: 10.1016/j.critrevonc.2014.10.012. [Epub ahead of print] IF: 4.40

## Targeted therapy: A new hope for thyroid carcinomas.

[Perri F](#)<sup>1</sup>, [Pezzullo L](#)<sup>2</sup>, [Chiofalo MG](#)<sup>2</sup>, [Lastoria S](#)<sup>3</sup>, [Di Gennaro F](#)<sup>3</sup>, [Scarpati GD](#)<sup>4</sup>, [Caponigro F](#)<sup>5</sup>.

### [Author information](#)

#### Abstract

Thyroid carcinomas are rare and heterogeneous diseases representing less than 1% of all malignancies. The majority of thyroid carcinomas are differentiated entities (papillary and follicular carcinomas) and are characterized by good prognosis and good response to surgery and radioiodine therapy. Nevertheless, about 10% of differentiated carcinomas recur and become resistant to all therapies. Anaplastic and medullary cancers are rare subtypes of thyroid cancer not suitable for radioiodine therapy. A small percentage of differentiated and all the anaplastic and medullary thyroid carcinomas often recur after primary treatments and are no longer suitable for other therapies. In the last years, several advances have been made in the field of molecular biology and tumorigenesis mechanisms of thyroid carcinomas. Starting from these issues, the targeted therapy may be employed as a new option. The MAP-Kinase pathway has been found often dysregulated in thyroid carcinomas and several upstream signals have been recognized as responsible for this feature. RET/PTC mutations are often discovered both in papillary and in medullary carcinomas, while B-RAF mutation is typical of papillary and anaplastic histologies. Also mTOR disruptions and VEGFR pathway disruption are common features in all advanced thyroid cancers. Some angiogenesis inhibitors and a number of RET/PTC pathway blocking agents are yet present in the clinical armamentarium. Vandetanib, cabozatinib and sorafenib have reached clinical use. A number of other

biological compounds have been tested in phase II and III trials. Understanding the biology of thyroid cancers may help us to design a well shaped targeted therapy.

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#### KEYWORDS:

Anaplastic; Follicular; Medullary; Papillary; Pathway; Radioiodine therapy; Targeted therapy; Thyroid carcinoma

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4. [Thyroid](#). 2014 Oct 29. [Epub ahead of print] IF: 3.84

## Effectiveness of Preventative and Other Surgical Measures on Hypocalcemia Following Bilateral Thyroid Surgery: A Systematic Review and Meta-Analysis.

[Antakia R<sup>1</sup>](#), [Edefe O](#), [Uttley L](#), [Balasubramanian SP](#).

#### [Author information](#)

#### Abstract

Background: A variety of measures have been proposed to reduce the incidence of post-thyroidectomy hypocalcemia. The aim of this study was to perform a systematic review and meta-analysis of preventive and other surgical measures on post-thyroidectomy hypocalcemia as reported in the literature. Methods: Comprehensive searches of the PubMed, EMBASE, and Cochrane databases were performed, and the quality of included papers was assessed using the Cochrane risk of bias tool or a modified Newcastle-Ottawa Scale (NOS). The results of all included studies were summarized, and meta-analyses were performed where appropriate. Results: Thirty-nine randomized controlled trials (RCTs) and 37 observational studies were included. Measures studied included hemostatic techniques, extent of thyroidectomy and central neck dissection, surgical approach, calcium/vitamin D/thiazide diuretic supplements, parathyroid gland autotransplantation (PGAT) and intraoperative parathyroid gland (PG) identification, truncal ligation of inferior thyroid artery (ITA), preoperative magnesium infusion, and use of magnification loupes and Surgicel. Measures associated with significantly lower rates of transient hypocalcemia in meta-analysis were postoperative calcium and vitamin D supplementation compared to either calcium supplements alone (odds ratio (OR) 0.66; p=0.04) or no supplements (OR 0.34; p=0.007), and bilateral subtotal thyroidectomy (BST) compared to Hartley Dunhill (HD) procedure (OR 0.35; p=0.01). Meta-analyses did not demonstrate any measure to be significantly associated with a reduction in permanent hypocalcemia. Conclusion: This review identified postoperative calcium and vitamin D supplementation and bilateral subtotal thyroidectomy (over HD) as being effective in prevention of transient hypocalcemia. However, the majority of RCTs were of low quality, primarily due to a lack of blinding. The wide variability in study design, definitions of hypocalcemia, and methods of assessment prevented meaningful summation of results for permanent hypocalcemia.

PMID: 25203484

5. [Endocrine](#). 2014 Nov;47(2):380-8. doi: 10.1007/s12020-014-0251-9. Epub 2014 Apr 10. IF: 3.52

## The role of surgery in the current management of differentiated thyroid cancer.

[Conzo G<sup>1</sup>](#), [Avenia N](#), [Bellastella G](#), [Candela G](#), [de Bellis A](#), [Esposito K](#), [Pasquali D](#), [Polistena A](#), [Santini L](#), [Sinisi AA](#).

#### [Author information](#)

## Abstract

In the last decades, a surprising increased incidence of differentiated thyroid cancer (DTC), along with a precocious diagnosis of "small" tumors and microcarcinomas have been observed. In these cases, better oncological outcomes are expected, and a "tailored" and "less aggressive" multimodal therapeutic protocol should be considered, avoiding an unfavorable even if minimal morbidity following an "overtreatment." In order to better define the most suitable surgical approach, its benefits and risks, we discuss the role of surgery in the current management of DTCs in the light of data appeared in the literature. Even if lymph node metastases are commonly observed, and in up to 90 % of DTC cases micrometastases are reported, the impact of lymphatic involvement on long-term survival is still argument of intensive research, and indications and extension of lymph node dissection (LD) are still under debate. In particular, endocrine and neck surgeons are still divided between proponents and opponents of routine central LD (RCLD). Considering the available evidence, there is agreement about total thyroidectomy, therapeutic LD in clinically node-positive DTC patients, and RCLD in "high risk" cases. Nevertheless, indications to the best surgical treatment of clinically node-negative "low risk" patients are still subject of research. Considering on the one hand, the recent trend toward routine central lymphadenectomy, avoiding radioactive treatment, and on the other hand, the satisfactory results obtained reserving prophylactic LD to "high risk" patients, we think that further prospective randomized trials are needed to evaluate the best choice between the different surgical approaches.

PMID: 24718845 [Makale sayfası](#)

6. [Eur J Clin Nutr.](#) 2014 Dec 17. doi: 10.1038/ejcn.2014.265. [Epub ahead of print] **IF: 2.95**

## Vitamin D and thyroid disease: to D or not to D?

[Muscogiuri G](#)<sup>1</sup>, [Tirabassi G](#)<sup>2</sup>, [Bizzaro G](#)<sup>3</sup>, [Orio F](#)<sup>4</sup>, [Paschou SA](#)<sup>5</sup>, [Vryonidou A](#)<sup>5</sup>, [Balercia G](#)<sup>2</sup>, [Shoenfeld Y](#)<sup>6</sup>, [Colao A](#)<sup>1</sup>.

### [Author information](#)

#### Abstract

The main role of vitamin D is to maintain calcium and phosphorus homeostasis, thus preserving bone health. Recent evidence has demonstrated that vitamin D may also have a role in a variety of nonskeletal disorders such as endocrine diseases and in particular type 1 diabetes, type 2 diabetes, adrenal diseases and polycystic ovary syndrome. Low levels of vitamin D have also been associated with thyroid disease, such as Hashimoto's thyroiditis. Similarly, patients with new-onset Graves' disease were found to have decreased 25-hydroxyvitamin D concentrations. Impaired vitamin D signaling has been reported to encourage thyroid tumorigenesis. This review will focus on the role of vitamin D in thyroid diseases, both autoimmune diseases and thyroid cancer, and will summarize the results of vitamin D supplementation studies performed in patients with thyroid disorders. Although observational studies support a beneficial role of vitamin D in the management of thyroid disease, randomized controlled trials are required to provide insight into the efficacy and safety of vitamin D as a therapeutic tool for this dysfunction. *European Journal of Clinical Nutrition* advance online publication, 17 December 2014; doi:10.1038/ejcn.2014.265.

PMID: 25514898 [Makale sayfası](#)

7. [J Surg Oncol.](#) 2014 Oct 28. doi: 10.1002/jso.23769. [Epub ahead of print] **IF: 2.84**

## Hereditary thyroid cancer syndromes and genetic testing.

[Rowland KJ](#)<sup>1</sup>, [Moley JF](#).

### [Author information](#)

#### Abstract

This review focuses on both hereditary medullary thyroid cancer (MTC) and hereditary nonmedullary thyroid cancer (NMTC) and discusses the genetics, clinical diagnosis and evaluation, and surgical approach to treatment of these malignancies. Areas of innovation as well as areas of debate are highlighted and management recommendations are made. J. Surg. Oncol. © 2014 Wiley Periodicals, Inc.

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#### **KEYWORDS:**

hereditary thyroid cancer; medullary thyroid cancer; multiple endocrine neoplasia; nonmedullary thyroid cancer; ret proto oncogene

PMID: 25351655

8. [Cell Biochem Biophys](#). 2014 Oct 25. [Epub ahead of print] IF: 2.38

## **Complications and Adverse Effects Associated with Intraoperative Nerve Monitoring During Thyroid Surgery Under General Anesthesia.**

[Chen P<sup>1</sup>](#), [Liang F](#), [Li LY](#), [Zhao GQ](#).

[Author information](#)

#### **Abstract**

This study covers a large cohort of patients (3,029 cases) who underwent thyroid surgery under intraoperative nerve monitoring (IONM). Most common problems and complications associated with the surgery were identified and analyzed. On the basis of this analysis, we provide some practical advices and suggestions which specialists in the field will find useful in their surgical practice. The data will help in developing clear surgical guidelines for thyroid surgery with IONM and for post-operative follow-up and monitoring.

PMID: 25343942

9. [Endocrine](#). 2014 Dec 23. [Epub ahead of print] IF:2.24

## **Reliability of real-time elastography to diagnose thyroid nodules previously read at FNAC as indeterminate: a meta-analysis.**

[Trimboli P<sup>1</sup>](#), [Treglia G](#), [Sadeghi R](#), [Romanelli F](#), [Giovannella L](#).

[Author information](#)

#### **Abstract**

The main limit of thyroid fine-needle aspiration cytology (FNAC) is represented by indeterminate report. Recently, real-time elastography (RTE) has been described in the management of these cases. Here, we performed a meta-analysis of published studies specifically focused on the use of RTE in indeterminate thyroid nodules. A comprehensive literature search of PubMed/MEDLINE and Google Scholar databases was conducted by using the combination of the terms "thyroid" and "indeterminate" and "elastography." Pooled sensitivity, specificity, accuracy, PPV and NPV of RTE as predictor of malignancy in thyroid nodules with indeterminate FNAC were calculated, including 95 % confidence intervals (95 % CI). The area under the summary ROC curve (AUC) was also assessed. Databases found 572 papers, and eight were included in the meta-analysis. Of these, six studies had prospective design and two were retrospective. Pooled malignancy rate was 31 %. As common denominator, all studies set the prevalence of hardness within the nodule as risk factor for malignancy of the lesion. Sensitivity of RTE ranged from 11 to 89 % (pooled estimate of 69 %; 95 % CI 55-82 %), specificity varied from 6 to 100 % (pooled estimate of

75 %; 95 % CI 42-96 %), and accuracy was comprised between 35 and 94 % (pooled estimate of 73 %; 95 % CI 54-89 %). The AUC was 0.77. RTE has suboptimal diagnostic accuracy to diagnose thyroid nodules previously classified as indeterminate. Then, RTE alone should not be used for selecting these patients for surgery or not. We advice for further studies using other elastographic approaches and combined RTE and B-mode ultrasonography.

PMID: 25534701

10. [J Surg Res](#). 2014 Oct;191(2):389-98. doi: 10.1016/j.jss.2014.04.023. Epub 2014 Apr 16. IF: 2.22

## **A systematic review and meta-analysis comparing outcomes between robotic-assisted thyroidectomy and non-robotic endoscopic thyroidectomy.**

[Lang BH](#)<sup>1</sup>, [Wong CK](#)<sup>2</sup>, [Tsang JS](#)<sup>3</sup>, [Wong KP](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

##### **BACKGROUND:**

Despite its feasibility, using the da Vinci robot in remote-access thyroidectomy remains controversial. This meta-analysis compared surgical and oncological outcomes between robotic-assisted thyroidectomy (RT) and non-robotic endoscopic thyroidectomy (ET).

##### **METHODS:**

A systematic review was performed to identify studies comparing outcomes between RT and ET. Outcomes included operating time, drain output, complications, number of central lymph nodes retrieved, and preablation stimulated thyroglobulin level. A random-effects model was used.

##### **RESULTS:**

Six studies were eligible. Of the 3510 patients, 2167 (61.7%) underwent RT whereas 1343 (38.3%) underwent ET. Despite a higher drain output (185.8 mLs versus 173.3 mLs,  $P = 0.019$ ), RT had fewer temporary recurrent laryngeal nerve injury (2.6% versus 3.3%,  $P = 0.035$ ) and shorter length of hospital stay (3.4 d versus 3.5 d,  $P = 0.030$ ). In terms of oncological outcomes, despite higher incidence of multicentricity and larger tumors, the number of central lymph nodes retrieved during unilateral central neck dissection in RT was significantly greater than ET ( $4.5 \pm 2.6$  and  $3.4 \pm 2.5$ ,  $P < 0.001$ ) whereas the preablation stimulated thyroglobulin was comparable (0.8 ng/mL versus 1.1 ng/mL,  $P = 0.456$ ). However, follow-up data were relatively scarce.

##### **CONCLUSIONS:**

Adding the robot in remote-access thyroidectomy was associated with a significantly lower risk of temporary recurrent laryngeal nerve injury and shorter length of hospital stay. However, despite achieving a comparable level of surgical completeness for low-risk differentiated thyroid carcinoma between RT and ET, this study highlighted the limitations with the current literature and the need for more prospective studies with adequate follow-up.

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##### **KEYWORDS:**

Central neck dissection; Endoscopic thyroidectomy; Hypoparathyroidism; Nerve monitoring; Non-robotic thyroidectomy; Papillary thyroid carcinoma; Recurrent laryngeal nerve; Robotic thyroidectomy; Total thyroidectomy

PMID: 24814766 [Makale sayfası](#)

11. [ScientificWorldJournal](#). 2014;2014:692365. Epub 2014 Nov 24. IF: 1.21

## **Intraoperative Neuromonitoring of the External Branch of the Superior Laryngeal Nerve during Thyroidectomy: The Need for Evidence-Based Data and Perioperative Technical/Technological Standardization.**

[Mangano A](#)<sup>1</sup>, [Lianos GD](#)<sup>2</sup>, [Boni L](#)<sup>1</sup>, [Kim HY](#)<sup>3</sup>, [Roukos DH](#)<sup>2</sup>, [Dionigi G](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

The external branch of the superior laryngeal nerve (EBSLN) is surgically relevant since its close anatomical proximity to the superior thyroid vessels. There is heterogeneity in the EBSLN anatomy and EBSLN damage produces changes in voice that are very heterogeneous and difficult to diagnose. The reported prevalence of EBSLN injury widely ranges. EBSLN iatrogenic injury is considered the most commonly underestimated complication in endocrine surgery because vocal assessment underestimates such event and laryngoscopic postsurgical evaluation does not show standardized findings. In order to decrease the risk for EBSLN injury, multiple surgical approaches have been described so far. IONM provides multiple advantages in the EBSLN surgical approach. In this review, we discuss the current state of the art of the monitored approach to the EBSLN. In particular, we summarize, providing our additional remarks, the most relevant aspects of the standardized technique brilliantly described by the INMSG (International Neuromonitoring Study Group). In conclusion, in our opinion, there is currently the need for more prospective randomized trials investigating the electrophysiological and pathological aspects of the EBSLN for a better understanding of the role of IONM in the EBSLN surgery.

PMID: 25525624

12. [Surg Technol Int](#). 2014 Nov;25:91-6. IF: 0.22

## **Evidence-based Analysis on The Clinical Impact of Intraoperative Neuromonitoring in Thyroid Surgery: State of the Art and Future Perspectives.**

[Mangano A](#)<sup>1</sup>, [Wu CW](#)<sup>2</sup>, [Lianos GD](#)<sup>3</sup>, [Kim HY](#)<sup>4</sup>, [Chiang FY](#)<sup>2</sup>, [Wang P](#)<sup>5</sup>, [Xiaoli L](#)<sup>6</sup>, [Hui S](#)<sup>7</sup>, [Teksöz S](#)<sup>8</sup>, [Bukey Y](#)<sup>9</sup>, [Dionigi G](#)<sup>10</sup>, [Rausei S](#)<sup>11</sup>.

### **Author information**

#### **Abstract**

Laryngeal nerve injuries are one the most critical complications during thyroid and parathyroid surgery. Iatrogenic damages to the recurrent laryngeal nerve (RLN) are relevant in terms of clinical implications, economic costs, and for malpractice litigation. In order to minimize potential neural damages, a standardized surgical technique is mandatory. Intraoperative neuromonitoring (IONM) of the RLN is an important adjunct to the traditional approach and is a reliable tool for neural mapping and in dissection and prognostication of postoperative neural function. Because of this, most of the iatrogenic damages are not related to direct transection, but they are visually undetectable. Notwithstanding the increasing use of IONM at this stage, there is still the need for prospective, randomized, well-powered, and well-designed trials in order to further validate (via evidence-based data) the role of IONM in thyroid surgery. The aim of this review is to provide a critical analysis of the scientific evidences on the clinical impact of IONM in thyroid surgery showing the unsolved problems and the future challenges.

PMID: 25398401

# TIROID

## PROSPEKTIF

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1. [Radiology](#). 2014 Dec 17:140481. [Epub ahead of print] IF: 6.21

### **Papillary Thyroid Cancer: Dual-Energy Spectral CT Quantitative Parameters for Preoperative Diagnosis of Metastasis to the Cervical Lymph Nodes.**

[Liu X](#)<sup>1</sup>, [Ouyang D](#), [Li H](#), [Zhang R](#), [Lv Y](#), [Yang A](#), [Xie C](#).

#### **Author information**

#### **Abstract**

**Purpose** To evaluate the use of dual-energy spectral computed tomographic (CT) quantitative parameters compared with the use of conventional CT imaging features for preoperative diagnosis of metastasis to the cervical lymph nodes in patients with papillary thyroid cancer. **Materials and Methods** This study was approved by the ethics committee and all patients provided written informed consent. Analyses of quantitative gemstone spectral imaging data and qualitative conventional CT imaging features were independently performed by different groups of radiologists. Excised lymph nodes were located and labeled during surgery according to location on preoperative CT images and were evaluated histopathologically. Single and combined parameters were fitted to simple and multiple logistic regression models, respectively, by means of the generalized estimating equations method. Sensitivity and specificity analyses were performed by using receiver operating characteristic curves and were compared with data from the qualitative analysis. **Results** The slope of the spectral Hounsfield unit curve ( $\lambda_{HU}$ ), normalized iodine concentration, and normalized effective atomic number ( $Z_{eff-c}$ ) measured during both arterial and venous phases were significantly higher in metastatic than in benign lymph nodes. The best single parameter for detection of metastatic lymph nodes was venous phase  $\lambda_{HU}$ , with sensitivity, specificity, accuracy, positive predictive value, and negative predictive value of 62.0%, 91.1%, 80.6%, 79.7%, and 81.0%, respectively. The best combination of parameters was venous phase  $\lambda_{HU}$  and arterial phase normalized iodine concentration, with values of 73.0%, 88.4%, 82.9%, 78.0%, and 85.3%, respectively. Compared with qualitative analysis, the venous phase  $\lambda_{HU}$  showed higher specificity (91.1% vs 83.0%,  $P < .001$ ) and similar sensitivity (62.0% vs 61.9%,  $P > .99$ ), and the combined venous phase  $\lambda_{HU}$  and arterial phase normalized iodine concentration showed higher sensitivity (73.0% vs 61.9%,  $P < .001$ ) and specificity (88.4% vs 83.0%,  $P < .001$ ). **Conclusion** Quantitative assessment with gemstone spectral imaging quantitative parameters showed higher accuracy than qualitative assessment of conventional CT imaging features for preoperative diagnosis of metastatic cervical lymph nodes in patients with papillary thyroid cancer. © RSNA, 2014 Online supplemental material is available for this article.

PMID: 25521777

2. [Ann Surg Oncol](#). 2014 Oct 16. [Epub ahead of print] IF: 4.21

### **Use of the Nerve Integrity Monitor during Thyroid Surgery Aids Identification of the External Branch of the Superior Laryngeal Nerve.**

[Glover AR<sup>1</sup>](#), [Norlén O](#), [Gundara JS](#), [Morris M](#), [Sidhu SB](#).

**[Author information](#)**

**Abstract**

**BACKGROUND:**

The external branch of the superior laryngeal nerve (EBSLN) is at risk during thyroid surgery. Despite meticulous dissection and visualization, the EBSLN can be mistaken for other structures. The nerve integrity monitor (NIM) allows EBSLN confirmation with cricothyroid twitch on stimulation.

**AIMS:**

The aim of this study was to assess any difference in identification of EBSLN and its anatomical sub-types by dissection alone compared to NIM-aided dissection.

**METHODS:**

Routine intra-operative nerve monitoring (IONM) was used, when available, for 228 consecutive thyroid operations (129 total thyroidectomies, 99 hemi-thyroidectomies) over a 10-month period. EBSLN identification by dissection alone (with NIM confirmation of cricothyroid twitch) and by NIM-assisted dissection was recorded prospectively. Anatomical sub-types were defined by the Cernea classification.

**RESULTS:**

Of 357 nerves at risk, 97.2 % EBSLNs (95 % confidence interval [CI], 95.5-98.9) were identified by visualization and NIM-aided dissection compared to 85.7 % (95 % CI, 82.1-89.3) identified by dissection alone (<0.001). EBSLN frequency was 34 % for type 1, 55 % for type 2a, and 11 % for type 2b. All identified EBSLNs were stimulated to confirm a cricothyroid twitch after superior thyroid vessel ligation.

**CONCLUSION:**

Using the NIM and meticulous dissection of the upper thyroid pole improves EBSLN identification. As the EBSLN is at risk during thyroidectomy and can lead to voice morbidity, the NIM can aid identification of the EBSLN and provide a functional assessment of the EBSLN after thyroid resection.

PMID: 25319580

3. [Surg Endosc](#). 2014 Nov 27. [Epub ahead of print] IF: 3.65

**"Scarless" (in the neck) endoscopic thyroidectomy (SET) with ipsilateral levels II, III, and IV dissection via breast approach for papillary thyroid carcinoma: a preliminary report.**

[Yan H<sup>1</sup>](#), [Wang Y](#), [Wang P](#), [Xie Q](#), [Zhao Q](#).

**[Author information](#)**

**Abstract**

**BACKGROUND:**

Endoscopic thyroidectomy with level II dissection has previously been reported to be performed endoscopically via various approaches. However, very few reports were available regarding level II dissection performed via the breast approach. In this article, we reported a series of 12 papillary thyroid carcinoma (PTC) patients with scarless (in the neck) endoscopic thyroidectomy (SET) via breast approach to level II dissection and evaluated its feasibility and safety.

**METHODS:**

Between January 2011 and March 2013, 12 PTC female patients with suspected lymph node metastasis at level II, III, or IV were selected for this procedure. After completing thyroidectomy and central compartment dissection, dissection of ipsilateral levels II, III, and IV was performed. The steps of endoscopic lateral neck dissection were similar to those of conventional surgery except that the lateral cervical compartment was

exposed by splitting the sternocleidomastoid muscle (SCM) longitudinally and dividing between the strap muscles and the anterior margin of the SCM.

## RESULTS:

This procedure was carried out in all of the 12 patients (Table 1). Mean operative time was 243 min (range 165-355 min). Nine patients (75 %) had lymph node metastasis in the lateral compartment confirmed on the final pathological report. Mean lymph node yield (LNY) in the lateral compartment (including ipsilateral level II, III, and IV dissection) was 21.8 (range 5-42). Five patients (41.6 %) had lymph node metastasis in the ipsilateral level II. The mean LNY in the ipsilateral level II was 6.7 (range 1-14). In 1 of the 12 patients, bleeding from injury to the internal jugular vein in level II was encountered intraoperatively, and a 4-cm upper neck transverse incision was made to stop the bleeding. Average postoperative hospital stay was 5.0 days (range 3-7 days). Table 1 Original article on endoscopic lateral neck dissection (including level II) by other authors Author (Ref.) Year Mean age (years) Tumor size (cm) No. of patients M:F Tech. Type of operation Mean LNY in lateral zone Mean operative time (min) Postoperative bleeding Chyle leakage Mean PHS (days) Wu et al. [13] 2013 43.2 1.88 26 6:20 VAT SLND 8.3 137.7 None None 3.6 Lee et al. [8] 2013 40.2 1.39 62 5:57 Robot MRND 32.8 271.8 None None 6.9 Kang et al. [5] 2012 35.8 1.14 56 10:46 Robot MRND 31.1 277.4 1 5 6 Kang et al. [6] 2011 NA NA 36 NA Robot MRND 27.7 280.91 1 3 NA Kang et al. [4] 2009 NA NA 13 NA AP MRND/SLND 18.8 286 NA NA 5.3 Current article 31.2 1.67 12 0:12 SET SLND 21.8 243 None None 5 Ref. references, No. number, M male, F female, Tech. technique, LNY lymph node yield, PHS postoperative hospital stay, VAT video-assisted thyroidectomy, SLND selective lateral neck dissection, MRND modified radical neck dissection, AP axillary approach, NA not available

CONCLUSIONS: According to the present SET data, level II dissection by SET was a feasible and safe procedure. With reasonable costs and satisfactory cosmetic results, oncoplastic SET via breast approach might gain wider acceptance in the near future.

PMID: 25427410

4. [Endocrine](#). 2014 Nov;47(2):537-42. doi: 10.1007/s12020-014-0209-y. Epub 2014 Feb 22. IF: 3.52

## Hypocalcemia following thyroid surgery: incidence and risk factors. A longitudinal multicenter study comprising 2,631 patients.

[Puzziello A<sup>1</sup>](#), [Rosato L](#), [Innaro N](#), [Orlando G](#), [Avenia N](#), [Perigli G](#), [Calò PG](#), [De Palma M](#).

### Author information

#### Abstract

Postoperative hypocalcemia is the most frequent complication of total thyroidectomy. It may have a delayed onset, and therefore delays the discharge from the hospital, requiring calcium replacement therapy to alleviate clinical symptoms. During a 7-month period, 2,631 consecutive patients undergoing primary or completion thyroidectomy were prospectively followed up and underwent analysis regarding postoperative hypoparathyroidism. Data were prospectively collected by questionnaires from 39 Italian endocrine surgery units affiliated to the Italian Endocrine Surgery Units Association (Club delle Unità di EndocrinoChirurgia-UEC), where thyroid surgery is routinely performed. The incidence of hypoparathyroidism was 28.8 % (757 patients), including transient hypocalcemia (27.9 %-734 patients) and permanent hypocalcemia (0.9 %-23 patients). The rate of asymptomatic hypocalcemia was 70.80 %. The incidence of permanent hypocalcemia was higher in the symptomatic hypocalcemia group (7.5 %) than in asymptomatic one (1.5 %). Female patients experienced a transient postoperative hypocalcemia more frequently than male patients (29.7 and 21.2 %, respectively;  $p < 0.0001$ ). The percentage developing hypocalcemia in patients in which parathyroid glands were intraoperatively identified and preserved was higher than in the patients in which the identification of parathyroid glands was not achieved (29.2 vs. 18.7 %,  $p < 0.01$ ). This prospective study confirmed the main risk factors for postoperative hypocalcemia: thyroid cancer, nodal dissection, and female gender. It further showed that identifying

parathyroids has an important role to prevent permanent hypocalcemia though with a higher risk of transient hypocalcemia. A suitable informed consent should especially emphasize the importance of some primary factors in increasing the risk of hypocalcemia after thyroid surgery.

### Comment in

- [iatrogenic/post-surgical hypoparathyroidism: where do we go from here?](#) [Endocrine. 2014]

PMID: 24563161 [Makale sayfası](#)

5. [Surgery](#). 2014 Dec;156(6):1638-43. doi: 10.1016/j.surg.2014.08.081. Epub 2014 Nov 11. **IF: 3.10**

## **A novel, ultrarapid parathyroid hormone assay to distinguish parathyroid from nonparathyroid tissue.**

[James BC](#)<sup>1</sup>, [Nagar S](#)<sup>1</sup>, [Tracy M](#)<sup>2</sup>, [Kaplan EL](#)<sup>1</sup>, [Angelos P](#)<sup>1</sup>, [Scherberg NH](#)<sup>2</sup>, [Grogan RH](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Frozen section is the gold standard for distinguishing parathyroid tissue from lymph nodes, thyroid nodules, or fat during parathyroidectomy and thyroidectomy. Although a very accurate procedure, it can be time-consuming and costly. We hypothesize that the extremely high concentrations of parathyroid hormone (PTH) in parathyroid tissue allow for modification of a standard PTH assay that would distinguish parathyroid from nonparathyroid tissue in substantially less time than frozen section or any currently available PTH assay.

#### **METHODS:**

A prospective, single-institution study using a modified PTH assay protocol and a manual luminometer was undertaken by testing 20 parathyroid adenomas and 9 control tissues. Analyses were performed simultaneously by the modified PTH protocol and the conventional intraoperative PTH assay.

#### **RESULTS:**

PTH luminescence values from parathyroid tissue and control tissue aspirates were significantly different at 60 seconds ( $P = .015$ ). ROC curve analysis showed the assay to be 100% sensitive and 100% specific in differentiating parathyroid from nonparathyroid tissue.

#### **CONCLUSION:**

Our novel PTH assay accurately and reliably differentiates parathyroid from nonparathyroid tissue within 60 seconds of measurement onset. This assay provides a great advantage in time savings compared with frozen section as well as any currently existing PTH assays.

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PMID: 25456968 [Makale sayfası](#)

6. [Head Neck](#). 2014 Dec 24. doi: 10.1002/hed.23996. [Epub ahead of print] **IF: 2.85**

## **Extent of Central Neck Dissection among Thyroid Cancer Surgeons: A Cross-sectional Analysis.**

[Deutschmann MW](#)<sup>1</sup>, [Chin-Lenn L](#), [Au J](#), [Brilz A](#), [Nakoneshny S](#), [Dort JC](#), [Pasiaka JL](#), [Chandarana SP](#).

### **Author information**

## Abstract

Background: It is unclear if surgeons are performing comprehensive central neck dissections (CND) for well-differentiated thyroid cancer. Our objective was to determine mean lymph node (LN) retrieval in CND as well as variability across surgeons and institutions. Methods: A prospectively collected database identified 18 surgeons performing 425 CNDs, 313 unilateral and 112 bilateral. Demographics, peri-operative and pathologic factors were analyzed. Results: Mean LN yield was 7.4 and 11.9 for unilateral and bilateral CND, respectively. While 224 CND were prophylactic, both total and pathologic LN yields were significantly higher in therapeutic CND. There was a significant variation in LN yield across individual surgeons, institutions, and regions. High-volume CND surgeons have significantly lower LN yield compared to low-volume surgeons. Conclusions: CND appears to be performed adequately; however, there is a significant variation in LN yield. Future initiatives should try to standardize the CND performed, with emphasis on obtaining a sufficient yield. This article is protected by copyright. All rights reserved.

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## KEYWORDS:

Central Neck Dissection; Lymph Node Metastasis; Thyroid Cancer

PMID: 25546489 [Makale sayfası](#)

7. [Clin Nucl Med](#). 2014 Dec 26. [Epub ahead of print] IF: 2.85

## Prognostic Role of 18F-FDG PET/CT in the Postoperative Evaluation of Differentiated Thyroid Cancer Patients.

[Pace L<sup>1</sup>](#), [Klain M](#), [Salvatore B](#), [Nicolai E](#), [Zampella E](#), [Assante R](#), [Pellegrino T](#), [Storto G](#), [Fonti R](#), [Salvatore M](#).

### Author information

#### Abstract

#### PURPOSE:

The aim of this study was to evaluate the role of F-FDG PET/CT performed after surgery but before radioiodine therapy in patients with differentiated thyroid cancer.

#### PROCEDURES:

FDG PET/CT was performed off L-thyroxine in 60 newly diagnosed differentiated thyroid cancer patients. Clinical and hematological evaluation as well as high-resolution neck ultrasound were performed. All patients underwent a complete follow-up (range, 6-67 months; mean [SD], 31.7 [20.6] months). The date of recurrence or the most recent office visit was recorded. Progression-free survival (PFS) is the primary end point of this study. Analysis was performed by Cox proportional hazards model. Survival curves were generated using Kaplan-Meier estimates, and the log-rank test was used to assess significance.

#### RESULTS:

FDG PET/CT was negative in 63% of patients, 20% had FDG thyroid bed uptake, 5% distant metastases, and 12% lymph node FDG uptake. In patients with positive FDG PET/CT scan (ie, those with distant metastases or lymph node uptake), a higher rate of recurrence was observed (50% vs 6%,  $P < 0.05$ ). Thyroglobulin, neck ultrasound, stage, and FDG PET/CT correlated with PFS at univariate analysis. At multivariate analysis, only thyroglobulin and FDG PET/CT continued to be predictors of PFS. Patients with a negative FDG PET/CT scan have a better PFS either in the whole group or in those with elevated thyroglobulin level (both  $>2$  ng/mL and  $>10$  ng/mL).

#### CONCLUSIONS:

FDG PET/CT was abnormal in 17% of patients. Moreover, FDG PET/CT has an independent prognostic role, with a better PFS in patients with a negative scan.

8. [Head Neck](#). 2014 Dec 18. doi: 10.1002/hed.23954. [Epub ahead of print] **IF: 2.85**

## **Thyroid thyrothymic extension: An anatomical study in a surgical series.**

[Sheahan P<sup>1</sup>](#), [O'Duffy F](#).

[Author information](#)

### **Abstract**

Introduction: The thyrothymic extension (TTE) is a variable projection from the inferior thyroid pole along the course of the thyrothymic ligament. Awareness of the TTE is critical to ensure complete total thyroidectomy. However, there is little mention of the TTE in the literature. The purpose of the present study was to investigate the frequency of the TTE in our surgical series. Methods: Prospective cohort study of 284 thyroid and parathyroid surgeries performed by a single surgeon. Results: A TTE was present in 138 of 414 evaluable thyroid lobes (33.3%), with no predilection for left or right. The TTE was bilateral in 57% of cases. In 5 cases, there was significant nodular enlargement of the TTE. The inferior parathyroid gland was closely associated with 8% of TTEs. Conclusions: The TTE is a commonly encountered projection from the inferior thyroid pole. Awareness of the TTE is important to ensure complete total thyroidectomy. This article is protected by copyright. All rights reserved.

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### **KEYWORDS:**

Thyrothymic; anatomy; parathyroid; thymus; thyroid

PMID: 25524573

[Makale sayfası](#)

9. [Head Neck](#). 2014 Oct;36(10):1425-30. doi: 10.1002/hed.23469. Epub 2014 Jan 16. **IF: 2.85**

## **Lymph node distribution in the central compartment of the neck: an anatomic study.**

[Tavares MR<sup>1</sup>](#), [Cruz JA](#), [Waisberg DR](#), [Toledo SP](#), [Takeda FR](#), [Cernea CR](#), [Capelozzi VL](#), [Brandão LG](#).

[Author information](#)

### **Abstract**

#### **BACKGROUND:**

Dissection of the central compartment of the neck (CCN) is performed for proven or suspected lymph node metastases of thyroid carcinoma. During this procedure, the recurrent laryngeal nerves and the parathyroid glands are at risk. The purpose of this study was to determine the anatomic distribution of the lymph nodes in the CCN.

#### **METHODS:**

The anatomic distribution of the lymph nodes in the CCN was studied by dissection of 30 fresh cadavers. The soft tissue between the cricoid cartilage and the innominate vein, carotid arteries, and prevertebral fascia was removed and divided according to CCN sublevels. Nodules were identified by palpation in the specimen and sent for pathological examination.

#### **RESULTS:**

Three to 44 ( $18.5 \pm 10.29$ ) nodules were identified macroscopically. Two to 42 nodules were confirmed as lymph nodes after microscopic examination. The lymph node distribution was as follows: precricoid: 0 to 2 ( $0.9 \pm 0.72$ ); pretracheal: 1 of 35 ( $12.4 \pm 8.19$ ); lateral to the right recurrent laryngeal nerve (RLN): 0 to 11 ( $3.4 \pm 2.34$ ); and lateral to the left: 0 to 4 ( $1.7 \pm 1.30$ ). Twenty-six parathyroid glands were removed by 14 dissections. The innominate vein was found at 15 mm above the superior border of the clavicles to 35 mm below on the left side of the neck and 5 to 45 mm on the right side.

#### **CONCLUSION:**

The number of confirmed lymph nodes in the central neck varied from 2 to 42. Sixty-seven percent of the lymph nodes were in the pretracheal sublevel. There was no division between level VI and VII lymph nodes. Additionally, the innominate vein was found to be from 15 mm above the superior border of the clavicles to 35 mm below on the left side of the neck and 5 to 45 mm on the right side. Parathyroid glands were identified to be far away from the thyroid gland.

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#### **KEYWORDS:**

anatomic study; central neck compartment; lymph nodes; neck dissection; thyroid cancer

PMID: 24038585

[Makale sayfası](#)

10. [World J Surg.](#) 2014 Dec 2. [Epub ahead of print] IF: 2.47

## **Radiofrequency Ablation of Benign Symptomatic Thyroid Nodules: Prospective Safety and Efficacy Study.**

[Ugurlu MU<sup>1</sup>](#), [Uprak K](#), [Akpınar IN](#), [Attaallah W](#), [Yegen C](#), [Gulluoğlu BM](#).

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Radiofrequency ablation (RFA) is a relatively novel procedure in the management of benign nodular goiter. This study was conducted to evaluate the safety and efficacy of ultrasound (US)-guided percutaneous RFA for benign symptomatic thyroid nodules as an alternative to surgery.

#### **METHODS:**

The study involved patients for whom a fine needle aspiration biopsy had proved a diagnosis of benign nodular goiter and had nodule-related symptoms such as dysphagia, cosmetic problems, sensation of foreign body in the neck, hyperthyroidism due to autonomous nodules or fear of malignancy. Percutaneous RFA was performed as an outpatient procedure under local anesthesia. The primary outcome was an evaluation of the changes in symptom scores (0-10) for pain, dysphagia and foreign body sensation at the 1st, 3rd, and 6th months after the RFA procedure. Secondary outcomes were assessing volume changes in nodules, complication rates, and changes in thyroid function status.

#### **RESULTS:**

A total of 33 patients (24 % female, 76 % male) and a total of 65 nodules were included into the study. More than one nodule was treated in 63.6 % of the patients. We found a statistically significant improvement from baseline to values at the 1st, 3rd, and 6th months, respectively, as follows: pain scores ( $2.9 \pm 2.7$ ,  $2.3 \pm 2.01$ ,  $1.8 \pm 1.7$ , and  $1.5 \pm 1.2$ ,  $p < 0.005$ ), dysphagia scores ( $3.9 \pm 2.7$ ,  $2.6 \pm 1.9$ ;  $1.7 \pm 1.6$ , and  $1.1 \pm 0.3$ ,  $p < 0.032$ ), and foreign body sensation scores  $3.6 \pm 3$ ,  $2.5 \pm 2.2$ ;  $1.6 \pm 1.5$ , and  $1.1 \pm 0.4$ ,  $p < 0.002$ ). The mean pre-treatment nodule volume was  $7.3 \pm 8.3$  mL. There was a statistically significant size reduction in the nodules at the 1st, 3rd, and 6th months after RFA ( $3.5 \pm 3.8$ ,  $2.7 \pm 3.4$ , and  $1.2 \pm 1.7$  mL,  $p < 0.002$ ). The volume reduction was found to be 74 % at 6th months following the RFA ( $p < 0.005$ ). 8 patients

had autonomously functioning nodules in the pre-treatment period, 50 % (n: 4) became euthyroid at the 6th month after RFA. There were no complaints other than pain (12 %).

#### **CONCLUSION:**

RFA can be an alternative treatment modality in the management of benign symptomatic thyroid nodules. The results showed that it is a safe and effective procedure.

PMID: 25446486

11. [Thyroid Res.](#) 2014 Dec 5;7(1):9. doi: 10.1186/s13044-014-0009-8. eCollection 2014. IF: 2.22

## **The use of semi-quantitative ultrasound elastosonography in combination with conventional ultrasonography and contrast-enhanced ultrasonography in the assessment of malignancy risk of thyroid nodules with indeterminate cytology.**

[Giusti M](#)<sup>1</sup>, [Campomenosi C](#)<sup>2</sup>, [Gay S](#)<sup>2</sup>, [Massa B](#)<sup>3</sup>, [Silvestri E](#)<sup>4</sup>, [Monti E](#)<sup>2</sup>, [Turtulici G](#)<sup>4</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

The pre-surgical selection of thyroid nodules with indeterminate cytology (Thy 3 according to British Thyroid Association) after fine-needle aspiration biopsy (FNAB) is currently required in order to reduce unnecessary total thyroidectomy. The objective of our study was to use a surgical series of Thy 3 nodules to evaluate the predictive role of ultrasound elastosonography (USE) and contrast-enhanced ultrasonography (CEUS) in pre-surgical diagnoses of malignancy.

#### **SUBJECTS AND METHODS:**

We enrolled 63 patients with Thy 3 nodules in which cytological-histological correlation was available. The ELX 2/1 strain index was obtained by means of semi-quantitative USE, which was performed before surgery in addition to conventional ultrasonography (US) and contrast-enhanced US (CEUS) on the Thy 3 nodules. The ELX 2/1 strain index, a five-item US score and both peak (P) index and time to peak (TTP) index from CEUS were correlated with the histological results. After surgical diagnosis, the data were analysed by using a receiver-operating characteristic (ROC) curve.

