

## Nisan-Mayıs- Haziran 2014 Seçilmiş Yayın Taraması

Pubmed taramasında son 3 ayda Endokrin cerrahisi ile ilgili makaleler gözden geçirilmiş ve seçilmiş bazı yayınların özetleri verilmiştir. Yayınlar aşağıdaki tabloda yayın türlerine göre ayrılmıştır. Tablodaki yayın sayılarının, Word formatında Ctrl ile, Pdf formatında üzerine tıklanarak ilgili yayınların sayfasına ulaşılabilir. Makale özetlerinde Pubmed Id üzerine tıklanarak makalenin pubmed sayfasına, Dergi ismi üzerine tıklanarak ise (aboneliğiniz varsa) yayının dergi sayfasına ulaşabilirsiniz.

	Derleme	Prospektif Makaleler	Retrospektif Makaleler	Vaka sunumu
Tiroid	<u>16</u>	<u>7</u>	<u>21</u>	<u>1</u>
Paratiroid	<u>3</u>	<u>8</u>	<u>18</u>	<u>3</u>
Adrenal	<u>4</u>	<u>1</u>	<u>8</u>	<u>4</u>
NET	<u>13</u>	<u>3</u>	<u>11</u>	<u>2</u>

# TİROID

## DERLEME

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1. Thyroid hormone inactivation in gastrointestinal stromal tumors. [►](#)
2. Hashimoto thyroiditis: clinical and diagnostic criteria. [►](#)
3. Diagnosis and classification of Graves' disease. [►](#)
4. The accuracy of thyroid nodule ultrasound to predict thyroid cancer: systematic review and meta-analysis. [►](#)
5. Comparison of secondary and primary thyroid cancer in adolescents and young adults. [►](#)
6. Systematic review and meta-analysis of wound drains after thyroid surgery. [►](#)
7. Hürthle cells in fine-needle aspirates of the thyroid: a review of their diagnostic criteria and significance. [►](#)
8. MiR-129-5p is down-regulated and involved in the growth, apoptosis and migration of medullary thyroid carcinoma cells through targeting RET. [►](#)
9. Quantification of cancer risk of each clinical and ultrasonographic suspicious feature of thyroid nodules: a systematic review and meta-analysis. [►](#)
10. Diagnosis of endocrine disease: thyroid ultrasound (US) and US-assisted procedures: from the shadows into an array of applications. [►](#)
11. Occupation and thyroid cancer. [►](#)
12. Diagnostic accuracy of sonoelastography in detecting malignant thyroid nodules: a systematic review and meta-analysis. [►](#)
13. Current thyroid cancer trends in the United States. [►](#)
14. Systematic review and meta-analysis of robotic vs conventional thyroidectomy approaches for thyroid disease. [►](#)
15. Hypothyroidism: causes, killers, and life-saving treatments. [►](#)
16. Hyperthyroidism and thyrotoxicosis. [►](#)

# TİROID

## PROSPEKTİF

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1. Regulation of IL-1 receptor antagonist by TSH in fibrocytes and orbital fibroblasts.  
[►](#)
2. CLM3, a multitarget tyrosine kinase inhibitor with antiangiogenic properties, is active against primary anaplastic thyroid cancer in vitro and in vivo.  
[►](#)
3. Thyroglobulin suppresses thyroid-specific gene expression in cultures of normal but not neoplastic human thyroid follicular cells.  
[►](#)
4. Pre-operative role of BRAF in the guidance of the surgical approach and prognosis of differentiated thyroid carcinoma.  
[►](#)
5. Comparison of surgical outcomes between papillary thyroid cancer patients treated with the Harmonic ACE scalpel and LigaSure Precise instrument during conventional thyroidectomy: a single-blind prospective randomized controlled trial.  
[►](#)
6. Superior laryngeal nerve quantitative intraoperative monitoring is possible in all thyroid surgeries.  
[►](#)
7. Accuracy of intraoperative determination of central node metastasis by the surgeon in papillary thyroid carcinoma.  
[►](#)