#### **RESULTS:**

Histology was benign in 50 and malignant in 13 Thy 3 nodules. No difference in maximal diameter was noted between benign ( $22.8 \pm 1.6$  mm) and malignant ( $18.9 \pm 2.9$  mm) nodules. Significant correlations were found between histology and cumulative US findings ( $p=0.005$ ), ELX 2/1 index ( $p=0.002$ ), P index ( $p=0.01$ ) and TTP index ( $p=0.02$ ). On analysing data from US, USE and CEUS, significant ROC areas under the curve were observed ( $p<0.0001$ ). A cut-off value was set for US ( $>2$ ), ELX 2/1 ( $>0.95$ ), P index ( $<0.99$ ) and TTP index ( $>0.98$ ) scores. The diagnostic power of the cumulative pre-surgical analysis of Thy 3 nodules with US, USE and CEUS, considering the experimental cut-off points obtained from the ROC curves was: sensitivity 64%, specificity 92%, PPV 75% and accuracy 84%.

#### **CONCLUSION:**

The ELX 2/1 index in conjunction with the US score can be useful in orienting surgical strategies in Thy 3 nodules. The information added by CEUS is less sensitive than that provided by US and USE. The use of a cut-off based on histology can reduce thyroidectomy. Observation should be the first choice when not all instrumental results are suspect.

#### **KEYWORDS:**

Contrast-enhanced ultrasonography; Cytological–histological correlation; Indeterminate cytology; ROC analysis; Strain index; Thyroid nodules; Ultrasonography; Ultrasound elastosonography

PMID: 25506397

[Makale sayfası](#)

12. [Clin Radiol](#). 2015 Jan;70(1):42-7. doi: 10.1016/j.crad.2014.09.008. Epub 2014 Oct 14. IF: 1.66

## **Ethanol ablation of predominantly cystic thyroid nodules: Evaluation of recurrence rate and factors related to recurrence.**

[Suh CH](#)<sup>1</sup>, [Baek JH](#)<sup>2</sup>, [Ha EJ](#)<sup>3</sup>, [Choi YJ](#)<sup>1</sup>, [Lee JH](#)<sup>1</sup>, [Kim JK](#)<sup>4</sup>, [Chung KW](#)<sup>5</sup>, [Kim TY](#)<sup>6</sup>, [Kim WB](#)<sup>6</sup>, [Shong YK](#)<sup>6</sup>.

### **[Author information](#)**

#### **Abstract**

##### **AIM:**

To evaluate recurrence rate and associated risk factors for recurrence after ethanol ablation (EA) in patients with predominantly cystic thyroid nodules.

##### **MATERIALS AND METHODS:**

This observational study was approved by the Ethics Committee of the Institutional Review Board and informed consent for procedures was obtained. From April 2009 to April 2013, 107 consecutive patients with predominantly cystic nodules were treated using EA. Recurrence was defined as nodules showing a residual solid portion with internal vascularity, cosmetic problems remaining, or persistent symptoms, and patients who requested additional therapy to resolve their symptomatic or cosmetic problems. Delayed recurrence was defined as treated nodules that showed no recurrent features at 1 month, but showed newly developed recurrent features during the longer follow-up period. Multivariate analysis was used for variables to demonstrate the independent factors related to volume reduction.

##### **RESULTS:**

One month after EA, 18.7% of patients (20/107) showed recurrence. Among 87 patients with non-recurrence, 24.1% (21/87) showed delayed recurrence. The total recurrence rate was 38.3% (41/107). Patients with recurrence (n = 41) were treated using radiofrequency ablation (n = 28), second EA (n = 4), and refused further treatment (n = 9). These patients responded well to repeat EA and radiofrequency ablation. Multivariate analysis demonstrated that the initial nodule volume (>20 ml; p < 0.036) and vascularity (grade >1; p < 0.049) were independent predictors of volume reduction at last follow-up.

##### **CONCLUSIONS:**

The results revealed that although EA seemed to be effective during the initial period, delayed recurrence should be considered during longer-term follow-up. The independent predictors of recurrence were initial volume (>20 ml) and vascularity.

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PMID: 25443776

[Makale sayfası](#)

13. [Radiol Oncol](#). 2014 Nov 5;48(4):348-53. doi: 10.2478/raon-2014-0007. eCollection 2014. IF: 1.66

## **The role of elastosonography, gray-scale and colour flow Doppler sonography in prediction of malignancy in thyroid nodules.**

[Tatar IG](#)<sup>1</sup>, [Kurt A](#)<sup>1</sup>, [Yilmaz KB](#)<sup>2</sup>, [Doğan M](#)<sup>3</sup>, [Hekimoglu B](#)<sup>1</sup>, [Hucumenoglu S](#)<sup>4</sup>.

### **[Author information](#)**

## Abstract

### BACKGROUND:

Ultrasound is as a noninvasive method commonly used in the work-up of thyroid nodules. This study aimed to evaluate the usefulness of sonographic and elastosonographic parameters in the discrimination of malignancy.

### PATIENTS AND METHODS:

150 thyroid nodules were evaluated by gray-scale, Doppler and elastosonography. The cytological analysis revealed that 141 nodules were benign and 9 were malignant.

### RESULTS:

Orientation of the nodule was the only sonographic parameter associated with malignancy ( $p = 0.003$ ). In the strain ratio analysis the best cut-off point was 1.935 to discriminate malignancy ( $p = 0.000$ ), with 100% sensitivity, 76% specificity, 100% negative predictive value, 78.5% positive predictive value and 78% accuracy rate. There was a statistically significant correlation between the elasticity score and malignancy ( $p = 0.001$ ). Most of the benign nodules had score 2 and 3, none of them displayed score 5. On the other hand, none of the malignant nodules had score 1 and 2, most of them displaying score 5.

### CONCLUSIONS:

A change in the diagnostic algorithm of the thyroid nodules should be considered integrating the elastosonographic analysis.

### KEYWORDS:

Doppler; elastosonography; thyroid, malignancy; ultrasound

PMID: 25435847

[Makale sayfası](#)

14. [Int J Clin Exp Med](#). 2014 Oct 15;7(10):3404-9. eCollection 2014. IF: 1.42

## Minimally invasive surgery using mini anterior incision for thyroid diseases: a prospective cohort study.

[Sabuncuoğlu MZ](#)<sup>1</sup>, [Sabuncuoğlu A](#)<sup>2</sup>, [Sozen I](#)<sup>3</sup>, [Benzin MF](#)<sup>1</sup>, [Cakir T](#)<sup>4</sup>, [Cetin R](#)<sup>5</sup>.

### Author information

#### Abstract

#### AIM:

Minimally invasive surgical techniques have attracted interest in all surgical specialties since 1980. The thyroidectomy technique requires meticulous surgical dissection, absolute hemostasis, en bloc tumor resection and adequate visualization of the operative field, all of which can be accomplished with minimally invasive techniques.

#### METHODS:

The study group comprised all patients undergoing MITS from its introduction in 2010 until July 2012. All data were prospectively recorded in the Elbistan Hospital and Suleyman Demirel University in Turkey. This study was designed to demonstrate our experience with mini-incision-technique in thyroidectomy.

#### RESULTS:

Over the 2-year period, 37 patients underwent bilateral MITS procedures. The procedure made with a small (2.5 cm) anterior incision made above the isthmus. The final diagnoses were benign multinodular goitre (37%), follicular adenoma (28%) incidental carcinoma (11%), Hashimoto's thyroiditis (15%), Hurtle cell adenoma (5%), subacute thyroiditis (3%), residual thyroid-non carcinoma (2%), simple cyst (1%), diffuse hyperplasia (1%) and other (1%). Of the carcinomas, 80% were papillary thyroid cancer, 13% were follicular, and the remaining 7% were Hurtle cell carcinomas. We don't need to extend our incision in any cases. Two patients had temporary recurrent laryngeal nerve paresis and one patient had temporary hypocalcemia.

**CONCLUSIONS:**

It is not easy to demonstrate the advantages of MIT over conventional and video-assisted surgery. The main complications, such as nerve injury, hypoparathyroidism, or hemorrhage, are the same as in other surgical approaches. MIT has demonstrated advantages over conventional open approaches for both hemi- and total thyroidectomy and the benefits do not depend on the open or video-assisted approach. The anterior mini-incision approach can be performed with an operative time and postoperative complication profile equivalent to conventional thyroidectomy while providing excellent cosmesis with a 2 cm scar in both total thyroidectomy and lobectomies.

**KEYWORDS:**

Minimal invasive thyroid surgery; anterior mini incision; thyroidectomy; thyroid disease

PMID: 25419375

15. [Laryngoscope](#). 2014 Oct 9. doi: 10.1002/lary.24960. [Epub ahead of print] **IF:1.32**

## Stimulation threshold greatly affects the predictive value of intraoperative nerve monitoring.

[Faden DL](#)<sup>1</sup>, [Orloff LA](#), [Ayeni T](#), [Fink DS](#), [Yung K](#).

**[Author information](#)****Abstract****OBJECTIVES/HYPOTHESIS:**

Using a standardized, graded, intraoperative stimulation protocol, we aimed to delineate the effects of various stimulation levels applied to the recurrent laryngeal nerve on the postoperative predictive value of intraoperative nerve monitoring.

**STUDY DESIGN:**

A total of 917 nerves at risk were included for analysis. Intraoperatively, patients underwent stimulation of the recurrent laryngeal nerve at 0.3, 0.5, 0.8, and 1.0 mA followed by postoperative laryngoscopy for correlation with intraoperative findings.

**METHODS:**

Sensitivity, specificity, positive predictive value, and negative predictive value were calculated at each stimulation level.

**RESULTS:**

Sensitivity, specificity, positive predictive value, and negative predictive values ranged from 100% to 37%, 6% to 99%, 2% to 39%, and 100% to 99%, respectively at 0.3 to 1.0 mA. No demographic variables affected sensitivity or specificity. Receiver operating characteristic analysis identified 0.5 mA as the level of stimulation that optimizes sensitivity and specificity.

**CONCLUSIONS:**

The predictive value of intraoperative nerve monitoring varies greatly depending on the stimulation levels used. At low amplitudes of stimulation, nerve monitoring has high sensitivity and negative predictive value but low specificity and positive predictive value, related to the high rate of false positives. At high levels of stimulation, specificity and negative predictive value are high, sensitivity is low, and the positive predictive value rises as the rate of false negatives increase and the rate of false positives decrease. A stimulation level of 0.5 mA optimizes the predictive value of nerve monitoring; however, stimulation at multiple levels significantly improves the predictive value of intraoperative nerve monitoring.

**LEVEL OF EVIDENCE:**

2b. [Laryngoscope](#), 2014.

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**KEYWORDS:**

Recurrent laryngeal nerve; intraoperative nerve monitoring; thyroid surgery

PMID: 25302692 [Makale sayfası](#)

16. [Ann Otol Rhinol Laryngol](#). 2014 Nov 17. pii: 0003489414560433. [Epub ahead of print] IF: 1.24

## Clinical Implication of Highly Sensitive Detection of the BRAFV600E Mutation in Fine-Needle Aspirations According to the Thyroid Bethesda System in Patients With Conventional Papillary Thyroid Carcinoma.

[Seo JY](#)<sup>1</sup>, [Choi JR](#)<sup>2</sup>, [Moon HJ](#)<sup>3</sup>, [Kim EK](#)<sup>3</sup>, [Han KH](#)<sup>4</sup>, [Kim H](#)<sup>5</sup>, [Kwak JY](#)<sup>6</sup>.

[Author information](#)

**Abstract****BACKGROUND:**

We investigated the additional diagnostic yield of the mutation test and evaluated the frequency of the BRAF mutation in conventional PTC (cPTC) according to ultrasound (US) features and the Bethesda System for Reporting Thyroid Cytopathology (BSRTC) based on the BRAF<sup>V600E</sup> mutation status.

**MATERIALS AND METHODS:**

During the study period, 279 patients who underwent FNA with an additional BRAF<sup>V600E</sup> mutation test were diagnosed as cPTC after surgery. We analyzed the association between the mutation and several clinical factors.

**RESULTS:**

Of the 279 cPTCs, 250 (89.6%) had the BRAF<sup>V600E</sup> mutation. The BRAF mutation test was helpful in diagnosing an additional 19% (53/279) of cPTCs. The frequency of the BRAF mutation in cPTCs with suspicious US features was higher than that of cPTCs with negative US features regardless of the BSRTC.

**CONCLUSIONS:**

Suspicious US features may be helpful in deciding whether an additional BRAF<sup>V600E</sup> mutation test should be done in thyroid nodules with indeterminate cytology.

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**KEYWORDS:**

biopsy; cytology; fine-needle; mutation; papillary; proto-oncogene proteins BRAF; thyroid cancer

PMID: 25404749

17. [J Invest Surg](#). 2014 Dec 23. [Epub ahead of print] IF: 1.19

## Detection of Thyroid Papillary Carcinoma Lymph Node Metastases Using One Step Nucleic Acid Amplification (OSNA): Preliminary Results.

[González O](#)<sup>1</sup>, [Iglesias C](#), [Zafon C](#), [Castellví J](#), [García-Burillo A](#), [Temprana J](#), [Caubet E](#), [Vilallonga R](#), [Mesa J](#), [Cajal SR](#), [Fort JM](#), [Armengol M](#), [María Balibrea J](#).

[Author information](#)

**Abstract**

ABSTRACT Purpose: One Step Nucleic Acid Amplification (OSNA) has been previously proposed for the diagnosis of lymph node metastases (LNMs) from several malignant conditions by quantifying the number

of copies of cytokeratin 19 mRNA. Our aim was to evaluate the results obtained by OSNA in the lymph nodes of patients with papillary thyroid carcinoma (PTC) by comparing our results with the findings observed using standard pathological examination. Materials and Methods: Fifty human lymph nodes (from five patients with diagnosed PTC) were studied. Each node was divided into two: one half was used for molecular study ("OSNA-node"), and the other half was used for conventional staining with hematoxylin and eosin ("HE-non-OSNA node"). Three cytological imprints using Papanicolaou and May-Grunwald-Giemsa stains were obtained from both node halves. The results from each technique were compared, and ROC analysis was performed. Results: The OSNA study showed 22 positive samples for LNM (44%), which demonstrate a high concordance rate with the results observed using conventional pathological examination (cytology of "OSNA-node" and HE of "Non-OSNA node") with specificity and sensitivity values greater than 86% and 89%, respectively. However, both comparisons differed in the number of copies of mRNA as the best cut-off (260 copies in the first case and 93 in the second case). Conclusions: The OSNA results for the detection of LNM in patients with PTC are comparable with those observed using conventional techniques. However, its quantitative nature could be useful to more accurately detect lymph node involvement.

**KEYWORDS:**

OSNA; lymph node metastases; papillary thyroid carcinoma

PMID: 25536089

# TİROİD

## RETROSPEKTİF

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1. [Ann Surg](#). 2014 Oct;260(4):601-5; discussion 605-7. doi: 10.1097/SLA.0000000000000925. IF: 7.18

### **Extent of surgery for papillary thyroid cancer is not associated with survival: an analysis of 61,775 patients.**

[Adam MA](#)<sup>1</sup>, [Pura J](#), [Gu L](#), [Dinan MA](#), [Tyler DS](#), [Reed SD](#), [Scheri R](#), [Roman SA](#), [Sosa JA](#).

#### **Author information**

#### **Abstract**

##### **OBJECTIVE:**

To examine the association between the extent of surgery and overall survival in a large contemporary cohort of patients with papillary thyroid cancer (PTC).

##### **BACKGROUND:**

Guidelines recommend total thyroidectomy for PTC tumors >1 cm, based on older data demonstrating an overall survival advantage for total thyroidectomy over lobectomy.

##### **METHODS:**

Adult patients with PTC tumors 1.0-4.0 cm undergoing thyroidectomy in the National Cancer Database, 1998-2006, were included. Cox proportional hazards models were applied to measure the association between the extent of surgery and overall survival while adjusting for patient demographic and clinical factors, including comorbidities, extrathyroidal extension, multifocality, nodal and distant metastases, and radioactive iodine treatment.

##### **RESULTS:**

Among 61,775 PTC patients, 54,926 underwent total thyroidectomy and 6849 lobectomy. Compared with lobectomy, patients undergoing total thyroidectomy had more nodal (7% vs 27%), extrathyroidal (5% vs 16%), and multifocal disease (29% vs 44%) (all Ps < 0.001). Median follow-up was 82 months (range, 60-179 months). After multivariable adjustment, overall survival was similar in patients undergoing total thyroidectomy versus lobectomy for tumors 1.0-4.0 cm [hazard ratio (HR) = 0.96; 95% confidence interval (CI), 0.84-1.09]; P = 0.54] and when stratified by tumor size: 1.0-2.0 cm [HR = 1.05; 95% CI, 0.88-1.26; P = 0.61] and 2.1-4.0 cm [HR = 0.89; 95% CI, 0.73-1.07; P = 0.21]. Older age, male sex, black race, lower income, tumor size, and presence of nodal or distant metastases were independently associated with compromised survival (P < 0.0001).

##### **CONCLUSIONS:**

Current guidelines suggest total thyroidectomy for PTC tumors >1 cm. However, we did not observe a survival advantage associated with total thyroidectomy compared with lobectomy. These findings call into question whether tumor size should be an absolute indication for total thyroidectomy.

2. [J Clin Endocrinol Metab.](#) 2014 Oct;99(10):3686-93. doi: 10.1210/jc.2014-1681. Epub 2014 Jul 25.

IF: 7.02

## **Preoperative neck ultrasound in clinical node-negative differentiated thyroid cancer.**

[Wang LY<sup>1</sup>](#), [Palmer FL](#), [Thomas D](#), [Shaha AR](#), [Shah JP](#), [Patel SG](#), [Tuttle RM](#), [Ganly I](#).

[Author information](#)

**Abstract**

### **BACKGROUND:**

The impact of preoperative neck ultrasound (US) on management of the lateral neck in patients with differentiated thyroid cancer is unclear. The objective of this study was to assess the impact of preoperative neck US on the rate of lateral neck dissection in clinical N0 neck and initial response to therapy.

### **METHODS:**

An institutional review board-approved retrospective review of 890 patients that had thyroid surgery for differentiated thyroid cancer between 2009 and 2010 was performed at our institution. Patients with palpable neck disease, distant metastases, less than total thyroidectomy, no postoperative thyroglobulin (Tg) determinations, and positive Tg antibodies were excluded, leaving 465 patients available for analysis. Patients were divided into those who had a preoperative neck US to evaluate lateral neck nodes (n = 234) and those who did not (n = 231). Patient and tumor characteristics were compared using the  $\chi^2$  test. The primary end point was response to therapy, defined by postoperative US and Tg levels.

### **RESULTS:**

There were no significant differences in age, histology, T stage, postoperative radioactive iodine dose, American Joint Committee on Cancer stage, American Thyroid Association risk category, or duration of follow up between the 2 groups. Patients with preoperative neck US were more likely to have lateral neck dissection compared with patients without preoperative neck US [n = 31 (13.2%) vs n = 2 (0.9%); P < .001]. Preoperative neck US resulted in a better response to therapy (P = 0.005), a greater likelihood of no evidence of disease, and a smaller likelihood of having a biochemical or structural incomplete response or a return for delayed neck dissection. The preoperative US group also resulted in fewer recurrences; 10 patients from the no preoperative US group returned to the operating room compared with two patients (4.3% vs 0.9%, P = .018) who had a preoperative neck US.

### **CONCLUSION:**

Preoperative neck US detects more lateral neck disease, leading to an increase in lateral neck dissection with subsequent improvement in response to therapy and fewer return to the operating room for regional recurrence management.

PMID: 25062456 [Makale sayfası](#)

3. [J Clin Endocrinol Metab.](#) 2014 Oct;99(10):3700-7. doi: 10.1210/jc.2013-4401. Epub 2014 Apr 7. IF:

7.02

## **The large majority of 1520 patients with indeterminate thyroid nodule at cytology have a favorable outcome, and a clinical risk score has a high negative predictive value for a more cumbersome cancer disease.**

[Rago T<sup>1</sup>](#), [Scutari M](#), [Latrofa F](#), [Loiacono V](#), [Piaggi P](#), [Marchetti I](#), [Romani R](#), [Basolo F](#), [Miccoli P](#), [Tonacchera M](#), [Vitti P](#).

[Author information](#)

**Abstract**

**CONTEXT:**

Clinical management of patients with thyroid nodules indeterminate at fine-needle aspiration (FNA) cytology is still unsettled.

**OBJECTIVE:**

Our objective was to establish the clinical outcome of patients with thyroid nodules indeterminate at cytology and to identify the features associated with malignancy.

**DESIGN AND PATIENTS:**

This was a retrospective evaluation of 1520 consecutive patients with indeterminate cytology among 100 065 patients who underwent FNA between January 2000 and December 2010.

**RESULTS:**

Of 1520 patients, 371 (24.4 %) had thyroid cancer at histology, the follicular variant of papillary cancer being the most frequent histotype, and 342 patients with cancer were free of disease after thyroidectomy and (131)I remnant ablation, whereas 29 needed further treatment because of persistent disease. Among them, only 12 had persistence of disease at the end of follow-up. Atypias at cytology ( $P = .001$ ), blurred nodule margins ( $P = .005$ ), and spot microcalcifications ( $P = .003$ ) at thyroid ultrasound (US) were significantly associated with malignancy. A clinical score including cytology and US characteristics was calculated; the lowest value showed a high negative predictive value (83.9%) for the presence of malignancy and even higher (99.5%) for the presence of a more cumbersome cancer disease, and only 4 of the 29 patients who needed further treatment were included in the group with the lowest risk score.

**CONCLUSIONS:**

Patients with Thy 3 cytology and histology of thyroid cancer had an overall good prognosis. A clinical risk score including the results of cytology and US features is helpful in the management of patients with indeterminate thyroid nodules.

PMID: 24708101

[Makale sayfası](#)

4. [Ann Surg Oncol](#). 2014 Nov 12. [Epub ahead of print] IF:4.33

## A Risk Model to Determine Surgical Treatment in Patients with Thyroid Nodules with Indeterminate Cytology.

[Macias CA](#)<sup>1</sup>, [Arumugam D](#), [L Arlow R](#), [Eng OS](#), [Lu SE](#), [Javidian P](#), [Davidov T](#), [Trooskin SZ](#).

### [Author information](#)

#### **Abstract**

**BACKGROUND:**

Thyroid nodules are present in 19-67 % of the population and have a 5-10 % risk of malignancy. Fine needle aspiration biopsies are indeterminate in 20-30 % of patients, often necessitating thyroid surgery for diagnosis. We hypothesized that developing a risk model incorporating factors associated with malignancy could help predict the risk of malignancy in patients with indeterminate thyroid nodules.

**METHODS:**

We identified 151 patients with a cytologic diagnosis of follicular neoplasm (Bethesda IV) who progressed to surgery. We retrospectively analyzed demographic, clinical, sonographic, and cytological variables in relation to thyroid carcinoma.

**RESULTS:**

Of 151 patients, 51 (33.8 %) had a final diagnosis of thyroid carcinoma. Papillary carcinoma was diagnosed in 34 patients (66.7 %), follicular carcinoma in 15 (29.4 %), and Hürthle cell carcinoma in 2 (3.9 %). On univariate analysis, younger age, male gender, tobacco use, larger nodule size, and calcifications on ultrasound, nuclear atypia on cytology, and suspicious frozen section were associated with the presence of

malignancy. When determining odds ratios, four factors were most predictive of malignancy: nodule calcification [odds ratio (OR) 6.37, 95 % confidence interval (CI) 1.62-25.1,  $p < 0.01$ ] and nodule size (OR 1.75, 95 % CI 1.19-2.57,  $p < 0.01$ ) on ultrasound, nuclear atypia on cytology (OR 4.91, 95 % CI 1.90-12.66,  $p < 0.01$ ), and tobacco use (OR 4.59, 95 % CI 1.30-16.27,  $p < 0.02$ ). A multivariable model based on these four factors resulted in a c-statistic of 0.82.

#### **CONCLUSIONS:**

A multivariable model based on calcification, nodule size, nuclear atypia, and tobacco use may predict the risk of thyroid cancer requiring a total thyroidectomy in patients with thyroid nodules of indeterminate cytology.

PMID: 25388058

5. [Ann Surg Oncol](#). 2014 Nov 4. [Epub ahead of print] IF: 4.33

## **Postoperative Nomogram for Predicting Cancer-Specific Mortality in Medullary Thyroid Cancer.**

[Ho AS](#)<sup>1</sup>, [Wang L](#), [Palmer FL](#), [Yu C](#), [Toset A](#), [Patel S](#), [Kattan MW](#), [Tuttle RM](#), [Ganly J](#).

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Medullary thyroid cancer (MTC) is a rare thyroid cancer accounting for 5 % of all thyroid malignancies. The purpose of our study was to design a predictive nomogram for cancer-specific mortality (CSM) utilizing clinical, pathological, and biochemical variables in patients with MTC.

#### **METHODS:**

MTC patients managed entirely at Memorial Sloan-Kettering Cancer Center between 1986 and 2010 were identified. Patient, tumor, and treatment characteristics were recorded, and variables predictive of CSM were identified by univariable analyses. A multivariable competing risk model was then built to predict the 10-year cancer specific mortality of MTC. All predictors of interest were added in the starting full model before selection, including age, gender, pre- and postoperative serum calcitonin, pre- and postoperative CEA, RET mutation status, perivascular invasion, margin status, pathologic T status, pathologic N status, and M status. Stepdown method was used in model selection to choose predictive variables.

#### **RESULTS:**

Of 249 MTC patients, 22.5 % (56/249) died from MTC, whereas 6.4 % (16/249) died secondary to other causes. Mean follow-up period was  $87 \pm 67$  months. The seven variables with the highest predictive accuracy for cancer specific mortality included age, gender, postoperative calcitonin, perivascular invasion, pathologic T status, pathologic N status, and M status. These variables were used to create the final nomogram. Discrimination from the final nomogram was measured at 0.77 with appropriate calibration.

#### **CONCLUSIONS:**

We describe the first nomogram that estimates cause-specific mortality in individual patients with MTC. This predictive nomogram will facilitate patient counseling in terms of prognosis and subsequent clinical follow up.

PMID: 25366585

6. [Ann Surg Oncol](#). 2014 Oct 15. [Epub ahead of print] IF: 4.33

## **Unanticipated Thyroid Cancer in Patients with Substernal Goiters: Are We Underestimating the Risk?**

[Campbell MJ](#)<sup>1</sup>, [Candell L](#), [Seib CD](#), [Gosnell JE](#), [Duh QY](#), [Clark OH](#), [Shen WT](#).

## [Author information](#)

### **Abstract**

#### **BACKGROUND:**

The rate of unexpected thyroid cancers found at the time of thyroidectomy is thought to be similar in patients with cervical and substernal multinodular goiters (MNGs).

#### **METHODS:**

The objective of this study was to compare the prevalence of undiagnosed cancer found in patients undergoing a thyroidectomy for a cervical or substernal MNG. We conducted a review of patients with a preoperative diagnosis of an MNG (both cervical and substernal) at a tertiary referral center between 2005 and 2012.

#### **RESULTS:**

We identified 538 patients who underwent thyroidectomy for an MNG (144 with substernal MNGs and 394 with cervical MNGs). Patients with substernal MNGs were older (59.6 vs. 52.3;  $p < 0.001$ ), more likely to be men (34 vs. 11.1 %;  $p < 0.001$ ), and less likely to have a history of radiation exposure to the neck (2.1 vs. 12.4 %;  $p < 0.001$ ). Thyroid cancer ( $>1$  cm) was found in 13.7 % of substernal MNG specimens and in 6.3 % of cervical MNG specimens ( $p = 0.003$ ). On multivariate analysis, substernal location [odds ratio (OR) = 2.360; confidence interval (CI), 1.201-4.638] was the only variable independently associated with an unexpected thyroid cancer on surgical pathology.

#### **CONCLUSION:**

The rate of postoperatively discovered thyroid cancer is significant in patients with substernal MNGs and is increased when compared to patients with cervical MNGs. Surgeons should counsel their patients regarding the possibility of this unexpected result.

PMID: 25316492

7. [Ann Surg Oncol](#). 2014 Oct 9. [Epub ahead of print] IF: 4.33

## **Surgeon-Performed Ultrasound-Guided Fine-Needle Aspiration Cytology of Head and Neck Mass Lesions: Sampling Adequacy and Diagnostic Accuracy.**

[Ahn D<sup>1</sup>](#), [Kim H](#), [Sohn JH](#), [Choi JH](#), [Na KJ](#).

### [Author information](#)

#### **Abstract**

#### **BACKGROUND:**

Studies of surgeon-performed ultrasound-guided fine-needle aspiration cytology (US-FNAC) have been limited largely to thyroid nodules. This study evaluated the sampling adequacy and diagnostic accuracy of surgeon-performed US-FNAC for a large range of head and neck mass lesions, including lesions of the thyroid, salivary glands, and lymph nodes.

#### **METHODS:**

The study included 617 cases of US-FNAC performed by a single surgeon between 2009 and 2013. Their medical histories and ultrasound (US) findings were retrospectively reviewed. Sample adequacy was analyzed according to the surgeon's experience, anatomic tumor location, and US tumor characteristics. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and diagnostic accuracy of FNAC were calculated after correlation with the surgical histopathologic results.

#### **RESULTS:**

The overall adequacy rate for surgeon-performed US-FNAC was 91.9 % (567/617). Inadequate specimens were obtained from 9.7 % (29/282) of the thyroid glands, 6.1 % of the salivary glands (6/98), and 6.3 % (15/237) of the lymph nodes. The effect of the surgeon's experience plateaued (inadequate sampling rate, 6-8 %) after 100 US-FNAC procedures. Inadequate sampling was associated with tumor characteristics

such as cystic change and rim calcification. Overall, US-FNAC showed a sensitivity of 88.2 %, a specificity of 98.2 %, a PPV of 98.5 %, an NPV of 85.7 %, and a diagnostic accuracy of 91.6 %.

#### **CONCLUSION:**

With proper training and experience managing at least 100 US-FNAC cases, surgeons can ensure a low inadequate sampling rate and good diagnostic accuracy for a range of head and neck mass lesions.

PMID: 25297899

8. [Eur Radiol](#). 2014 Nov;24(11):2819-26. doi: 10.1007/s00330-014-3325-4. Epub 2014 Jul 20. **IF: 4.33**

## **Thyroid nodules with initially non-diagnostic, fine-needle aspiration results: comparison of core-needle biopsy and repeated fine-needle aspiration.**

[Choi SH](#)<sup>1</sup>, [Baek JH](#), [Lee JH](#), [Choi YJ](#), [Hong MJ](#), [Song DE](#), [Kim JK](#), [Yoon JH](#), [Kim WB](#).  
[Author information](#)

#### **Abstract**

##### **OBJECTIVE:**

To evaluate the role of core-needle biopsy (CNB) by comparing the results of CNB and repeated fine-needle aspiration (FNA) for thyroid nodules with initially non-diagnostic FNA results.

##### **METHODS:**

From October 2008 to December 2011, 360 nodules - 180 consecutive repeated FNAs and 180 consecutive CNBs -- from 360 patients (83 men, 277 women; mean age, 54.4 years) with initially non-diagnostic FNA results were analyzed retrospectively. The incidence of non-diagnostic results, inconclusive results, diagnostic surgery, and diagnostic performance of repeated FNA and CNB were assessed, and factors affecting second non-diagnostic results were evaluated.

##### **RESULTS:**

CNB achieved a significantly lower non-diagnostic and inconclusive rate than repeated FNA (1.1 % versus 40.0 %,  $P < 0.001$ ; 7.2 % versus 72.0 %,  $P < 0.001$ ). All diagnostic performances with CNB were higher than repeated FNA. The diagnostic surgery rate was lower with CNB than with repeated FNA (3.6 % versus 16.7 %,  $P = 0.047$ ). Multivariate logistic regression analysis showed that repeated FNA was the most important factor for second non-diagnostic results (OR = 56.06,  $P < 0.001$ ), followed by nodules with rim calcification (OR = 7.46,  $P = 0.003$ ).

##### **CONCLUSIONS:**

CNB is more useful than repeated FNA for reducing the number of non-diagnostic and inconclusive results and for preventing unnecessary diagnostic surgery for thyroid nodules with initially non-diagnostic FNA results.

##### **KEY POINTS:**

- Core-needle biopsy achieved a lower number of non-diagnostic and inconclusive results.
- Core-needle biopsy achieved better diagnostic performance.
- Use of core-needle biopsy could prevent unnecessary diagnostic surgery.
- Repeated fine-needle aspiration was significantly associated with a second non-diagnosis.

PMID: 25038860 [Makale sayfası](#)

9. [Thyroid](#), 2014 Nov 25. [Epub ahead of print] IF: 3.84

## Size Distribution of Metastatic Lymph Nodes with Extranodal Extension in Patients with Papillary Thyroid Cancer: A Pilot Study.

[Alpert EH](#)<sup>1</sup>, [Wenig BM](#), [Dewey EH](#), [Su HK](#), [Dos Reis L](#), [Urken ML](#).

[Author information](#)

### Abstract

Background: Extranodal extension (ENE) is a documented negative prognostic factor in patients with papillary thyroid cancer (PTC). ENE is presumed to manifest in larger lymph nodes. Yet, to date, no study has proven this. This is a pilot study that specifically examines the size distribution of positive lymph nodes manifesting ENE in patients with PTC. Methods: An Institutional Review Board approved review examined the size of all lymph nodes demonstrating ENE in postoperative PTC patients that underwent surgery for PTC under the care of a single surgeon between 2004 and 2014. All patients in the study had regional metastatic lymph nodes with ENE. Analysis of the size distribution for all lymph nodes with ENE was performed. Results: A total of 47% of lymph nodes with ENE were  $\leq 10$  mm. Conclusions: Results indicate that clinically nonevident, small lymph nodes are at risk of harboring aggressive disease biology reflected in ENE. A total of 47% of all nodes fell within Randolph et al.'s classification of "small" lymph nodes, while 59% of the nodes with ENE were  $< 1.5$  cm—the threshold size that was deemed to be prognostically significant by Ito et al. It is apparent that clinically nonevident regional lymph nodes can have adverse histologic features and that the previous presumption that nodes with ENE only appear in clinically evident, macroscopic nodes is flawed.

PMID: 25422987

10. [Thyroid](#), 2014 Nov 24. [Epub ahead of print] IF: 3.84

## How Do Liquid Based Preparations of Thyroid FNA Compare with Conventional Smears? An Analysis of 5475 Specimens.

[Nagarajan N](#)<sup>1</sup>, [Schneider EB](#), [Ali SZ](#), [Zeiger MA Md](#), [Olson M](#).

[Author information](#)

### Abstract

Background Fine needle aspiration (FNA) plays a pivotal role in the initial evaluation of patients with thyroid nodules. Traditionally, aspirated material is expelled directly onto the microscope slide to make a conventional smear (CS). Recently, liquid based preparations (LBP) have gained in popularity. This study compares the accuracy of these two preparation techniques in diagnosing thyroid nodules. Methods A clinical database containing 5475 thyroid cytology consults from 2009 to 2013 was queried to identify 5169 CS and 306 LBP cases. The agreement rates for the cytological diagnoses rendered before and after second review were compared. Correlation with the histology diagnosis was also calculated for each preparatory technique. Results Age, sex and nodule size were comparable between patients who had FNA processed by LBP and CS. More LBP cases than CS cases were inadequate (17% vs. 10%,  $p < 0.001$ ). LBP cases had fewer benign diagnoses (39 vs. 47%,  $p = 0.003$ ) and tended to have more malignant diagnoses (16 vs. 12%,  $p = 0.09$ ) when compared to CS. Indeterminate and suspicious categories were comparable between LBP and CS. Correlation with histology was also comparable between both techniques. Conclusion LBP was associated with a significantly higher proportion of inadequate and a lower proportion of benign diagnoses. Thus, universal adoption of LBP may introduce more inadequate samples. Future investigations should explore the lack of on-site evaluation with LBP as a potential source for the high inadequate rate.

PMID: 25420135

11. [Thyroid](#), 2014 Nov 4. [Epub ahead of print] **IF: 3.84**

## **Analysis of Age and Disease Status as Predictors of Thyroid Cancer-Specific Mortality Using the Surveillance, Epidemiology, and End Results Database.**

[Orosco RK<sup>1</sup>](#), [Hussain T](#), [Brumund KT](#), [Oh DK](#), [Chang DC](#), [Bouvet M](#).

[Author information](#)

### **Abstract**

Background: Age at diagnosis is incorporated into all relevant staging systems for differentiated thyroid carcinoma (DTC). There is growing evidence that a specific age cutoff may not be ideal for accurate risk stratification. We sought to evaluate the interplay between age and oncologic variables in patients with DTC using the largest cohort to date. Methods: The Surveillance, Epidemiology, and End Results (SEER) database was queried to identify patients with DTC as their only malignancy for the period 1973 to 2009. Multivariate analyses using a range of age cutoffs and age subgroupings were utilized in order to search for an optimal age that would provide the most significant risk stratification between young and old patients. The primary outcome was disease-specific survival (DSS) and covariates included: age, race, sex, tumor/nodal/metastasis (TNM) stage, decade of diagnosis, and radioactive iodine therapy. Results: A total of 85,740 patients were identified. Seventy-six percent of patients were American Joint Committee on Cancer (AJCC) stage I, 8% were stage II, 7% were stage III, and 8% were stage IV. Age over 45 years (hazard ratio [HR] 19.2,  $p < 0.001$ ) and metastatic disease (HR 13.1,  $p < 0.001$ ) were the strongest predictors of DSS. Other factors that significantly predicted DSS included: not receiving radioactive iodine (RAI; HR 1.3,  $p = 0.002$ ), T3 (HR 2.6,  $p < 0.001$ ), and T4 disease (HR 3.3,  $p < 0.001$ ), and nodal spread (HR 2.6 to 3.3,  $p < 0.001$ ). Female sex showed a significant protective effect (HR 0.7,  $p = 0.001$ ). Adjusting the age-group cutoff from 25 to 55 years showed consistently high HRs for advanced age, without a distinct change at any point. Comparing HRs for T, N, and M stage between young and old patient subgroups showed that advanced disease increased the risk for DSS regardless of age, and was oftentimes a worse prognosticator in young patient groups. Conclusions: The contribution of age at diagnosis to a patient's DSS is considerable, but there is no age cutoff that affords any unique risk-stratification in patients with DTC.

PMID: 25369076

12. [Thyroid](#), 2014 Nov 7. [Epub ahead of print] **IF: 3.84**

## **Reproductive Outcomes and Nononcologic Complications after Radioactive Iodine Ablation for Well-Differentiated Thyroid Cancer.**

[Wu JX<sup>1</sup>](#), [Young S](#), [Ro K](#), [Li N](#), [Leung AM](#), [Chiu HK](#), [Harari A](#), [Yeh MW](#).

[Author information](#)

### **Abstract**

Background: Radioactive iodine (RAI) ablation is frequently performed after initial surgery for well-differentiated thyroid cancer (WDTC). We examined the frequency and timing of childbirth as well as nononcologic complications after RAI ablation for WDTC on a population level. Methods: A retrospective cohort study of 25,333 patients (18,850 women) with WDTC was performed using the California Cancer Registry and California Office of Statewide Health Planning and Development database, 1999-2008. The primary outcomes were birthrate and median time to first live birth among women of childbearing age. Secondary outcomes were nononcologic diagnoses occurring outside the acute setting ( $>30$  days) after ablation. Results: RAI ablation did not affect birthrate among women in the full dataset. However, in subgroup analyses, birthrate among women age 35-39 was significantly decreased in those who received RAI versus those who did not (11.5 versus 16.3 births per 1000 woman-years,  $p < 0.001$ ). Median time to

first live birth after diagnosis of WDTC was prolonged among women who received RAI compared to those who did not (34.5 versus 26.1 months;  $p < 0.0001$ ). When 5-year age groups were examined individually, delay to first live birth was observed in women age 20-39 ( $p < 0.05$ ). This remained significant after adjustment for tumor characteristics, socioeconomic status, and marital status. The only nononcologic, nonreproductive adverse effect associated with RAI ablation was an increased rate of nasolacrimal stenosis (RR 3.44,  $p < 0.0001$ ). Conclusions: RAI ablation is associated with delayed childbearing in women across most of the reproductive lifespan, and with decreased birthrate in the late reproductive years. The underlying mechanism likely involves physician recommendation to delay pregnancy, as well as a potential impact of RAI on both reproductive choice and reproductive health. Further investigation is merited.

PMID: 25289542

13. [Thyroid](#). 2014 Dec;24(12):1796-805. doi: 10.1089/thy.2014.0132. IF: 3.84

## Ultrasound surveillance for thyroid malignancies in survivors of childhood cancer following radiotherapy: a single institutional experience.

[Li Z<sup>1</sup>](#), [Franklin J](#), [Zelcer S](#), [Sexton T](#), [Husein M](#).

### [Author information](#)

### Abstract

#### BACKGROUND:

Survivors of childhood cancer (SCC) who have received radiotherapy to the head, neck, and upper thorax are at higher risk of developing subsequent thyroid malignancies. As part of the post treatment long-term follow-up protocol, the current Children's Oncology Group guideline recommends surveillance by annual palpation; however, thyroid nodules are difficult to detect by physical examinations alone, and potentially malignancy-harboring nodules may be undetected. Since thyroid ultrasound is a sensitive and noninvasive procedure, it was incorporated in our institutional follow-up protocol. The aim of this study was to examine the outcome of ultrasound screening in this high-risk population. The following describes our experience from 2007 to 2013.

#### METHODS:

A retrospective chart review was conducted on survivors enrolled in our follow-up program. SCC who have received direct or scattered radiation to the thyroid gland, and who were  $\geq 10$  years from the diagnosis of primary childhood cancer were considered to be at-risk.

#### RESULTS:

Seventy-eight survivors met the inclusion criteria and were screened. Thyroid ultrasound detected thyroid nodule(s) in 46 patients (59%), 17 of which had nodule(s) between 5 and 10 mm (22%), and 15 patients had nodules  $\geq 10$  mm (19%). Fourteen patients (18%) underwent fine-needle aspiration biopsy. Six patients (8%) underwent surgery, and 5 (6%) had confirmed papillary carcinoma. At the time of the first ultrasound, thyroid nodules of various sizes were found. However, over time, these nodules demonstrated slow growth rates.

#### CONCLUSIONS:

Incorporation of thyroid ultrasound into routine follow-up of high-risk SCC may aid in the detection of thyroid malignancies that are not clinically apparent. The use of ultrasound allows detailed characterization of the thyroid nodule and reliable monitoring of nodule progression. In SCC without suspicious nodule(s), it may be reasonable to perform screening ultrasounds less frequently due to the slow growth rate of thyroid nodules. However, in those with suspicious features, surgical work-up resulted in the removal of a high number of malignancies, with few unnecessary surgeries and complications.

PMID: 25286003

[Makale sayfası](#)

14. [Thyroid](#). 2014 Dec;24(12):1790-5. doi: 10.1089/thy.2014.0256. IF: 3.84

## Central lymph node characteristics predictive of outcome in patients with differentiated thyroid cancer.

[Wang LY<sup>1</sup>](#), [Palmer FL](#), [Nixon IJ](#), [Thomas D](#), [Shah JP](#), [Patel SG](#), [Tuttle RM](#), [Shaha AR](#), [Ganly I](#).  
[Author information](#)

### Abstract

#### BACKGROUND:

The aim of our study was to determine central compartment lymph node (LN) characteristics predictive of outcomes in patients with differentiated thyroid cancer (DTC) and pathologically confirmed positive central LNs, in the absence of lateral neck disease or distant metastases at presentation.

#### METHODS:

An institutional database of 3664 previously untreated patients with DTC operated between 1986 and 2010 was reviewed. Six hundred patients with central compartment nodal disease on histopathology were identified. Patient demographics, number of positive LNs, size of largest LN, and presence of extranodal spread (ENS) were recorded for each patient. Variables predictive of recurrence-free survival (RFS) were identified using the Kaplan-Meier method. Univariate analysis was carried out by the log-rank test and multivariable analysis was carried out using cox proportional hazard model.

#### RESULTS:

The median age of the cohort was 41 years (range 12-91 years). The median follow-up was 61 months (range 1-330 months). Neck recurrence occurred in 43 patients. Recurrence occurred in the central neck in 11 patients, lateral neck in 27 patients, and both compartments in five patients. Factors predictive of neck RFS on univariate analysis were higher T stage ( $p=0.007$ ), increased number of positive LNs, increased LN diameter, and presence of ENS ( $p=0.001$ ). Multivariable analysis of LN characteristics showed that the only statistically significant predictor of neck recurrence was the presence of ENS. Neck RFS at five years for patients with and without ENS was 84.7% and 94.5% respectively ( $p=0.001$ ).

#### CONCLUSION:

The LN feature most predictive of neck recurrence appears to be the presence of ENS in the positive central neck.

PMID: 25268855 [Makale sayfası](#)

15. [Thyroid](#). 2014 Dec;24(12):1779-83. doi: 10.1089/thy.2014.0167. IF: 3.84

## Impact of invasive extranodal extension on the prognosis of patients with papillary thyroid carcinoma.

[Moritani S<sup>1</sup>](#).

[Author information](#)

### Abstract

#### BACKGROUND:

Although 20-50% of papillary thyroid carcinoma (PTC) patients initially present with lymph node metastases, prognosis is excellent. Thus, the significance of lymph node metastasis in PTC remains controversial. In this study, we examined the impact of extranodal extension to surrounding organs (invasive extranodal extension) on the prognosis for PTC patients.

#### METHODS:

Medical records of PTC patients who underwent surgery as their initial treatment at our institution between 1981 and 2008 were retrospectively reviewed. Patients with or without invasive extranodal extension were

selected. Our therapeutic strategy for PTC with invasive extranodal extension included complete resection and functional reconstruction. Intergroup comparison was performed using Student's t-test or the chi-square test as appropriate. Survival curves determined by the Kaplan-Meier method were compared for statistical significance using the log-rank test. A Cox-hazard regression model with the forward stepwise method was used for multivariate analysis.

#### **RESULTS:**

The study cohort included 60 (12.3%) patients with and 428 (87.7%) without invasive extranodal extension. The most common site of invasive extranodal extension in the central neck compartment was the recurrent laryngeal nerve, whereas the internal jugular vein was the most frequently invaded site in the lateral neck compartment. The locoregional recurrence rate did not differ significantly between patients with and without invasive extranodal extension, but the distant recurrence rate was higher for those with invasive extranodal extension. The 10-year disease-specific survival rate was significantly lower for patients with invasive extranodal extension than for those without invasive extranodal extension. Furthermore, multivariate analysis revealed that being aged  $\geq 45$  years, poor differentiation, and extrathyroidal extension were independent predictive factors for disease-specific death in PTC. Invasive extranodal extension had no effect on the survival of PTC patients.

#### **CONCLUSIONS:**

Invasive extranodal extension did not affect the survival of patients with PTC. Despite a negative impact on distant recurrence, invasive extranodal extension did not affect locoregional recurrence in PTC patients.

PMID: 25157399 [Makale sayfası](#)

16. [Endocrine](#). 2014 Oct 17. [Epub ahead of print] IF: 3.52

## **Differentiated thyroid cancer patients with a previous indeterminate (Thy 3) cytology have a better prognosis than those with suspicious or malignant FNAC reports.**

[Trimboli P<sup>1</sup>](#), [Bongiovanni M](#), [Rossi F](#), [Guidobaldi L](#), [Crescenzi A](#), [Ceriani L](#), [Nigri G](#), [Valabrega S](#), [Romanelli F](#), [Giovanella L](#).

#### **Author information**

#### **Abstract**

The prognosis of differentiated thyroid cancers (DTC) read at cytology as indeterminate and classified as Thy 3 according to the British Thyroid Association has recently been suggested to be good. To obtain robust information about this potential novelty, in this study we retrospectively reviewed DTC with a prior fine-needle aspiration cytology (FNAC) of Thy 3, Thy 4 or Thy 5 presently followed up at two institutes. Patients with no FNAC before surgery were excluded and a series of 284 DTC was enrolled in the study. Of these, 53 had Thy 3, 108 Thy 4, and 123 had Thy 5 prior to surgery. At histology, 280 (98.6 %) papillary and 4 follicular (1.4 %) cancers were found. Overall, the less aggressive cancer forms were prevalent in all three groups. The lower TNM stages (I and II) were more frequent in the Thy 3 group (96.2 %) than in the other cases (76.6 %) ( $p < 0.001$ ). Neck lymph node metastasis at diagnosis was found in 3.8 % of Thy 3, 18.5 % of Thy 4, and 26 % of Thy 5 cases. At follow-up, a 16.2 % recurrence rate was recorded, ranging from 1.9 % in Thy 3 group to 19.5 % for Thy 4 and Thy 5 ( $p < 0.001$ ). According to the Kaplan-Meier curve, Thy 3 was thus a favorable prognostic factor compared with Thy 4 and Thy 5 (OR = 0.079,  $p < 0.001$ , 95 %CI 0.01-0.59). At multivariate analysis, Thy 3 was an independent predictor of good prognosis (OR = 0.06,  $p = 0.03$ , 95 %CI 0.01-0.80). In conclusion, DTC with a preoperative Thy 3 cytology have a better prognosis than those with Thy 4 and Thy 5 due to less aggressive tumor types and lower TNM stage at diagnosis.

PMID: 25323658

## Value of sonographic features in predicting malignancy in thyroid nodules diagnosed as follicular neoplasm on cytology.

[Chng CL](#)<sup>1</sup>, [Kurzawinski TR](#), [Beale T](#).

### [Author information](#)

### Abstract

#### BACKGROUND:

The cytological diagnosis of follicular neoplasm (Thy3F) remains a diagnostic challenge. The main aim of this study is to stratify the risk of malignancy in thyroid nodules diagnosed as Thy3F on cytology (Thy3F) using Thyroid Imaging Reporting and Data System (TIRADS).

#### METHODS:

A database of thyroid nodules with Thy3F cytological results from ultrasound guided FNA (US-FNA) between January 2007 and March 2014 was studied retrospectively. Information on patient demographics, ultrasound characteristics and final histology of the nodules was collated. The number of suspicious US features of each thyroid nodule was counted based on TIRADS. The malignancy rate of each of the TIRADS category was also calculated based on the final histological outcomes of the nodules and compared to that calculated using a recently proposed thyroidmalignancy risk prediction model.

#### RESULTS:

The overall malignancy rate of Thy3F cytology was 24.3%. There were significantly higher percentages of malignant nodules with irregular margins (20.0% versus 0%,  $p=0.000$ ), hypoechogenicity (74.3% versus 51.4%,  $p=0.013$ ) and taller than wide morphology (17.1% versus 0.9%,  $p=0.001$ ) when compared to benign nodules. The risk of malignancy increased with advancing TIRADS score: TIRADS 4A (14.3%), TIRADS 4B (23.1%), TIRADS 4C (87.5%) and TIRADS 5 (100%). The malignancy rate calculated using the prediction model similarly increased with advancing TIRADS score: TIRADS 4A (6.2%), TIRADS 4B (32.5%), TIRADS 4C (79.9%) and TIRADS 5 (90%).

#### CONCLUSION:

Thyroid nodules with TIRADS scores 4C and 5 should be considered for single definitive surgery in view of the high malignant rate. This article is protected by copyright. All rights reserved.

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#### KEYWORDS:

Cyodiagnosis; Thyroid Cancer; Thyroid Nodule; Thyroidectomy

PMID: 25488575 [Makale sayfası](#)

## High expression of metadherin correlates with malignant pathological features and poor prognostic significance in papillary thyroid carcinoma.

[Li WF](#)<sup>1</sup>, [Wang G](#), [Zhao ZB](#), [Liu CA](#).

### [Author information](#)

### Abstract

#### BACKGROUND:

Metadherin (MTDH) protein, also called astrocyte elevated gene-1 (AEG-1) is over expressed in a variety of malignant tumors, and is closely related to tumor invasion and the poor prognosis.

#### OBJECTIVE:

This study tries to explore the clinical pathological significance of MTDH expression in a large cohort of PTC patients.

#### **DESIGN AND PATIENTS:**

Immunohistochemistry was used to detect MTDH expression in 156 cases of PTC, 6 cases of anaplastic thyroidcarcinoma (ATC), 10 cases of multi-nodular goiter (MNG) and 10 cases of thyroid adenoma tissues who received a thyroid operation between June 2003 to July 2008.

#### **MEASUREMENTS:**

Clinical pathological data of 156 cases of PTC were analyzed according to MTDH expression. The Kaplan-Meier method was used to plot survival curves and log-rank test to compare the postoperative survival results. The prognostic meaning of MTDH expression in PTC was evaluated by Cox regression analysis.

#### **RESULTS:**

The positive expression rates of MTDH in PTC and ATC tissues were 37.2% (58/156) and 50% (3/6) respectively, and MTDH positive expression rates were both 10% (1/10) in MNG and thyroid adenoma tissues. High MTDH expression in PTC positive with larger tumor size ( $p = 0.030$ ), high rates of lymph node ( $p = 0.041$ ) and distant metastasis ( $p = 0.028$ ), but no relation with the patient age, gender, tumor multicenter, extrathyroid invasion, and tumor grade. High MTDH expression was associated with recurrence free survival (RFS) and disease specific survival rate (DSS) ( $p = 0.014$ ,  $p = 0.001$ , respectively). Cox regression analysis showed that high MTDH expression was independent prognostic indicators for RFS and DSS in PTC patients ( $p = 0.023$ , and  $p = 0.035$ , respectively).

#### **CONCLUSION:**

High MTDH expression in PTC might play an important role in tumor growth and metastasis, and targeting MTDH treatment might have potential therapeutic value for PTC patients. This article is protected by copyright. All rights reserved.

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#### **KEYWORDS:**

Clinical significance; Immunohistochemistry; MTDH; Papillary thyroid carcinoma

PMID: 25418110 [Makale sayfası](#)

19. [BMC Cancer](#). 2014 Dec 4;14:914. doi: 10.1186/1471-2407-14-914. IF: 3.31

## **Number of tumor foci predicts prognosis in papillary thyroid cancer.**

[Qu N](#), [Zhang L](#), [Ji QH](#)<sup>1</sup>, [Zhu YX](#), [Wang ZY](#), [Shen Q](#), [Wang Y](#), [Li DS](#).

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Papillary thyroid cancer (PTC) often presents as multifocal. However, the association of multifocality with poor prognosis remains controversial. The aim of this retrospective study was to identify the characteristics of PTC with multiple foci and to evaluate the association between multifocality and prognosis.

#### **METHODS:**

We reviewed the medical records of 496 patients who underwent total thyroidectomy for PTC. Patients were classified as G1 (1 tumor focus), G2 (2 foci), and G3 (3 or more foci). We analyzed the clinicopathological features and clinical outcomes in each classification. A Cox regression model was used to assess the relationship between multifocality and recurrence or cancer mortality.

#### **RESULTS:**

The G1, G2 and G3 groups included 287, 141 and 68 patients, respectively. The mean age was  $47.1 \pm 16.1$  yr in G1,  $41.1 \pm 18.4$  yr in G2, and  $35.5 \pm 15.9$  yr in G3 and differed significantly among the 3 groups ( $p = 0.001$ ). The proportion of extrathyroidal extension, central lymph node metastasis (CLNM), and lateral lymph node metastasis (LLNM) in the G1 to G3 groups increased with increasing number of tumor foci. The Kaplan-Meier curves revealed that G3 had the shortest recurrence-free survival, and differences were significant among the 3 groups ( $p = 0.001$ , Log Rank test). Furthermore, cancer-specific survival rates decreased significantly with increasing number of tumor foci ( $p = 0.041$ ). Independent predictors of recurrence by multivariate Cox analysis included  $>3$  tumor foci [HR 2.60, 95% confidence interval (CI) 1.53-4.39,  $p = 0.001$ ] and extrathyroidal extension (HR 1.95, CI 1.12-3.38,  $p = 0.018$ ).

#### **CONCLUSION:**

An increase in the number of tumors is associated with a tendency toward more aggressive features and predicts poor prognosis in PTC.

PMID: 25471041

[Makale sayfası](#)

20. [BMC Cancer](#). 2014 Oct 23;14:777. doi: 10.1186/1471-2407-14-777. IF: 3.31

## **Prognostic factors for disease-specific survival in 108 patients with Hürthle cell thyroid carcinoma: a single-institution experience.**

[Petric R](#), [Gazic B](#), [Besic N](#)<sup>1</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Hürthle cell thyroid carcinoma (HCTC) is a rare disease. It is believed that it is more aggressive than follicular thyroid carcinoma. The aim of our study was to identify factors associated with disease-specific and disease-free survival.

#### **METHODS:**

Altogether, 108 patients with HCTC (26 male, 82 female; median age 62 years; range 19-87 years) treated at our Institute from 1972 to 2011 were included in the present retrospective study. Data on age, clinical and histopathological factors, tumor stage, recurrence, disease-free and disease-specific survival were collected. Univariate analysis was used to identify factors associated with disease-specific survival. Cox's multivariate regression model was used to identify independent prognostic factors for disease-specific survival.

#### **RESULTS:**

The follow-up period was 1 to 337 (median 105) months. Of 108 patients, 12 (11%) had distant and 8 (7%) had locoregional metastases before primary treatment. Recurrence was diagnosed in 26 cases (24%): locoregional, distant, and both locoregional and distant in 12, 11, and 3 cases, respectively. The 5-year, 10-year, and 20-year disease-specific survival were 96%, 88%, and 67%, respectively. Independent prognostic factors for disease-specific survival were: age of patients at diagnosis, distant metastases and residual tumor after surgery.

#### **CONCLUSION:**

Long disease-specific survival was found in patients with HCTC younger than 45 years of age without distant metastases and without residual tumor after surgery.

PMID: 25338674

[Makale sayfası](#)

21. [Surgery](#). 2014 Dec;156(6):1579-89. doi: 10.1016/j.surg.2014.08.060. Epub 2014 Sep 26. IF: 3.10

## **Risk-adapted management of papillary thyroid carcinoma according to our own risk group classification system: Is thyroid lobectomy the treatment of choice for low-risk patients?**

[Ebina A](#)<sup>1</sup>, [Sugitani I](#)<sup>2</sup>, [Fujimoto Y](#)<sup>1</sup>, [Yamada K](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Our original system for risk group classification for predicting cause-specific death from papillary thyroid carcinoma (PTC) defined patients with distant metastasis and older patients (≥50 years) with either massive extrathyroidal extension or large (≥3 cm) lymph node metastasis as high risk; all others are low risk. For unilateral, low-risk PTC, the extent of thyroidectomy (less-than-total thyroidectomy vs total or near-total thyroidectomy) has been determined based on the choice of the patient since 2005.

#### **PATIENTS:**

Of 1,187 patients who underwent initial thyroidectomy for PTC (tumor size [T] >1 cm) between 1993 and 2010, 967 (82%) were classified as low risk. Among low-risk patients, 791 (82%) underwent less than total thyroidectomy.

#### **RESULTS:**

The 10-year cause-specific survival and disease-free survival rates did not differ between patients who underwent total thyroidectomy versus less than total thyroidectomy (cause-specific survival, 99% vs 99% [P = .61]; disease-free survival, 91% vs 87% [P = .90]). Age ≥60 years, T ≥3 cm, and lymph node metastases >3 cm represented significant risk factors for distant recurrence.

#### **CONCLUSION:**

The favorable overall survival of low-risk patients, regardless of the extent of thyroidectomy, supports patient autonomy in treatment-related decision making. Low-risk patients possessing risk factors for distant recurrence would be likely to benefit from total thyroidectomy followed by radioactive iodine.

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PMID: 25262223

[Makale sayfası](#)

22. [Surgery](#). 2014 Nov 27. pii: S0039-6060(14)00719-3. doi: 10.1016/j.surg.2014.10.020. [Epub ahead of print] IF: 3.10

## **Papillary thyroid microcarcinomas located at the middle part of the middle third of the thyroid gland correlates with the presence of neck metastasis.**

[Xiang D](#)<sup>1</sup>, [Xie L](#)<sup>2</sup>, [Xu Y](#)<sup>1</sup>, [Li Z](#)<sup>3</sup>, [Hong Y](#)<sup>4</sup>, [Wang P](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Papillary thyroid microcarcinomas (PTMCs), located at upper poles of the thyroid, are associated with lateral neck metastasis (LNM) according to previous reports. Controversy remains regarding the correlation between the location of PTMCs and central neck metastasis (CNM).

#### **METHODS:**

Medical records of 949 patients with PTMCs diagnosed between 2010 and 2013 were reviewed retrospectively. With a subdivision of the middle third of the thyroid gland, correlations between tumor

location and CNM/LNM along with other clinicopathologic factors were analyzed by binary logistic regression.

#### **RESULTS:**

PTMCs located in the middle part of the middle third of the thyroid gland (MPMT) showed the greatest rate of CNM (57.5%) among all locations. PTMCs located at isthmus showed the second greatest rate of CNM (44.3%). In the multivariate analysis, MPMT, tumor size >0.5 cm, young and middle age, male sex, multifocality within the affected lobe, and capsular invasion were correlated with CNM. PTMCs located at upper poles and MPMT showed comparatively high rates of LNM (8.6% and 8.3%). Consistent with previous reports, an upper pole location, MPMT, and a tumor size >0.5 cm greatly correlated with LNM in the multivariate analysis. Eleven patients had skip metastases, which only occurred with upper/lower pole locations and MPMT.

#### **CONCLUSION:**

PTMCs located in the MPMT correlated with both CNM and LNM. Tumor location along with other clinicopathologic factors such as young and middle age, male sex, and tumor size >0.5 cm could facilitate preoperative stratification and guide operative management for patients with PTMC.

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23. [Surgery](#). 2015 Jan;157(1):111-8. doi: 10.1016/j.surg.2014.05.023. Epub 2014 Oct 14. IF: 3.10

## **Central lymph node metastasis in papillary thyroid microcarcinoma can be stratified according to the number, the size of metastatic foci, and the presence of desmoplasia.**

[Cho SY](#)<sup>1</sup>, [Lee TH](#)<sup>2</sup>, [Ku YH](#)<sup>3</sup>, [Kim HI](#)<sup>3</sup>, [Lee GH](#)<sup>4</sup>, [Kim MJ](#)<sup>5</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Lymph node (LN) metastasis is common in papillary thyroid microcarcinoma (PTMC). The aim of this study was to investigate the impact of LN metastasis and its risk stratification on PTMC recurrence.

#### **METHODS:**

We retrospectively reviewed the data of 336 patients with PTMC who underwent surgery from 2005 to 2006 at a single institution. LN metastasis was stratified according to the number of metastatic LNs, the ratio of metastatic to removed LNs, the size of metastatic foci in LNs, and the presence of extranodal extension and desmoplasia.

#### **RESULTS:**

Of the 336 patients, 93 (28%) had LN metastasis. During the follow-up of 5.3 years, 16 (4.8%) experienced locoregional recurrence. Among several clinicopathologic factors, LN metastasis was the most important risk factor for recurrence ( $P = .02$ ). Lateral LN metastasis was correlated with recurrence-free survival ( $P < .01$ ), whereas central LN metastasis was not ( $P = .20$ ). When central LN metastasis was stratified, a high number of metastatic LNs ( $\geq 3$ ), larger metastatic foci ( $\geq 0.2$  cm), and the presence of desmoplasia were associated with recurrence-free survival ( $P < .05$ ).

#### **CONCLUSION:**

The prognostic significance of central LN metastasis can differ according to the number of metastatic LNs, the size of metastatic foci, and the presence of desmoplasia. Patients with a high number of metastatic LNs, larger metastatic foci, and presence of desmoplasia in LNs should be treated aggressively and supervised carefully for PTMC recurrence.

24. [Surgery](#). 2014 Nov;156(5):1157-66. doi: 10.1016/j.surg.2014.07.018. Epub 2014 Oct 17. IF: 3.10

## Differential recurrent laryngeal nerve palsy rates after thyroidectomy.

[Serpell JW](#)<sup>1</sup>, [Lee JC](#)<sup>2</sup>, [Yeung MJ](#)<sup>2</sup>, [Grodski S](#)<sup>2</sup>, [Johnson W](#)<sup>2</sup>, [Bailey M](#)<sup>3</sup>.

### [Author information](#)

#### Abstract

#### INTRODUCTION:

Recurrent laryngeal nerve (RLN) palsy is a devastating complication of thyroidectomy. Although neurapraxia is thought to be the most common cause, the underlying mechanisms are poorly understood. The objectives of this study were to examine the differential palsy rates between the left and right RLNs, and the role of intraoperative nerve swelling as a risk factor of postoperative palsy.

#### METHODS:

Thyroidectomy data were collected, including demographics, change in RLN diameter, and RLN electromyographic (EMG) reading. Left and right RLNs, as well as bilateral and unilateral subgroup analyses were performed.

#### RESULTS:

A total of 5,334 RLNs were at risk in 3,408 thyroidectomies in this study. The overall RLN palsy rate was 1.5%, greater on the right side than the left for bilateral cases ( $P = .025$ ), and greater on the left side than the right for unilateral cases ( $P = .007$ ). In a subgroup of 519 RLNs, the diameter and EMG amplitude were measured. The RLN diameter increased by approximately 1.5-fold ( $P < .001$ ), and corresponded to increased EMG amplitude ( $P = .01$ ) during the procedure. The diameter of the right RLN was larger than the left RLN, both at the beginning and end of the dissection ( $P = .001$ ).

#### CONCLUSION:

The right-left differential rates of post-thyroidectomy RLN palsy seemed to be due in part to differential RLN diameters, with stretch having a more deleterious effect on RLNs with a smaller diameter; also, edema as a result of stretch might be an underlying mechanism for postoperative neurapraxia and palsy. Thyroid surgeons should be aware of the different vulnerabilities of each RLN and develop practices to avoid iatrogenic injury.

25. [Surgery](#). 2014 Dec;156(6):1569-78. doi: 10.1016/j.surg.2014.08.051. Epub 2014 Oct 24. IF: 3.10

## BRAF mutation in papillary thyroid cancer: A cost-utility analysis of preoperative testing.

[Lee WS](#)<sup>1</sup>, [Palmer BJ](#)<sup>2</sup>, [Garcia A](#)<sup>1</sup>, [Chong VE](#)<sup>1</sup>, [Liu TH](#)<sup>1</sup>.

### [Author information](#)

#### Abstract

#### BACKGROUND:

Papillary thyroid carcinoma (PTC) with BRAF mutation carries a poorer prognosis. Prophylactic central neck dissection (CND) reduces locoregional recurrences, and we hypothesize that initial total thyroidectomy (TT) with CND in patients with BRAF-mutated PTC is cost effective.

#### **METHODS:**

This cost-utility analysis is based on a hypothetical cohort of 40-year-old women with small PTC [2 cm, confined to the thyroid, node(-)]. We compared preoperative BRAF testing and TT+CND if BRAF-mutated or TT alone if BRAF-wild type, versus no testing with TT. This analysis took into account treatment costs and opportunity losses. Key variables were subjected to sensitivity analysis.

#### **RESULTS:**

Both approaches produced comparable outcomes, with costs of not testing being lower (-\$801.51/patient). Preoperative BRAF testing carried an excess expense of \$33.96 per quality-adjusted life-year per patient. Sensitivity analyses revealed that when BRAF positivity in the testing population decreases to 30%, or if the overall noncervical recurrence in the population increases above 11.9%, preoperative BRAF testing becomes the more cost-effective strategy.

#### **CONCLUSION:**

Outcomes with or without preoperative BRAF testing are comparable, with no testing being the slightly more cost-effective strategy. Although preoperative BRAF testing helps to identify patients with higher recurrence rates, implementing a more aggressive initial operation does not seem to offer a cost advantage.

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26. [Surgery](#). 2014 Dec;156(6):1491-7. doi: 10.1016/j.surg.2014.08.054. Epub 2014 Nov 11. IF: 3.10

## **The utility of lymph node mapping sonogram and thyroglobulin surveillance in post thyroidectomy papillarythyroid cancer patients.**

[Miah CF](#)<sup>1</sup>, [Zaman JA](#)<sup>2</sup>, [Simon M](#)<sup>1</sup>, [Davidov T](#)<sup>1</sup>, [Trooskin SZ](#)<sup>1</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

The American Thyroid Association recommends lymph node mapping (LNM) ultrasonography 6-12 months after thyroidectomy for patients with papillary thyroid cancer (PTC). The yield of LNM over thyroglobulin (TG) screening is not well defined. We sought to investigate this relationship.

#### **METHODS:**

Post thyroidectomy LNM was performed on 163 patients with PTC. LNM was considered positive based on these criteria: Loss of fatty hilum (LOFH), microcalcifications, hypervascularity, architectural distortion, or short axis (>8 mm). Serum TG levels were compared to LNM and fine needle aspiration (FNA).

#### **RESULTS:**

Sixty-nine patients had suspicious LNM (42%) and 17 had PTC on FNA (25%). There were 135 suspicious lymph nodes described with malignant nodes found in 6 of 65 patients (9%) with LOFH, 13 of 18 patients (76%) with microcalcifications, 11 of 12 patients (92%) with hypervascularity, 16 of 28 patients (52%) with architectural distortion, and 4 of 7 patients (52%) with enlarged size on FNA. The positive predictive value of LNM was 0.34, increasing to 0.66 when LOFH was excluded. Among 152 patients with documented TG data, LNM identified cervical nodal metastasis in 4 patients with TG < 0.5 pg/mL (anti-TG antibody negative, thyroid-stimulating hormone suppressed). Of the 15 patients with positive anti-TG antibody, 3 with recurrence were found on LNM.

**CONCLUSION:**

LNM can detect recurrent PTC when TG level is undetectable, and LOFH is a low-yield sonographic characteristic.

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PMID: 25456939 [Makale sayfası](#)

27. [Surgery](#). 2014 Dec;156(6):1477-83. doi: 10.1016/j.surg.2014.08.038. Epub 2014 Nov 11. **IF: 3.10**

## Preoperative laryngoscopy in thyroid surgery: Do patients' subjective voice complaints matter?

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### [Author information](#)

#### Abstract

**BACKGROUND:**

Although routine preoperative laryngoscopy has been standard practice for many thyroid surgeons, there is recent literature that supports selective laryngoscopy. We hypothesize that patients' preoperative voice complaints do not correlate well with abnormalities seen on preoperative laryngoscopy.

**METHODS:**

A retrospective chart review of a 3-year, single-surgeon experience was performed. Records of patients undergoing thyroid surgery were reviewed for patient voice complaints, prior neck surgery, surgeon-documented voice quality, and results of laryngoscopy.

**RESULTS:**

Of 464 patients, 6% had abnormal laryngoscopy findings, including 11 cord paralyses (2%). Preoperatively, 39% of patients had voice complaints, but only 10% had a corresponding abnormality on laryngoscopy. Only 4% of patients had a surgeon-documented voice abnormality with 72% corresponding abnormalities on laryngoscopy, including 8 cord paralyses. When eliminating patient voice complaints and using only history of prior neck surgery and surgeon-documented voice abnormality as criteria for preoperative laryngoscopy, only 1 cord paralysis is missed and sensitivity (91%) and specificity (86%) were high. Also, when compared with routine laryngoscopy, 84% fewer laryngoscopies are performed.

**CONCLUSION:**

When using patients' voice complaints as criteria for preoperative laryngoscopy, the yield is low. We recommend using surgeon-documented voice abnormalities and history of prior neck surgery as criteria for preoperative laryngoscopy.

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PMID: 25456935 [Makale sayfası](#)

28. [Surgery](#). 2014 Dec;156(6):1453-60. doi: 10.1016/j.surg.2014.08.024. Epub 2014 Nov 11. **IF: 3.10**

## Surgeon volume and adequacy of thyroidectomy for differentiated thyroid cancer.

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### [Author information](#)

#### Abstract

**INTRODUCTION:**

We aimed to determine influence of surgeon volume on (1) frequency of appropriate initial surgery for differentiated thyroid cancer (DTC) and (2) completeness of resection.

#### **METHODS:**

We reviewed all initial thyroidectomies (Tx; lobectomy and total) performed in a health system during 2011; surgeons were grouped by number of Tx cases per year. For patients with histologic DTC  $\geq 1$  cm, surgeon volume was correlated with initial extent of the operation, and markers of complete resection including uptake on I(123) prescan, thyrotropin-stimulated thyroglobulin levels, and I(131) dose administered.

#### **RESULTS:**

Of 1,249 patients who underwent Tx by 42 surgeons, 29% had DTC  $\geq 1$  cm without distant metastasis. At a threshold of  $\geq 30$  Tx per year, surgeons were more likely to perform initial total Tx for DTC  $\geq 1$  cm ( $P = .01$ ), and initial resection was more complete as measured by all 3 quantitative markers. For patients with advanced stage disease, a threshold of  $\geq 50$  Tx per year was needed before observing improvements in I(123) uptake ( $P = .004$ ).

#### **CONCLUSION:**

Surgeons who perform  $\geq 30$  Tx a year are more likely to undertake the appropriate initial operation and have more complete initial resection for DTC patients. Surgeon volume is an essential consideration in optimizing outcomes for DTC patients, and even higher thresholds ( $\geq 50$  Tx/year) may be necessary for patients with advanced disease.

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29. [Surgery](#). 2014 Dec;156(6):1423-31. doi: 10.1016/j.surg.2014.08.074. Epub 2014 Nov 11. IF: 3.10

## **Risk factors for 30-day hospital readmission after thyroidectomy and parathyroidectomy in the United States: An analysis of National Surgical Quality Improvement Program outcomes.**

[Mullen MG](#)<sup>1</sup>, [LaPar DJ](#)<sup>1</sup>, [Daniel SK](#)<sup>1</sup>, [Turrentine FE](#)<sup>1</sup>, [Hanks JB](#)<sup>1</sup>, [Smith PW](#)<sup>2</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

The 30-day readmission rate is a quality metric under the Affordable Care Act. Readmission rates after thyroidectomy and parathyroidectomy and associated factors remain ill-defined. We evaluated patient and perioperative factors for association with readmission after thyroidectomy and parathyroidectomy.

#### **METHODS:**

The American College of Surgeons National Surgical Quality Improvement Program Participant Use File (2011) data for thyroid ( $n = 3,711$ ) and parathyroid ( $n = 3,358$ ) resections were analyzed. Patient- and operation-related factors were assessed by univariate and multivariate analyses.

#### **RESULTS:**

Among 7,069 patients, 30-day readmission rate was 4.0%: 4.1% after thyroidectomy and 3.8% after parathyroidectomy. Significant associations for 30-day readmission included declining functional status (odds ratio [OR], 6.4-10.1), preoperative hemodialysis (OR, 2.6; 95% CI, 1.5-4.7), malnutrition (OR, 3.4; 95% CI, 1.2-10.1), increasing American Society of Anesthesiologists class (OR 1.3-4.7), unplanned reoperation (OR, 61.6), and length of stay (LOS)  $< 24$  hours (OR, 0.61; 95% CI, 0.45-0.85; all  $P < .05$ ). Readmission was associated with greater total and postoperative LOS and major postoperative complications, including renal insufficiency (all  $P < .01$ ).

#### **CONCLUSION:**

Thirty-day readmission after cervical endocrine resection occurs in 4% of patients. Discharge within 24 hours of operation does not affect the likelihood of readmission. Risk factors for readmission are multifactorial and driven by preoperative conditions. Decreasing the index hospital stay and preventing major postoperative complications may decrease readmissions and improve quality metrics.

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PMID: 25456925 [Makale sayfası](#)

30. [Eur J Surg Oncol](#). 2014 Oct 27. pii: S0748-7983(14)01186-X. doi: 10.1016/j.ejso.2014.10.049.

[Epub ahead of print] **IF:3.07**

## **Breach of the thyroid capsule and lymph node capsule in node-positive papillary and medullary thyroid cancer: Different biology.**

[Machens A](#)<sup>1</sup>, [Dralle H](#)<sup>2</sup>.

[Author information](#)

### **Abstract**

#### **AIMS:**

The higher incidence of extranodal growth (breach of a lymph node capsule) in the presence of extrathyroidal extension (breach of the thyroid capsule) in papillary thyroid cancer prompted conclusions that the biology of thyroid cancer is conferred to the lymph nodes, causing invasion of perinodal tissues. This study aimed at quantifying the independent contributions of clinical-pathological factors to extranodal growth in thyroid cancer.

#### **METHODS:**

Multivariate analyses of 1250 patients operated on for node-positive papillary (PTC; 702 patients) or node-positive medullary thyroid cancer (MTC; 548 patients), 138 and 130 of whom harbored extranodal growth.

#### **RESULTS:**

After correction for multiple testing, extranodal growth correlated with number of lymph node metastases (means of 17.0 vs. 10.1 nodes for PTC, 20.6 vs. 13.4 nodes for MTC; each  $P < 0.001$ ) and male gender (49 vs. 35% for PTC,  $P = 0.005$ ; 62 vs. 46% for MTC;  $P = 0.002$ ); and in MTC also with extrathyroidal extension (46 vs. 30%;  $P = 0.002$ ). On multivariate analysis, independent determinants of extranodal growth were number of lymph node metastases (odds ratios of 2.1, 3.7 and 3.7 for PTC ( $P \leq 0.01$ ) and 2.7, 3.3, and 4.0 for MTC ( $P \leq 0.004$ ) looking at 6-10, 11-20 and  $>20$  involved nodes against a 1-5 node baseline) and male gender (odds ratio 1.6 for PTC, 1.7 for MTC; each  $P = 0.02$ ), but not extrathyroidal extension.

#### **CONCLUSIONS:**

In PTC and MTC, extranodal growth develops independently from extrathyroidal extension. This finding argues against mere transference of primary tumor characteristics to lymph nodes, pointing more to accrual of invasive properties by nodal tumor deposits.

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#### **KEYWORDS:**

Distant metastasis; Extranodal growth; Extrathyroidal extension; Lymph node metastases; Medullary thyroid carcinoma; Papillary thyroid carcinoma; Primary tumor diameter

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31. [Oral Oncol.](#) 2014 Nov 27. pii: S1368-8375(14)00343-1. doi: 10.1016/j.oraloncology.2014.11.004.

[Epub ahead of print] IF: 3.02

## Recurrence in regional lymph nodes after total thyroidectomy and neck dissection in patients with papillary thyroid cancer.

[Joo JY](#)<sup>1</sup>, [Jin J](#)<sup>2</sup>, [Seo ST](#)<sup>1</sup>, [Lim YC](#)<sup>3</sup>, [Rha KS](#)<sup>1</sup>, [Koo BS](#)<sup>4</sup>.

[Author information](#)

**Abstract**

### BACKGROUND:

We investigated the risk factors of the regional lymph node (LN) recurrence in papillary thyroid cancer (PTC) patients underwent thyroidectomy and neck dissection according to the clinicopathologic features, preoperative clinical nodal status and the recurrence in previously dissected or undissected compartment of the neck.

### METHODS:

A retrospective analysis was performed on 297 patients who underwent total thyroidectomy and LN dissection between 2004 and 2010. Patients with and without regional recurrence were compared by the various clinicopathological factors. Recurrence-free survival rates were estimated by the Kaplan-Meier and Cox regression method.

### RESULTS:

With a median follow-up of 53months, 22 (7.4%) patients developed regional LN recurrence. Initial LN metastasis and tumor size  $\geq 1$ cm were independent predictive factors for regional recurrence. In patients without preoperative clinical LN, Tumor size  $\geq 1$ cm and extrathyroidal extension were significant risk factors for regional recurrence. In cases with preoperative clinical LN, there was no specific significant factor for recurrence. Tumor size  $\geq 1$ cm, capsular invasion, extrathyroidal extension, and lymphovascular invasion were significant risk factors of regional recurrence in previously dissected compartments. Tumor size  $\geq 1$ cm and extrathyroidal extension were significant predictive factors of regional recurrence in previously undissected compartments.

### CONCLUSIONS:

Tumor size and LN metastasis were independent predictors of regional LN recurrence in PTC patients after total thyroidectomy and central neck dissection. Patients with tumor size  $>1$ cm or extrathyroidal extension were more likely to have tumor recur both within the previously dissected field as well as the un-dissected compartments.

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### KEYWORDS:

Lymph node; Neck dissection; Papillary thyroid cancer; Recurrence

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32. [Head Neck.](#) 2014 Dec 18. doi: 10.1002/hed.23957. [Epub ahead of print] IF: 2.85

## Ultrasound-guided percutaneous laser ablation (LA) in treating symptomatic solid benign thyroid nodules: Our experience in 45 patients.

[Achille G](#)<sup>1</sup>, [Zizzi S](#), [Di Stasio E](#), [Grammatica A](#), [Grammatica L](#).

[Author information](#)

**Abstract**

Background: Laser ablation may be useful in debulking of benign thyroid nodules. Methods: To evaluate retrospectively the effectiveness and safety of LA, 45 patients with benign solid thyroid nodules, with a fluid component  $\leq 20\%$ , were included in our series between October 2009 and January 2011. All reported pressure and/or cosmetic complaints. Nd:YAG laser at 1064 nm was used, with a fix-power (3W), changing the application time. All patients were evaluated at baseline, 6 and 12 months. Complications were recorded. Results: mean nodule volume reduction decreased from 24.2 mL  $\pm 19.4$  to 4.5  $\pm 5.2$  at 12 months ( $p < 0.001$ ). Mean nodule volume reduction was 84%  $\pm 13$ . Cosmetic signs were completely resolved in 87%, reduced in 9%, unchanged in 2%; pressure symptoms were resolved in 88%. One patient experienced transient dysphonia. Conclusions: US-guided LA is an effective tool for treatment of symptomatic benign thyroid nodules in patients not eligible for surgery. This article is protected by copyright. All rights reserved.

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33. [World J Surg.](#) 2014 Oct 21. [Epub ahead of print] IF: 2.47

## Posterosuperior Lesion has a High Risk of Lateral and Central Nodal Metastasis in Solitary Papillary Thyroid Cancer.

[Lee DJ](#)<sup>1</sup>, [Lee KH](#), [Kim JH](#), [Kwon KH](#), [Yoon DY](#), [Rho YS](#).

[Author information](#)

### Abstract

#### BACKGROUND:

Preoperative nodal assessment of papillary thyroid cancer (PTC) is very important because 60 to 70 % of all disease recurrence in the neck can occur in the lymph nodes. This study explored the association between ultrasonographic intrathyroidal location and the nodal metastasis pattern in solitary PTC.

#### METHODS:

Data from 218 patients who underwent total thyroidectomy with or without neck dissection for previously untreated PTC between 2006 and 2010 were retrospectively analyzed. Only patient data for which both preoperative ultrasound findings and postoperative pathologic reports were available were included. Multifocal cases, cases with extrathyroidal extension, and distant metastasis were excluded. The association between nodal metastasis pattern and clinical or pathologic features of solitary PTCs was analyzed, as was the association between ultrasonographic intrathyroidal location and central or lateral nodal metastasis in solitary PTC.

#### RESULTS:

Mass size larger than 2 cm ( $p < 0.001$ , Odds ratio (OR) 4.117) and central nodal metastasis ( $p < 0.001$ , OR 3.984) were related with lateral neck metastasis in multivariate analysis. Male sex ( $p = 0.001$ , OR 3.012) and capsular invasion ( $p < 0.001$ , OR 4.720) were related with central neck metastasis in multivariate analysis. When analyzing ultrasonographic location of intrathyroidal solitary lesion, posterosuperiorly located lesion was strongly associated with both lateral and central neck metastasis. ( $p < 0.001$  and  $p = 0.002$ , respectively).

#### CONCLUSIONS:

Posterosuperior location of intrathyroidal solitary PTC has a high risk of lateral and central nodal metastasis when compared to other locations. For such patients, careful preoperative evaluation of nodal status should be done.

PMID: 25331728

34. [Am J Surg](#). 2014 Dec 15. pii: S0002-9610(14)00611-4. doi: 10.1016/j.amjsurg.2014.09.026. [Epub ahead of print] IF: 2.39

## The utility of frozen section examination for determining the extent of thyroidectomy in patients with a thyroid nodule and "atypia/follicular lesion of undetermined significance"

[Posillico SE](#)<sup>1</sup>, [Wilhelm SM](#)<sup>1</sup>, [McHenry CR](#)<sup>2</sup>.

[Author information](#)

**Abstract**

### BACKGROUND:

The purpose of this study was to evaluate the role of frozen section examination (FSE) for determining the extent of thyroidectomy in patients with nodular thyroid disease and fine-needle aspiration categorized as atypia/follicular lesion of undetermined significance (AFLUS).

### METHODS:

A retrospective review of all patients operated on for a thyroid nodule and AFLUS was completed to determine the role of clinical examination and FSE in intraoperative decision making.

### RESULTS:

One hundred twenty patients with AFLUS underwent thyroidectomy; 18 (15%) had carcinoma. FSE altered management in 36 (62%) of the 58 patients-32 with benign disease and 4 with cancer who underwent lobectomy and total thyroidectomy, respectively. Total thyroidectomy without FSE was performed in 61 (51%) patients with sonographically confirmed bilateral disease. FSE had a 36.4% sensitivity, 100% specificity, 100% positive predictive value, 87% negative predictive value, and 88% accuracy.