# TİROID

## RETROSPEKTİF

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1. Outcomes in patients with poorly differentiated thyroid carcinoma. ►
2. Surgical curability of medullary thyroid cancer in multiple endocrine neoplasia 2B: a changing perspective. ►
3. Thyroid nodules with benign findings at cytologic examination: results of long-term follow-up with US. ►
4. Surgeon-driven thyroid interrogation of patients presenting with primary hyperparathyroidism. ►
5. A 4-MicroRNA signature can discriminate primary lymphomas from anaplastic carcinomas in thyroid cytology smears. ►
6. Comparison of fine-needle aspiration and fine-needle capillary sampling of thyroid nodules: a prospective study with emphasis on the influence of nodule size. ►
7. Impact of pregnancy on prognosis of differentiated thyroid cancer: clinical and molecular features. ►
8. TSH measurement is not an appropriate screening test for autonomous functioning thyroid nodules: a retrospective study of 368 patients. ►
9. Tyrosine kinase inhibitor treatments in patients with metastatic thyroid carcinomas: a retrospective study of the TUTHYREF network. ►
10. The study of the coexistence of Hashimoto's thyroiditis with papillary thyroid carcinoma. ►
11. Morphology predicts BRAF (V<sup>600</sup>E) mutation in papillary thyroid carcinoma: an interobserver reproducibility study. ►
12. Evaluation of genetic biomarkers for distinguishing benign from malignant thyroid neoplasms. ►

13. MicroRNA-21 regulates biological behaviors in papillary thyroid carcinoma by targeting programmed cell death 4. ►
14. Incidental parathyroidectomy during thyroid surgery using capsular dissection technique. ►
15. Barriers to same-day discharge of patients undergoing total and completion thyroidectomy. ►
16. Epidemiology of vocal fold paralyses after total thyroidectomy for well-differentiated thyroid cancer in a Medicare population. ►
17. Comparison of surgical completeness between robotic total thyroidectomy versus open thyroidectomy. ►
18. Preservation of the inferior thyroidal vein reduces post-thyroidectomy hypocalcemia. ►
19. Differential diagnostic ultrasound criteria of papillary and follicular carcinomas: a multivariate analysis. ►
20. Thyroid surgery as a 23-hour stay procedure. ►
21. Incidence and predictors of post-thyroidectomy hypocalcaemia in a tertiary endocrine surgical unit.. ►

# TİROID

## Vaka sunumu

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1. Metastatic papillary carcinoma of the thyroid in a patient previously treated for Graves' disease..►

# PARATİROID

## DERLEME

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1. Diagnosis and classification of autoimmune parathyroid disease. ►
2. Renal impairment as a surgical indication in primary hyperparathyroidism: does the data support this recommendation? ►
3. Parathyroid carcinoma. ►

# PARATİROID

## PROSPEKTİF

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1. Surgeon and Staff Radiation Exposure During Radioguided Parathyroidectomy at a High-Volume Institution. ►
2. US-guided high-intensity focused ultrasound as a promising non-invasive method for treatment of primary hyperparathyroidism. ►
3. Intraoperative near-infrared fluorescence imaging of parathyroid adenomas with use of low-dose methylene blue. ►
4. The small abnormal parathyroid gland is increasingly common and heralds operative complexity. ►
5. Transoral parathyroid surgery-a new alternative or nonsense? ►
6. Clinical impact of SPECT-CT in the diagnosis and surgical management of hyperparathyroidism. ►
7. The effectiveness of low-dose versus high-dose  $^{99m}\text{Tc}$  MIBI protocols for radioguided surgery in patients with primary hyperparathyroidism. ►
8. Modified robotic-assisted thyroidectomy: An initial experience with the retroauricular approach..►