### CONCLUSION:

Ultrasound in combination with FSE is of value for determining the extent of thyroidectomy in patients with AFLUS.

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### KEYWORDS:

Atypia/follicular lesion of undetermined significance; Frozen section examination; Intraoperative management; Thyroid nodule

PMID: 25554703 [Makale sayfası](#)

35. [Cell Biochem Biophys](#). 2014 Nov 30. [Epub ahead of print] IF: 2.38

## Surgical Treatment of Hashimoto's with Thyroid Microcarcinoma.

[Tao L](#)<sup>1</sup>, [Xi-Lin H](#), [Xiang-Dong M](#).

[Author information](#)

**Abstract**

The aim of this study is to explore the surgical strategies for treating Hashimoto's disease complicated with thyroid microcarcinoma. We analyzed the clinical data of 25 patients with Hashimoto's disease with thyroid microcarcinoma who were treated in our hospital from January 1995 to September 2011. The incidence of Hashimoto's disease with thyroid microcarcinoma was 9.8 % (25/256) in our hospital. Amongst them, 19 patients had papillary thyroid carcinoma and six had follicular thyroid carcinoma. There were 24 cases (96 %) confirmed by the frozen section examination and one (4 %) after surgery. One patient did not undergo remedial surgery. The surgical approaches were determined based on preoperative examinations and intraoperative frozen pathology, including thyroid lobe and isthmus resection with contralateral lobe subtotal resection in 19 cases, and bilateral subtotal thyroid lobectomy in one case. Central lymph node dissection was conducted for all patients except one who was not diagnosed until after the surgery. No

recurrence occurred during the follow-up (range: 6 months to 17 years) and all patients have survived to date. The preoperative diagnosis rate of Hashimoto's disease with thyroid cancer (in particular thyroid microcarcinomas) is low. Preoperative palpation, color Doppler ultrasound, fine needle aspiration, and the frozen section examination are helpful to improve the diagnosis rate of Hashimoto's disease with thyroid microcarcinoma. Surgery procedure is the most effective approach.

PMID: 25433724

36. [Int J Clin Oncol](#). 2014 Oct 15. [Epub ahead of print] If: 2.17

## Does papillary thyroid carcinoma have a better prognosis with or without Hashimoto thyroiditis?

[Kwak HY](#)<sup>1</sup>, [Chae BJ](#), [Eom YH](#), [Hong YR](#), [Seo JB](#), [Lee SH](#), [Song BJ](#), [Jung SS](#), [Bae JS](#).

### [Author information](#)

### Abstract

#### BACKGROUND:

It has been reported that the BRAF<sup>V600E</sup> mutation is related to a low frequency of background Hashimoto thyroiditis (HT); however, there are not many factors known to be related to the development of HT. The aim of this study was to determine whether patients with both papillary thyroid carcinoma (PTC) and HT show aggressive features, by investigating the clinicopathological features of HT in patients with PTC.

#### METHODS:

A database of patients with PTC who underwent thyroidectomy between October 2008 and August 2012 was collected and reviewed. All 2464 patients were offered a thyroidectomy, and DNA was extracted from the atypical cells in the surgical specimens for detection of the BRAF<sup>V600E</sup> mutation. Clinical and pathological characteristics were also investigated.

#### RESULTS:

Four hundred and fifty-two of 1945 (23.2 %) patients were diagnosed with HT, and of these, 119 (72.1 %) had a BRAF<sup>V600E</sup> mutation. HT was not significantly associated with the BRAF<sup>V600E</sup> mutation ( $P < 0.001$ ) and extrathyroidal extensions ( $P = 0.005$ ) but was associated with a low stage ( $P = 0.011$ ) and female predominance ( $P < 0.001$ ). In a subgroup analysis for gender, HT was associated with a low probability of BRAF<sup>V600E</sup> mutations in both genders ( $P < 0.001$  for both females and males). Also, recurrence was significantly associated with HT (OR 0.297, CI 0.099-0.890,  $P = 0.030$ ), lymph node ratio (OR 2.545, CI 1.092-5.931,  $P = 0.030$ ), and BRAF<sup>V600E</sup> mutation (OR 2.075, CI 1.021-4.217,  $P = 0.044$ ). However, there was no relationship with clinicopathological factors or with death.

#### CONCLUSIONS:

Our results show that HT in patients with PTC is associated with a low probability of BRAF<sup>V600E</sup> mutations. Moreover, HT was correlated with some factors that were associated with less aggressive clinical features and inversely related to recurrence. Therefore, these results may be useful to predict whether PTC concurrent with HT exhibits a better prognosis than PTC alone.

PMID: 25312294

## **Prediction of extrathyroidal extension using ultrasonography and computed tomography.**

[Lee DY](#)<sup>1</sup>, [Kwon TK](#)<sup>1</sup>, [Sung MW](#)<sup>1</sup>, [Kim KH](#)<sup>1</sup>, [Hah JH](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

**Objectives.** The aim of the present study was to evaluate the value of high-resolution ultrasound (US) and computed tomography (CT) scan for preoperative prediction of the extrathyroidal extension (ETE).  
**Methods.** We analyzed the medical records of 377 patients with papillary thyroidcarcinoma (PTC) with preoperative US and CT scan to calculate the sensitivity, specificity, and positive and negative predictive values of characteristics imaging features (such as contact and disruption of thyroid capsule) for the presence of ETE in postoperative pathologic examination. We also evaluated the diagnostic power for several combinations of US and CT findings. **Results.** ETE was present in 174 (46.2%) based on pathologic reports. The frequency of ETE was greater in the patients with greater degrees of tumor contact and disruption of capsule, as revealed by both US and CT scans (positive predictive value of 72.2% and 81.8%, resp.). Considering positive predictive values and AUC of US and CT categories, separately or combined, a combination of US and CT findings was most accurate for predicting ETE (83.0%, 0.744). **Conclusions.** This study suggests that ETE can be predicted most accurately by a combination of categories based on the findings of US and CT scans.

PMID: 25525431

[Makale sayfası](#)

## **Modifiable Risk Factors and Thyroid Cancer.**

[Stansifer KJ](#)<sup>1</sup>, [Guynan JF](#)<sup>2</sup>, [Wachal BM](#)<sup>3</sup>, [Smith RB](#)<sup>4</sup>.

### **Author information**

#### **Abstract**

##### **OBJECTIVE:**

To evaluate the association between modifiable patient risk factors including tobacco use, alcohol consumption, body mass index (BMI), and thyroid cancer.

##### **STUDY DESIGN:**

Retrospective study with chart review.

##### **SETTING:**

Midwest university hospital.

##### **SUBJECTS AND METHODS:**

Retrospective study comparing Midwest patients with thyroid cancer from our Thyroid Tumor and Cancer Registry with Midwest controls without a personal history of cancer. Descriptive statistics were created from patient questionnaires and chart reviews. Odds ratios (ORs) were reported for significant associations.

##### **RESULTS:**

There were 467 patients with cancer and 255 controls. The thyroid cancer group included 404 papillary, 47 follicular, 13 medullary, and 3 anaplastic cancers. When comparing all patients with cancer with controls, smoking more than 100 lifetime cigarettes was associated with a reduced cancer risk (OR, 0.68; 95% confidence interval [CI], 0.50-0.94). Secondhand smoke exposure did not show a statistically significant relationship to thyroid cancer. Compared with never drinking, current drinking was associated with a reduced cancer risk (OR, 0.46; 95% CI, 0.29-0.73) as was consuming 1 to 2 drinks daily compared to drinking <1 drink daily (OR, 0.58; 95% CI, 0.34-0.89). There was no difference between median BMI at age 20 years, lifetime maximum BMI, or current BMI between patients with cancer and controls.

**CONCLUSION:**

Our data showed no positive correlation between tobacco use, alcohol consumption, or obesity and thyroid cancer risk. Our data suggest that tobacco use and mild alcohol consumption may be associated with a slightly reduced risk of thyroid cancer. There was no association between BMI and thyroid cancer in our study population.

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**KEYWORDS:**

alcohol; body mass index; risk factors; secondhand smoke; thyroid cancer; tobacco

PMID: 25552593

39. [Otolaryngol Head Neck Surg.](#) 2015 Jan;152(1):53-6. doi: 10.1177/0194599814556250. Epub 2014 Oct 30. IF: 1.72

## Comparison of the Incidence of Postoperative Hypocalcemia following Total Thyroidectomy vs Completion Thyroidectomy.

[Merchavy S](#)<sup>1</sup>, [Marom T](#)<sup>2</sup>, [Forest VJ](#)<sup>3</sup>, [Hier M](#)<sup>4</sup>, [Mlynarek A](#)<sup>4</sup>, [McHugh T](#)<sup>4</sup>, [Payne R](#)<sup>4</sup>.

**Author information****Abstract****OBJECTIVE:**

To study the rate of postoperative hypocalcemia following completion thyroidectomy (CT), in comparison with the hypocalcemia rate following total thyroidectomy (TT).

**STUDY DESIGN AND SETTING:**

A retrospective study, performed at the McGill University Thyroid Cancer Center, Montreal, Quebec, Canada, from 2007 to 2012.

**SUBJECTS AND METHODS:**

Medical records of adult patients undergoing CT and TT operated by a single surgeon were reviewed. Data were extracted for demographics, postoperative calcium levels, surgical logs, and final surgical pathology. Hypocalcemia was defined as corrected serum calcium level  $\leq 1.90$  mmol/L, with concurrent serum parathyroid hormone  $< 8$  ng/L, and/or any signs or symptoms of hypocalcemia.

**RESULTS:**

There were 68 CTs and 146 TTs. Transient hypocalcemia occurred in 1 of 68 (1.5%) and 18 of 146 (12.5%) patients in the CT and TT groups, respectively. The rate of hypocalcemia was significantly lower in the CT compared with the TT group ( $P = .02$ ). In both groups, there were no cases of permanent hypocalcemia.

**CONCLUSION:**

The risk of transient hypocalcemia in patients undergoing CT is significantly lower than the rate of hypocalcemia in patients undergoing TT.

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**KEYWORDS:**

completion thyroidectomy; complication; hypocalcemia; hypoparathyroidism; total thyroidectomy

PMID: 25358344

[Makale sayfası](#)

## Association of Radiation Dose With Prevalence of Thyroid Nodules Among Atomic Bomb Survivors Exposed in Childhood (2007-2011).

[Imaizumi M](#)<sup>1</sup>, [Ohishi W](#)<sup>2</sup>, [Nakashima E](#)<sup>3</sup>, [Sera N](#)<sup>4</sup>, [Neriishi K](#)<sup>5</sup>, [Yamada M](#)<sup>2</sup>, [Tatsukawa Y](#)<sup>2</sup>, [Takahashi J](#)<sup>2</sup>, [Fujiwara S](#)<sup>6</sup>, [Sugino K](#)<sup>7</sup>, [Ando T](#)<sup>8</sup>, [Usa T](#)<sup>9</sup>, [Kawakami A](#)<sup>8</sup>, [Akahoshi M](#)<sup>2</sup>, [Hida A](#)<sup>2</sup>.

### [Author information](#)

#### Abstract

#### IMPORTANCE:

Few studies have evaluated the association of radiation dose with thyroid nodules among adults exposed to radiation in childhood.

#### OBJECTIVE:

To evaluate radiation dose responses on the prevalence of thyroid nodules in atomic bomb survivors exposed in childhood.

#### DESIGN, SETTING, AND PARTICIPANTS:

This survey study investigated 3087 Hiroshima and Nagasaki atomic bomb survivors who were younger than 10 years at exposure and participated in the thyroid study of the Adult Health Study at the Radiation Effects Research Foundation. Thyroid examinations including thyroid ultrasonography were conducted between October 2007 and October 2011, and solid nodules underwent fine-needle aspiration biopsy. Data from 2668 participants (86.4% of the total participants; mean age, 68.2 years; 1213 men; and 1455 women) with known atomic bomb thyroid radiation doses (mean dose, 0.182 Gy; median dose, 0.018 Gy; dose range, 0-4.040 Gy) were analyzed.

#### MAIN OUTCOMES AND MEASURES:

The prevalence of all thyroid nodules having a diameter of 10 mm or more (consisting of solid nodules [malignant and benign] and cysts), prevalence of small thyroid nodules that were less than 10 mm in diameter detected by ultrasonography, and atomic bomb radiation dose-responses.

#### RESULTS:

Thyroid nodules with a diameter of 10 mm or more were identified in 470 participants (17.6%): solid nodules (427 cases [16.0%]), malignant tumors (47 cases [1.8%]), benign nodules (186 cases [7.0%]), and cysts (49 cases [1.8%]), and all were significantly associated with thyroid radiation dose. Excess odds ratios per gray unit were 1.65 (95% CI, 0.89-2.64) for all nodules, 1.72 (95% CI, 0.93-2.75) for solid nodules, 4.40 (95% CI, 1.75-9.97) for malignant tumors, 2.07 (95% CI, 1.16-3.39) for benign nodules, and 1.11 (95% CI, 0.15-3.12) for cysts. The interaction between age at exposure and the dose was significant for the prevalence of all nodules ( $P = .003$ ) and solid nodules ( $P < .001$ ), indicating that dose effects were significantly higher with earlier childhood exposure. No interactions were seen for sex, family history of thyroid disease, antithyroid antibodies, or seaweed intake. No dose-response relationships were observed for small (<10-mm diameter) thyroid nodules.

#### CONCLUSIONS AND RELEVANCE:

Radiation effects on thyroid nodules exist in atomic bomb survivors 62 to 66 years after their exposure in childhood. However, radiation exposure is not associated with small thyroid nodules.

## **Minimal-access video-assisted thyroidectomy for benign disease: A retrospective analysis of risk factors for postoperative complications.**

[Billmann F](#)<sup>1</sup>, [Bokor-Billmann T](#)<sup>2</sup>, [Lapshyn H](#)<sup>3</sup>, [Burnett C](#)<sup>4</sup>, [Hopt UT](#)<sup>3</sup>, [Kiffner E](#)<sup>5</sup>.

### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Minimal-access video-assisted thyroidectomy (MIVAT) has now become a widespread technique in the treatment of benign thyroid disease. No studies systematically investigate risk factors for postoperative complications. The aim of our study was to investigate possible risk factors for postoperative complications in MIVAT in patients with benign disease.

#### **METHODS:**

One-hundred eighty-nine patients who underwent MIVAT for benign disease were retrospectively identified in a prospectively-maintained institutional register of thyroid surgery. Exclusion criteria were: (1) thyroid volume > 45 mL; (2) malignant disease; (3) prior neck surgery; (4) prior neck irradiation; (5) nodule size > 3 cm; (6) intrathoracic component; (7) follow-up < 1 year. Age, sex, comorbidities, body mass index, existence of symptoms, duration of disease evolution, thyroid volume, hyperthyroidism, thyroiditis, and the duration of surgery were analyzed as risk factors for complications. We applied both bivariate and multivariate logistic regression analyses in order to identify risk factors associated with postoperative complications.

#### **RESULTS:**

Complications were presented by 28 patients (14.8%). The variables associated as independent risk factors with these complications were hyperthyroidism (OR = 4.31; P = 0.003) and thyroiditis (OR = 3.59; P = 0.035). Age, sex and thyroid volume up to 45 mL do not seem to be independent risk factors.

#### **CONCLUSIONS:**

In endocrine surgery units, two independent risk factors for postoperative complications could be identified in MIVAT patients: hyperthyroidism and thyroiditis. Surgeons operating on patients presenting these factors should be aware of the potential augmented risk in order to correctly adapt intraoperative and postoperative care.

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#### **KEYWORDS:**

MIVAT; Risk factor; Thyroid; Thyroidectomy; Video-assisted surgery

PMID: 25448650 [Makale sayfası](#)

## **Autotransplantation of Inferior Parathyroid glands during central neck dissection for papillary thyroid carcinoma: A retrospective cohort study.**

[Wei T](#)<sup>1</sup>, [Li Z](#)<sup>1</sup>, [Jin J](#)<sup>2</sup>, [Chen R](#)<sup>1</sup>, [Gong Y](#)<sup>1</sup>, [Du Z](#)<sup>1</sup>, [Gong R](#)<sup>1</sup>, [Zhu J](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

#### **INTRODUCTION:**

The management of inferior parathyroid glands during central neck dissection (CND) for papillary thyroid carcinoma (PTC) remains controversial. Most surgeons preserve inferior parathyroid

glands in situ. Autotransplantation is not routinely performed unless devascularization or inadvertent parathyroidectomy occurs. This retrospective study aimed to compare the incidence of postoperative hypoparathyroidism and central neck lymph node (CNLN) recurrence in patients with PTC who underwent inferior parathyroid glands autotransplantation vs preservation in situ.

#### **METHODS:**

This is a retrospective study which was conducted in a tertiary referral hospital. A total of 477 patients with PTC (pN1) who underwent total thyroidectomy (TT) and bilateral CND with/without lateral neck dissection were included. Patients' demographical characteristics, tumor stage, incidence of hypoparathyroidism, CNLN recurrence and the number of resected CNLN were analyzed.

#### **RESULTS:**

Three hundred and twenty-one patients underwent inferior parathyroid glands autotransplantation (autotransplantation group). Inferior parathyroid glands were preserved in situ among 156 patients (preservation group). Permanent hypoparathyroidism rate was 0.9% (3/321) versus 3.8% (6/156) respectively ( $p = 0.028$ ). Mean numbers of resected CNLN were  $15 \pm 3$  (6-23) (autotransplantation group) versus  $11 \pm 3$  (7-21) (preservation group) ( $p < 0.001$ ). CNLN recurrence rate was 0.3% (1/321) versus 3.8% (6/156) respectively ( $p = 0.003$ ).

#### **CONCLUSION:**

Inferior parathyroid glands autotransplantation during CND of PTC (pN1) might reduce permanent hypoparathyroidism and CNLN recurrence. Further study enrolling more patients with long-term follow-up is needed to support this conclusion.

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#### **KEYWORDS:**

Central neck dissection; Papillary thyroid carcinoma; Parathyroids autotransplantation

PMID: 25448646

[Makale sayfası](#)

43. [J Endocrinol Invest](#). 2014 Dec 12. [Epub ahead of print] IF: 1.61

## **Characterization of V804M-mutated RET proto-oncogene associated with familial medullary thyroid cancer, report of the largest Turkish family.**

[Basaran MN](#)<sup>1</sup>, [Tuna MM](#), [Karakılıç E](#), [Doğan BA](#), [İmge NN](#), [Berker D](#), [Güler S](#).

#### **Author information**

#### **Abstract**

#### **PURPOSE:**

Analysis of the RET proto-oncogene is very important for diagnosis and prognosis of medullary thyroid cancer (MTC). Genotype-phenotype correlation is also well known. Here we report features of the largest known family in Turkey with the V804M-mutated RET proto-oncogene.

#### **METHODS:**

Thirty members from three generations were evaluated. A RET proto-oncogene mutation, calcitonin (Ct) measurement and thyroidultrasound were performed on all individuals. Seventeen members had V804M mutation. Fourteen of these patients underwent total thyroidectomy and additional central lymph node dissection for five subjects.

#### **RESULTS:**

The mean age of patients with MTC was 46.5 (30-61) years. The mean calcitonin level of RET positive members was 13.27 pg/mL (1-49.8 pg/mL). Three had a basal Ct level above normal limits. Seven of the 14 patients were diagnosed with MTC, and two were diagnosed with papillary thyroid cancer without MTC. One patient had central neck metastasis. Hyperparathyroidism or pheochromocytoma was not detected in any case. Patients who were RET negative, had normal Ct levels and no suspected nodule on ultrasound examination.

#### **CONCLUSIONS:**

Our study revealed a relatively good prognosis in patients with V804M mutation. Despite the surgery was performed in older age no advance disease was observed.

PMID: 25501606

44. [Eur Arch Otorhinolaryngol](#). 2014 Dec 6. [Epub ahead of print] IF: 1.60

## **The operation experience of endoscopic thyroidectomy by areola and axilla approach.**

[Xia LY](#)<sup>1</sup>, [He C](#), [Huang XW](#), [Xi X](#), [Liu XK](#).

#### **Author information**

#### **Abstract**

To explore the feasibility of endoscopic thyroidectomy via breast areola and axilla approach. The clinical data of 36 cases that underwent endoscopic thyroidectomy via breast areola and axilla approach from February 2012 to December 2013 were reviewed. All cases were completed, the mean operation time was 136.3 min (95-183 min), intraoperative blood loss was 15.8 ml (5-60 ml). The average hospitalization time was 5 days (4-6 days). There were no conversions to open surgery, no permanent nerve injuries, and no cases of hypoparathyroidism. Three patients had postoperative subcutaneous ecchymosis who were cured spontaneously after 1 month. Endoscopic thyroidectomy is safe and feasible for patients with thyroid diseases with good cosmetic results, and is worthy of being widely applied for patients who have cosmetic demand.

PMID: 25480477

45. [Eur Ann Otorhinolaryngol Head Neck Dis](#). 2014 Dec 22. pii: S1879-7296(14)00169-0. doi:

10.1016/j.anorl.2014.02.006. [Epub ahead of print] IF: 1.60

## **Role of frozen section analysis in nodular thyroid pathology.**

[Guevara N](#)<sup>1</sup>, [Lassalle S](#)<sup>2</sup>, [Benaim G](#)<sup>3</sup>, [Sadoul J](#)<sup>4</sup>, [Santini J](#)<sup>5</sup>, [Hofman P](#)<sup>2</sup>.

#### **Author information**

#### **Abstract**

#### **INTRODUCTION:**

Frozen section (FS) analysis used to be the principal examination guiding surgical strategy. The development and recent standardization of fine-needle aspiration cytology (FNAC) challenges it as a systematic attitude. The present study assessed the current contribution of FS, comparing it with FNAC as a diagnostic tool guiding surgery.

#### **MATERIAL AND METHODS:**

A retrospective diagnostic study analyzed 1515 thyroid samples over a 6-year period. Two hundred and fifty-two of the patients had undergone both FNAC (analyzed in our unit) and FS, revealing 69 cancers.

#### **RESULTS:**

The sensitivity and specificity of FS and FNAC were 75.36% and 100% versus 31.88% and 100%, respectively. In case of malignancy on FNAC (22 patients), FS did not influence indications for surgery. In case of non-malignant FNAC findings, FS diagnosed cancer in 13% of cases (30/230). In the subgroup of follicular lesions (Bethesda 3 and 4), FS modified surgical strategy in only 6.2% of cases (6/97), but diagnosed 13 of the 16 cancers (81.25%) in case of Bethesda 5 on FNAC (21 cases) and in 9 of the 13 cancers (69%) associated with non-diagnostic FNAC results (Bethesda 1: 70 cases).

#### **CONCLUSION:**

Although its contribution is small, FS optimizes surgery in certain cases. Systematic implementation may be economically justified, especially in follicular lesions diagnosed on FNAC, improving interpretation of a difficult and operator-dependent test, as is essential in certain FNAC results.

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#### **KEYWORDS:**

Biobank resource center; Fine-needle aspiration cytology; Frozen section; Molecular biology; Surgery; Thyroid

PMID: 25540990 [Makale sayfası](#)

46. [Endocr Res](#). 2014 Dec 22:1-5. [Epub ahead of print] IF: 1.40

## **Comparison of T stage, N stage, multifocality, and bilaterality in papillary thyroid carcinoma patients according to the presence of coexisting lymphocytic thyroiditis.**

[Park JY](#)<sup>1</sup>, [Kim DW](#), [Park HK](#), [Ha TK](#), [Jung SJ](#), [Kim DH](#), [Bae SK](#).

#### **Author information**

#### **Abstract**

**Abstract Purpose:** This study aimed to assess the relationship between coexisting lymphocytic thyroiditis and T-N stages of papillary thyroid carcinoma (PTC) by histopathological analysis. **Materials and methods:** The study included 653 patients who underwent thyroid surgery for PTC at our hospital. Each case was classified as either Hashimoto's thyroiditis (HT), non-Hashimoto type of lymphocytic thyroiditis (NHLT), or normal according to the histopathology of thyroid parenchyma. Patient age, gender, surgical modality, location, T stage, N stage, multifocality and bilaterality were compared according to the histopathology. **Results:** The prevalence of coexisting lymphocytic thyroiditis was 25.8% (169/653); HT (7.5%, 49/653) and NHLT (18.3%, 120/653). There were no significant differences in T stage, N stage, multifocality and bilaterality with regard to coexisting lymphocytic thyroiditis, regardless of whether HT and NHLT were considered collectively or discretely. Primary tumor size ( $p < 0.0001$ ), location ( $p = 0.0011$ ), N stage ( $p < 0.0001$ ), multifocality ( $p < 0.0001$ ) and bilaterality ( $p < 0.0001$ ) differed significantly according to T stage, and gender ( $p = 0.0193$ ), primary tumor size ( $p < 0.0001$ ), T stage ( $p < 0.0001$ ), multifocality ( $p < 0.0001$ ) and bilaterality ( $p < 0.0001$ ) differed significantly according to N stage. **Conclusions:** PTC patients with coexisting lymphocytic thyroiditis did not differ from those with normal parenchyma in terms of T stage, N stage, multifocality and bilaterality.

#### **KEYWORDS:**

Hashimoto's thyroiditis; TNM stage; Thyroid; lymphocytic thyroiditis; papillary thyroid carcinoma

PMID: 25531396

## Superiority of delayed risk stratification in differentiated thyroid cancer after total thyroidectomy and radioactive iodine ablation.

[Hong CM](#)<sup>1</sup>, [Lee WK](#), [Jeong SY](#), [Lee SW](#), [Ahn BC](#), [Lee J](#).

### [Author information](#)

#### Abstract

##### AIM:

The aim of this study was to validate the effectiveness of delayed risk stratification (DRS) in predicting structural progression and compare the predictive value of American Thyroid Association (ATA) risk stratification with that of DRS in patients with differentiated thyroid cancer (DTC).

##### METHODS:

A total of 398 patients with DTC who underwent surgery followed by radioactive iodine ablation were enrolled. Patients were categorized as having excellent response, acceptable response, biochemical incomplete response, or structural incomplete response at 8-15 months' evaluation after radioactive iodine ablation for DRS. Effectiveness of DRS was evaluated according to structural progression-free survival (PFS; median follow-up, 10.7 years).

##### RESULTS:

A total of 229 patients (57.5%) were classified as having excellent response, 78 (19.6%) as having acceptable response, 62 (15.6%) as having biochemical incomplete response, and 29 patients (7.3%) as having structural incomplete response. After DRS, 60.2% of intermediate-risk patients and 20.5% of high-risk patients were shifted to the excellent response category. Sixty-nine patients (17.3%) showed structural progression. DRS showed statistical difference in PFS (hazard ratio, 4.268; 95% confidence interval, 3.258-5.477;  $P < 0.001$ ). In multivariate analysis of ATA risk stratification and DRS, DRS was significantly associated with PFS (hazard ratio, 4.383; 95% confidence interval, 3.250-5.912;  $P < 0.001$ ), but ATA risk stratification was not. There was no significant difference in deviances between the use of DRS alone and the use of both DRS and ATA risk stratification ( $\chi^2 = 0.103$ , d.f. = 1,  $P = 0.748$ ).

##### CONCLUSION:

DRS is superior to ATA risk stratification in predicting structural disease progression for DTC patients.

PMID: 25144561 [Makale sayfası](#)

## Lateral neck recurrence from papillary thyroid carcinoma: Predictive factors and prognostic significance.

[Giordano D](#)<sup>1</sup>, [Frasoldati A](#), [Kasperbauer JL](#), [Gabielli E](#), [Pernice C](#), [Zini M](#), [Pedroni C](#), [Cavuto S](#), [Barbieri V](#).

### [Author information](#)

#### Abstract

##### OBJECTIVES/HYPOTHESIS:

The aim of this study was to identify any possible predictive factors of lateral neck recurrence in patients with papillary thyroid carcinoma with no ultrasonographic and/or cytological evidence of lymph node metastasis at time of diagnosis. The influence of lateral neck recurrence on survival was also investigated.

##### STUDY DESIGN:

Observational retrospective study.

##### METHODS:

Retrospective review of clinical records of 610 patients surgically treated for papillary thyroid carcinoma with clinically negative lymph nodes at the Otolaryngology Unit of the Arcispedale Santa Maria Nuova-IRCCS, Reggio Emilia, Italy, from January 1984 to December 2008.

#### **RESULTS:**

Lateral neck recurrences were ipsilateral to the primary tumor in all cases and were associated with the occurrence of more aggressive histological variants and central neck metastasis. Lateral neck recurrences were more frequently observed in patients with distant metastases and were associated with a reduced disease-specific survival.

#### **CONCLUSION:**

Lateral neck compartment ipsilateral to the tumor was the most common site of recurrence, with about half of cases appearing in the first 28 months of follow-up. In patients with papillary thyroid carcinoma, detection of lateral neck metastases prior to first surgery is crucial to surgical planning. Aggressive histological variants and postsurgical evidence of lymph node metastasis from papillary thyroid carcinoma in central neck compartment are associated with a higher risk of lateral neck recurrence. In these patients, a closer postsurgical ultrasound surveillance of the lateral neck compartments seems worthwhile.

#### **LEVEL OF EVIDENCE:**

4. Laryngoscope, 2014.

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#### **KEYWORDS:**

Lateral neck recurrence; follow-up; metastasis; papillary thyroid carcinoma

PMID: 25510637 [Makale sayfası](#)

49. [Clin Anat](#). 2014 Nov 25. doi: 10.1002/ca.22487. [Epub ahead of print] IF: 1.15

## **Superior laryngeal nerve monitoring using laryngeal surface electrodes and intraoperative neurophysiological monitoring during thyroidectomy.**

[Hodnett BL](#)<sup>1</sup>, [Schmitt NC](#), [Clayburgh DR](#), [Burkowsky A](#), [Balzer J](#), [Thirumala PD](#), [Duvvuri U](#).  
[Author information](#)

#### **Abstract**

The objective of this study is to establish normative waveform data for the external branch of the superior laryngeal nerve (SLN) utilizing laryngeal surface electrodes and intraoperative neurophysiological monitoring (IONM) in conjunction with a clinical neurophysiologist. A retrospective chart review of 91 consecutive at-risk SLN were identified in 51 patients in whom IONM using laryngeal surface electrodes was performed by a clinical neurophysiologist using Dragonfly (Neurovision Medical Products, Ventura, CA) recording electrodes and a Protektor (Natus Medical Inc., San Carlos, CA) 16 channel- intraoperative nerve monitoring system. Inclusion criteria were met for 30 SLN. Data collected included preoperative diagnosis, surgical procedure, rates of nerve identification and stimulation, and waveform characteristics. Waveform analysis for 30 SLN yielded a peak latency of  $4.0 \pm 0.2$  ms, onset latency  $2.3 \pm 0.1$  ms, peak-to-peak amplitude of  $220.4 \pm 31.1$   $\mu$ V, onset-to-peak amplitude of  $186.0 \pm 25.0$   $\mu$ V, and stimulation current threshold of  $0.55 \pm 0.03$  mA (data = mean  $\pm$  SEM). Two patients had abnormal SLN function documented clinically on postoperative laryngoscopic examination. Laryngeal surface electrodes were successfully utilized to identify and monitor SLN function intraoperatively. IONM using laryngeal surface electrodes enables analysis of waveform morphology and latency in addition to threshold and amplitude data obtained with the traditional NIM system, potentially improving the performance of nerve monitoring during thyroid surgery. *Clin. Anat.*, 2014. © 2014 Wiley Periodicals, Inc.

**KEYWORDS:**

external branch of superior laryngeal nerve; nerve monitoring and stimulation; thyroid surgery

PMID: 25425500 [Makale sayfası](#)

50. [Oncol Lett.](#) 2015 Jan;9(1):103-107. Epub 2014 Nov 4. IF: 0.98

## **Risk factor analysis for central nodal metastasis in papillary thyroid carcinoma.**

[Mao LN](#)<sup>1</sup>, [Wang P](#)<sup>2</sup>, [Li ZY](#)<sup>2</sup>, [Wang Y](#)<sup>2</sup>, [Song ZY](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

Lymph node involvement is associated with recurrence in papillary thyroid carcinoma (PTC). The central neck compartment (level VI) lymph nodes are at the greatest risk of metastases from PTC, but the role of central neck dissection (CND) remains controversial, particularly in PTC without clinical cervical lymph node metastasis (cN<sub>0</sub>). The present study aimed to identify risk factors of central cervical nodal metastasis and the safety of CND in patients with cN<sub>0</sub> PTC. The current study retrospectively investigated 389 patients who had been followed up for 12.0-25.5 months after surgery, and were divided into positive or negative lymph node involvement groups according to the pathological results subsequent to this surgery. Univariate and multivariate analyses were used to study the risk factor of central node involvement. The mean tumor size was 0.71±0.35 cm (range, 0.1-2.0 cm). There was no significant difference in the rate of central lymph node involvement based on age (<45 or ≥45 years) or tumor focality (unifocal or multifocal). However, there were significant differences based on gender, extra-thyroid invasion and tumor size (P<0.05). The incidence of transient hypoparathyroidism and transient vocal cord paralysis following CND was 12.34 and 4.11%, respectively. No patient experienced permanent hypoparathyroidism or vocal cord paralysis. One patient (1/389; 0.23%) experienced disease recurrence during the follow-up. A larger tumor size and the male gender were significantly associated with the central nodal metastasis rate for cN<sub>0</sub> PTC with a tumor size of <2.0 cm. CND for cN<sub>0</sub> PTC patients was safe and the tumor-associated recurrence rate following CND plus total thyroidectomy was low. The present study suggests that CND should be conducted for male cN<sub>0</sub> PTC patients with a larger tumor size (≥0.5 cm).

### **KEYWORDS:**

central neck dissection; hypoparathyroidism; papillary thyroid carcinoma; total thyroidectomy; vocal cord paralysis

PMID: 25435941

51. [Endocr Regul.](#) 2014 Oct;48(4):173-81. IF: 0.94

## **Prognostic factors of survival and recurrence pattern in differentiated thyroid cancer: A retrospective study from Western Turkey.**

[Erol V](#), [Makay O](#), [Icoz G](#), [Kose T](#), [Yararbas U](#), [Kumanlioglu K](#), [Akyildiz M](#).

### **Abstract**

**Objectives.** The aim of this study was to determine prognostic factors in patients with well-differentiated thyroid cancer (WDTC). **Methods.** This retrospective study included 181 well-differentiated thyroid cancer patients who were operated between Decembers 1996-2007. Total of 181 patients [139 (76.8%) women and 42 (23.2%) men with a mean age of 46.3 years] who were subjected to a complete follow-up, were enrolled in the study. The mean follow-up period was 7.1 years (range 3.1 to 14.9 years). Medical records were reviewed regarding to age, gender, extent of surgery, tumor size, multifocality, clinical stage, capsule infiltration, extracapsular invasion, histological type, lymph node metastasis, distant metastasis, radioactive iodine treatment and prognosis. **Results.** During follow-up, in 41 (22.6%) patients locoregional recurrences were detected and 5 (2.7%) patients passed away. Determined statistically significant prognostic factors were as follows; tumor size (histopathologically), extent of surgery, histological type, lymph node metastasis, tumor invasion (capsule and extracapsular) and clinical stage. **Conclusions.** Well-differentiated thyroid cancer is a disease with good prognosis when detected early and appropriate treatment applied. Despite the prognosis, it is good to apply the right treatment and reduce recurrence and mortality rates, prognostic factors are well known and must be considered in patient management.

PMID: 25512190

52. [J Otolaryngol Head Neck Surg.](#) 2014 Dec 3;43(1):48. [Epub ahead of print] IF: 0.83

## **Predictors of non-diagnostic cytology in surgeon-performed ultrasound guided fine needle aspiration of thyroid nodules.**

[Isaac A](#), [Jeffery CC](#), [Seikaly H](#), [Al-Marzouki H](#), [Harris JR](#), [O Connell DA](#).

### **Abstract**

**Background** Fine needle aspiration (FNA) is the standard of care for the diagnostic work-up of thyroid nodules but despite its proven utility, the non-diagnostic rate for thyroid FNA ranges from 6-36%. A non-diagnostic FNA is problematic for the clinician and patient because it can result in repeated procedures, multiple physician visits, and a delay in definitive treatment. Surgeon-performed FNA has been shown to be safe, cost-effective, as accurate as those performed by other clinicians, and has the added benefit of decreasing wait times to surgery. Several studies have examined rates and factors that may be predictive of a non-diagnostic cytology in non-surgeon FNA, but none have evaluated this in surgeon-performed thyroid FNA. If these factors are unique in surgeon-performed vs. non-surgeon performed thyroid FNA, then patients may be more appropriately triaged to FNA by alternate clinicians. **Objectives** The purpose of this study was to determine the rate and factors predictive of a non-diagnostic FNA in surgeon performed ultrasound-guided FNA of thyroid nodules. **Methods** We conducted a retrospective review of all adult patients who underwent thyroid FNA by a staff, fellow, or resident Otolaryngologist at the University of Alberta between January 2011 and June 2013. Factors analyzed included patient factors, thyroid characteristics, nodule characteristics, and surgeon level of training and experience. Univariate and multivariate binary logistic regression analysis were performed. **Results** 131 patients (180 nodules) were reviewed. The non-diagnostic rate was 23%. Nodules with predominant cystic component, those less than 1cm, and resident-performed FNA were associated with non-diagnostic cytology ( $p < 0.001$ ,  $p < 0.02$ ,  $p < 0.04$  respectively). A cystic nodule was the only independent predictor of non-diagnostic FNA on multivariate analysis OR 4.441, 95% CI [1.785-11.045],

$p < 0.001$ ). Conclusions The rate of non-diagnostic thyroid FNA performed by a surgeon with ultrasound guidance is similar to other clinicians. A cystic nodule is a strong independent predictor of non-diagnostic cytology. Non-cystic nodules may particularly benefit from surgeon-performed thyroid FNA due to the high diagnostic rate and potential for earlier definitive management.

PMID: 25466726

# TIROİD

## Vaka sunumu

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1. [BMC Res Notes](#). 2014 Nov 6;7:790. doi: 10.1186/1756-0500-7-790. IF: 1.41

### **Ectopic thyroid tissue in the head and neck: a case series.**

[Adelchi C](#)<sup>1</sup>, [Mara P](#), [Melissa L](#), [De Stefano A](#), [Cesare M](#).

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Through a review of three cases, the etiopathogenetic, clinical-diagnostic, and therapeutic aspects of ectopic thyroid tissue are herein discussed to highlight the main presentations of this polymorphous disease.

#### **CASE PRESENTATIONS:**

The first case involved an ectopic thyroid gland in the lingual area in a 45-year-old Caucasian woman who presented with dysphagia and midline swelling at the base of the tongue. The second case involved a 22-year-old Caucasian woman with a submandibular mass comprising ectopic thyroid tissue. The third case involved a 33-year-old Caucasian man with a typical thyroglossal duct cyst characterized by the presence of thyroid tissue upon histological analysis.

#### **CONCLUSION:**

Surgery seems to be the most appropriate treatment for patients with ectopic thyroid tissue showing clinical signs of upper airway obstruction or when the lesion shows signs of infection or malignant degeneration. When a site of ectopic thyroid tissue is the only such site in the body, removal of this tissue will usually lead to hypothyroidism that requires medical thyroid hormone replacement.

PMID: 25376176 [Makale sayfası](#)

2. [Case Rep Endocrinol](#). 2014;2014:923438. doi: 10.1155/2014/923438. Epub 2014 Dec 8. IF: 1.01

### **Cutaneous sinus formation is a rare complication of thyroid fine needle aspiration biopsy.**

[Akbaba G](#)<sup>1</sup>, [Omar M](#)<sup>2</sup>, [Polat M](#)<sup>3</sup>, [Özcan Ö](#)<sup>3</sup>, [Bellı AK](#)<sup>3</sup>, [Sahan M](#)<sup>4</sup>, [Cullu N](#)<sup>5</sup>.

#### **Author information**

#### **Abstract**

Fine needle aspiration biopsy (FNAB) is essential in the diagnosis and management of thyroid nodules. In this paper, we report a rare complication, cutaneous sinus formation, after diagnostic FNAB guided by palpation. Sixty-three-year-old female patient was admitted with the complaints of hoarseness and discharge from the anterior neck wall which were present for the last 6 months. The patient underwent a near total thyroidectomy 17 years ago. Recurrent nodular goiter was detected six months before and a diagnostic FNAB guided by palpation was performed. Two weeks later the patient had wound discharge and hoarseness. Physical examination of the patient revealed a sinus, which was located superior to the thyroidectomy incision. A 1 cm nodule was palpated in the left side of her neck. A cervical ultrasonography (USG) showed a 9 × 7 mm nodule in the remnant thyroid and a 9.5 × 3.5 mm fistulized fluid collection. The patient underwent sinus tract and remnant thyroid removal. This case report presents a cutaneous sinus formation deriving from the granulation tissue, probably due to the silk suture reaction in the

previous surgery, by the FNAB guided by palpation procedure. We suggest USG guided FNAB to achieve more accurate and safe diagnosis in evaluating the thyroid nodules.

PMID: 25548688 [Makale sayfası](#)

3. [Case Rep Endocrinol](#). 2014;2014:584513. doi: 10.1155/2014/584513. Epub 2014 Oct 7. IF: 1.01

## **Metastatic Follicular Thyroid Carcinoma Secreting Thyroid Hormone and Radioiodine Avid without Stimulation: A Case Report and Literature Review.**

[Abid SA](#)<sup>1</sup>, [Stack BC Jr](#)<sup>2</sup>, [Bodenner DL](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

**Introduction.** This is an extremely rare case of a patient with metastatic follicular thyroid cancer who continued to produce thyroid hormone and was iodine scan positive without stimulation after thyroidectomy and radioiodine (I-131) therapy. **Patient Findings.** A 76-year-old Caucasian male was diagnosed with metastatic follicular thyroid carcinoma on lung nodule biopsy. Total thyroidectomy was performed and he was ablated with 160 mCi of I-131 after recombinant human thyrotropin (rhTSH) stimulation. Whole body scan (WBS) after treatment showed uptake in bilateral lungs, right sacrum, and pelvis. The thyroglobulin decreased from 2,063 to 965 four months after treatment but rapidly increased to 2,506 eleven months after I-131. Thyroid stimulating hormone (TSH) remained suppressed and free T4 remained elevated after I-131 therapy without thyroid hormone supplementation. He was treated with an additional 209 mCi with WBS findings positive in lung and pelvis. Despite I-131, new metastatic lesions were noted in the left thyroid bed and large destructive lesion to the first cervical vertebrae four months after the second I-131 dose. **Conclusions.** This case is exceptional because of its rarity and also due to the dissociation between tumor differentiation and aggressiveness. The metastatic lesions continued to secrete thyroid hormone and remained radioiodine avid with rapid progression after I-131 therapy.

PMID: 25400957 [Makale sayfası](#)

4. [Ear Nose Throat J](#). 2014 Dec;93(12):E18-21. IF: 0.88

## **Acute exacerbation of Hashimoto thyroiditis mimicking anaplastic carcinoma of the thyroid: A complicated case.**

[Kanaya H](#)<sup>1</sup>, [Konno W](#), [Fukami S](#), [Hirabayashi H](#), [Haruna S](#).

### **Author information**

#### **Abstract**

The fibrous variant of Hashimoto thyroiditis is uncommon, accounting for approximately 10% of all cases of Hashimoto thyroiditis. We report a case of this variant that behaved like a malignant neoplasm. The patient was a 69-year-old man who presented with a right-sided anterior neck mass that had been rapidly growing for 2 weeks. Fine-needle aspiration cytology revealed clusters of large multinucleated cells suggestive of an anaplastic carcinoma. A week after presentation, we ruled out that possibility when the mass had shrunk slightly. Instead, we diagnosed the patient with an acute exacerbation of Hashimoto thyroiditis on the basis of laboratory findings. We performed a right thyroid lobectomy, including removal of the isthmus, to clarify the pathology and alleviate pressure symptoms. The final diagnosis was the fibrous variant of Hashimoto thyroiditis, with no evidence of malignant changes. Physicians should keep in mind that on rare occasions, Hashimoto thyroiditis mimics a malignant neoplasm.

PMID: 25531848

5. [Int J Surg Case Rep.](#) 2014;5(12):1251-3. doi: 10.1016/j.ijscr.2014.11.012. Epub 2014 Nov 11. IF: 0.57

## Emergency thyroidectomy: Due to acute respiratory failure.

[Bayhan Z](#)<sup>1</sup>, [Zeren S](#)<sup>2</sup>, [Ucar BI](#)<sup>3</sup>, [Ozbay I](#)<sup>4</sup>, [Sonmez Y](#)<sup>5</sup>, [Mestan M](#)<sup>6</sup>, [Balaban O](#)<sup>7</sup>, [Bayhan NA](#)<sup>8</sup>, [Ekici MF](#)<sup>9</sup>.

### [Author information](#)

### Abstract

#### INTRODUCTION:

Giant cervical and mediastinal goiter may lead to acute respiratory failure caused by laryngotracheal compression and airway obstruction. Here, we present a case admitted to the emergency service with a giant goiter along with respiratory failure and poor general health status, which required urgent surgical intervention.

#### PRESENTATION OF CASE:

A 71-year-old female admitted to the emergency room with shortness of breath and poor general health status resulting from a giant cervical swelling progressively increased during the last 7 years and constituted severe respiratory failure which has become severe in the last one month. A giant nodular goiter of the left thyroid lobe extending retrosternally, causing tracheal compression, limiting the neck movements was detected with clinical examination and bedside ultrasound. Emergency thyroidectomy was planned. Fiberoptic-assisted awake nasal intubation was performed in the operating room. Emergency total thyroidectomy was performed for the life-threatening respiratory failure. Postoperative period was uneventful. She was transferred from intensive care unit to the ward on postoperative day 3 and was discharged from the hospital on the postoperative 7th day. Benign multinodular hyperplasia was reported on the histopathological report. Patient was included in routine follow-up.

#### DISCUSSION:

In the present case tracheal destruction due to compression of the giant goiter was found in agreement with previous reports. Emergency thyroidectomy was performed after awake intubation since it is a common surgical option for the treatment of giant goiter causing severe airway obstruction.

#### CONCLUSION:

Respiratory failure due to giant nodular goiter is a life-threatening situation and should be treated immediately by performing awake endotracheal intubation following emergency total thyroidectomy.

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#### KEYWORDS:

Awake intubation; Giant goiter; Laryngotracheal compression; Respiratory failure; Retrosternal; Thyroidectomy

PMID: 25437688

[Makale sayfası](#)

# PARATIROID

## DERLEME

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1. [Arch Gynecol Obstet](#). 2014 Nov 4. [Epub ahead of print] IF: 1.27

### Primary hyperparathyroidism during pregnancy.

[Dochez V<sup>1</sup>](#), [Ducarme G](#).

#### [Author information](#)

#### Abstract

##### PURPOSE:

Primary hyperparathyroidism (pHPT) during pregnancy is rare and associated with increased morbidity and mortality for both mother and fetus. This review aims to draw together recent thinking on pregnancy and pHPT.

##### METHODS:

We have performed a Pubmed (Medline<sup>®</sup>) search with no time limit using "primary hyperparathyroidism", "pregnancy" or "management" as keywords. We reviewed 37 articles in English and French languages on pHPT characteristics, clinical presentations, pregnancy complications, birth outcomes and management of pHPT during pregnancy.

##### RESULTS:

The diagnosis of pHPT is characterized by an elevated serum calcium level associated with an inappropriate increase in the parathyroid hormone level. The clinical manifestations are directly related to the calcium level. Usual techniques to detect parathyroid adenoma or hyperplasia, as computerized tomography and 99mTc-sestamibi scintigraphy, are not recommended in pregnancy. Thus, ultrasonography of the neck is the current first-line investigation during pregnancy for localization of parathyroid diseases. pHPT during pregnancy with mildly elevated calcium levels may be managed with medical treatment: intravenous or oral rehydration, with or without forced diuresis. Few drugs are available for pHPT during pregnancy; calcitonin and cinacalcet require further study; bisphosphonate should be restricted to life-threatening hypercalcemia. Surgery is the only curative treatment and is recommended when calcium levels are above 2.75 mmol/L. It should be performed in the second trimester and considered in the third trimester if there is inadequate response to medical therapy.

##### CONCLUSION:

Early diagnosis of pHPT in a pregnant woman, followed by appropriate management and treatment, has been shown to significantly reduce maternal and fetal complications.

PMID: 25367603

2. [J Clin Endocrinol Metab](#). 2014 Dec 9;jc20142760. [Epub ahead of print] IF: 7.02

### Primary and Metastatic Parathyroid Malignancies: A Rare or Underdiagnosed Condition?

[Shifrin A<sup>1</sup>](#), [LiVolsi V](#), [Shifrin-Douglas S](#), [Zheng M](#), [Erler B](#), [Matulewicz T](#), [Davis J](#).

#### [Author information](#)

#### Abstract

Objective: Parathyroid gland malignancies are considered rare. The most common of these tumor types is primary parathyroid carcinoma. Metastatic spread from other cancers may also occur with up to 10% of cancers from other sites showing parathyroid involvement at autopsy. Tumor-to-tumor metastases (metastatic spread to parathyroid neoplasm) from remote cancers to the parathyroid gland have been described. Methods: PubMed literature review and analysis of our own experience of 392 consecutive parathyroidectomies. Results: Primary and secondary parathyroid malignancies can be grouped into three categories: 1) primary parathyroid carcinoma (PPCa), 2) spread of carcinoma into parathyroid glands by contiguous extension from the thyroid gland or other

head and neck cancer, and 3) metastatic disease to the parathyroid gland from distant cancers. Studies of tumor-to-tumor spread indicate a predilection of spread to endocrine tumors possibly because of the rich blood supply that is present in endocrine tumors. Two out of our 392 parathyroidectomies (0.5%) had cancer: one metastatic (thymic neuroendocrine tumor), and another PPCa. Conclusion: Metastatic disease to the parathyroid gland is poorly documented. When performing surgery for primary thyroid cancer, the search for parathyroid gland metastases is often overlooked because of the desire to preserve parathyroid function. Metastatic disease from other cancers to a benign parathyroid gland or to a parathyroid adenoma probably indicates a grave prognosis since it likely indicates widespread metastatic disease; however, isolated metastases to the parathyroid may occur. While these lesions may be uncommon they may not be as rare as once thought.

PMID: 25490272

[Makale sayfası](#)

3. [Clin Endocrinol \(Oxf\)](#). 2014 Nov 20. doi: 10.1111/cen.12681. [Epub ahead of print] **IF: 3.46**

## **F18-Choline PET/CT: a novel tool to localise parathyroid adenoma?**

[van Raalte DH<sup>1</sup>](#), [Vlot MC](#), [Zwijenburg A](#), [Ten Kate RW](#).

[Author information](#)

### **Abstract**

hyperparathyroidism is a frequent cause of hypercalcaemia. Primary hyperparathyroidism, induced by a solitary parathyroid adenoma (PTA) and less frequently multiple PTA's, has an estimated prevalence of 3 in 1000 patients (1). The diagnosis is usually based on an elevated serum calcium concentration and a raised or inappropriately normal parathyroid hormone (PTH) concentration. If treatment is indicated, surgery is the treatment modality of choice for most patients. Recently, minimally invasive approaches have been introduced which have less complications compared to a classic open surgical procedure. This article is protected by copyright. All rights reserved.

This article is protected by copyright. All rights reserved.

### **KEYWORDS:**

Hyperparathyroidism; Parathyroidectomy; Technetium Tc 99m Sestamibi

PMID: 25410059

[Makale sayfası](#)

# PARATIROID

## PROSPEKTİF

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1. [J Clin Endocrinol Metab](#). 2014 Dec;99(12):4531-6. doi: 10.1210/jc.2014-2821. IF:7.02

### **Is (18)f-fluorocholine-positron emission tomography/computerized tomography a new imaging tool for detecting hyperfunctioning parathyroid glands in primary or secondary hyperparathyroidism?**

[Michaud L](#)<sup>1</sup>, [Burgess A](#), [Huchet V](#), [Lefèvre M](#), [Tassart M](#), [Ohnona J](#), [Kerrou K](#), [Balogova S](#), [Talbot JN](#), [Périé S](#).

#### **Author information**

#### **Abstract**

#### **CONTEXT:**

Preoperative ultrasonography and scintigraphy using (99m)Tc-sestamibi are commonly used to localize abnormal parathyroid glands. In cases of discrepant results between scintigraphy and ultrasonography, it is important to rely on another diagnostic imaging modality. (18)F-fluorodeoxyglucose (FDG) and (11)C-methionine positron emission tomography (PET) have been studied, but are imperfect to detect abnormal parathyroid glands. Recently, first cases of abnormal parathyroid glands taking-up radiolabelled choline were discovered incidentally in men referred to (11)C-choline or (18)F-fluorocholine (FCH)-PET/CT for prostate cancer. We checked if FCH uptake was a general feature of adenomatous or hyperplastic parathyroid glands.

#### **METHODS:**

FCH-PET/CT was performed in 12 patients with primary (n = 8) or secondary hyperparathyroidism (1 dialyzed, 3 grafted) and with discordant or equivocal results on preoperative ultrasonography (US) and/or (123)I/(99m)Tc-sestamibi dual-phase scintigraphy. The results of the FCH-PET/CT were evaluated, with surgical exploration and histopathologic examination as the standard of truth.

#### **RESULTS:**

On a per-patient level, the detection rate of FCH-PET/CT (at least one FCH focus corresponding to an abnormal parathyroid gland in a given patient) was 11/12 = 92%. FCH-PET/CT detected 18 foci interpreted as parathyroid glands and correctly localized 17 abnormal parathyroid glands (7 adenomas and 10 hyperplasias). On a per-lesion level, FCH-PET/CT results were 17 TP, 2 false negative ie, a lesion-based sensitivity of 89%, and 1 false positive.

#### **CONCLUSION:**

As the main result of this pilot study, we show that in patients with hyperparathyroidism and with discordant or equivocal results on scintigraphy or on ultrasonography, adenomatous or hyperplastic parathyroid glands can be localized by FCH-PET/CT with good accuracy. Furthermore, FCH-PET/CT can solve discrepant results between preoperative ultrasonography and scintigraphy and has thus a potential as a functional imaging modality in the detection of abnormal parathyroid glands. Our preliminary results are encouraging and prompt us to further evaluate FCH-PET/CT as a functional imaging agent in patients with biochemical hyperparathyroidism.

PMID: 25215560

[Makale sayfası](#)

2. [Ann Surg Oncol](#). 2014 Nov;21(12):3853-8. doi: 10.1245/s10434-014-3822-3. Epub 2014 May 28.

IF: 4.33

## Surgeon and staff radiation exposure during radioguided parathyroidectomy at a high-volume institution.

[Oltmann SC](#)<sup>1</sup>, [Brekke AV](#), [Macatangay JD](#), [Schneider DF](#), [Chen H](#), [Sippel RS](#).

### [Author information](#)

#### Abstract

#### INTRODUCTION:

Radioguided parathyroidectomy (RGP) uses technetium-99 m sestamibi causing gamma ray emission during RGP to aid dissection and confirm parathyroid excision. Source (the patient) proximity and exposure duration determine degree of exposure. The purpose of this study was to quantify surgeon and staff radiation exposure during RGP.

#### METHODS:

Surgeons and assistants wore radiation dosimeters during RGP procedures at a high-volume endocrine surgery practice. Area dosimeters measured personnel potential exposure. Data were prospectively collected. Provider exposures were corrected for both duration of exposure and case volume. Institutional safety requirements uses 100 mrem/year as an indicator for radiation safety training, 500 mrem/year for personal monitoring, and a maximum allowed exposure of 4,500 mrem/year.

#### RESULTS:

A total of 120 RGP were performed over 6 months. Badges were worn in 82 cases (68 %). Three faculty and four assistants were included. Primary hyperparathyroidism was the diagnosis for 95 %. Median case volume per provider was 13 cases (range 6-45), with median exposure of 18 h (range 9-70). Mean provider deep dose exposure (DDE) was  $22 \pm 10$  mrem. Corrected for exposure duration, mean DDE was  $0.6 \pm 0.2$  mrem/h. Corrected for case volume, mean DDE was  $0.8 \pm 0.2$  mrem/case. Anesthesia exposure was minimal, while mayo stand exposure was half to two thirds that of the surgeon and assistant. Based on institutional guidelines and above data, 125 RGP/year warrants safety training, 625 RGP/year warrants monitoring, whereas >5,600 RGP/year may result in maximum allowed radiation exposure to the surgeon.

#### CONCLUSIONS:

Surgeon and staff radiation exposure during RGP is minimal. However, high-volume centers warrant safety training.

PMID: 24866439

[Makale sayfası](#)

3. [Surgery](#). 2014 Dec;156(6):1638-43. doi: 10.1016/j.surg.2014.08.081. Epub 2014 Nov 11. IF: 3.19

## A novel, ultrarapid parathyroid hormone assay to distinguish parathyroid from nonparathyroid tissue.

[James BC](#)<sup>1</sup>, [Nagar S](#)<sup>1</sup>, [Tracy M](#)<sup>2</sup>, [Kaplan EL](#)<sup>1</sup>, [Angelos P](#)<sup>1</sup>, [Scherberg NH](#)<sup>2</sup>, [Grogan RH](#)<sup>3</sup>.

### [Author information](#)

#### Abstract

#### BACKGROUND:

Frozen section is the gold standard for distinguishing parathyroid tissue from lymph nodes, thyroid nodules, or fat during parathyroidectomy and thyroidectomy. Although a very accurate procedure, it can be time-consuming and costly. We hypothesize that the extremely high concentrations of parathyroid hormone (PTH) in parathyroid tissue allow for modification of a standard PTH assay that would distinguish parathyroid from nonparathyroid tissue in substantially less time than frozen section or any currently available PTH assay.

#### METHODS:

A prospective, single-institution study using a modified PTH assay protocol and a manual luminometer was undertaken by testing 20 parathyroid adenomas and 9 control tissues. Analyses were performed simultaneously by the modified PTH protocol and the conventional intraoperative PTH assay.

#### **RESULTS:**

PTH luminescence values from parathyroid tissue and control tissue aspirates were significantly different at 60 seconds ( $P = .015$ ). ROC curve analysis showed the assay to be 100% sensitive and 100% specific in differentiating parathyroid from nonparathyroid tissue.

#### **CONCLUSION:**

Our novel PTH assay accurately and reliably differentiates parathyroid from nonparathyroid tissue within 60 seconds of measurement onset. This assay provides a great advantage in time savings compared with frozen section as well as any currently existing PTH assays.

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PMID: 25456968

[Makale sayfası](#)

4. [Surgery](#). 2014 Dec;156(6):1326-35. doi: 10.1016/j.surg.2014.08.006. Epub 2014 Sep 26. IF: 3.19

## **A randomized, prospective trial of operative treatments for hyperparathyroidism in patients with multiple endocrine neoplasia type 1.**

[Lairmore TC](#)<sup>1</sup>, [Govednik CM](#)<sup>2</sup>, [Quinn CE](#)<sup>2</sup>, [Sigmond BR](#)<sup>2</sup>, [Lee CY](#)<sup>2</sup>, [Jupiter DC](#)<sup>2</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Hyperparathyroidism (HPT) in multiple endocrine neoplasia (MEN) type 1 is associated with multiglandular parathyroid disease. Previous retrospective studies comparing subtotal parathyroidectomy (SP) and total parathyroidectomy with autotransplantation (TP/AT) have not established clearly better outcomes with either procedure.

#### **METHODS:**

Patients were assigned randomly to either SP or TP/AT and data were collected prospectively. The rates of persistent HPT, recurrent HPT, and postoperative hypoparathyroidism were compared.

#### **RESULTS:**

The study cohort included 32 patients randomized to receive either SP or TP/AT (mean follow-up,  $7.5 \pm 5.7$  years). The overall rate of recurrent HPT was 19% (6/32). Recurrent HPT occurred in 4 of 17 patients (24%) treated with SP and 2 of 15 patients (13%) treated with TP/AT ( $P = .66$ ). Permanent hypoparathyroidism occurred in 3 of 32 patients (9%) overall. The rate of permanent hypoparathyroidism was 12% in the SP group (2/17) and 7% in the TP/AT group (1/15). A second operation was performed in 4 of 17 patients initially treated with SP (24%), compared with 1 of 15 patients undergoing TP/AT (7%;  $P = .34$ ).

#### **CONCLUSION:**

This randomized trial of SP and TP/AT in patients with MEN 1 failed to show any difference in outcomes when comparing results of SP versus TP/AT. Both procedures are associated with acceptable results, but SP may have advantages in that it involves only 1 surgical incision and avoids an obligate period of transient postoperative hypoparathyroidism.

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PMID: 25262224

[Makale sayfası](#)

5. [Clin Nucl Med](#). 2014 Dec;39(12):1033-8. doi: 10.1097/RLU.0000000000000607. IF: 2.85

## Localization of parathyroid adenoma by <sup>11</sup>C-choline PET/CT: preliminary results.

[Orevi M](#)<sup>1</sup>, [Freedman N](#), [Mishani E](#), [Bocher M](#), [Jacobson O](#), [Krausz Y](#).

### [Author information](#)

### Abstract

#### PURPOSE:

This prospective pilot study was aimed to evaluate <sup>11</sup>C-choline PET/CT (choline) as a tool for localization of parathyroid adenoma (PTA).

#### METHODS:

Forty patients with biochemical hyperparathyroidism underwent choline and <sup>99m</sup>Tc-MIBI imaging within a median interval of 56 days. Choline and MIBI images were analyzed and correlated with each other, with additional modalities such as ultrasound, CT, MRI, and with surgical findings, when available.

#### RESULTS:

Thirty-seven of forty cases were choline-positive, and 3 were choline-negative. Choline uptake on PET was identified with corresponding nodules on CT of the PET/CT, yielding precise localization. Twenty of thirty-seven foci were located in typical sites in the neck, and 17 were ectopic. Clear visualization of PTA was achieved in 33 of 37, whereas findings in 4 cases were suspicious for PTA. MIBI was positive in 33 of 40 cases (22 clearly positive, 11 suspicious). In 29 of 40 cases, choline and MIBI were concordant, but choline findings were clearer in 9 of these 29 studies. At the time of writing, 27 patients had undergone surgery. In 24 cases, there was complete matching of choline with surgical findings of PTA. Overall in 23 cases, both choline and MIBI matched surgical findings of PTA. In 1 case, PTA was correctly localized on choline but not on MIBI, and in 2 cases, neither choline nor MIBI corresponded to the surgical findings.

#### CONCLUSIONS:

These preliminary results indicate that the combined functional and anatomical modality of choline PET/CT is a promising tool for PTA localization, providing clearer images than MIBI, equal or better accuracy, and quicker and easier acquisition.

PMID: 25290292

[Makale sayfası](#)

6. [Scand J Surg](#). 2014 Nov 10. pii: 1457496914557015. [Epub ahead of print] IF: 1.28

## Operative Treatment of Primary Hyperparathyroidism in Daycare Surgery.

[Dulfer RR](#)<sup>1</sup>, [van Ginhoven TM](#)<sup>2</sup>, [Geilvoet W](#)<sup>3</sup>, [de Herder WW](#)<sup>3</sup>, [van Eijck CH](#)<sup>2</sup>.

### [Author information](#)

### Abstract

#### OBJECTIVE:

The standard of care for primary hyperparathyroidism is surgical removal of hyperfunctional parathyroid tissue. Here, we describe 20 patients with primary hyperparathyroidism who were treated surgically in the setting of daycare surgery.

#### DESIGN:

Prospective observational study.

#### METHODS:

A total of 20 patients with primary hyperparathyroidism were operated between March 2005 and May 2010. The follow-up period had a median of 41 weeks (5-245 weeks). Results are presented as mean ( $\pm$  standard deviation) or median (minimum-maximum).

#### RESULTS:

A total of 20 patients (15 women, mean age  $54 \pm 14$  years) were included. Nine patients were provided with post-operative calcium supplementation. One of the patients visited the emergency department the next day with

paresthesia and normocalcemia; this patient was sent home. Four patients, without prophylaxis, also reported themselves to the emergency department. Only one had mild hypocalcemia (2.09 mmol/L) and was supplemented. Comparing the emergency department group (n = 5) with the others, we found that pre-operative calcium levels were similar (p = 0.40); however, the emergency department group had significantly lower post-operative calcium levels (2.27 ± 0.14 vs 2.55 ± 0.25, p = 0.008) and the decrease-percentage was significantly higher (17.5% ± 5.4% vs 10.5% ± 6.4%, p = 0.21).

#### **CONCLUSION:**

Parathyroidectomy in the daycare setting is feasible and safe. However, many patients return to the emergency department. This could be related to the strict information that is provided or due to a large decrease in their calcium levels, albeit normocalcemia. Calcium supplementation is cheap and safe, so we will provide all future patients with calcium supplementation and herewith aim to reduce the amount of emergency department visits.

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#### **KEYWORDS:**

Ambulatory surgical procedures; humans; hyperparathyroidism; hypocalcemia; operative; parathyroidectomy; primary/complications; primary/surgery; surgical procedures

PMID: 25384910

7. [Am Surg.](#) 2014 Nov;80(11):1146-51. **IF:0.98**

## **Treatment strategies for primary hyperparathyroidism: what is the cost?**

[Aliabadi-Wahle S<sup>1</sup>](#), [Kelly TL](#), [Rozenfeld Y](#), [Carlisle JR](#), [Naeole LK](#), [Negreanu FA](#), [Schuman E](#), [Hammill CW](#).

#### **Author information**

#### **Abstract**

Primary hyperparathyroidism (HPT) contributes to the onset of many chronic conditions. Although parathyroidectomy is the only definitive treatment, observation remains a valid option. Over a 3-year span, a major health plan was queried for HPT and benign parathyroid neoplasm. Patients with secondary and tertiary HPT, Stage III to V kidney disease, and prior renal transplant were excluded. Patients were divided into: observation (Group 1), parathyroidectomy during the study period (Group 2), and parathyroidectomy before the study group (Group 3), and were compared with a control group of 27,092 adult members without HPT using analysis of variance. The 3-year mean total allowed expenditure for Group One (n = 559), Group Two (n = 93), and Group Three (n = 48) were \$21,267, \$37,043, and \$14,702, respectively. Groups One and Two had significantly higher use than the nonparathyroid group (P < 0.0001), whereas that of Group Three was comparable. Group Two had the highest cost, whereas Group Three had a significantly lower cost than Group One (P 0.0001). Primary hyperparathyroidism is associated with a higher use of healthcare resources. Patients observed incurred a higher allowed expenditure than those with prior parathyroidectomy. Surgical treatment may represent a cost-effective strategy for treatment of hyperparathyroidism, although more comprehensive studies are needed to confirm these findings.

PMID: 25347507

## The value and role of low dose methylene blue in the surgical management of hyperparathyroidism.

[Bewick J](#), [Pfleiderer A](#).

### Abstract

#### INTRODUCTION:

Methylene blue (MB) has been used in the identification of abnormal parathyroid glands in surgery for hyperparathyroidism. Its efficacy and safety profile have been questioned recently and this study sought to demonstrate such aspects in a unit where its use is routine.

#### METHODS:

Prospective data collected over six years in a single surgeon's practice were interrogated to identify factors affecting MB staining, side effects suffered and unusual cases where the dye was invaluable in locating the diseased gland.

#### RESULTS:

A total of 98 patients underwent MB infusion. Of these, 77 cases (78.6%) stained positively with MB and 21 (21.4%) did not. Six patients suffered side effects but there were no cases of neurotoxicity. No positive predictive factors of dye uptake were found. MB was particularly useful in cases of intrathyroidal and ectopic glands as well as improving efficiency in both targeted and open parathyroidectomy.

#### CONCLUSIONS:

This series shows that when used correctly, MB is efficacious in locating diseased parathyroid glands, with similar sensitivity rates to preoperative ultrasonography and radionuclide imaging. Adverse effects were much lower than published previously, which may be attributed to the low dose of MB used (3.5 mg/kg).

# PARATIROID

## RETROSPEKTİF

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1. [J Clin Endocrinol Metab.](#) 2014 Oct 22;jc20143255. [Epub ahead of print] IF:7.02

### **Safety and Efficacy of Percutaneous Parathyroid Ethanol Ablation in Patients with Recurrent Primary Hyperparathyroidism and Multiple Endocrine Neoplasia Type 1.**

[Singh Ospina N<sup>1</sup>](#), [Thompson GB](#), [Lee RA](#), [Reading CC](#), [Young WF Jr.](#)

#### **Author information**

#### **Abstract**

Context: The most common feature of multiple endocrine neoplasia type 1 (MEN1) is primary hyperparathyroidism (PHP), which occurs in approximately 95% of the patients. Approximately 40-60% of patients with MEN1 develop recurrent hypercalcemia within 10 to 12 years after their initial parathyroid surgery and the successful management of recurrent PHP is challenging. Objective: Evaluate the safety and efficacy of percutaneous ethanol ablation (PEA) for the treatment of recurrent PHP in patients with MEN1. Methods (Design, Setting, Patients, Intervention, Outcome measured): We performed an electronic search to identify patients with a billing code for MEN1 who were seen at Mayo Clinic between 1977 and 2013. Patients with recurrent PHP who underwent PEA were identified and their clinical information was collected. We performed t test analyses to compare mean values. Results: Thirty-seven patients underwent 80 PEA treatments that included 123 sessions of ethanol administration. Twenty-one patients were women (56.8%) and the mean age at diagnosis of PHP was 33.8 years. The mean pre-procedure calcium level was 10.7 mg/dL  $\pm$  0.57 (SD) and the mean post-procedure calcium level was 9.6 mg/dL  $\pm$  0.76 SD (P<.01). In 14 (18.9%) treatments the post-procedure calcium was >10.1 mg/dL. Post-procedure hypocalcemia occurred in 6 treatments (8.1%). Normocalcemia was achieved in 54 of the treatment episodes (73%) and the mean duration of normocalcemia was 24.8 months. PEA was safe with transient hoarseness occurring in 4 (5%) of the treatments. Conclusion: The treatment of recurrent PHP in patients with MEN1 represents a challenge that is associated with increased morbidity. PEA is an effective treatment option for achieving normocalcemia in the majority of the patients with MEN1. PEA is associated with low rates of hypocalcemia and no permanent complications.

PMID: 25337928

2. [Ann Surg Oncol.](#) 2014 Dec 6. [Epub ahead of print] IF: 4.21

### **Morbidity Associated with Concomitant Thyroid Surgery in Patients with Primary Hyperparathyroidism.**

[Riss P<sup>1</sup>](#), [Kammer M](#), [Selberherr A](#), [Scheuba C](#), [Niederle B](#).

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Recurrent laryngeal nerve (RLN) palsy and hypoparathyroidism are serious complications in thyroid and parathyroid surgery. The extent to which incidentally detected thyroid nodules should be treated concomitantly is a matter of debate.

#### **METHODS:**

This analysis was based on 1,065 patients who underwent consecutive surgery for primary hyperparathyroidism at a single institution. Together with the surgical strategy, histologic and follow-up examinations were

documented prospectively and analyzed retrospectively regarding the occurrence and course of RLN palsy, hypoparathyroidism, and thyroid carcinoma.

#### **RESULTS:**

Altogether, RLN palsy occurred for 38 patients (3.6 %) and proved to be permanent for 1 patient (0.1 %). Postoperative calcium substitution was necessary for 191 patients (17.9 %), with 3 patients showing permanent hypoparathyroidism (0.3 %). Procedures other than open minimally invasive exploration were accompanied by a significantly increased risk for temporary RLN paresis (odds ratio [OR], 6.136) and temporary hypoparathyroidism (OR 3.306). Concomitant thyroid surgery was performed for 502 patients (47.1 %). Compared with open minimally invasive parathyroid exploration, patients undergoing unilateral exploration and hemithyroidectomy (OR 5.827) or bilateral neck exploration (BNE) and thyroidectomy (OR 8.047) had a significantly increased risk for RLN paresis. Patients administered BNE with hemithyroidectomy (OR 2.380) or thyroidectomy (OR 7.233) had a significantly increased risk for hypoparathyroidism. Thyroid malignancy was incidentally detected in 86 patients (8.1 %).

#### **CONCLUSION:**

Patients undergoing concomitant thyroid procedures have a significantly higher risk for temporary RLN palsy and hypoparathyroidism. However, the high rate of incidentally detected thyroid carcinoma in an iodine-replete endemic goiter area indicates hemithyroidectomy in the presence of thyroid nodules incidentally identified in preoperative ultrasounds.

PMID: 25480411

3. [JAMA Surg.](#) 2014 Nov 1;149(11):1133-7. doi: 10.1001/jamasurg.2014.1296. IF: 4.21

## **Paradigm shift in the surgical management of multigland parathyroid hyperplasia: an individualized approach.**

[Lebastchi AH](#)<sup>1</sup>, [Donovan PI](#)<sup>1</sup>, [Udelsman R](#)<sup>1</sup>.

#### **Author information**

#### **Abstract**

#### **IMPORTANCE:**

Locoregional anesthesia, conscious sedation, and exploration via a limited incision have become a well-accepted approach for the treatment of patients with primary hyperparathyroidism with image-localized, presumed single-gland disease. However, to our knowledge, this minimally invasive technique has never been investigated in patients with multigland disease.

#### **OBJECTIVE:**

To extrapolate the technique of locoregional anesthesia, conscious sedation, and exploration via a limited incision to perform minimally invasive bilateral exploration in patients who have multigland hyperplasia.

#### **DESIGN, SETTING, AND PARTICIPANTS:**

Retrospective analysis at a tertiary academic referral center of 100 consecutive patients undergoing parathyroidectomy for primary hyperparathyroidism due to parathyroid hyperplasia between January 19, 2010, and July 30, 2013, who were included in a prospective database.

#### **INTERVENTIONS:**

All patients underwent subtotal parathyroidectomy using either conventional treatment (bilateral neck exploration under general anesthesia) or extended minimally invasive parathyroidectomy (ex-MIP; locoregional anesthesia, conscious sedation, and exploration via a limited incision). Patients in the ex-MIP group who required conversion to general anesthesia were analyzed in the ex-MIP group on an intent-to-treat basis.

#### **MAIN OUTCOMES AND MEASURES:**

Patient cure and complication rates, length of stay, and total hospital charges.

#### **RESULTS:**

Of the 100 consecutive patients with parathyroid hyperplasia, 29 received conventional treatment and 71 underwent ex-MIP. In the ex-MIP group, 11 of 71 patients (15.5%) required conversion to general anesthesia.

There were no differences between the ex-MIP and conventional treatment groups in age (mean [SD], 62.2 [12.2] vs 57.7 [15.2] years;  $P = .12$ ), sex (59 [83.1%] vs 23 [79.3%] female;  $P = .78$ ), preoperative serum calcium level (mean [SD], 11.1 [0.9] vs 10.8 [0.8] mg/dL; to convert to millimoles per liter, multiply by 0.25;  $P = .15$ ), preoperative serum parathyroid hormone level (mean [SD], 114.5 [56.8] vs 137.8 [83.4] pg/mL; to convert to nanograms per liter, multiply by 1;  $P = .10$ ), complications (4 vs 0 complications;  $P = .32$ ), or cure rates (98.6% vs 96.6%;  $P = .50$ ). Importantly, the ex-MIP group had a significant reduction in length of stay compared with the conventional treatment group (mean [SD], 1.01 [0.02] vs 1.35 [0.24] days;  $P = .04$ ). They also had lower total hospital charges, but the difference was not statistically significant (mean, \$23 199 vs \$27 312;  $P = .17$ ).

#### CONCLUSIONS AND RELEVANCE:

Parathyroidectomy with bilateral neck exploration under general anesthesia has been the standard of care for the treatment of parathyroid hyperplasia. We demonstrate that ex-MIP can provide equivalent cure and complication rates with a shorter hospital stay and a mean hospital charge reduction of more than \$4000 per case.

PMID: 25188005 [Makale sayfası](#)

4. [J Am Coll Surg](#). 2014 Oct 24. pii: S1072-7515(14)01762-1. doi: 10.1016/j.jamcollsurg.2014.10.007.

IF: 4.11 [Epub ahead of print]

## Modern Experience with Aggressive Parathyroid Tumors in a High-Volume New England Referral Center.

[Quinn CE](#)<sup>1</sup>, [Healy J](#)<sup>2</sup>, [Lebastchi AH](#)<sup>2</sup>, [Brown TC](#)<sup>2</sup>, [Stein JE](#)<sup>3</sup>, [Prasad ML](#)<sup>3</sup>, [Callender GG](#)<sup>2</sup>, [Carling T](#)<sup>2</sup>, [Udelsman R](#)<sup>2</sup>.

#### [Author information](#)

#### Abstract

##### BACKGROUND:

Parathyroid carcinoma (PTCA) is an exceptionally rare malignancy, often with a clinical presentation similar to that of benign atypical parathyroid adenoma. Its low incidence portends unclear guidelines for management. Accordingly, thorough examination of clinical and pathologic variables was undertaken to distinguish between PTCA and atypical adenomas.

##### STUDY DESIGN:

This was a retrospective analysis of a prospective database at a tertiary academic referral center. Between September 2001 and April 2014, 3,643 patients were referred for surgical treatment of PHPT. Of these, 52 harbored aggressive parathyroid tumors: parathyroid carcinomas ( $n = 18$ ) and atypical adenomas ( $n = 34$ ). We analyzed the surgical and clinicopathologic tumor characteristics, and did a statistical analysis. We measured preoperative and intraoperative variables, and postoperative and pathologic outcomes.

##### RESULTS:

Parathyroid carcinoma patients present with significantly increased tumor size (3.5 cm vs 2.4 cm, respectively;  $p = 0.002$ ), mean serum calcium (13.0 vs 11.8 mg/dL, respectively;  $p = 0.003$ ) and intact parathyroid hormone (iPTH) levels (489 vs 266 pg/mL, respectively;  $p = 0.04$ ), and a higher incidence of hypercalcemic crisis, compared with patients with atypical adenomas (50% vs 19%, respectively;  $p = 0.072$ ). Parathyroid carcinoma more frequently lacks a distinct capsule (47.1% vs 12.9%, respectively;  $p = 0.03$ ) and adheres to adjacent structures (77.8% vs 20.6%, respectively;  $p = 0.017$ ). Of note, there was no significant difference in loss of parafibromin expression between groups.

##### CONCLUSIONS:

Clinical distinction between PTCA and atypical adenomas is of critical importance in determining the appropriate extent of resection and follow-up. Loss of parafibromin has not been shown to distinguish between PTCA and atypical adenoma; clearer definition of clinicopathologic criteria for PTCA is warranted and may lead to improved postoperative management.

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PMID: 25488353 [Makale sayfası](#)

5. [J Am Coll Surg](#). 2014 Nov;219(5):1010-9. doi: 10.1016/j.jamcollsurg.2014.06.020. Epub 2014 Jul 11. IF: 4.11

## The biochemical severity of primary hyperparathyroidism correlates with the localization accuracy of sestamibi and surgeon-performed ultrasound.

[Hughes DT](#)<sup>1</sup>, [Sorensen MJ](#)<sup>2</sup>, [Miller BS](#)<sup>2</sup>, [Cohen MS](#)<sup>2</sup>, [Gauger PG](#)<sup>2</sup>.

### [Author information](#)

#### Abstract

#### BACKGROUND:

Minimally invasive parathyroidectomy for primary hyperparathyroidism is dependent on preoperative localization, commonly with ultrasound and sestamibi imaging. This study sought to determine if preoperative serum calcium and parathyroid hormone (PTH) levels correlate with localization sensitivity and positive predictive value (PPV).

#### STUDY DESIGN:

This is a retrospective analysis of a prospective database of 1,910 patients with primary hyperparathyroidism from 2002 to 2013, who had surgeon-performed ultrasound and/or sestamibi for preoperative localization. The sensitivity and PPV of ultrasound and sestamibi were analyzed by degree of preoperative serum calcium and parathyroid hormone level perturbation.

#### RESULTS:

In 1,910 parathyroidectomy patients, ultrasound was localizing in 1,411 of 1,644 (86%) and sestamibi in 802 of 1,165 (69%) ( $p < 0.01$ ). The PPV of ultrasound was 1,135 of 1,411 (80%) and sestamibi was 705 of 802 (88%) ( $p < 0.01$ ). Using logistic regression analysis, there was statistically significant positive correlation between localization and preoperative serum calcium for both sestamibi (odds ratio [OR] 1.21 [95% CI 1.00 to 1.47;  $p < 0.05$ ]) and ultrasound (OR 1.29 [95% CI 1.03 to 1.60;  $p < 0.05$ ]). There was a weak, but statistically significant positive correlation of PTH with sestamibi localization (OR 1.00 [95% CI 1.00 to 1.01;  $p < 0.05$ ]). There was no statistically significant correlation between the PPV and serum calcium or PTH for either study. When patients were divided into quartiles of preoperative serum calcium and PTH levels, localization rates and PPV of both ultrasound and sestamibi increased with higher calcium and PTH levels. Surgeon-performed ultrasound had higher localization rates than sestamibi, with lower calcium and PTH values. Sestamibi demonstrated higher PPV values across all quartiles.

#### CONCLUSIONS:

Surgeon-performed ultrasound and sestamibi have higher localization rates and PPV, with increasing preoperative serum calcium and PTH levels. Surgeon-performed ultrasound may be a better initial test for patients with lower calcium ( $<10.5$  mg/dL) and PTH ( $<90$  pg/mL) values due to significantly higher localization rates; however, a localizing sestamibi has higher PPV.

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PMID: 25086814 [Makale sayfası](#)

6. [J Am Coll Surg](#). 2014 Oct;219(4):757-64. doi: 10.1016/j.jamcollsurg.2014.06.003. Epub 2014 Jun 18. IF: 4.11

## A single parathyroid hormone level obtained 4 hours after total thyroidectomy predicts the need for postoperative calcium supplementation.

[Carr AA](#)<sup>1</sup>, [Yen TW](#)<sup>1</sup>, [Fareau GG](#)<sup>2</sup>, [Cayo AK](#)<sup>3</sup>, [Misustin SM](#)<sup>1</sup>, [Evans DB](#)<sup>1</sup>, [Wang TS](#)<sup>4</sup>.

### [Author information](#)

#### Abstract

#### BACKGROUND:

Parathyroid hormone (PTH) levels after total thyroidectomy have been shown to predict the development of symptomatic hypocalcemia and the need for calcium supplementation. This study aimed to determine whether a PTH level drawn 4 hours postoperatively is as effective as a level drawn on postoperative day 1 (POD1) in predicting this need.

#### **STUDY DESIGN:**

This is a single-institution retrospective review of 4-hour and POD1 PTH levels in patients who underwent total thyroidectomy from January 2012 to September 2012. If POD1 PTH was  $\geq 10$  pg/mL, patients did not routinely receive supplementation; if PTH was  $< 10$  pg/mL, patients received oral calcium with or without calcitriol.

#### **RESULTS:**

Of 77 patients, 20 (26%) had a 4-hour PTH  $< 10$  pg/mL; 18 (90%) of these patients had a POD1 PTH  $< 10$  pg/mL. No patient with a 4-hour PTH  $\geq 10$  pg/mL had a POD1 PTH  $< 10$  pg/mL. All 18 patients with POD1 PTH  $< 10$  pg/mL received calcium supplementation. Three additional patients received supplementation due to reported symptoms or surgeon preference. A 4-hour PTH  $\geq 10$  pg/mL compared with a POD1 PTH had a similar ability to predict which patients would not need calcium supplementation; sensitivity was 98% vs 98%, specificity was 90% vs 86%, and negative predictive value was 95% vs 95%. Of 21 patients who received supplementation, 13 (62%) also received calcitriol, including 9 patients (69%) with a 4-hour PTH  $< 6$  pg/mL.

#### **CONCLUSIONS:**

A single PTH level obtained 4 hours after total thyroidectomy that is  $\geq 10$  pg/mL accurately identifies patients who do not need calcium supplementation or additional monitoring of serum calcium levels. Same-day discharge, if deemed safe, can be accomplished with or without calcium supplementation based on the 4-hour PTH level. Greater consideration should be given to calcitriol supplementation in patients with a 4-hour PTH  $< 6$  pg/mL.

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PMID: 25053220

[Makale sayfası](#)

7. [Ann Surg Oncol](#). 2014 Oct 30. [Epub ahead of print] IF: 3.94

## **What Can We Learn from Intraoperative Parathyroid Hormone Levels that Do Not Drop Appropriately?**

[Wachtel H<sup>1</sup>](#), [Cerullo I](#), [Bartlett EK](#), [Kelz RR](#), [Karakousis GC](#), [Fraker DL](#).