# PARATİROID

## RETROSPEKTİF

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1. Trends in the Frequency and Quality of Parathyroid Surgery: Analysis of 17,082 Cases Over 10 Years. [►](#)
2. Oncologic resection achieving r0 margins improves disease-free survival in parathyroid cancer. [►](#)
3. Operative failure in minimally invasive parathyroidectomy utilizing an intraoperative parathyroid hormone assay. [►](#)
4. Parathyroid surgery in the elderly: should minimally invasive surgery be abandoned? [►](#)
5. Cytologic features of parathyroid fine-needle aspiration on Thin Prep preparations. [►](#)
6. Dynamic CT for Parathyroid Disease: Are Multiple Phases Necessary? [►](#)
7. Dissection and identification of parathyroid glands during thyroidectomy: Association with hypocalcemia. [►](#)
8. A novel technique to improve the diagnostic yield of negative sestamibi scans. [►](#)
9. Subcutaneous injection is a simple and reproducible option to restore parathyroid function after total parathyroidectomy in patients with secondary hyperparathyroidism. [►](#)
10. Does the ultrasound dissector improve parathyroid gland preservation during surgery? [►](#)
11. Changing Trends in Thyroid and Parathyroid Surgery over the Decade: Is Same-day Discharge Feasible in the United Kingdom? [►](#)
12. Total parathyroidectomy with trace amounts of parathyroid tissue autotransplantation as the treatment of choice for secondary hyperparathyroidism: a single-center experience. [►](#)

13. Large non-functioning parathyroid cysts: our institutional experience of a rare entity and a possible pitfall in thyroid cytology. [►](#)
14. Long-term function of parathyroid subcutaneous autoimplantation after presumed total parathyroidectomy in the treatment of secondary hyperparathyroidism. A clinical retrospective study. [►](#)
15. Postoperative hypocalcemia: Assessment timing. [►](#)
16. Parathyroid dual tracer subtraction scintigraphy: small regions method for quantitative assessment of parathyroid adenoma uptake. [►](#)
17. The Efficacy of Low- and High-Dose 99m Tc-MIBI Protocols for Intraoperative Identification of Hyperplastic Parathyroid Glands in Secondary Hyperparathyroidism. [►](#)
18. Radioguided parathyroidectomy in patients with secondary hyperparathyroidism due to chronic renal failure. [►](#)

# PARATİROID

## VAKA SUNUMU

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1. Successful parathyroid tissue autograft after 3 years of cryopreservation: a case report. ►
2. Intrathyroidal parathyroid carcinoma mimicking a thyroid nodule in a MEN type 1 patient. ►
3. Functioning oxyphil parathyroid adenoma: a case report...►

# ADRENAL

## DERLEME

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1. Surgical management of adrenocortical tumours. ►
2. A review of the anatomy and clinical significance of adrenal veins. ►
3. The past, the present, and the future of minimally invasive therapy in laparoscopic surgery: A review and speculative outlook. ►
4. Adrenalectomy for isolated metastasis from operable non-small-cell lung cancer.  
►

# ADRENAL

## PROSPEKTİF

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1. Primary aldosteronism and essential hypertension: assessment of cardiovascular risk at diagnosis and after treatment. 

# ADRENAL

## RETROSPEKTİF

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1. Outcomes of adrenal-sparing surgery or total adrenalectomy in phaeochromocytoma associated with multiple endocrine neoplasia type 2: an international retrospective population-based study. [►](#)
2. Robot-assisted Laparoscopic Adrenalectomy: Step-by-Step Technique and Comparative Outcomes. [►](#)
3. The adrenal psoas sign: surgical outcomes following a simple technique to maximize removal of extracortical adrenal tissue during bilateral laparoscopic adrenalectomy. [►](#)
4. Laparoscopic transperitoneal anterior adrenalectomy in pheochromocytoma: experience in 62 patients. [►](#)
5. A single-institution experience in image-guided thermal ablation of adrenal glandmetastases. [►](#)
6. Expanding the indications for laparoscopic retroperitoneal adrenalectomy: experience with 81 resections. [►](#)
7. Contemporary review of large adrenal tumors in a tertiary referral center. [►](#)
8. A modified adrenal gland-sparing surgery based on retroperitoneal laparoscopic radical nephrectomy. [►](#)