[Author information](#)

#### **Abstract**

#### **BACKGROUND:**

Parathyroidectomy remains the only definitive treatment for primary hyperparathyroidism. We studied our large series of parathyroidectomies to identify factors predictive of failure to meet intraoperative parathyroid hormone (IOPTH) monitoring criteria.

#### **METHODS:**

We performed a retrospective cohort review of patients who underwent initial parathyroidectomy for primary hyperparathyroidism with IOPTH monitoring. Primary outcome was intraoperative failure, defined as failure to decrease IOPTH by  $\geq 50$  % and into normal range. Univariate and multivariate analyses were performed to determine factors associated with intraoperative failure. A subset analysis evaluated 6-month outcomes.

#### **RESULTS:**

Of 2,185 subjects, 5.0 % (n = 110) experienced intraoperative failure. The intraoperative failure group had more multigland disease (35.2 vs. 16.6 %, p < 0.001) and smaller glands (1.3 vs. 1.5 cm, p = 0.048) compared to patients who experienced intraoperative success. On multivariate analysis, PTH level was statistically, but not clinically, significantly associated with intraoperative failure (odds ratio 1.0, 95 % confidence interval 1.000-1.003). Persistent hyperparathyroidism was identified in 2.5 % (n = 15) of 592 patients with  $\geq 6$  month follow-up. Median IOPTH decrease was lower in patients with persistent hyperparathyroidism (67.1 vs. 85.8 %, p < 0.001). IOPTH criteria were 93.7 % sensitive and 40.0 % specific for eucalcemia 6 months postoperatively. Of 15 patients with persistent hyperparathyroidism, 7 underwent reoperation with a 100 % cure rate. Reoperative diagnoses included ectopic mediastinal glands (n = 3), hyperplasia (n = 3), and missed second adenoma (n = 1).

## CONCLUSIONS:

Intraoperative failure is associated with higher rates of multigland disease and smaller parathyroid glands. Patients with persistent disease had significantly lower decreases in IOPTH, but half of patients who experienced failure by IOPTH criteria were eucalcemic 6 months postoperatively. All patients undergoing reoperation experienced successful cure.

PMID: 25354574

8. [Surg Endosc](#). 2014 Dec 5. [Epub ahead of print] IF: 3.65

## Intraoperative optical coherence tomography imaging to identify parathyroid glands.

[Sommerer S<sup>1</sup>](#), [Al Arabi N](#), [Ladurner R](#), [Chiapponi C](#), [Stepp H](#), [Hallfeldt KK](#), [Gallwas JK](#).

### [Author information](#)

### Abstract

#### OBJECTIVE:

Optical coherence tomography (OCT) is a non-invasive high-resolution imaging technique that permits characterization of microarchitectural features in real time. Previous ex vivo studies have shown that the technique is capable of distinguishing between parathyroid tissue, thyroid tissue, lymph nodes, and adipose tissue. The purpose of this study was to evaluate the practicality of OCT during open and minimally invasive parathyroid and thyroid surgery.

#### METHODS:

During parathyroid and thyroid surgery, OCT images were generated from parathyroid glands, thyroid tissue, lymph nodes, and adipose tissue. The images were immediately assessed by the operating team using the previously defined criteria. Second, the OCT images were blinded with respect to their origin and analyzed by two investigators. Whenever possible the OCT findings were matched to the corresponding histology.

#### RESULTS:

A total of 227 OCT images from 27 patients undergoing open or minimally invasive thyroid or parathyroid surgery were analyzed. Parathyroid glands were correctly identified in 69.2 %, thyroid tissue in 74.5 %, lymph nodes in 37.5 %, and adipose tissue in 69.2 %. 43 OCT images (18.9 %) could not be allocated to one of the tissue types (Table 2). Sensitivity and specificity in distinguishing parathyroid tissue from the other entities were 69 % (63 true positive, 13 false negative findings, 15 images where an allocation was not possible) and 66 %, respectively (71 true negative, 9 false positive, 28 images where an assessment was not possible).

#### CONCLUSION:

OCT is capable of distinguishing between parathyroid, thyroid, and adipose tissue. An accurate differentiation between parathyroid tissue and lymph nodes was not possible. The disappointing results compared to the previous ex vivo study are related to problems handling the endoscopic probe intraoperatively. However, further refinement of this new technology may lead to OCT systems with higher resolution and intraoperative probes that are easier to handle.

PMID: 25475518

9. [Surgery](#). 2014 Dec;156(6):1622-30. doi: 10.1016/j.surg.2014.08.069. Epub 2014 Nov 11. IF: 3.19

## Parathyroid carcinoma in more than 1,000 patients: A population-level analysis.

[Sadler C<sup>1</sup>](#), [Gow KW<sup>2</sup>](#), [Beierle EA<sup>3</sup>](#), [Doski JJ<sup>4</sup>](#), [Langer M<sup>5</sup>](#), [Nuchtern JG<sup>6</sup>](#), [Vasudevan SA<sup>6</sup>](#), [Goldfarb M<sup>7</sup>](#).

### [Author information](#)

### Abstract

#### BACKGROUND:

Parathyroid carcinoma (PC) is a rare malignancy with a moderate prognosis. The staging system, prognostic indicators, and optimal surgical management are still under debate. This large cohort explores prognostic factors for PC.

#### **METHODS:**

1,022 cases of PC in the 1998-2011 National Cancer Data Base that underwent surgery were examined for predictors of lower overall survival (OS) and relative risk (RR) of death at 5 years.

#### **RESULTS:**

The 5-year OS was 81.1% in 528 patients with  $\geq 60$  months of follow-up. The overall cohort was mainly non-Hispanic (96.5%), white (77.4%), and insured (94.3%), with a median age of 57 years. Mean OS was lower and RR of death greater in older ( $P < .001$ ), black ( $P = .007$ ) patients with a secondary malignancy ( $P = .015$ ) and  $\geq 2$  comorbidities ( $P = .005$ ), whose surgical specimen had positive surgical margins ( $P = .026$ ) or positive lymph nodes ( $P < .001$ ). Multivariate cox regression demonstrated that positive lymph nodes (hazard ratio [HR], 6.47; 95% CI, 1.81-23.11) and older age (HR, 2.35; 95% CI, 1.25-4.43) were associated with lower OS.

#### **CONCLUSION:**

PC is a rare malignancy with a 5-year OS of 81.1%. Positive lymph nodes and older age predict lower OS and an increased risk of death.

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PMID: 25456964 [Makale sayfası](#)

10. [Surgery](#). 2014 Dec;156(6):1336-41. doi: 10.1016/j.surg.2014.08.005. Epub 2014 Nov 11. IF: 3.19

## **Is central lymph node dissection necessary for parathyroid carcinoma?**

[Hsu KT](#)<sup>1</sup>, [Sippel RS](#)<sup>1</sup>, [Chen H](#)<sup>1</sup>, [Schneider DF](#)<sup>2</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Parathyroid carcinoma is a rare cancer. Unlike other more common malignancies, the importance of lymph node (LN) status remains controversial. The purpose of this study was to determine the relative importance of LN metastases in disease-specific survival (DSS).

#### **METHODS:**

A retrospective review of the Surveillance, Epidemiology, and End Result database was performed on parathyroid carcinoma cases diagnosed between 1988 and 2010.

#### **RESULTS:**

We identified 405 parathyroid carcinoma patients. Among 114 patients with LNs examined at operation, only 12 (10.5%) had positive LNs. Sensitivity analysis found that a tumor size threshold of 3 cm best divided the cohort by DSS. Only tumors  $\geq 3$  cm and distant metastasis but not LN metastases were independent prognostic factors on multivariate analysis. When examining factors associated with LN status, only tumors  $\geq 3$  cm predicted LN metastasis. LN metastases were 7.5 times more likely in patients with tumors  $\geq 3$  cm than those with tumors  $< 3$  cm.

#### **CONCLUSION:**

Tumors  $\geq 3$  cm were associated with LN metastases in parathyroid carcinoma, but positive LN status was not associated with DSS. Tumor size can potentially risk stratify patients by their risk of LN metastases.

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PMID: 25456903 [Makale sayfası](#)

11. [Surgery](#). 2014 Nov;156(5):1132-44. doi: 10.1016/j.surg.2014.05.014. Epub 2014 Oct 17. IF: 3.19

## Prognostic factors and staging systems in parathyroid cancer: A multicenter cohort study.

[Villar-Del-Moral J](#)<sup>1</sup>, [Jiménez-García A](#)<sup>2</sup>, [Salvador-Egea P](#)<sup>3</sup>, [Martos-Martínez JM](#)<sup>4</sup>, [Nuño-Vázquez-Garza JM](#)<sup>5</sup>, [Serradilla-Martín M](#)<sup>6</sup>, [Gómez-Palacios A](#)<sup>7</sup>, [Moreno-Llorente P](#)<sup>8</sup>, [Ortega-Serrano J](#)<sup>9</sup>, [de la Quintana-Basarrate A](#)<sup>10</sup>.

### [Author information](#)

#### Abstract

#### BACKGROUND:

Parathyroid carcinoma (PC) is an uncommon disease that generally is detected postoperatively and traditionally is associated with a poor prognosis. Our purpose was to evaluate treatment outcomes, prognostic factors, and usefulness of some proposed staging systems for this disease.

#### METHODS:

A multicenter review of patients with surgically resected PC was performed, led by the Spanish Association of Surgery. All surgical units affiliated with its endocrine surgery section were invited to answer a questionnaire that collected several hospital-related, clinical, biochemical, operative, pathologic, and follow-up data. Their relationships with prognosis were assessed by both univariate and multivariate analysis, as well as the effectiveness of three staging systems for parathyroid carcinoma.

#### RESULT:

Of the 6,863 patients undergoing parathyroidectomy, 62 (0.9%) had PC. Of them, 12 (19.3%) died, in 5 cases (8%) because of disease, and 14 (22.6%) suffered recurrence, after a median follow-up of 55 months. The most predictive independent variables on tumor recurrence were intraoperative tumor rupture (hazard ratio [HR] 6.22; 95% confidence interval [CI] 1.19-32.36; P = .030); the presence of mitotic figures within tumor parenchyma cells (HR 4.76; 95% CI 1.24-18.21; P = .022); and allocation in class III according to Schulte differentiated staging classification (HR 5.23; 95% CI 1.41-19.31; P = .013). As to disease-specific survival, poor outcomes were associated with intraoperative tumor rupture (HR 58.71; 95% CI 2.39-1,439.96; P = .013) and distant recurrence (HR 38.74; 95% CI 3.44-435.62; P = .003).

#### CONCLUSION:

In addition to factors associated with tumor histopathology and stage, prognosis of PC is greatly influenced by surgeon's performance, which emphasizes the importance of preoperative diagnosis.

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PMID: 25444314

[Makale sayfası](#)

12. [Surgery](#). 2014 Dec;156(6):1300-7. doi: 10.1016/j.surg.2014.08.002. Epub 2014 Sep 26. IF: 3.19

## Multiphase computed tomography for localization of parathyroid disease in patients with primary hyperparathyroidism: How many phases do we really need?

[Noureldine SI](#)<sup>1</sup>, [Aygun N](#)<sup>2</sup>, [Walden MJ](#)<sup>2</sup>, [Hassoon A](#)<sup>3</sup>, [Gujar SK](#)<sup>2</sup>, [Tufano RP](#)<sup>4</sup>.

### [Author information](#)

#### Abstract

#### BACKGROUND:

Multiphase computed tomography (CT) involves multiple cervical CT acquisitions to accurately identify hyperfunctional parathyroid glands, thus increasing radiation exposure to the patient. We hypothesized that only 2 cervical acquisitions, instead of the conventional 4, would provide equivalent localization information and halve the radiation exposure.

#### METHODS:

We identified 53 consecutive patients with primary hyperparathyroidism who underwent multiphase CT before parathyroidectomy. All scans were reinterpreted first using 2 phases then using all 4 phases. The accuracies of interpretations were determined with surgical findings serving as the standard of reference.

#### **RESULTS:**

Sixty-four hyperfunctional parathyroid glands were resected with a mean weight of 394.3 mg. Two-phase CT lateralized the hyperfunctional glands in 38 patients with a sensitivity, positive predictive value (PPV), and accuracy of 100%, 71.7%, and 71.7%, respectively. Four-phase CT lateralized the hyperfunctional glands in 39 patients with a sensitivity, PPV, and accuracy of 95.1%, 76.5%, and 73.6%, respectively. For quadrant localization, the accuracy of 2-phase and 4-phase CT was 50.9% and 52.8%, respectively.

#### **CONCLUSION:**

Our results suggest that 2-phase and 4-phase CT provide an equivalent diagnostic accuracy in localizing hyperfunctional parathyroid glands. The reduced radiation exposure to the patient may make 2-phase acquisitions a more acceptable alternative for preoperative localization.

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PMID: 25262222 [Makale sayfası](#)

13. [Surgery](#). 2014 Oct;156(4):760-6. doi: 10.1016/j.surg.2014.06.060. IF: 3.19

## **Is intraoperative parathyroid hormone monitoring necessary with ipsilateral parathyroid gland visualization during anticipated unilateral exploration for primary hyperparathyroidism: a two-institution analysis of more than 2,000 patients.**

[Rajaei MH](#)<sup>1</sup>, [Oltmann SC](#)<sup>2</sup>, [Adkisson CD](#)<sup>3</sup>, [Elfenbein DM](#)<sup>1</sup>, [Chen H](#)<sup>1</sup>, [Carty SE](#)<sup>3</sup>, [McCoy KL](#)<sup>3</sup>.

#### **Author information**

#### **Abstract**

#### **INTRODUCTION:**

Intraoperative parathyroid hormone (ioPTH) monitoring during focused parathyroidectomy for primary hyperparathyroidism (PHPT) is used commonly, but some argue that ioPTH adds little if a normal ipsilateral parathyroid gland (IPG) is visualized. This hypothesis was tested for validity.

#### **METHODS:**

The prospective databases of consecutive patients with PHPT undergoing initial parathyroidectomy with ioPTH at two academic institutions were queried. Patients with ectopic adenoma, familial PHPT, previous parathyroidectomy, planned bilateral exploration, or <6 months follow-up were excluded. Persistence was defined as hypercalcemia at <6 months.

#### **RESULTS:**

From 1998 to 2013, 2,162 patients met inclusion criteria, and the rate of persistent disease was 1.5%. Most (n = 1,353; 63.5%) underwent single-gland resection with ioPTH and no IPG visualization, with 1% persistence. Among patients with a single adenoma resected and a normal IPG visualized, 15.2% had contralateral disease. Resection based on IPG appearance alone would have resulted in 13% persistent disease.

#### **CONCLUSION:**

In PHPT, the cure rate for initial unilateral exploration guided by ioPTH is 98.5% versus a predicted rate of 87% when decision making is based on IPG appearance alone. Routine visualization of IPG is not necessary during exploration for suspected single adenoma guided by ioPTH. ioPTH remains useful in optimizing outcomes.

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PMID: 25239313 [Makale sayfası](#)

14. [Int J Surg](#). 2014 Dec;12(12):1286-90. doi: 10.1016/j.ijssu.2014.11.001. Epub 2014 Nov 4. IF: 1.73

## **Autotransplantation of Inferior Parathyroid glands during central neck dissection for papillary thyroid carcinoma: A retrospective cohort study.**

[Wei T](#)<sup>1</sup>, [Li Z](#)<sup>1</sup>, [Jin J](#)<sup>2</sup>, [Chen R](#)<sup>1</sup>, [Gong Y](#)<sup>1</sup>, [Du Z](#)<sup>1</sup>, [Gong R](#)<sup>1</sup>, [Zhu J](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

#### **INTRODUCTION:**

The management of inferior parathyroid glands during central neck dissection (CND) for papillary thyroid carcinoma (PTC) remains controversial. Most surgeons preserve inferior parathyroid glands in situ. Autotransplantation is not routinely performed unless devascularization or inadvertent parathyroidectomy occurs. This retrospective study aimed to compare the incidence of postoperative hypoparathyroidism and central neck lymph node (CNLN) recurrence in patients with PTC who underwent inferior parathyroid glands autotransplantation vs preservation in situ.

#### **METHODS:**

This is a retrospective study which was conducted in a tertiary referral hospital. A total of 477 patients with PTC (pN1) who underwent total thyroidectomy (TT) and bilateral CND with/without lateral neck dissection were included. Patients' demographical characteristics, tumor stage, incidence of hypoparathyroidism, CNLN recurrence and the number of resected CNLN were analyzed.

#### **RESULTS:**

Three hundred and twenty-one patients underwent inferior parathyroid glands autotransplantation (autotransplantation group). Inferior parathyroid glands were preserved in situ among 156 patients (preservation group). Permanent hypoparathyroidism rate was 0.9% (3/321) versus 3.8% (6/156) respectively ( $p = 0.028$ ). Mean numbers of resected CNLN were  $15 \pm 3$  (6-23) (autotransplantation group) versus  $11 \pm 3$  (7-21) (preservation group) ( $p < 0.001$ ). CNLN recurrence rate was 0.3% (1/321) versus 3.8% (6/156) respectively ( $p = 0.003$ ).

#### **CONCLUSION:**

Inferior parathyroid glands autotransplantation during CND of PTC (pN1) might reduce permanent hypoparathyroidism and CNLN recurrence. Further study enrolling more patients with long-term follow-up is needed to support this conclusion.

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#### **KEYWORDS:**

Central neck dissection; Papillary thyroid carcinoma; Parathyroids autotransplantation

PMID: 25448646 [Makale sayfası](#)

15. [Otolaryngol Head Neck Surg](#). 2014 Dec 17. pii: 0194599814562195. [Epub ahead of print] IF: 1.68

## **Comparison of 4D CT, Ultrasonography, and 99mTc Sestamibi SPECT/CT in Localizing Single-Gland Primary Hyperparathyroidism.**

[Suh YJ](#)<sup>1</sup>, [Choi JY](#)<sup>2</sup>, [Kim SJ](#)<sup>1</sup>, [Chun IK](#)<sup>3</sup>, [Yun TJ](#)<sup>4</sup>, [Lee KE](#)<sup>5</sup>, [Kim JH](#)<sup>4</sup>, [Cheon GJ](#)<sup>6</sup>, [Youn YK](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

#### **OBJECTIVE:**

The present study was designed to evaluate 4D computerized tomography (CT) as a means of localizing abnormal parathyroid glands in primary hyperparathyroidism (HPT).

**STUDY DESIGN:**

Case series with expertized image review.

**SETTING:**

Tertiary care hospital.

**SUBJECTS AND METHODS:**

A total of 38 patients were recruited for study, all of whom had undergone focused parathyroidectomy for single-lesion primary HPT between June 2011 and September 2013. In each patient, 3 imaging procedures were performed: cervical ultrasonography (US), <sup>99m</sup>Tc-sestamibi SPECT/CT (SeS), and 4D CT. Collective imaging data were blindly reviewed and compared.

**RESULTS:**

4D CT outperformed US and SeS in terms of sensitivity ( $P = .27$ ), specificity ( $P = .01$ ), positive predictive value (PPV) ( $P < .01$ ), negative predictive value (NPV) ( $P = .19$ ), and accuracy ( $P < .01$ ). In 7.9% (3/38) of patients, 4D CT provided specific anatomic information that was unaffordable by US and SeS. Localization by 4D CT correlated with tissue parathyroid hormone level ( $P = .02$ ), maximum diameter ( $P = .01$ ), and volume ( $P < .01$ ) of abnormal parathyroid glands.

**CONCLUSION:**

4D CT proved helpful in localizing target parathyroid glands of primary HPT that were missed by traditional imaging.

© American Academy of Otolaryngology—Head and Neck Surgery Foundation 2014.

**KEYWORDS:**

4-dimensional computed tomography; 99mTc sestamibi SPECT/CT; minimally invasive surgical procedures; primary hyperparathyroidism; ultrasonography

PMID: 25518904

16. [ANZ J Surg](#). 2014 Oct 23. doi: 10.1111/ans.12885. [Epub ahead of print] **IF:1.35**

**Outcomes for minimally invasive parathyroidectomy: widening inclusion criteria based on preoperative imaging results.**

[Reilly DJ](#)<sup>1</sup>, [Chew GL](#), [Eckhaus J](#), [Smoll NR](#), [Farrell SG](#).

**Author information**

**Abstract**

**BACKGROUND:**

Primary hyperparathyroidism is caused by a single adenoma in at least 80% of cases. Minimally invasive parathyroidectomy (MIP) has overtaken bilateral neck exploration as the gold standard for treatment in cases with adequate preoperative localization. There is evidence that, following careful review of preoperative imaging by the surgeon, increasing numbers of patients can successfully undergo MIP.

**METHODS:**

We conducted a retrospective review of 225 consecutive cases performed by a single surgeon. Outcomes for patients with disease reported as localized by radiologists and nuclear medicine physicians using sestamibi and ultrasound were compared with patients with negative or indeterminate localization studies, in which the surgeon reviewed the sestamibi, performed an ultrasound study and identified likely single adenomas and planned MIP.

**RESULTS:**

One hundred and sixty patients with radiologist-localized disease and an additional 29 patients with surgeon-localized disease underwent MIP. The surgeon-localized group had higher rates of conversion to bilateral neck exploration (21% compared with 4%,  $P = 0.004$ ), but rates of failure to cure were comparable between the two groups (4.3% compared with 2.8%).

**CONCLUSION:**

Careful review of preoperative sestamibi and ultrasound studies by an experienced surgeon can increase the number of patients that can successfully undergo MIP for the treatment of primary hyperparathyroidism. Offering MIP to these patients does not result in increased rates of failure or recurrence.

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#### KEYWORDS:

hyperparathyroidism; minimally invasive; parathyroid; parathyroidectomy; primary; sestamibi; surgical procedures

PMID: 25345711 [Makale sayfası](#)

17. [Am J Otolaryngol](#). 2014 Nov 6. pii: S0196-0709(14)00266-X. doi: 10.1016/j.amjoto.2014.10.036.

[Epub ahead of print] IF: 1.07

### Radiographic evaluation of non-localizing parathyroid adenomas

[Payne SJ](#)<sup>1</sup>, [Smucker JE](#)<sup>1</sup>, [Bruno MA](#)<sup>2</sup>, [Winner LS](#)<sup>2</sup>, [Saunders BD](#)<sup>3</sup>, [Goldenberg D](#)<sup>4</sup>.

#### [Author information](#)

#### Abstract

##### PURPOSE:

Patients with primary hyperparathyroidism routinely undergo preoperative imaging to localize the abnormal gland to facilitate a guided parathyroidectomy. These techniques include neck ultrasound (US), dual phase planar technetium-99m (<sup>99m</sup>Tc) sestamibi (MIBI) scans, single photon emission computed tomography (SPECT), combined SPECT/CT, and four dimensional CT scans (4D CT). Despite appropriate preoperative imaging, non-localization of abnormal glands does occur. This study aims to determine whether non-localization is the result of radiologic interpretive error or a representation of a subset of truly non-localizing parathyroid adenomas.

##### MATERIALS AND METHODS:

A retrospective study was performed; two senior radiologists reinterpreted the preoperative imaging (US and MIBI scans) of 30 patients with initially non-localizing studies. All patients underwent parathyroidectomy for primary hyperparathyroidism at a tertiary referral center. Both radiologists were blinded to the scores of his colleague. The results were compared for inter-reader reliability using Cohen's kappa test.

##### RESULTS:

Twenty-nine of thirty nuclear studies were found to be negative on reinterpretation. The readers agreed in 86.67% of their observations, with a kappa ( $\kappa$ ) value of 0.706 (SE= $\pm$ 0.131, 95% confidence interval for  $\kappa$  =0.449-0.962). One of eighteen ultrasounds had positive localizations on reexamination, however, the inter-observer agreement was only 55.6%, with a kappa value of 0.351 (SE= $\pm$ 0.139, and 95% confidence interval for  $\kappa$  =0.080-0.623). Overall, no statistically significant difference in preoperative and retrospective interpretation was found.

##### CONCLUSION:

This study identifies a subset of parathyroid adenomas that do not localize on preoperative imaging despite sound radiographic evaluation.

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PMID: 25465322 [Makale sayfası](#)

18. [Minerva Chir](#). 2014 Dec;69(6):315-320. Epub 2014 Sep 22. IF: 0.93

### Incidental parathyroidectomy as a cause of postoperative hypocalcemia after thyroid surgery: reality or illusion?

[Yazici P](#)<sup>1</sup>, [Bozkurt E](#), [Citgez B](#), [Kaya C](#), [Mihmanli M](#), [Uludağ M](#).

#### [Author information](#)

#### Abstract

##### AIM:

We aimed to investigate the incidence and clinical relevance of incidental parathyroidectomy (IPT) following thyroid surgery.

**METHODS:**

A retrospective review of thyroid operations was performed between January 2013 and January 2014. Pathology and operative reports were analyzed to identify the specimens which included parathyroid tissue. Information related to diagnosis, operative details and postoperative complications were collected. Calcium levels of  $\leq 8$  mg/dL was defined as biochemical hypocalcemia and those presenting with classic findings of acute hypocalcemia, were classified as clinical hypocalcemia.

**RESULTS:**

Two hundred and forty-five thyroid procedures were performed during study period. IPT was found in 34 (13.8%) cases: 25 were benign and 9 were malignant. Parathyroid tissue was found intrathyroidal in 6 patients (17.6%); lobar locations were right lobe in 19 (55.8%) and left lobe in 13 (38.2%) and isthmus in 2 cases (5.8%). The frequency of biochemical and clinical hypocalcemia were 50% (N.=17) and 8.8% (N.=3), respectively. Neither surgical type (lobectomy or thyroidectomy) nor malignancy (benign or malign) was not found associated with biochemical hypocalcemia. In those with biochemical hypocalcemia, left location of both dominant nodule and extracted parathyroid gland were significantly higher (P=0.01 and 0.04, respectively).

**CONCLUSION:**

Incidental parathyroidectomy which is not uncommon (13.8%) after thyroidectomy is not associated with postoperative biochemical hypocalcemia. Neither the type of surgical procedure (lobectomy or thyroidectomy) nor the pathology but adjacent dominant nodule location may increase the risk of IPT.

# PARATHYROID

## VAKA SUNUMU

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1. [J Clin Endocrinol Metab.](#) 2014 Oct 10;jc20143063. [Epub ahead of print] **IF:7.02**

### **From Hypocalcemia to Hypercalcemia - An Unusual Clinical Presentation of a Patient with Permanent Post-Surgical Hypoparathyroidism.**

[Sundaresh V<sup>1</sup>](#), [Levine SN.](#)

#### **Author information**

#### **Abstract**

Context: Hypercalcemia associated with lymphomas can be secondary to increased calcitriol [1,25(OH)<sub>2</sub> vitamin D3], parathyroid hormone-related protein, or osteolytic metastases. Objective: Presentation of a case of calcitriol mediated hypercalcemia secondary to non-Hodgkin lymphoma (NHL), in a patient with post-surgical hypoparathyroidism. Design & setting: Single patient managed at a tertiary health care facility in the United States. Patient: A 55-year-old white woman had a total thyroidectomy and radioiodine ablation for a 3.5 cm follicular carcinoma. Surgery was complicated by permanent hypoparathyroidism treated with calcium, calcitriol, and cholecalciferol. For over 16 years she had no evidence of either residual thyroid tissue in the neck or metastasis. Her corrected serum calcium levels were appropriately maintained in the low-normal range. During a routine clinic visit she had mild hypercalcemia; calcium and cholecalciferol were reduced by 50%, while calcitriol was continued. Two weeks later she presented with nausea, abdominal pain, and multiple, rapidly enlarging cervical and axillary lymph nodes with elevated calcium and calcitriol. A Fluorine-18 Fluorodeoxyglucose positron emission tomography/computed tomography (F-18 FDG PET/CT) scan and lymph node biopsy were diagnostic for NHL. Intervention: Calcium and calcitriol were stopped; hypercalcemia was corrected with IV fluids. Chemotherapy resulted in an excellent response within 7 weeks; calcitriol normalized and she developed recurrent hypocalcemia. A PET/CT at 7 weeks and 3 months after treatment documented near complete resolution of the lesions. Outcome & Result: Sixteen months after the treatment of lymphoma she remains free of disease and is on calcium, calcitriol and cholecalciferol. Conclusion: Clinicians should have a high index of suspicion for malignancy when patients presents with rapid and high elevations of serum calcium.

PMID: 25303492

2. [Endocr Pract.](#) 2014 Oct 1;20(10):e180-2. doi: 10.4158/EP14136.CR. **IF:2.12**

### **Hyperparathyroid crisis due to asymmetric parathyroid hyperplasia with a massive ectopic parathyroid gland.**

[Gratian LF<sup>1</sup>](#), [Hyland KA<sup>1</sup>](#), [Scheri RP<sup>2</sup>](#).

#### **Author information**

#### **Abstract**

#### **OBJECTIVE:**

To report a rare case of primary hyperparathyroidism presenting with hyperparathyroid crisis due to parathyroid hyperplasia with ectopic glands.

#### **METHODS:**

We present the initial clinical manifestations, laboratory results, radiologic and surgical findings, and management in a patient who had hyperparathyroid crisis. The pertinent literature and management options are also reviewed.

#### RESULTS:

A 60-year-old female presented with hyperparathyroid crisis requiring preoperative stabilization with rehydration, diuresis, bisphosphonate therapy, and ultimately hemodialysis. Parathyroidectomy revealed asymmetric 4-gland hyperplasia, with a massive ectopic parathyroid gland in the tracheoesophageal groove extending into the mediastinum. Her postoperative course was complicated by hungry bone syndrome and hypocalcemia.

#### CONCLUSION:

This case illustrates the rare occurrence of hyperparathyroid crises due to asymmetric parathyroid hyperplasia with a massive ectopic parathyroid gland.

PMID: 24936566 [Makale sayfası](#)

3. [Pediatr Transplant](#). 2014 Dec 13. doi: 10.1111/ptr.12410. [Epub ahead of print] IF: 1.63

## A novel non-surgical, minimally invasive technique for parathyroid autotransplantation: A case report.

[Aysan E<sup>1</sup>](#), [Kilic U](#), [Gok O](#), [Altug B](#), [Ercan C](#), [Idiz UO](#), [Kesgin C](#), [Muslumanoglu M](#).

#### [Author information](#)

#### Abstract

We present a case report of intramuscular autotransplantation of the parathyroid cell suspension acquired after total parathyroidectomy. A 15-yr-old female patient who had been undergoing hemodialysis due to chronic renal failure for eight yr was diagnosed with secondary hyperthyroidism and subsequently underwent total parathyroidectomy. The parathyroid cells were acquired from the resected tissues, processed through isolation and cultivation phases, and counted using a cell counter. A total of two million cells were injected into the left deltoid muscle using a 22-gauge needle. After surgery, five and 10 million cells were injected in the fifth and 12 week, respectively. The desired serum levels of parathyroid hormones and calcium were not achieved after the first two transplantations. In addition, there was no regression in the patient's symptoms. However, at four wk after the third transplantation, serum parathyroid hormone level did not decrease to <3 pg/mL, the patient was asymptomatic, and the oral treatment was stopped. Our findings indicate that this new technique is applicable because it is minimally invasive, and it can be easily repeated.

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#### KEYWORDS:

autotransplantation; invasive; minimally; non-surgical; parathyroid

PMID: 25495657 [Makale sayfası](#)

4. [Exp Clin Transplant](#). 2014 Dec 3. doi: 10.6002/ect.2014.0110. [Epub ahead of print] IF: 0.79

## Parathyroid Allotransplant for Persistent Hypocalcaemia: A New Technique Involving Short-Term Culture.

[Aysan E<sup>1</sup>](#), [Kilic U](#), [Gok O](#), [Altug B](#), [Ercan C](#), [Kesgin Toka C](#), [Idiz UO](#), [Muslumanoglu M](#).

#### [Author information](#)

#### Abstract

#### OBJECTIVES:

To develop a new parathyroid allotransplant method for the treatment of permanent hypoparathyroidism.

#### MATERIALS AND METHODS:

Parathyroid cells  $50 \times 10^6$  derived from a parathyroid hyperplasia patient were transferred to a 61-year-old patient who had thyroidectomy 17 years earlier, allowing to papillary thyroid cancer; he was admitted to our outpatient clinic with symptomatic chronic hypocalcemia. Cell isolation, cryopreservation, and culturing were conducted according to a new protocol.

**RESULTS:**

During a follow-up of 5 months, the patient had no complications that could indicate rejection, and clinical symptoms completely resolved without requiring any drug supplementation.

**CONCLUSIONS:**

Here, we report a new method, enabling fast and cost-effective parathyroid allotransplant with maintained tissue viability sufficient to treat persistent hypocalcemia.

PMID: 25476143 [Makale sayfası](#)

# ADRENAL

## DERLEME

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1. [Neoplasia](#). 2014 Oct 23;16(10):868-73. doi: 10.1016/j.neo.2014.09.002. eCollection 2014. IF: 5.39

### **Adrenal medullary hyperplasia is a precursor lesion for pheochromocytoma in MEN2 syndrome.**

[Korpershoek E](#)<sup>1</sup>, [Petri BJ](#)<sup>2</sup>, [Post E](#)<sup>1</sup>, [van Eijck CH](#)<sup>3</sup>, [Oldenburg RA](#)<sup>4</sup>, [Belt EJ](#)<sup>3</sup>, [de Herder WW](#)<sup>5</sup>, [de Krijger RR](#)<sup>1</sup>, [Dinjens WN](#)<sup>1</sup>.

#### **Author information**

#### **Abstract**

Adrenal medullary hyperplasias (AMHs) are adrenal medullary proliferations with a size < 1 cm, while larger lesions are considered as pheochromocytoma (PCC). This arbitrary distinction has been proposed decades ago, although the biological relationship between AMH and PCC has never been investigated. Both lesions are frequently diagnosed in multiple endocrine neoplasia type 2 (MEN2) patients in whom they are considered as two unrelated clinical entities. In this study, we investigated the molecular relationship between AMH and PCC in MEN2 patients. Molecular aberrations of 19 AMHs and 13 PCCs from 18 MEN2 patients were determined by rearranged during transfection (RET) proto-oncogene mutation analysis and loss of heterozygosity (LOH) analysis for chromosomal regions 1p13, 1p36, 3p, and 3q, genomic areas covering commonly altered regions in RET-related PCC. Identical molecular aberrations were found in all AMHs and PCCs, at similar frequencies. LOH was seen for chromosomes 1p13 in 8 of 18 (44%), 1p36 in 9 of 15 (60%), 3p12-13 in 12 of 18 (67%), and 3q23-24 in 10 of 16 (63%) of AMHs, and for chromosome 1p13 in 13 of 13 (100%), 1p36 in 7 of 11 (64%), 3p12-13 in 4 of 11 (36%), and 3q23-24 in 11 of 12 (92%) of PCCs. Our results indicate that AMHs are not hyperplasias and, in clinical practice, should be regarded as PCCs, which has an impact on diagnosis and treatment of MEN2 patients. We therefore propose to replace the term AMH by micro-PCC to indicate adrenal medullary proliferations of less than 1 cm.

#### **KEYWORDS:**

AMH, adrenal medullary hyperplasia; Adrenal medullary hyperplasia; LOH, loss of heterozygosity; MEN2; MEN2, multiple endocrine neoplasia type 2; PCC, pheochromocytoma; RET, rearranged during transfection proto-oncogene; loss; molecular alterations; pheochromocytoma

PMID: 25379023 [Makale sayfası](#)

2. [Eur J Pediatr Surg](#). 2014 Dec;24(6):450-6. doi: 10.1055/s-0034-1396421. Epub 2014 Dec 8. IF:

0.97

### **Advances in the surgical treatment of neuroblastoma: a review.**

[Murphy JM](#)<sup>1</sup>, [La Quaglia MP](#)<sup>1</sup>.

#### **Author information**

#### **Abstract**

Neuroblastoma prognosis varies tremendously based on the stage and biologic features of the tumor. Treatment varies depending on the risk group and can range from surgery alone for stage 1 tumors to aggressive multimodality treatment for MYCN-amplified tumors. Although surgery plays a role in the diagnosis and management of all stages of neuroblastoma, the importance of that role, especially the

extent of resection, in high-risk neuroblastoma continues to evolve. In the past five years, there have been several advances in neuroblastoma surgery. Studies have demonstrated that patients with low-risk disease can be treated with surgery alone, and in a subset of patients who are neonatally diagnosed with adrenal tumors, surgery can be avoided in 80%. Recent abstracts have supported a role for >90% resection of the primary tumor in high-risk patients. This article also reviews the surgical approaches to difficult thoracic and abdominal tumors, as well as the role for minimally invasive surgery in the management of localized neuroblastoma.

Georg Thieme Verlag KG Stuttgart · New York.

PMID: 25486413 [Makale sayfası](#)

3. [J Visc Surg](#). 2014 Oct;151(5):355-64. doi: 10.1016/j.jviscsurg.2014.07.002. Epub 2014 Aug 13. **IF: 0.76**

## Management of adrenal incidentaloma.

[Menegaux F](#)<sup>1</sup>, [Chéreau N](#)<sup>2</sup>, [Peix JL](#)<sup>3</sup>, [Christou N](#)<sup>4</sup>, [Lifante JC](#)<sup>3</sup>, [Paladino NC](#)<sup>5</sup>, [Sebag F](#)<sup>5</sup>, [Ghander C](#)<sup>6</sup>, [Trésallet C](#)<sup>2</sup>, [Mathonnet M](#)<sup>4</sup>.

### Author information

#### **Abstract**

Improvements in medical imaging have resulted in the incidental discovery of many silent and unrecognized adrenal tumors. The term "adrenal incidentaloma" (AI) is applied to any adrenal mass  $\geq 1$  cm in its longest axis that is discovered incidentally during abdominal imaging that was not performed to specifically evaluate adrenal pathology. These incidentalomas may be either secretory or non-secretory, benign or malignant. Distinctive characteristics of these lesions must be determined by the clinician to determine appropriate management. Such distinctions are based on laboratory findings and imaging, principally CT with and without contrast injection. Investigations must be carefully chosen to avoid ordering unnecessary and expensive tests for too many patients while, at the same time, avoiding the risk of failing to diagnose a secreting malignant or tumor. These examinations will determine patient care: surgery or surveillance. When simple surveillance is chosen, specific criteria must be met with regard to diagnostic modalities (clinical, imaging, laboratory testing) and its duration.

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#### **KEYWORDS:**

Adrenal; Diagnosis; Incidentaloma; Treatment

PMID: 25127879 [Makale sayfası](#)

# ADRENAL

## PROSPEKTİF

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1. [Ann Surg](#). 2014 Nov;260(5):740-7; discussion 747-8. doi: 10.1097/SLA.0000000000000982. IF: 7.65

### **Randomized clinical trial of posterior retroperitoneoscopic adrenalectomy versus lateral transperitoneal laparoscopic adrenalectomy with a 5-year follow-up.**

[Barczyński M<sup>1</sup>](#), [Konturek A](#), [Nowak W](#).

[Author information](#)

**Abstract**

#### **OBJECTIVE:**

To test if posterior retroperitoneoscopic adrenalectomy (PRA) is superior to lateral transperitoneal laparoscopic adrenalectomy (LTLA).

#### **BACKGROUND:**

Most popular LTLA has been recently challenged by an increasing popularity of PRA, which is believed by many surgeons (not evidence-based) as superior to LTLA in the treatment of small and benign adrenal tumors.

#### **METHODS:**

Participants were assigned randomly to PRA or LTLA and followed for 5 years after surgery. The primary endpoint was the duration of surgery. Secondary endpoints were blood loss, conversion rate, postoperative recovery, morbidity, and costs.

#### **RESULTS:**

Sixty-five patients were included, of whom 61 (PRA 30, LTLA 31) completed the 5-year follow-up. The following differences were identified in favor of PRA vs LTLA: shorter duration of surgery (50.8 vs 77.3 minutes), lower intraoperative blood loss (52.7 vs 97.8 mL), diminished pain intensity within 48 hours postoperatively, lower prevalence of shoulder-tip pain (3.0% vs 37.5%), shorter time to oral intake (4.4 vs 7.3 hours), shorter time to ambulation (6.1 vs 11.5 hours), shorter length of hospital stay, and lower cost (1728 € vs 2315 €), respectively ( $P < 0.001$  for all). No differences were noted in conversion rate or morbidity except for herniation occurring more often after LTLA than PRA (16.1% vs 0%,  $P = 0.022$ ) and need for hernia repair (12.9% vs 0%,  $P = 0.050$ ), respectively.

#### **CONCLUSIONS:**

Both approaches were equally safe. However, outcomes of PRA operations were superior to LTLA in terms of shorter surgery duration, lower blood loss, lower postoperative pain, faster recovery, improved cost-effectiveness, and abolished risk of surgical access site herniation.

#### **REGISTRATION NUMBER:**

[NCT01959711](#) (<http://www.clinicaltrials.gov>).

PMID: 25243546 [Makale sayfası](#)

2. [World J Surg.](#) 2014 Dec 20. [Epub ahead of print] IF: 2.47

## Risk of Adrenocortical Carcinoma in Adrenal Tumours Greater than 8 cm.

[Abdel-Aziz TE](#)<sup>1</sup>, [Rajeev P](#), [Sadler G](#), [Weaver A](#), [Mihai R](#).

### Author information

#### Abstract

##### **BACKGROUND:**

Adrenocortical cancer (ACC) is a rare malignancy. In the absence of metastatic disease, the suspicion of ACC is based on size and radiological appearance. The aim of this study was to analyse the long-term outcome of patients with large adrenal cortical tumours (>8 cm).

##### **METHODS:**

A prospective database recorded clinical, biochemical, operative and histological data on patients operated for cortical adrenal tumours between January 2000 and February 2013. Out of 130 patients operated for cortical adrenal tumours, analysis was restricted to 37 cortical tumours >8 cm.

##### **RESULTS:**

There were 31 (84 %) ACCs and 6 (16 %) benign adenomas ( $p < 0.01$ ). The most common presentation was that of an abdominal mass [17 (55 %) vs. 3 (50 %), ACC vs. benign, respectively]. There was no difference in size between stage II and stage III-IV tumours; however, there was a trend for tumours to be heavier in advanced stages ( $920 \pm 756$  vs.  $1,435 \pm 1,022$  g,  $p = 0.08$ , stage II vs. stage III-IV, respectively). No mortality was observed in patients with benign tumours during a median follow-up of 70 months (range 36-99 months). Mortality in the ACC group occurred in 17/31 (55 %) patients. Mitotane was administered in 12 (71 %) patients with stage III-IV ACCs with a 5-year survival rate 25 % compared to 20 % in patients who did not receive Mitotane. In stage II ACC, eight (57 %) patients received Mitotane with a 50 % mortality at 5 years.

##### **CONCLUSIONS:**

The high incidence of ACC in cortical tumours >8 cm underlines the need for adequate surgical resection via open surgery aiming to avoid local recurrence. Beyond surgery, the impact of other therapies is not fully characterised and the efficacy of adjuvant Mitotane treatment is yet to be proven.

PMID: 25526921

# ADRENAL

## RETROSPEKTİF

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1. [J Clin Endocrinol Metab.](#) 2014 Dec;99(12):4462-70. doi: 10.1210/jc.2014-3007. IF: 7.02

### **Cortisol as a marker for increased mortality in patients with incidental adrenocortical adenomas.**

[Debono M<sup>1</sup>](#), [Bradburn M](#), [Bull M](#), [Harrison B](#), [Ross RJ](#), [Newell-Price J](#).

#### **Author information**

#### **Abstract**

#### **CONTEXT:**

Incidental benign adrenocortical adenomas, adrenal incidentalomas are found in 4.5% of abdominal computed tomography scans, with the incidence increasing to 10% in patients older than 70 years of age. These incidentalomas frequently show evidence of excess cortisol secretion but without overt Cushing's syndrome. The mortality rate is increased in Cushing's syndrome.

#### **OBJECTIVE:**

This study sought to investigate whether patients with adrenal incidentalomas have an increased mortality.

#### **DESIGN:**

This was a retrospective, longitudinal cohort study.

#### **SETTING:**

The study was carried out in an Endocrine Investigation Unit in a University Teaching Hospital.

#### **PATIENTS:**

Two hundred seventy-two consecutive patients with an incidental adrenal mass underwent a dedicated diagnostic protocol, which included dexamethasone testing for hypercortisolism between 2005 and 2013. Overall survival was assessed in 206 patients with a benign, adrenocortical adenoma.

#### **MAIN OUTCOME MEASURES:**

Survival analysis was carried out by using Kaplan-Meier curves and the effect of dexamethasone cortisol estimated by Cox-regression analysis. Cause-specific mortality was ascertained from death certificates and compared with local and national data.

#### **RESULTS:**

Eighteen of 206 patients died and the mean time (SD) from diagnosis to death was 3.2 (1.7) years. Seventeen of 18 patients who died had a post dexamethasone cortisol >1.8 µg/dL and there was a significant decrease in survival rate with increasing dexamethasone cortisol levels (P = .001). Compared with the <1.8 µg/dL group, the hazard ratio (95% confidence interval) for the 1.8-5µg/dL group was 12.0 (1.6-92.6) whereas that of the >5 µg/dL group was 22.0 (2.6-188.3). Fifty percent and 33% of deaths were secondary to circulatory or respiratory/infective causes, respectively.

#### **CONCLUSIONS:**

PATIENTS with adrenal incidentalomas and a post-dexamethasone serum cortisol >1.8 µg/dL have increased mortality, mainly related to cardiovascular disease and infection.

PMID: 25238207

[Makale sayfası](#)

2. [J Clin Endocrinol Metab.](#) 2014 Nov 18;jc20142998. [Epub ahead of print] IF: 7.02

## **Per-operative hemodynamic instability in normotensive patients with incidentally discovered pheochromocytomas.**

[Lafont M](#)<sup>1</sup>, [Fagour C](#), [Haissaguerre M](#), [Darancette G](#), [Wagner T](#), [Corcuff J](#), [Tabarin A](#).

### **Author information**

#### **Abstract**

Context: The per-operative hemodynamic behavior of normotensive incidentally discovered pheochromocytomas is poorly documented. Objective: To compare the per-operative hemodynamic instability and early post-operative outcome of normotensive pheochromocytomas, hypertensive pheochromocytomas, and benign non pheochromocytoma adrenal incidentalomas (AI). Design: Retrospective cohort treated in a single center. Patients and Methods: 50 patients (10 normotensive pheochromocytomas, 24 hypertensive pheochromocytomas and 16 AI) were anesthetized and operated on by the same team, using laparoscopy in 78% of cases. Before surgery, 60% of normotensive and 95.8% of hypertensive pheochromocytomas received pretreatment with alpha-receptor or calcium-channel blockers. All the patients received the same intraoperative hemodynamic monitoring, including continuous direct intra-arterial pressure recording. Results: All the features of hemodynamic instability, with the exception of the diastolic pressure nadir and fluid volume requirements, differed between hypertensive pheochromocytomas and AI. Conversely, all features of hemodynamic instability were similar in hypertensive and normotensive pheochromocytomas. More specifically, by comparison with AI, normotensive pheochromocytomas displayed higher maximal systolic pressure, more hypertensive, severe hypertensive and hypotensive episodes, and a higher minimal heart rate, and also required more interventions to treat undesirable blood pressure elevations. Post-operative complications, all of which were mild, were more frequent in hypertensive pheochromocytomas than in normotensive pheochromocytomas ( $p < 0.03$ ). Conclusions: Normotensive pheochromocytomas have roughly comparable per-operative hemodynamic instability hypertensive pheochromocytomas and differ markedly from non pheochromocytoma AI. It is therefore crucial to identify normotensive pheochromocytomas among adrenal incidentalomas when surgery is scheduled, and to apply the standard of care for pheochromocytoma anesthesia.

PMID: 25405501

3. [Surg Endosc.](#) 2014 Oct 11. [Epub ahead of print] IF: 3.65

## **Posterior retroperitoneoscopic versus laparoscopic adrenalectomy in sporadic and MENIIA pheochromocytomas.**

[Kiriakopoulos A](#)<sup>1</sup>, [Petralias A](#), [Linos D](#).

### **Author information**

#### **Abstract**

#### **INTRODUCTION:**

Retroperitoneal adrenalectomy (PRA) comprises an alternative approach in the management of adrenal tumors that has been set as the treatment of choice in our Institution. We assess the impact of PRA the management of hereditary and sporadic pheochromocytomas comparing its outcomes to the laparoscopic technique, in a case-controlled setting.

#### **PATIENTS AND METHODS:**

From May 2008 to January 2013, 17 patients [5 males and 12 females, mean age: 51 yrs (range 26-73)] with pheochromocytomas underwent PRA. Demographics, tumor characteristics, operative time, complications, hospital stay, and postoperative pain (based on VAS score at days 1 and 3) were compared to 17 selected laparoscopic patient controls [7 males and 10 females, mean age 49 yrs (range 25-64)].

## RESULTS:

17 patients, 11 with the sporadic form and 6 with MENIIA associated pheochromocytomas, comprised the retroperitoneoscopic group. 19 pheochromocytomas with a mean size 3.7 cm (range 1.7-7.0) at a mean operative time: 105.6 min (range 60-180) were accordingly excised. In the laparoscopic group, 13 patients had sporadic pheochromocytomas, whereas 4 patients had MENIIA syndrome. Mean tumor size of the laparoscopic series was 5.1 cm (range 1.7-8.5) at a mean operative time of 137 min (range 75-195). No mortality or conversions were encountered in both groups. No blood transfusions were needed. Mean visual analog scale pain scores were significantly lower for the retroperitoneoscopic group both on days 1 and 3 [0.94 (0-3) vs 4.15 (3-6),  $p < 0.001$  and 0.06 (0-1) vs 3.5 (2-6)  $p < 0.001$ ] respectively. Mean hospital stay for the patients of the retroperitoneoscopic group was significantly better than the laparoscopic group [(2.1  $\pm$  0.24 days vs 40  $\pm$  0.70 days)  $p < 0.001$ ].

## CONCLUSIONS:

Retroperitoneoscopic adrenalectomy is associated with excellent clinical results in the management of sporadic and hereditary pheochromocytomas. Moreover, it appears to be superior to the laparoscopic approach, because it is faster and affords the patient with less pain and shorter hospital stay.

PMID: 25303922

4. [Surg Endosc.](#) 2014 Oct;28(10):2911-9. doi: 10.1007/s00464-014-3553-3. Epub 2014 May 23. IF: 3.65

## Laparoendoscopic single-site adrenalectomy versus conventional laparoscopic adrenalectomy: a comparison of surgical outcomes and an analysis of a single surgeon's learning curve.

[Hirasawa Y](#)<sup>1</sup>, [Miyajima A](#), [Hattori S](#), [Miyashita K](#), [Kurihara I](#), [Shibata H](#), [Kikuchi E](#), [Nakagawa K](#), [Oya M](#).

### [Author information](#)

### Abstract

#### BACKGROUND:

Conventional laparoscopic adrenalectomy (LA) is the gold standard procedure for benign adrenal tumors. Laparoendoscopic single-site adrenalectomy (LESS-A) has been developed as an extension of standard laparoscopic minimally invasive procedures.

#### METHODS:

This retrospective study compared the first experience of one surgeon with 70 LESS-A to 140 LA cases with respect to evaluating the influence of the inexperience on surgical outcomes and to assess this surgeon's learning curve for LESS-A.

#### RESULTS:

Age, gender, BMI, percentage of patients with prior abdominal surgery, tumor laterality, and tumor size were all comparable between the two groups. There were no statistically significant differences in any surgical outcomes, including mean operative time, pneumoperitoneum time, estimated blood loss, transfusion requirements, hemoglobin decrease at postoperative day 1, analgesic requirements, postoperative day of oral intake, conversion rate, or morbidity between the two groups. The one exception was hospital stay. There were no mortalities or reoperations in either group. The morbidity rates in the LESS-A group and LA group were 4.2 and 6.4%, respectively ( $p = 0.528$ ). LESS-A appears to have a steep learning curve and the operative time of the initial 70 cases decreased markedly and remained stable when the experience level exceeded 12 cases. There was no morbidity or conversion in these first 12 LESS-A cases. Multiple regression analysis revealed that surgeon experience ( $p = 0.008$ ) and tumor size ( $p = 0.001$ ) were independent predictors of prolonged operative time.

## CONCLUSIONS:

Surgical outcomes of LESS-A were equivalent to those of LA without compromising safety. The introduction of LESS-A at our hospital was smooth and safe. While the indication for LESS-A has been controversial, LESS-A was a useful procedure, especially for cases in which cosmesis is of paramount importance.

PMID: 24853845 [Makale sayfası](#)

5. [Urol Oncol.](#) 2015 Jan;33(1):22.e23-7. doi: 10.1016/j.urolonc.2014.08.014. Epub 2014 Oct 7. IF: 3.36

## Preoperative cross-sectional imaging allows for avoidance of unnecessary adrenalectomy during RCC surgery.

[Blakely S<sup>1</sup>](#), [Bratslavsky G<sup>2</sup>](#), [Zaytoun O<sup>1</sup>](#), [Daugherty M<sup>1</sup>](#), [Landas SK<sup>3</sup>](#), [Shapiro O<sup>1</sup>](#).

### [Author information](#)

### Abstract

#### OBJECTIVES:

To assess the frequency of adrenal involvement and the reliability of preoperative imaging to predict adrenal involvement in patients treated for cortical renal masses at a single institution.

#### METHODS:

Using a retrospective pathology database, we identified 117 consecutive patients who underwent radical nephrectomy and concomitant ipsilateral adrenalectomy at our institution over the course of 2 decades. Patient demographics, tumor characteristics, and radiographic results were obtained for analysis.

#### RESULTS:

Of 117 patients, only 6 (5.1%) were identified as having adrenal involvement. The average age of the patient was 58.3 years, and the average tumor size was 7.13cm. The mean tumor size in patients without adrenal involvement was 6.79cm, whereas in those with adrenal involvement, it was 9.62cm ( $P = 0.057$ ). Of 6 patients with adrenal involvement, 5 had imaging studies available for review, and all 5 demonstrated suspicion for adrenal involvement preoperatively. Among 111 patients without adrenal involvement, 53 (47.7%) had imaging available for review, with only 3 (5.7%) demonstrating suspicion for adrenal involvement. The negative predictive value was 100%, whereas the sensitivity and specificity were 100% and 94.3%, respectively.

#### CONCLUSIONS:

Ipsilateral adrenal involvement in renal cell carcinoma is uncommon and reliably predicted by preoperative cross-sectional imaging. Among all adrenalectomies in this series, nearly 95% were performed unnecessarily. With careful review, preoperative imaging can help avoid unnecessary adrenalectomy during radical nephrectomy in patients with renal cortical tumors.

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#### KEYWORDS:

Adrenal preservation; Adrenalectomy; Radical nephrectomy; Renal cell carcinoma

PMID: 25304287 [Makale sayfası](#)

## A new risk stratification algorithm for the management of patients with adrenal incidentalomas.

[Birsen O](#)<sup>1</sup>, [Akyuz M](#)<sup>1</sup>, [Dural C](#)<sup>1</sup>, [Aksoy E](#)<sup>1</sup>, [Aliyev S](#)<sup>1</sup>, [Mitchell J](#)<sup>1</sup>, [Siperstein A](#)<sup>1</sup>, [Berber E](#)<sup>2</sup>.

### [Author information](#)

### **Abstract**

#### **BACKGROUND:**

Although adrenal incidentalomas (AI) are detected in  $\leq 5\%$  of patients undergoing chest and abdominal computed tomography (CT), their management is challenging. The current guidelines include recommendations from the National Institutes of Health, the American Association of Endocrine Surgeons (AAES), and the American Association for Cancer Education (AACE). The aim of this study was to develop a new risk stratification model and compare its performance against the existing guidelines for managing AI.

#### **METHODS:**

A risk stratification model was designed by assigning points for adrenal size (1, 2, or 3 points for tumors  $< 4$ , 4-6, or  $> 6$  cm, respectively) and Hounsfield unit (HU) density on noncontrast CT (1, 2, or 3 points for HU  $< 10$ , 10-20, or  $> 20$ , respectively). This model was applied retrospectively to 157 patients with AI managed in an endocrine surgery clinic to assign a score to each tumor. The utility of this model versus the AAES/AACE guidelines was assessed.

#### **RESULTS:**

Of the 157 patients, 54 (34%), had tumors  $< 4$  cm with HU  $< 10$  (a score of 2). One third of these were hormonally active on biochemical workup and underwent adrenalectomy. The remaining two thirds were nonsecretory lesions and have been followed conservatively with annual testing. In 103 patients (66%), the adrenal mass was  $> 4$  cm and/or had indeterminate features on noncontrast CT (HU  $> 10$ , irregular borders, heterogeneity), and adrenalectomy was performed after hormonal evaluation was completed (10 were hormonally active on biochemical testing). Seven of these patients (7%) had adrenocortical cancer on final pathology with tumor size  $< 4$  cm in 0, 4-6 cm in 1, and  $> 6$  cm in 5 patients. Of the hormonally inactive patients, 32% had a score of 3, 38% 4, and 30% 5 or 6. The incidence of adrenocortical cancer in these subgroups was 0, 0, and 25%, respectively.

#### **CONCLUSION:**

This study shows that an algorithm that utilizes the hormonal activity at the first decision step followed by a consolidated risk stratification, based on tumor size and HU density, has a potential to spare a substantial number of patients from unnecessary "diagnostic" surgery for AI.

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### **Comment in**

- [Discussion](#). [Surgery. 2014]

7. [Surgery](#). 2014 Dec;156(6):1378-86. doi: 10.1016/j.surg.2014.08.018. Epub 2014 Nov 11. IF: 3.19

## **A novel staging system for adrenocortical carcinoma better predicts survival in patients with stage I/II disease.**

[Asare EA](#)<sup>1</sup>, [Wang TS](#)<sup>2</sup>, [Winchester DP](#)<sup>3</sup>, [Mallin K](#)<sup>3</sup>, [Kebebew E](#)<sup>4</sup>, [Sturgeon C](#)<sup>5</sup>.

### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Current American Joint Committee on Cancer/International Union against Cancer (AJCC/UICC) and European Network for the Study of Adrenal Tumors staging for adrenocortical carcinoma (ACC) have not shown a survival difference between patients with stage I/II disease. This study evaluates current staging systems for survival prediction using a larger cohort and assesses whether incorporating age into ACC staging improves survival predictions.

#### **METHODS:**

Patients in the National Cancer Data Base (1985-2006) with a diagnosis of ACC were identified and staged using a novel TNM-A staging system: Stage I (T1/T2N0M0, age ≤55), stage II (T1/T2N0M0, age >55), stage III (T1/T2N1M0 or T3/T4N0-N1M0, any age), or stage IV (any T any NM1, any age). Differences in overall survival (OS) by stage were compared using a Cox proportional hazards model.

#### **RESULTS:**

Staging was derived for 1,579 of 3,262 patients. Median age was 54 years; mean tumor size was 11.6 cm. Using current staging, differences in 5-year OS was observed only between patients with stages II/III and III/IV ACC. With TNM-A staging, differences in 5-year OS between all stages was significant (I/II [P < .003], II/III [P < .0001], III/IV [P < .0001]).

#### **CONCLUSION:**

A staging system that incorporates patient age better predicts 5-year OS among patients with stages I/II ACC. Consideration should be given to including age in staging for ACC, because it may better inform providers about treatment and prognosis.

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PMID: 25456914 [Makale sayfası](#)

8. [Am J Surg](#). 2014 Oct;208(4):619-25. doi: 10.1016/j.amjsurg.2014.06.002. Epub 2014 Jul 25. IF: 2.39

## **Influence of adrenal pathology on perioperative outcomes: a multi-institutional analysis.**

[Kiernan CM](#)<sup>1</sup>, [Shinall MC Jr](#)<sup>2</sup>, [Mendez W](#)<sup>3</sup>, [Peters MF](#)<sup>4</sup>, [Broome JT](#)<sup>5</sup>, [Solorzano CC](#)<sup>5</sup>.

### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Endoscopic or open adrenalectomies are performed for variable pathologies. We investigated if adrenal pathology affects perioperative outcomes independent of operative approach.

#### **METHODS:**

A multi-institutional retrospective review of 345 adrenalectomies was performed. A multivariate analysis was utilized.

#### **RESULTS:**

Pathology groups included benign non-pheochromocytoma tumors (50.4%), pheochromocytomas (41%), adrenocortical carcinomas (5.2%), and metastatic tumors (3.4%). Controlling for age, body mass index, tumor size, procedure type, and pathology, pheochromocytomas exhibited greater blood loss (92 mL more,  $P = .007$ ) and operative times (33 min more,  $P < .001$ ) than benign non-pheochromocytoma tumors. Metastatic tumors demonstrated longer operative times (53 min more,  $P = .013$ ). Open adrenalectomy was associated with greater blood loss (396 mL more,  $P = .001$ ), transfusion requirement ( $P = .021$ ), operative times (79 min more,  $P < .001$ ), hospital stay (6.6 days more,  $P < .001$ ) and complications ( $P < .001$ ) when compared with endoscopic adrenalectomy.

#### CONCLUSIONS:

The type of adrenal pathology appears to influence blood loss and operative time but not complications in patients undergoing adrenalectomy. Open adrenalectomy remains a major driver of adverse perioperative outcomes.

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#### KEYWORDS:

Adrenalectomy; Adrenocortical carcinoma; Metastatic adrenal lesions; Outcomes; Pheochromocytoma

PMID: 25129428 [Makale sayfası](#)

9. [Int J Surg](#). 2014 Nov 22;13C:23-26. doi: 10.1016/j.ijso.2014.11.023. [Epub ahead of print] IF: 1.73

## Cystic adrenal lesions: Clinical and surgical management. The experience of a referral centre.

[Cavallaro G](#)<sup>1</sup>, [Crocetti D](#)<sup>2</sup>, [Paliotta A](#)<sup>2</sup>, [De Gori A](#)<sup>2</sup>, [Tarallo MR](#)<sup>2</sup>, [Letizia C](#)<sup>3</sup>, [De Toma G](#)<sup>2</sup>.

#### Author information

#### Abstract

Background: Cystic adrenal lesions (CALs) represent a rare entity having heterogeneity in etiology and clinical manifestations. Due to their very low incidence and heterogeneity in clinical aspects, many controversies still exist about their management. Methods: From 1984 to 2012, 21 patients (7 M, 14 F, mean age 48.2 years) underwent adrenalectomy for CALs. 9 patients suffered from hypertension, and 7 were affected by thyroid disorders. Results: 4 patients presented with vague abdominal pain, while in 17 patients the CAL was incidentally identified during imaging examinations. All patients underwent evaluation of adrenal functionality and imaging study. We found 1 case of cystic pheochromocytoma (confirmed by urinary and blood sampling, and MIBG-scan). All patients underwent adrenalectomy (open approach in the first 10 patients treated from 1984 to 1996, laparoscopic lateral transabdominal approach in the other 11 cases). Indication to surgery included: size over 4.5 cm in 16 cases, suspected malignancy at imaging evaluation (not confirmed by histology) in 4 cases, cystic pheochromocytoma in 1 case. Histology revealed 11 endothelial cysts, 3 pseudocysts, 6 epithelial cysts and 1 cystic pheochromocytoma. Conclusions: The presence of CAL, even asymptomatic, requires complete endocrinological evaluation and imaging study. In the presence of large size, endocrine activity or any suspicion of malignancy, patients must be referred to surgery.

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#### KEYWORDS:

Adrenal cysts; Adrenal tumors; Adrenalectomy

PMID: 25447606 [Makale sayfası](#)

10. [J Endocrinol Invest](#). 2014 Dec 13. [Epub ahead of print] IF: 1.55

## **Incidental ganglioneuromas: a presentation of 14 surgical cases and literature review.**

[Spinelli C](#)<sup>1</sup>, [Rossi L](#), [Barbetta A](#), [Ugolini C](#), [Strambi S](#).

[Author information](#)

**Abstract**

### **BACKGROUND AND AIMS:**

Ganglioneuromas are benign tumors which originate from the neural crest. This tumor affects mainly young patients rather than adult ones, and its most frequent localizations are mediastinum, retroperitoneum, adrenal glands and cervical region. Usually, ganglioneuromas are discovered as incidentalomas since they are often asymptomatic, even if they could present sympathetic or mass-related symptoms. To obtain a definitive diagnosis, histological exam is necessary since CT scan and MRI are not capable of distinguishing ganglioneuromas from other tumors, such as neuroblastomas or pheochromocytomas. The surgical excision is the chosen treatment and it offers an excellent prognosis.

### **METHODS:**

We conducted a retrospective analysis of our cases of ganglioneuroma from 2004 to 2014; this study aims to compare our experience with literature review (2000-2014). Data about patients' features, tumor localization, symptoms, treatment and follow-up were analyzed and reported in detailed tables.

### **RESULTS:**

Between 2004 and 2014 we treated 14 patients affected by ganglioneuroma. For all of them the diagnosis was incidental; 9 out of 12 (64.3 %) patients presented an adrenal mass; in 2 patients (14.3 %) the tumor was localized in cervical region; in other 2 patients (14.3 %) the tumor was in the retroperitoneum and one patient (7.1 %) presented a ganglioneuroma in the costo-vertebral space. All our patients underwent surgical removal and none of them present surgery-related complications or recurrences to date.

### **CONCLUSIONS:**

Our data widen the knowledge about ganglioneuroma and confirm that the surgical approach has an excellent prognosis with very low incidence of surgery-related complications and recurrences.

PMID: 25501841

11. [Int Urol Nephrol](#). 2015 Jan;47(1):59-67. doi: 10.1007/s11255-014-0841-8. Epub 2014 Oct 11. IF: 1.43

## **Effectiveness of partial adrenalectomy for concomitant hypertension in patients with nonfunctional adrenaladenoma.**

[Xu T](#)<sup>1</sup>, [Xia L](#), [Wang X](#), [Zhang X](#), [Zhong S](#), [Qin L](#), [Zhang X](#), [Zhu Y](#), [Shen Z](#).

[Author information](#)

**Abstract**

### **OBJECTIVE:**

To evaluate the effect of adrenal surgery on blood pressure (BP) in patients with both nonfunctional adrenal adenoma (NFA) and hypertension and to assess factors affecting hypertension outcomes after surgery.

### **METHODS:**

Nonfunctional adrenal adenoma patients with hypertension who were treated with or without adrenal surgery at our center during 2005-2011 were retrospectively studied. Clinical characteristics were collected, and changes in BP were evaluated and compared at 2 year after discharge. Factors predicting favorable hypertension outcomes after surgery were determined using logistic regression.

## RESULTS:

A total of 186 patients, including 77 surgically treated cases, were eligible for this study. Retroperitoneoscopic procedure was mostly adopted, and partial adrenalectomy was performed in 69 patients. At 2 year postoperatively, both systolic and diastolic pressure levels of the surgery group decreased significantly (162.9/97.6 vs. 146.9/88.2 mmHg), with 27 (35 %) patients cured and 26 (31 %) improved. In contrast, BP levels of conservatively treated patients remained relatively stable (159.9/96.8 vs. 161.9/97.4 mmHg) after 2 years. Multivariate logistic regression analyses showed hypertension duration <6 years was the only independent factor associated with favorable hypertension outcomes after surgery, which predicted complete cure as well as response to surgical intervention.

## CONCLUSION:

Early partial adrenalectomy substantially cures or improves concomitant hypertension in most patients with NFA. Prospective studies should be performed of large cohorts to construct ideal clinical guidelines for NFA patients at cardiometabolic risk.

PMID: 25305227 [Makale sayfası](#)

12. [Am Surg](#). 2014 Nov;80(11):1152-8. IF: 0.89

## Adrenalectomy for adrenal-mediated hypertension: National Surgical Quality Improvement Program analysis of an institutional experience.

[Shada AL](#)<sup>1</sup>, [Stokes JB](#), [Turrentine FE](#), [Simpson VB](#), [Padia SH](#), [Carey RM](#), [Hanks JB](#), [Smith PW](#).  
[Author information](#)

### Abstract

Adrenal-mediated hypertension (AMH) has been increasingly treated by laparoscopic adrenalectomy (LA). Metabolic derangements in patients with AMH could result in perioperative complications and mortality. Long-term operative and clinical outcomes after laparoscopic treatment of AMH have not been evaluated using large clinical databases. The institutional National Surgical Quality Improvement Program (NSQIP) data for patients undergoing adrenalectomy for AMH between 2002 and 2012 were reviewed. Patient demographics, perioperative variables, and outcomes were analyzed and compared with national NSQIP adrenalectomy data. Improvement in AMH was recorded when discontinuation or reduction of antihypertensive medication occurred or with a decrease of blood pressure on the preoperative antihypertensive regimen. Ninety-four patients underwent adrenalectomy. There were 48 patients with pheochromocytoma (PHE) and 46 patients with aldosterone-producing adenoma (APA). Eighty-five patients (90%) were taking antihypertensive medications preoperatively compared with 36 patients (38%) postoperatively ( $P < 0.0001$ ). Patients with PHE were more likely to discontinue all medications compared with the patients with APA (80 vs 20%, respectively,  $P < 0.0001$ ). Patients with PHE and APA, respectively, took an average of 2.0 and 3.2 antihypertensive medications preoperatively compared with 0.3 and 1.2 postoperatively. There were no conversions to open procedures or 30-day mortality. Our results were 0 per cent for cerebral vascular accident, 0 per cent for myocardial infarction, and 0.5 per cent for transfusions compared with the national NSQIP data of 0.2, 0, and 6.7 per cent, respectively. Patients presenting with significant AMH including PHE and APA can be effectively and safely treated with LA with minimal complications and with a significant number of patients eliminating or decreasing their need for antihypertensive medications.

PMID: 25347508

13. [Asian J Surg](#). 2014 Nov 3. pii: S1015-9584(14)00085-2. doi: 10.1016/j.asjsur.2014.09.003. [Epub ahead of print] IF: 0.75

## Laparoscopic adrenalectomy for adrenal tumors: A 21-year single-institution experience.

[Hirano D](#)<sup>1</sup>, [Hasegawa R](#)<sup>2</sup>, [Igarashi T](#)<sup>3</sup>, [Satoh K](#)<sup>3</sup>, [Mochida J](#)<sup>3</sup>, [Takahashi S](#)<sup>3</sup>, [Yoshida T](#)<sup>4</sup>, [Saitoh T](#)<sup>5</sup>, [Kiyotaki S](#)<sup>6</sup>, [Okada K](#)<sup>7</sup>.

### [Author information](#)

#### Abstract

#### OBJECTIVE:

We have performed laparoscopic adrenalectomy including retroperitoneoscopic adrenalectomy via a single large port (RASLP) and conventional laparoscopic adrenalectomy (CLA) for adrenal tumors since 1992, and report our experience to date.

#### METHODS:

The study population consisted of 134 patients who underwent laparoscopic adrenalectomy from 1992 to 2012. Fifty-eight patients (18 aldosterone-producing adenomas, 13 adenomas with Cushing's syndrome, 1 adenoma with preclinical Cushing's syndrome, and 26 nonfunctioning tumors) were treated using RASLP, and 76 patients (33 aldosterone-producing adenomas, 17 adenomas with Cushing's syndrome, 6 adenomas with preclinical Cushing's syndrome, 17 pheochromocytomas, and 3 nonfunctioning tumors) were treated using CLA. Complications were graded according to the modified Clavien system.

#### RESULTS:

The majority of RASLPs were performed during the 1990s, whereas all patients underwent CLA after 2000. The mean operation times (166 vs. 205 minutes,  $p < 0.01$ ) and intraoperative estimated blood loss (85 vs. 247 mL,  $p < 0.01$ ) were significantly lower in the CLA group. Conversion to open surgery was required in three patients (5%) in the RASLP group and five patients (7%) in the CLA group ( $p = 0.73$ ). Postoperative complications were grade 1 in three patients and grades 4 and 5 in one patient each in the RASLP group, whereas grade 2 in one patient was observed in the CLA group ( $p = 0.085$ ).

#### CONCLUSION:

Although this study included biases such as different eras and indications, CLA resulted in decreased operative times, blood loss, and postoperative complications compared with RASLP. CLA has so far become our preferred procedure for patients with adrenal tumor in our experience.

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#### KEYWORDS:

adrenal tumor; laparoendoscopic single-site surgery; laparoscopic adrenalectomy; minimally invasive surgery

PMID: 25451632 [Makale sayfası](#)

# ADRENAL

## VAKA SUNUMU

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1. [J Clin Endocrinol Metab](#). 2014 Dec;99(12):E2681-5. doi: 10.1210/jc.2014-1975. IF: 7.02

### **Peritoneal implantation of pheochromocytoma following tumor capsule rupture during surgery.**

[Rafat C](#)<sup>1</sup>, [Zinzindohoue F](#), [Hernigou A](#), [Hignette C](#), [Favier J](#), [Tenenbaum F](#), [Gimenez-Roqueplo AP](#), [Plouin PF](#), [Amar L](#).

#### **Author information**

#### **Abstract**

##### **CONTEXT:**

Patients with pheochromocytoma (PH) or paraganglioma (PGL) may suffer from tumor persistence or recurrence after resection of the primary tumor. Malignancy and genetic determinants account for the vast majority of these cases, but tumor recurrence or persistence may also arise from tumor spillage during primary resection, followed by peritoneal implantation. We report here five such cases.

##### **MATERIALS AND METHODS:**

Thirty-nine of the 181 patients referred to our unit for a PH experienced tumor persistence or recurrence as a result of malignant disease (n = 12), new PGL in a context of genetic determinants (n = 18) or incomplete primary surgical resection (n = 4). Another five patients presenting with adrenal PH could not be categorized into these three groups.

##### **RESULTS AND DISCUSSION:**

All five patients (age range 45-63 years) presented evidence of tumor capsule rupture documented upon macroscopic examination or in the surgical report. Initial diagnostic examinations provided no evidence of malignancy. All had a period of apparent remission, lasting from 24 to 106 months. The principal site of recurrence was invariably the peritoneum or the retroperitoneum. Two patients suffered solid organ metastasis, involving the liver (n = 2), bones (n = 1), and lung (n = 1). Therapeutic management involved a combination of (131)I-metaiodobenzylguanidine therapy and surgery. Two patients died due to tumor progression. One patient experienced tumor progression despite surgery. Two patients are currently in a satisfactory condition.

##### **CONCLUSION:**

Tumor rupture during surgical resection, with subsequent peritoneal and retroperitoneal dissemination, is a potentially lethal complication of primary pheochromocytoma resection. Even in cases of apparently benign disease, it may lead to peritoneal carcinomatosis and metastatic disease. Complete primary surgery is, therefore, crucial for a good prognosis in PH patients. Furthermore, in cases of tumor rupture, careful follow-up is mandatory, because recurrences may occur after long periods of apparent remission.

PMID: 25188716

[Makale sayfası](#)

2. [BMJ Case Rep.](#) 2014 Dec 22;2014. pii: bcr2014206962. doi: 10.1136/bcr-2014-206962. IF: 3.71

## **Postsurgical large adrenal cyst recurrence: treatment by means of percutaneous alcohol ablation.**

[Hatzidakis A](#)<sup>1</sup>, [Kozana A](#)<sup>1</sup>, [Petrakis I](#)<sup>1</sup>, [Mamoulakis C](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

We describe a case of a 28-year-old man who presented with symptomatic, right-sided, large adrenal cyst recurrence 9 months after laparoscopic decortication. Final treatment was achieved by means of percutaneous aspiration and ethanol ablation. On 6-month follow-up the patient was asymptomatic and the cyst remained minimised. In our opinion, percutaneous treatment with alcohol ablation of primary benign symptomatic or recurrent uncomplicated adrenal cysts should be considered as an effective alternative method when patients are frail or surgery fails to resolve the problem.

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PMID: 25535227 [Makale sayfası](#)

3. [Int Surg.](#) 2014 Nov-Dec;99(6):819-23. doi: 10.9738/INTSURG-D-14-00087.1. IF: 1.73

## **Bouveret's Syndrome: An Overlooked Diagnosis. A Case Report and Review of Literature.**

[Qasaimh GR](#)<sup>1</sup>, [Bakkar S](#), [Jadallah K](#).

### **Author information**

#### **Abstract**

Abstract Bouveret's syndrome is a rare cause of gastric outlet obstruction. Its diagnosis is often delayed or overlooked. It is characterized by the passage of a large gall bladder stone through a bilio-duodenal fistula, which becomes lodged in the duodenum causing duodenal obstruction. We report the case of a 70-year-old male with a history suggestive of gall bladder disease over a 1-year period. The diagnosis was confirmed by ultrasound, which showed a single large gall bladder stone and the patient was planned for elective laparoscopic cholecystectomy. One week prior to the elective surgery he presented with upper gastrointestinal bleeding for which he was admitted, diagnosed by a gastroenterologist as bleeding duodenal ulcer and treated by local epinephrine injection and blood transfusion. One week later he presented with a picture of acute gastric outlet obstruction, which proved by endoscopy to be due to a large stone impacted in the duodenum. Endoscopic management failed and the stone was managed by open surgery. The patient made a good postoperative recovery and for the last year he has remained free of symptoms.

#### **KEYWORDS:**

Bouveret's syndrome; Gallstone ileus; Gastric outlet obstruction

PMID: 25437593 [Makale sayfası](#)

4. [Int J Surg Case Rep.](#) 2014 Dec 5;6C:150-153. doi: 10.1016/j.ijscr.2014.12.002. [Epub ahead of print] IF: 1.65

## **Intraoperative near-infrared fluorescence imaging of a paraganglioma using methylene blue: A case report.**

[Tummers QR](#)<sup>1</sup>, [Boonstra MC](#)<sup>1</sup>, [Frangioni JV](#)<sup>2</sup>, [van de Velde CJ](#)<sup>1</sup>, [Vahrmeijer AL](#)<sup>3</sup>, [Bonsing BA](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

#### **INTRODUCTION:**

Intraoperative identification of tumors can be challenging. Near-infrared (NIR) fluorescence imaging is an innovative technique that can assist in intraoperative identification of tumors, which may otherwise be undetectable.

#### **PRESENTATION OF CASE:**

A 19-year-old patient with symptoms, normetanephrine levels and radiological findings suspicious for a paraganglioma, a rare tumor arising from extra-adrenal chromaffin cells within the sympathetic nervous system, is presented. Intraoperative NIR fluorescence imaging using intravenous administration of methylene blue (MB) assisted in intraoperative detection of the tumor, and even identified a smaller second lesion, which was not identified during surgery by visual inspection.

#### **DISCUSSION:**

Although the exact mechanism of MB accumulation in neuroendocrine tumors is unclear, it is described in both preclinical and clinical studies.

#### **CONCLUSION:**

In this report, we describe the first case of intraoperative NIR fluorescence imaging of a paraganglioma using MB, which identified an otherwise undetectable lesion.

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#### **KEYWORDS:**

Image-guided surgery; Methylene blue; Near-infrared fluorescence imaging; Neuroendocrine tumor; Paraganglioma

PMID: 25541370 [Makale sayfası](#)

5. [Case Rep Endocrinol.](#) 2014;2014:283458. doi: 10.1155/2014/283458. Epub 2014 Dec 3. IF: 1.01

## **A Pregnant Woman Who Underwent Laparoscopic Adrenalectomy due to Cushing's Syndrome.**

[Diri H](#)<sup>1</sup>, [Bayram F](#)<sup>1</sup>, [Simsek Y](#)<sup>1</sup>, [Ozkan Y](#)<sup>2</sup>, [Akcan A](#)<sup>3</sup>, [Karahan I](#)<sup>4</sup>, [Ileri I](#)<sup>5</sup>, [Aribas S](#)<sup>1</sup>, [Koc MS](#)<sup>1</sup>.

### **Author information**

#### **Abstract**

Cushing's syndrome (CS) may lead to severe maternal and fetal morbidities and even mortalities in pregnancy. However, pregnancy complicates the diagnosis and treatment of CS. This study describes a 26-year-old pregnant woman admitted with hypertension-induced headache. Hormonal analyses performed due to her cushingoid phenotype revealed a diagnosis of adrenocorticotrophic hormone- (ACTH-) independent CS. MRI showed a 3.5 cm adenoma in her right adrenal gland. After preoperative metyrapone therapy, she underwent a successful unilateral laparoscopic adrenalectomy at 14-week gestation. Although she had a temporary postoperative adrenal insufficiency, hormonal analyses showed that she has been in remission since delivery. Findings in this patient, as well as those in previous patients, indicate that pregnancy is not an absolute contraindication for laparoscopic adrenalectomy. Rather, such surgery should

be considered a safe and efficient treatment method for pregnant women with cortisol-secreting adrenal adenomas.

PMID: 25544906

[Makale sayfası](#)

# NET

## DERLEME

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1. [Annu Rev Med.](#) 2014 Oct 17. [Epub ahead of print] **IF: 15.47**

### **A Tale of Two Tumors: Treating Pancreatic and Extrapancreatic Neuroendocrine Tumors.**

[Halperin DM](#)<sup>1</sup>, [Kulke MH](#), [Yao JC](#).

#### Author information

- <sup>1</sup>Department of Gastrointestinal Medical Oncology, University of Texas MD Anderson Cancer Center, Houston, TX 77030; email: dmhalperin@mdanderson.org.

#### **Abstract**

Despite their perceived rarity, gastroenteropancreatic neuroendocrine tumors (GEP-NETs) are rising in incidence and prevalence. The biology, natural history, and therapeutic options for GEP-NETs are heterogeneous: NETs arising in the pancreas can be distinguished from those arising elsewhere in the gastrointestinal tract, and therapy is dichotomized between these two groups. Somatostatin analogues are the mainstay of oncologic management of bowel NETs; everolimus, streptozocin, and sunitinib are approved to treat pancreatic NETs. There are significant differences in molecular genetics between pancreatic and extrapancreatic NETs, and studies are evaluating whether additional NET patients may benefit from targeted agents. We discuss the distinguishing features of these two groups of tumors, as well as the therapeutic implications of the distinction. We also [examine] the evolving therapeutic landscape and discuss the likelihood that treatment will be developed independently for pancreatic and extrapancreatic gastrointestinal NETs, with novel therapeutics effective for newly identified pathologically or molecularly defined subgroups. Expected final online publication date for the Annual Review of Medicine Volume 66 is January 14, 2015. Please see <http://www.annualreviews.org/catalog/pubdates.aspx> for revised estimates.

PMID: 25341008

2. [Eur J Endocrinol.](#) 2014 Oct;171(4):R153-62. doi: 10.1530/EJE-14-0173. Epub 2014 Jun 11. **IF: 4.08**

### **GEP-NETS update: a review on surgery of gastro-entero-pancreatic neuroendocrine tumors.**

[Partelli S](#)<sup>1</sup>, [Maurizi A](#)<sup>1</sup>, [Tamburrino D](#)<sup>1</sup>, [Baldoni A](#)<sup>1</sup>, [Polenta V](#)<sup>1</sup>, [Crippa S](#)<sup>1</sup>, [Falconi M](#)<sup>2</sup>.

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#### **Abstract**

The incidence of neuroendocrine tumors (NETs) has increased in the last decades. Surgical treatment encompasses a panel of approaches ranging from conservative procedures to extended surgical resection. Tumor size and localization usually represent the main drivers in the choice of the most appropriate surgical resection. In the presence of small (<2cm) and asymptomatic nonfunctioning NETs, a conservative treatment is usually recommended. For localized NETs measuring above 2cm, surgical resection represents the cornerstone in the management of these tumors. As they are relatively biologically indolent, an extended resection is often justified also in the presence of advanced NETs. Surgical options for NET liver metastases range from limited resection up to liver transplantation. Surgical choices for metastatic NETs need to consider the extent of disease, the grade of tumor, and the presence of extra-abdominal disease. Any surgical procedures should always be balanced with the benefit of survival or relieving symptoms and patients' comorbidities.

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PMID: 24920289 [Makale sayfası](#)

3. [Eur J Endocrinol](#). 2014 Nov 10. pii: EJE-14-0630. [Epub ahead of print] **IF:3.64**

## **GEP-NETS update: Interventional radiology : Role in the treatment of liver metastases from GEP-NET tumors.**

[De Baere T](#)<sup>1</sup>, [Deschamps F](#)<sup>2</sup>, [Tselikas L](#)<sup>3</sup>, [Berdelou A](#)<sup>4</sup>, [Ducreux M](#)<sup>5</sup>, [Pearson E](#)<sup>6</sup>, [Leboulleux S](#)<sup>7</sup>, [Elias D](#)<sup>8</sup>, [Baudin E](#)<sup>9</sup>.

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- <sup>1</sup>T De Baere, Image guided therapy, Gustave Roussy, VILLEJUIF, 94805, France  
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- <sup>4</sup>A Berdelou, Médecine Nucléaire et Cancérologie Endocrinienne, Gustave Roussy, Villejuif, France.
- <sup>5</sup>M Ducreux, Medical Oncology, Gustave Roussy, Villejuif, France.
- <sup>6</sup>E Pearson, Image Guided Therapy, Gustave Roussy, Villejuif, France.
- <sup>7</sup>S Leboulleux, Médecine Nucléaire et Cancérologie Endocrinienne, Gustave Roussy, Villejuif, France.
- <sup>8</sup>D Elias, Oncologic Surgery, Gustave Roussy, Villejuif, France.
- <sup>9</sup>E Baudin, Endocrinology, Gustave Roussy, VILLEJUIF, 94805 cedex, France.

### **Abstract**

Neuroendocrine tumors from gastro-pancreatic origin (GEP-NET) can be responsible for liver metastases. Such metastases can be the dominant part of the disease as well due to the tumor burden itself or the symptoms related to such liver metastases. Intra-arterial therapies are commonly used in liver only or liver dominant disease and encompass transarterial chemoembolization (TACE), transarterial embolization (TAE) and radioembolization. TACE performed with drug emulsified in Lipiodol has been used for the past 20 years with reported overall survival in the range of 3 to 4 years, with objective response up to 75%. Response to TACE is higher when treatment is used as a first line therapy and degree of liver involvement is lower. Benefit of TACE over TAE is unproven in randomized study, but reported in retrospective studies namely in pancreatic NET. Radioembolization provides early interesting results that need to be further evaluated in terms of benefit and toxicity. Radiofrequency ablation allows control of small size and numbered liver metastases, with low invasiveness. Ideal metastases to target with are 1 metastasis less than 5 cm, or 3 metastases less than 3 cm, or a sum of diameter of all metastases below 8 cm. Ablation therapies can be applied in the lung or in the bones when needed, and more invasive surgery should be probably saved for large size metastases. Even if the indication of image guided therapy in the treatment of GEP-NET liver metastases needs to be refined, such therapies allows for manageable invasive set of

treatments able to address oligometastatic patients in liver, lung and bones. These treatments applied locally will save the benefit and the toxicity of systemic therapy for more advanced stage of the disease.

PMID: 25385817

4. [World J Gastroenterol](#). 2014 Oct 14;20(38):13893-8. doi: 10.3748/wjg.v20.i38.13893. IF: 2.95

## Update on surgical treatment of pancreatic neuroendocrine neoplasms.

[D'Haese JG](#)<sup>1</sup>, [Tosolini C](#)<sup>1</sup>, [Ceyhan GO](#)<sup>1</sup>, [Kong B](#)<sup>1</sup>, [Esposito I](#)<sup>1</sup>, [Michalski CW](#)<sup>1</sup>, [Kleeff J](#)<sup>1</sup>.

### Author information

- <sup>1</sup>Jan G D'Haese, Chiara Tosolini, Güralp O Ceyhan, Bo Kong, Christoph W Michalski, Jörg Kleeff, Department of Surgery, Klinikum rechts der Isar, Technische Universität München, 81675 Munich, Germany.

### **Abstract**

Pancreatic neuroendocrine neoplasms (PNEs) are rare and account for only 2%-4% of all pancreatic neoplasms. All PNEs are potential (neuroendocrine tumors PNETs) or overt (neuroendocrine carcinomas PNECs) malignant, but a subset of PNETs is low-risk. Even in case of low-risk PNETs surgical resection is frequently required to treat hormone-related symptoms and to obtain an appropriate pathological diagnosis. Low-risk PNETs in the body and the tail are ideal for minimally-invasive approaches which should be tailored to the individual patient. Generally, surgeons must aim for parenchyma sparing in these cases. In high-risk and malignant PNEs, indications for tumor resection are much wider than for pancreatic adenocarcinoma, in many cases due to the relatively benign tumor biology. Thus, patients with locally advanced and metastatic PNETs may benefit from extensive resection. In experienced hands, even multi-organ resections are accomplished with acceptable perioperative morbidity and mortality rates and are associated with excellent long term survival. However, poorly differentiated neoplasms with high proliferation rates are associated with a dismal prognosis and may frequently only be treated with chemotherapy. The evidence on surgical treatment of PNEs stems from reviews of mostly single-center series and some analyses of nation-wide tumor registries. No randomized trial has been performed to compare surgical and non-surgical therapies in potentially resectable PNE. Though such a trial would principally be desirable, ethical considerations and the heterogeneity of PNEs preclude realization of such a study. In the current review, we summarize recent advances in the surgical treatment of PNEs.

### **KEYWORDS:**

Laparoscopy; Liver metastases; Pancreatic neuroendocrine neoplasm; Pancreatic neuroendocrine neoplasms; Surgery

PMID: 25320524

[Makale sayfası](#)

5. [Pathology](#). 2014 Oct;46 Suppl 2:S1-2. doi: 10.1097/01.PAT.0000454055.93030.32. IF: 2.62

## **Keynote Lecture: KN04 CURRENT CONCEPT OF NEUROENDOCRINE TUMORS (NET): ITS CHANGES FOR THE PAST 20 YEARS.**

[Osamura RY](#)<sup>1</sup>.

### **Author information**

- <sup>1</sup>International University of Health and Welfare Mita Hospital, Japan.

### **Abstract**

Since Siegfried Oberndorfer used the term carcinoid in 1907, this type of tumor has disclosed hormonally-active function and early metastases to the liver and lymph nodes. Neuroendocrine tumors (NETs) are now better accepted to represent the tumors. Thus, the WHO classification in 2000 first used the term endocrine tumors (ETs) instead of carcinoid, and NETs have been accepted as more popular terminology, i.e., well differentiated NET, well differentiated NEC (carcinoma) and poorly differentiated NEC. In the 2010 WHO classification of the digestive tract, NETs were re-classified to NET Grade (G)1, NET G2 and NEC, according to mitotic counts or Ki-67 labeling index. Neuroendocrine carcinoma, Ki-67 index higher than 20%, is composed of small and large cell types. Genetic background has been pointed out in pancreatic NETs such as mutations of MEN1, VHL and NF1 with specific biologic features. For therapeutic aspect, the expression of somatostatin receptor (SSTR2) is frequent (approximately 60%) in gastroenteric-pancreatic (GEP) NET and NEC, suggesting the response to somatostatin analogues, an example of molecular targeted therapy. Among NEC, a recently proposed category of NET G3 with typical neuroendocrine histological pattern and higher SSTR2 expression will be discussed. This lecture will highlight the important role of pathologists in diagnosis and therapy for NET and NEC.

PMID: 25188045 [Makale sayfası](#)

6. [Cancer Chemother Pharmacol](#). 2014 Dec 6. [Epub ahead of print] IF: 2.57

## **Expert consensus for the management of advanced or metastatic pancreatic neuroendocrine and carcinoid tumors.**

[Castellano D](#)<sup>1</sup>, [Grande E](#), [Valle J](#), [Capdevila J](#), [Reidy-Lagunes D](#), [O'Connor JM](#), [Raymond E](#).

### **Author information**

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### **Abstract**

Neuroendocrine tumors (NETs) are rare tumors that have been increasing in incidence over the last 30 years with no significant changes in survival. As survival of patients with these tumors depends greatly on stage and histology, early diagnosis, classification and staging of tumors in patients in whom NETs are suspected are of great importance. Surgery, either with curative or palliative intent, is the mainstay of treatment for localized NETs. Therapeutic options for this disease almost invariably include somatostatin analogs to alleviate the symptoms of excessive hormone secretion. Other approaches for advanced disease may include hepatic artery embolization or ablation, peptide receptor radionuclide therapy and systemic chemotherapy. Recent advances regarding the signaling pathways involved in tumor development have allowed the development of novel targeted therapies. However, due to the lack of prognostic molecular markers to identify high-risk patients and the absence of a common pathogenesis in

all patients, treatment selection is often empirical. There is therefore a need to establish a consensus for the treatment of this disease and to provide evidence-based clinical recommendations and algorithms to optimize and individualize the treatment and follow-up for these patients.

PMID: 25480314

7. [Anticancer Res.](#) 2014 Oct;34(10):5661-9. IF: 2.09

## **Plasma chromogranin A levels predict survival and tumor response in patients with advanced gastroenteropancreatic neuroendocrine tumors.**

[Chou WC](#)<sup>1</sup>, [Chen JS](#)<sup>2</sup>, [Hung YS](#)<sup>2</sup>, [Hsu JT](#)<sup>3</sup>, [Chen TC](#)<sup>4</sup>, [Sun CF](#)<sup>5</sup>, [Lu CH](#)<sup>2</sup>, [Hwang TL](#)<sup>6</sup>.

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### **Abstract**

#### **AIM:**

To correlate the baseline and change of chromogranin A (CgA) levels with patient survival and tumor response in Asian patients with advanced gastro-enteropancreatic neuroendocrine tumors (GEP-NETs).

#### **PATIENTS AND METHODS:**

Sixty patients with advanced GEP-NET treated in a medical center between April 2010 and April 2013 were enrolled retrospectively. Plasma CgA level was analyzed for correlation with the patient's clinical outcome and tumor response.

#### **RESULTS:**

Multivariate analysis showed that independent favorable prognostic factors for overall survival were: Eastern Cooperative Oncology Groups performance score 0-1, World Health Organization tumor grade 1-2, single organ metastasis and less than twice the upper normal range of baseline CgA levels. Percentage changes in paired CgA tests ( $\Delta$ CgA) of more than 17% can predict partial response or stable disease from progressive disease with 91.2% sensitivity and 82.9% specificity.

#### **CONCLUSION:**

Baseline plasma CgA levels predicted overall survival and  $\Delta$ CgA predicted treatment response in Asian patients with GEP-NETs.

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**KEYWORDS:**

Neuroendocrine tumor; biomarker; chromogranin A; gastroenteropancreatic; tumor response

PMID: 25275071

8. [Pathol Oncol Res.](#) 2014 Oct;20(4):765-75. doi: 10.1007/s12253-014-9808-4. Epub 2014 Jun 11. **IF: 1.80**

## Neuroendocrine tumors of extrahepatic biliary tract.

[Michalopoulos N](#)<sup>1</sup>, [Papavramidis TS](#), [Karayannopoulou G](#), [Pliakos I](#), [Papavramidis ST](#), [Kanellos I](#).

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### **Abstract**

Neuroendocrine tumors of the extrahepatic bile ducts (EBNETs) are very rare. The aim of the present review is to elucidate the characteristics of EBNETs, their treatment and prognosis. An exhaustive systematic review of the literature was performed from 1959 up-to-date. One hundred articles, describing 150 cases were collected. Each article was carefully analyzed and a database was created. The most common symptoms were jaundice (60.3 %) and pruritus (19.2 %). Cholelithiasis co-existed in 15 cases (19.2 %). Hormone- and vasoactive peptide- related symptoms were present in only 7 cases (9 %). The most frequent sites were found to be the common hepatic duct and the proximal common bile duct (19.2 %). Surgical management was considered the main treatment for EBNETs, while excision of extrahepatic biliary tree (62.82 %) with portal vein lymphadenectomy (43.6 %) was the most popular procedure. EBNETs are extremely rare. Their rarity makes their characterization particularly difficult. Up to date the final diagnosis is made after surgery by pathology and immunohistochemistry findings. The present analysis of the existing published cases elucidates many aspects of these tumours, giving complete clinicopathological documentation.

PMID: 24917351     [Makale sayfası](#)

9. [World J Surg Oncol.](#) 2014 Nov 27;12:358. doi: 10.1186/1477-7819-12-358. **IF: 1.37**

## Gastroenteropancreatic neuroendocrine tumour arising in Meckel's diverticulum coexisting with colon adenocarcinoma.

[Katalinic D](#)<sup>1</sup>, [Santek F](#), [Juretic A](#), [Skegro D](#), [Plestina S](#).

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## Abstract

Although colon cancer is the third most common cause of cancer-related death worldwide, the prevalence of gastroenteropancreatic neuroendocrine tumours (GEP-NETs) remains rare. To date, very few cases of GEP-NETs within Meckel's diverticulum and synchronous colorectal cancer have been reported. Although the coexistence of these two tumour types is uncommon, it is important to be aware of their disease patterns. We present a rare case of a patient with an intestinal GEP-NET arising in Meckel's diverticulum coexisting with metastatic colon adenocarcinoma, and we discuss the clinical manifestations and the diagnostic procedures and treatment modalities used. This case report underlines the importance of being aware of this particular coexistence, as well as the unlikely metastatic spread of GEP-NETs and the importance of a multidisciplinary approach to cancer treatment. Finally, individualizing the treatment according to the stages of the primaries will result in durable cancer control, particularly in synchronous double malignancy.

PMID: 25427657 [Makale sayfası](#)

10. [Gland Surg.](#) 2014 Nov;3(4):276-83. doi: 10.3978/j.issn.2227-684X.2013.12.05.

## Practical management and treatment of pancreatic neuroendocrine tumors.

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## Abstract

Pancreatic neuroendocrine tumors (NETs) are uncommon disease, about which little is known. Pancreatic NETs are usually slow growing and their malignant potential are often underestimated. The management of this disease poses a challenge because of the heterogeneous clinical presentation and varying degrees of aggressiveness. Recently, several guidelines for the management of pancreatic NETs have been established and help to devise clinical strategy. In the treatment algorithms, however, a lot of uncertain points are included. Practical treatment decisions of pancreatic NETs are still sometimes made in a patient-and/or physicians-oriented manner. The tumor grading system proposed by the European Neuroendocrine Tumor Society (ENETS) gives important prognostic information, however, the implication of grading regarding medical treatment strategies to choose has not yet been clarified. Moreover, the place of surgical treatment is unclear in the overall management course of advanced pancreatic NETs. In some cases, practical management and treatment have to be individualized depending on predominant symptoms, tumor spread, and general health of the patients. Current issues and a few points to make a strategy in the management of pancreatic NETs would be reviewed.

### KEYWORDS:

Pancreas; neuroendocrine; neuroendocrine tumor (NET); treatment

PMID: 25493259 [Makale sayfası](#)

11. [Gland Surg.](#) 2014 Nov;3(4):258-75. doi: 10.3978/j.issn.2227-684X.2014.06.03.

## Update on pancreatic neuroendocrine tumors.

[McKenna LR](#)<sup>1</sup>, [Edil BH](#)<sup>1</sup>.

### Author information

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### Abstract

Pancreatic neuroendocrine tumors (pNETs) are relatively rare tumors comprising 1-2% of all pancreas neoplasms. In the last 10 years our understanding of this disease has increased dramatically allowing for advancements in the treatment of pNETs. Surgical excision remains the primary therapy for localized tumors and only potential for cure. New surgical techniques using laparoscopic approaches to complex pancreatic resections are a major advancement in surgical therapy and increasingly possible. With early detection being less common, most patients present with metastatic disease. Management of these patients requires multidisciplinary care combining the best of surgery, chemotherapy and other targeted therapies. In addition to surgical advances, recently, there have been significant advances in systemic therapy and targeted molecular therapy.

### KEYWORDS:

Pancreatic neuroendocrine tumor (pNET); islet cell tumor; laparoscopic pancreas surgery; liver metastases; neuroendocrine neoplasm; pancreas; pancreas cancer; surgical therapy; targeted therapy

PMID: 25493258

[Makale sayfası](#)

12. [Gland Surg.](#) 2014 Nov;3(4):243-51. doi: 10.3978/j.issn.2227-684X.2014.02.05.

## Curative versus palliative surgical resection of liver metastases in patients with neuroendocrine tumors: a meta-analysis of observational studies.

[Bacchetti S](#)<sup>1</sup>, [Pasqual EM](#)<sup>1</sup>, [Bertozzi S](#)<sup>1</sup>, [Londero AP](#)<sup>1</sup>, [Risaliti A](#)<sup>1</sup>.

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### Abstract

### BACKGROUND:

The role of surgical therapy in patients with liver metastases from neuroendocrine tumors (NETs) is unclear. In this study, the results obtained with curative or palliative resection, by reviewing recent literature and performing a meta-analysis, were examined.

#### **MATERIALS AND METHODS:**

A systematic review and meta-analysis of observational studies published between January 1990 and October 2013 were performed. Studies that evaluated the different survival between patients treated by curative or palliative surgical resection of hepatic metastases from NETs were considered. The collected studies were evaluated for heterogeneity, publication bias, and quality. To calculate the pooled hazard ratio (HR) estimate and the 95% confidence interval (95% CI), a fixed-effects model was applied.

#### **RESULTS:**

After the literature search, 2,546 studies were found and, among 38 potentially eligible studies, 3 were considered. We did not find a significant longer survival in patients treated with curative surgical resection of hepatic metastases when compared to palliative hepatic resection HR 0.40 (95% CI: 0.14-1.11). In one study, palliative resection of hepatic metastases significantly increased survival when compared to embolization.

#### **CONCLUSIONS:**

Curative and also palliative surgery of NETs liver metastases may improve survival outcome. However, further randomized clinical trials are needed to elucidate this argument.

#### **KEYWORDS:**

Liver metastases; curative surgery; meta-analysis; neuroendocrine tumors (NETs); overall survival; palliative surgery

PMID: 25493256 [Makale sayfası](#)

13. [Gland Surg.](#) 2014 Nov;3(4):219-21. doi: 10.3978/j.issn.2227-684X.2014.08.02.

## **Cytological Ki-67 in pancreatic endocrine tumors: a new "must"?**

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#### **Abstract**

In the last decades, the incidence of neuroendocrine tumors (NETs) has been rising and this might be due to more awareness, improved diagnostic tools and a change in definition. The histopathological type of the tumor, its Ki-67 or MIB-1 proliferation index, size and location, as well as the age of the patient, seems to be the most important factor that affects prognosis and survival. In 2008, in one of our studies, we concluded that the cytological Ki-67 may improve the preoperative assessment of pancreatic NETs (pNETs), helping the clinician choosing the optimal therapeutical approach". Although the literature reports discordant opinions on the value of tumor proliferation markers in predicting a patient's prognosis, many studies have then reinforced the idea that Ki-67 expression in histological sections obtained from pNETs is

an important predictor of their biological behaviour. The WHO classification of pNETs includes Ki-67 expression in the list of parameters (together with distant metastases, organ infiltration, dimension, angio/neuroinvasion, number of mitosis) determining the patient's prognosis. In conclusion we think that any study aimed to assess the correct biology and proliferative pattern of NETs contributes to the already known but still unclear attempt to define the correct individualized therapeutic strategy for each patient before surgery or any other therapeutic approach.

**KEYWORDS:**

Ki-67; Pancreas; endoscopic ultrasound (EUS)-guided fine needle aspiration; grading; neuroendocrine tumor (NET)

PMID: 25493251 [Makale sayfası](#)

# NET

## RETROSPEKTİF

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1. [Br J Surg](#). 2014 Oct;101(11):1405-12. doi: 10.1002/bjs.9603. Epub 2014 Aug 13. IF: 5.21

### Outcome of surgery for pancreatic neuroendocrine neoplasms.

[Fischer L](#)<sup>1</sup>, [Bergmann F](#), [Schimmack S](#), [Hinz U](#), [Prieß S](#), [Müller-Stich BP](#), [Werner J](#), [Hackert T](#), [Büchler MW](#).

#### Author information

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#### Abstract

##### BACKGROUND:

The incidence of pancreatic neuroendocrine neoplasms (pNEN) is increasing. This study aimed to evaluate predictors of overall survival and the indication for surgery.

##### METHODS:

Data collected between October 2001 and December 2012 were analysed. Histological grading and staging was based on the classifications of the World Health Organization, the International Union Against Cancer and the European Neuroendocrine Tumour Society.

##### RESULTS:

Some 310 patients (150 female, 48.4 per cent) underwent surgical resection. The final survival analysis included 291 patients. Five-year overall survival differed according to tumour grade (G): 91.0 per cent among 156 patients with pancreatic neuroendocrine tumours (pNET) G1, 70.8 per cent in 111 patients with pNET G2, and 20 per cent in 24 patients with pancreatic neuroendocrine carcinomas (pNEC) G3 ( $P < 0.001$ ). Tumours graded G3 (hazard ratio (HR) 6.96, 95 per cent confidence interval 3.67 to 13.21), the presence of distant metastasis (HR 2.41, 1.32 to 4.42) and lymph node metastasis (HR 2.10, 1.07 to 4.16) were independent predictors of worse survival ( $P < 0.001$ ,  $P = 0.004$  and  $P = 0.032$  respectively). Eight of 61 asymptomatic patients with pNEN smaller than 2 cm had tumours graded G2 or G3, and six of 51 patients had lymph node metastasis. Among patients with pNEC G3, the presence of distant metastasis had a significant impact on the 5-year overall survival rate: 0 per cent versus 43 per cent in those without distant metastasis ( $P = 0.036$ ).

##### CONCLUSION:

Neuroendocrine tumours graded G3, lymph node and distant metastasis are independent predictors of worse overall survival in patients with pNEN.

2. [Eur J Cancer](#). 2014 Nov;50(16):2802-9. doi: 10.1016/j.ejca.2014.08.004. Epub 2014 Sep 4. IF: 4.81

## Prognostic significance of neuroendocrine components in gastric carcinomas.

[Park JY](#)<sup>1</sup>, [Ryu MH](#)<sup>2</sup>, [Park YS](#)<sup>3</sup>, [Park HJ](#)<sup>2</sup>, [Ryoo BY](#)<sup>2</sup>, [Kim MG](#)<sup>4</sup>, [Yook JH](#)<sup>5</sup>, [Kim BS](#)<sup>5</sup>, [Kang YK](#)<sup>2</sup>.

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- <sup>5</sup>Department of Surgery, Asan Medical Center, University of Ulsan College of Medicine, 88, Olympic-Ro 43-Gil, Songpa-Gu, Seoul 138-736, Republic of Korea.

### Abstract

#### BACKGROUND:

Gastric neuroendocrine carcinomas (NECs) and mixed adenoneuroendocrine carcinomas (MANECs) are aggressive tumours but the prognostic significance of a neuroendocrine component in <30% of the tumour remains unclear. Here, the implication of neuroendocrine components in gastric carcinomas was assessed according to proportion.

#### METHODS:

Surgically resected primary gastric carcinomas with neuroendocrine morphology (NEM; n=88) from 2000 to 2012 at Asan Medical Center were retrospectively reviewed. Neuroendocrine differentiation (NED) was defined as immunopositivity for one of three neuroendocrine markers (synaptophysin, chromogranin or CD56) within the NEM area. To validate the prognostic significance of NED, these cases were compared with 650 randomly selected gastric adenocarcinomas without NEM from the same time period.

#### RESULTS:

Gastric carcinomas with NEM were reclassified as NEC ( $\geq 70\%$  NED, n=47), MANEC (30-70% NED, n=10), gastric carcinoma with 10-30% NED (GCNED, n=8) and carcinoma with <10% NED (n=23). The survival rates of patients with  $\geq 10\%$  NED were significantly poorer than those with <10% NED but no survival difference was observed between NEC and MANEC. In univariate analyses, older age ( $\geq 60$  years), larger tumour size ( $\geq 4$  cm), advanced stage group,  $\geq 10\%$  NED and lymphovascular or perineural invasion were indicative of a poor prognosis. Stage group and  $\geq 10\%$  NED remained as independent prognostic factors by multivariate analysis.

#### CONCLUSIONS:

A minor proportion (10-30%) of NED should not be overlooked in gastric carcinomas with NEM. NED should be carefully evaluated to predict patient outcomes and plan optimal additional therapies.

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#### **KEYWORDS:**

Component; Gastric carcinoma; Neuroendocrine; Prognosis; Proportion

PMID: 25201164 [Makale sayfası](#)

3. [Surgery](#). 2014 Dec;156(6):1504-11. doi: 10.1016/j.surg.2014.08.043. Epub 2014 Nov 11. IF: 3.19

## **Comparison of tumor markers for predicting outcomes after resection of nonfunctioning pancreatic neuroendocrine tumors.**

[Cherenfant J](#), [Talamonti MS](#), [Hall CR](#), [Thurrow TA](#), [Gage MK](#), [Stocker SJ](#), [Lapin B](#), [Wang E](#), [Silverstein JC](#), [Mangold K](#), [Odeleye M](#), [Kaul KL](#), [Lamzabi I](#), [Gattuso P](#), [Winchester DJ](#), [Marsh RW](#), [Roggin KK](#), [Bentrem DJ](#), [Baker MS](#), [Prinz RA](#).

#### **Abstract**

#### **BACKGROUND:**

This study compares the predictability of 5 tumor markers for distant metastasis and mortality in pancreatic neuroendocrine tumors (PNETs).

#### **METHODS:**

A total of 128 patients who underwent pancreatectomy for nonfunctioning PNETs between 1998 and 2011 were evaluated. Tumor specimens were stained via immunochemistry for cytoplasmic and nuclear survivin, cytokeratin 19 (CK19), c-KIT, and Ki67. Univariate and multivariate regression analyses and receiver operating characteristics curve were used to evaluate the predictive value of these markers.

#### **RESULTS:**

A total of 116 tumors (91%) were positive for cytoplasmic survivin, 95 (74%) for nuclear survivin, 85 (66.4%) for CK19, 3 for c-KIT, and 41 (32%) for Ki67 >3%. Twelve (9%) tumors expressed none of the markers. Survivin, CK19, and c-KIT had no substantial effect on distant metastasis or mortality. Age >55 years, grade 3 histology, distant metastasis, and Ki67 >3% were associated with mortality ( $P < .05$ ). A cut-off of Ki67 >3% was the best predictor (83%) of mortality with an area under the curve of 0.85. Ki67 >3% also predicted occurrence of distant metastases with odds ratio of 9.22 and 95% confidence interval of 1.55-54.55 ( $P < .015$ ).

#### **CONCLUSION:**

Of the 5 markers studied, only Ki67 >3% was greatly associated with distant metastasis and death. Survivin, CK19, and c-KIT had no prognostic value in nonfunctioning PNETs.

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PMID: 25456943 [Makale sayfası](#)

4. [Pancreas](#). 2014 Oct;43(7):1003-8. doi: 10.1097/MPA.0000000000000153. IF: 3.00

## Evaluation of the World Health Organization 2010 grading system in surgical outcome and prognosis of pancreatic neuroendocrine tumors.

[Yang M](#)<sup>1</sup>, [Tian BL](#), [Zhang Y](#), [Su AP](#), [Yue PJ](#), [Xu S](#), [Wang L](#).

### Author information

- <sup>1</sup>From the Department of Hepatobiliopancreatic Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan Province, the People's Republic of China.

### Abstract

#### OBJECTIVE:

The objective of this study was to evaluate the clinical consistency of the new World Health Organization 2010 grading and the European Neuroendocrine Tumor Society 2006 TNM staging systems on the surgical outcome for patients with pancreatic neuroendocrine tumors (p-NETs). Moreover, we will discuss their prognostic value.

#### METHODS:

The medical records of 110 consecutive patients with p-NETs who were surgically treated in our center from January 2002 to December 2012 were reviewed.

#### RESULTS:

Sixty-five patients were diagnosed as having neuroendocrine tumor G1, 27 patients had neuroendocrine tumor G2, 14 patients had neuroendocrine carcinoma G3, and 4 patients had mixed adenoneuro endocrine carcinoma; the survival rates at 5 years were 82.6%, 52.7%, 25.7%, and 0%, respectively ( $P < 0.001$ ). The TNM stage was I in 48 patients, II in 39 patients, III in 11 patients, and IV in 12 patients; the 5-year survival rates were 83.1%, 72.1%, 0%, and 0%, respectively ( $P < 0.001$ ). The patients who underwent R0 resection gained a statistically longer survival time than those who did not ( $P < 0.001$ ).

#### CONCLUSIONS:

Both classifications accurately reflect the clinical outcome of p-NETs. Surgical margin, the World Health Organization 2010 grading, and the TNM staging systems may all be meaningful prognostic factors impacting the long-term survival of patients with p-NETs.

PMID: 24945681     [Makale sayfası](#)

## **Clinicopathological features of small nonfunctioning pancreatic neuroendocrine tumors.**

[Furukori M](#)<sup>1</sup>, [Imai K](#)<sup>1</sup>, [Karasaki H](#)<sup>1</sup>, [Watanabe K](#)<sup>1</sup>, [Oikawa K](#)<sup>1</sup>, [Miyokawa N](#)<sup>1</sup>, [Taniguchi M](#)<sup>1</sup>, [Furukawa H](#)<sup>1</sup>.

### **Author information**

- <sup>1</sup>Mariko Furukori, Koji Imai, Kenji Watanabe, Masahiko Taniguchi, Hiroyuki Furukawa, Division of Gastroenterological and General Surgery, Department of Surgery, Asahikawa Medical University, Hokkaido 078-8510, Japan.

### **Abstract**

#### **AIM:**

To present our experiences in studying the clinicopathological features of small nonfunctioning pancreatic neuroendocrine tumors (NF-pNETs).

#### **METHODS:**

The subjects included 9 patients with NF-pNETs who underwent pancreatectomy between April 1996 and September 2012. The surgical procedure, histopathological findings, and prognosis were assessed.

#### **RESULTS:**

All tumors were incidentally detected by computed tomography. The median diameter was 10 mm (5-32 mm). One patient was diagnosed with von Hippel-Lindau disease, and the others were sporadic cases. For the histopathological findings, 7 patients were G1; 1 patient was G2; and 1 patient, whose tumor was 22 mm, had neuroendocrine carcinoma (NEC). One patient who had a tumor that was 32 mm had direct invasion to a regional lymph node and 1 patient with NEC, had regional lymph node metastases. Six of the 7 patients with sporadic NF-pNETs, excluding the patient with NEC, had tumors that were smaller than 10 mm. Tumors smaller than 10 mm showed no malignancy and lacked lymph node metastasis.

#### **CONCLUSION:**

Sporadic NF-pNETs smaller than 10 mm tend to have less malignant potential. These findings suggest that lymphadenectomy may be omitted for small NF-pNETs after further investigation.

#### **KEYWORDS:**

Lymphadenectomy; Nonfunctioning; Pancreatic neuroendocrine carcinoma; Pancreatic neuroendocrine tumor; Treatment

PMID: 25548493

[Makale sayfası](#)

## **Plasma chromogranin A levels predict survival and tumor response in patients with advanced gastroenteropancreatic neuroendocrine tumors.**

[Chou WC](#)<sup>1</sup>, [Chen JS](#)<sup>2</sup>, [Hung YS](#)<sup>2</sup>, [Hsu JT](#)<sup>3</sup>, [Chen TC](#)<sup>4</sup>, [Sun CF](#)<sup>5</sup>, [Lu CH](#)<sup>2</sup>, [Hwang TL](#)<sup>6</sup>.

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- <sup>5</sup>Department of Laboratory Medicine, Chang Gung Memorial Hospital and Chang Gung University, Taoyuan, Taiwan, R.O.C.
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### **Abstract**

#### **AIM:**

To correlate the baseline and change of chromogranin A (CgA) levels with patient survival and tumor response in Asian patients with advanced gastro-enteropancreatic neuroendocrine tumors (GEP-NETs).

#### **PATIENTS AND METHODS:**

Sixty patients with advanced GEP-NET treated in a medical center between April 2010 and April 2013 were enrolled retrospectively. Plasma CgA level was analyzed for correlation with the patient's clinical outcome and tumor response.

#### **RESULTS:**

Multivariate analysis showed that independent favorable prognostic factors for overall survival were: Eastern Cooperative Oncology Groups performance score 0-1, World Health Organization tumor grade 1-2, single organ metastasis and less than twice the upper normal range of baseline CgA levels. Percentage changes in paired CgA tests ( $\Delta$ CgA) of more than 17% can predict partial response or stable disease from progressive disease with 91.2% sensitivity and 82.9% specificity.

#### **CONCLUSION:**

Baseline plasma CgA levels predicted overall survival and  $\Delta$ CgA predicted treatment response in Asian patients with GEP-NETs.

## KEYWORDS:

Neuroendocrine tumor; biomarker; chromogranin A; gastroenteropancreatic; tumor response

PMID: 25275071

7. [J Endocrinol Invest.](#) 2014 Dec 12. [Epub ahead of print] IF: 1.55

## Prognostic factors for pancreatic neuroendocrine neoplasms (pNET) and the risk of small non-functioning pNET.

[Lombardi M](#)<sup>1</sup>, [De Lio N](#), [Funel N](#), [Sardella C](#), [Russo D](#), [Urbani C](#), [Rossi G](#), [Campani D](#), [Martino E](#), [Marcocci C](#), [Boggi U](#), [Bogazzi F](#).

### Author information

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### Abstract

#### BACKGROUND:

Non-functioning (NF) pancreatic neuroendocrine tumors (pNET) often have an indolent outcome. A consensus to submit patients with large (>2 cm) NF-pNET to surgery already exists; but a conservative approach for small ( $\leq$ 2 cm) NF neoplasms has been proposed.

#### AIM:

To identify prognostic factors for survival and progression free survival (PFS) of NF-pNET, evaluating whether surgery may be avoided for small NF-pNET.

#### SUBJECTS AND METHODS:

Retrospective study of 77 consecutive patients with pNET submitted to surgery, of which 60 were NF. Pathological tissues were revised according to the 2000 and 2010 WHO classifications. Risk factors for survival and PFS were evaluated using the Kaplan-Meier method and the Cox regression model.

#### RESULTS:

The 8-year cause-specific survival of NF-pNET was 79.3 %. At univariate analysis, high grading, high staging, large tumors, angioinvasion and peri-pancreatic infiltration were significantly associated with a shorter survival; at multivariate analysis only peri-pancreatic infiltration was significantly associated with a shorter NF-pNET survival. Most small NF-pNET were grade 1 (74 %), compared to large NF-pNET (27 %). Distant metastases were present in 29.7 % (n = 11) and 17.4 % (n = 4) of patients with large or small NF-pNET, respectively; among the 19 small NF-pNET without metastasis, five had a local malignancy (lymph node metastasis or local infiltration); thus, 39 % of the 23 NF-pNET, turned out to have a malignant potential.

#### CONCLUSIONS:

Among NF-pNET, large neoplasms were associated with worse outcomes; however, small NF-pNET do not seem to have an invariable benign behavior. Whether surgery should be avoided in all patients with small NF-pNET is questionable.

8. [J Pediatr Surg](#). 2014 Oct;49(10):1513-7. doi: 10.1016/j.jpedsurg.2014.05.019. Epub 2014 Jun 25.  
IF: 1.31

## Management and outcome of neuroendocrine tumours of the appendix-a two centre UK experience.

[Henderson L](#)<sup>1</sup>, [Fehily C](#)<sup>1</sup>, [Folaranmi S](#)<sup>2</sup>, [Kelsey A](#)<sup>3</sup>, [McPartland J](#)<sup>4</sup>, [Jawaid WB](#)<sup>1</sup>, [Craigie R](#)<sup>1</sup>, [Losty PD](#)<sup>5</sup>.

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- <sup>5</sup>Department of Paediatric Surgery, Alder Hey Children's Hospital NHS Foundation Trust and The University of Liverpool, UK. Electronic address: paul.losty@liv.ac.uk.

### Abstract

#### BACKGROUND:

Neuroendocrine tumours (NET) of the appendix are rare histopathological neoplasms detected following operation for appendicitis in childhood. The role (if any) for radical surgery notably right hemicolectomy (RHC) has often reflected the 'expert opinion' of adult general surgeons with wider experience of managing NET lesions of the gastrointestinal tract. Critical decisions have focused on (a) tumour size, (b) histology, (c) tumour location/invasion and (d) positive lymph nodes. Against this background we report the clinical outcome of children with 'incidental' appendix carcinoid tumours managed at two regional UK paediatric surgery centres. A critical review of the literature is additionally provided in an effort to define contemporary patterns of care in paediatric surgical practice.

#### METHODS:

Hospital records and pathology database(s) identified 27 patients at two UK centres with a confirmed histological diagnosis of appendix NET lesions during January 1997-January 2013. A PUBMED and EMBASE search strategy-(English language publications only), 1975-present, was performed to gather information on all patients younger than 20years at primary diagnosis with NET appendix tumours to review their management and outcomes.

#### RESULTS:

All 27 patients treated at the two institutions had acute appendicitis including 3 cases presenting with an appendix mass. Twenty-five underwent appendicectomy with two having interval operations. Tumours had a maximum diameter of 2-18mm (median 9mm) with 73% of lesions located at the appendix tip. Fourteen (52%) had tumour invading the mesoappendix. All patients underwent appendicectomy only with no single case having RHC or additional surgery. Surveillance studies (5HIAA, chromogranin-A) and imaging including ultrasound or CT were deployed in a minority of patients revealing no abnormality. All 27 cases are alive and well-(mean follow up 5years; range: 9months-16years). The literature highlights varied management strategies and no recorded fatalities with radical surgery in children largely evolving from adult surgical practice.

#### CONCLUSIONS:

This study confirms that paediatric patients with 'incidental' NET tumours of the appendix have an excellent prognosis. Consensus guidelines should ideally be developed by paediatric oncology surgeons to avoid unnecessary radical surgery in many otherwise healthy children.

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**KEYWORDS:**

Appendicectomy; Appendix; Carcinoid tumour(s); Neuroendocrine tumour(s); Radical surgery

PMID: 25280658 [Makale sayfası](#)

9. [Eur Rev Med Pharmacol Sci](#). 2014 Dec;18(2 Suppl):32-5. IF: 0.98

## **Surgical resection for neuroendocrine tumors of the pancreas: a fourteen years single institutional observation.**

[Centonze DC](#)<sup>1</sup>, [Cinardi N](#), [Giannone G](#).

### **Author information**

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### **Abstract**

#### **OBJECTIVE:**

Pancreatic neuroendocrine tumors (PNETs) are a rare entity that can present with symptoms of hormone overproduction with surgical resection being the only chance for cure despite the poorly defined tumor behavior. Their management involves a variety of therapies which require a well coordinated multidisciplinary team with the effort to optimize outcomes.

#### **PATIENTS AND METHODS:**

A retrospective analysis of 25 consecutive patients was performed by means of our single institution prospectively maintained database. All patients' files from 1999 to 2013, with histologically proven neuroendocrine tumors of the pancreas, were reviewed for clinical presentation, functional status, treatment, postoperative morbidity and mortality.

#### **RESULTS:**

Of 25 patients a total of 22 patients (11 females, 11 males, average age 49.7 years) underwent surgery with curative intent. We had 3 female patients that underwent palliative surgery because of unresectable disease. Nineteen of the 25 were not functional tumor. For the resected patients the overall morbidity was 38.8%. The 30-day mortality rate was zero. The overall median length of hospital stay was 10.4 days (range 4-23 days).

#### **CONCLUSIONS:**

Surgical resection with regional lymph node dissection is the only potentially curative therapy for patients with localized PNETs with the exceptions of most insulinomas where simple enucleation may be the

standard of treatment. The anatomic considerations for determining the resectability are the same as those for pancreatic adenocarcinomas. Careful follow-up after surgery is essential because up to 50% of patients who undergo complete resection develop metachronous liver metastasis. Distant metastatic disease should be resected if possible.

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1. [Anticancer Res.](#) 2014 Dec;34(12):7361-5. IF: 2.09

### **Sunitinib-induced Complete Response in Metastatic Renal Cancer Expressing Neuroendocrine Markers: A New Predictive Factor?**

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#### **Abstract**

##### **BACKGROUND:**

To date, no predictive factors are recognized and applied in the therapeutic choice for metastatic renal cell carcinoma. Due to significant side-effects and costs, which are relevant issues in this setting, optimization of treatments has become a priority.

##### **CASE REPORT:**

We herein report a case of complete remission of metastatic renal cell carcinoma after 1 year of treatment with sunitinib. Since pancreatic metastases were detected by a 68Ga-DOTA-NOC positron emission tomography, it was decided to perform a histological revision of the specimens, with immunohistochemical staining for neuroendocrine markers on the primary tumor.

##### **CONCLUSION:**

On the basis of the detection of neuroendocrine markers on the primary neoplasm, together with pancreatic metastases positive on a 68Ga-DOTA-NOC positron emission tomography (PET), we hypothesize and discuss about a potential role of specific neuroendocrine markers as predictive indicators of response to sunitinib (and allegedly to other target therapies) in the treatment of this neoplasm.

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**KEYWORDS:**

Neuroendocrine markers; predictive markers; renal cell carcinoma; sunitinib

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2. [Ann Ital Chir.](#) 2014 Dec 29;85. pii: S2239253X14023469. IF: 0.68

**Gastric paraganglioma: A case report and a review of the literature.**

[Pruiti V](#), [Mazzeo F](#), [Rossitto M](#), [Foti A](#), [Macri A](#), [Cucinotta E](#).

**Abstract**

in [English](#), [Italian](#)

**AIM:**

Paragangliomas are neural crest-derived neuroendocrine tumors, originating from paraganglia, which are dispersed neuroendocrine organs characterized by catecholamine and peptide-producing cells. With an annual incidence estimated at 1/100,000, paragangliomas represent 10% of catecholamine secreting tumors.

**MATERIAL OF STUDY:**

We report a case of a 76-year-old man who was submitted to a subtotal gastrectomy with omentectomy and gastrojejunal anastomosis. The Hystologic exam has revealed an ulcerative polypoid gastric carcinoma with cell poorly cohesive and infiltration of the muscular gastric wall and an incidental parietal gastric lesion which was a paraganglioma with immunocytochemical investigations positive for NSE and negative for CD117, S100, CD34 e SMA.

**DISCUSSION:**

Pheochromocytoma indicates exclusively tumors arising from the adrenal medulla, while the extra-adrenal paraganglioma suggests tumors of the chromaffin cells with other locations. Gastric or paragastric localization, as in our case, is very rare for these neoplasms, and in literature there are only isolated case reports. Genetical predisposition is observed in 30% of these tumors and can be responsible of hereditary disease characterized for differences in tumor distribution, catecholamine production, risk of metastasis, and association with others types of tumors.

**CONCLUSION:**

In asymptomatic patients and when biochemical and clinical suspicion of neuroendocrine tumor is strong, you have to perform anatomical and functional investigations to detect these neoplasms. The first line treatment for resectable tumors is complete surgical resection, that can be performed with open surgery or laparoscopic technique. Surgical therapy is also indicated to palliative intent when a complete eradication of disease is not achievable for metastatic status of malignancies.

**KEY WORDS:**

Autonomic nervous system, Gastrectomy, Gastric cancer, Gastric paraganglioma.

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