# ADRENAL

## VAKA SUNUMU

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1. Giant adrenal myelolipoma: when trauma and oncology collide. ►
2. Surgical management of pheochromocytoma in a 13-week pregnant woman. ►
3. Intraoperative hypertensive crisis secondary to an undiagnosed pheochromocytoma during orthognathic surgery: a case report. ►
4. Perirenal myelolipoma diagnosed on imprint: Case report and review of the literature. ►

# NET

## DERLEME

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1. Incidence of gastroenteropancreatic neuroendocrine tumours: a systematic review of the literature. ►
2. Risk Factors Associated with Rectal Neuroendocrine Tumors: A Cross-Sectional Study. ►
3. Gastroenteropancreatic high-grade neuroendocrine carcinoma. ►
4. A Retrospective Review of 126 High-Grade Neuroendocrine Carcinomas of the Colon and Rectum. ►
5. Gastroenteropancreatic endocrine tumors. ►
6. Endoscopic Diagnosis and Treatment of Pancreatic Neuroendocrine Tumors. ►
7. GEP-NETS update: Surgery of Neuroendocrine Tumors. ►
8. GEP-NETS update: functional localisation and scintigraphy in neuroendocrine tumours of the gastrointestinal tract and pancreas (GEP-NETs). ►
9. THERAPY OF ENDOCRINE DISEASE: Treatment of malignant pheochromocytoma and paraganglioma. ►
10. Laparoscopic resection of pancreatic neuroendocrine tumors. ►
11. Nonfunctional pancreatic neuroendocrine tumors. ►
12. The role of 68-Ga-DOTATOC CT-PET in surgical tactic for gastric neuroendocrine tumors treatment: Our experience. ►
13. Malignant insulinoma: Recommendations for workup and treatment]. ►

# NET

## PROSPEKTİF

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1. Oncologic outcomes of patients undergoing videoscopic inguinal lymphadenectomy for metastatic melanoma. ►
2. Radiofrequency Ablation of Pancreatic Neuroendocrine Tumors: A Pilot Study of Feasibility, Efficacy, and Safety. ►
3. Resection of Carotid Body Tumors reduces arterial blood pressure. An underestimatedneuroendocrine syndrome. ►

# NET

## RETROSPEKTİF

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1. Parathyroid Hormone-Related Peptide (PTHrP) Secretion by GastroenteropancreaticNeuroendocrine Tumors (GEP-NETs): Clinical Features, Diagnosis, Management, and Follow-Up. [►](#)
2. Poorly differentiated neuroendocrine carcinomas of the pancreas: a clinicopathologic analysis of 44 cases. [►](#)
3. Impact of Extent of Surgery on Survival in Patients with Small Nonfunctional PancreaticNeuroendocrine Tumors in the United States. [►](#)
4. Basing Treatment Strategy for Non-functional Pancreatic Neuroendocrine Tumors on Tumor Size. [►](#)
5. Pancreastatin Predicts Survival in Neuroendocrine Tumors. [►](#)
6. Cystic pancreatic neuroendocrine tumors: The value of cytology in preoperative diagnosis. [►](#)
7. Surgery for small-bowel neuroendocrine tumors: is there any benefit of the laparoscopic approach? [►](#)
8. Evaluation of the World Health Organization 2010 Grading System in Surgical Outcome and Prognosis of Pancreatic Neuroendocrine Tumors. [►](#)
9. Analysis of risk factors for recurrence after curative resection of well-differentiated pancreatic neuroendocrine tumors based on the new grading classification. [►](#)
10. Laparoscopic versus open pancreas resection for pancreatic neuroendocrine tumours: a systematic review and meta-analysis. [►](#)
11. Limitations of somatostatin scintigraphy in primary small bowel neuroendocrine tumors. [►](#)

# NET

## VAKA SUNUMU

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1. ACTH-secreting neuroendocrine pancreatic tumor: A case report. [►](#)
2. Carcinoid abdominal crisis: A case report. [►](#)

# TİROID

## DERLEME / METAANALİZ

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1. [N Engl J Med.](#) 2014 Apr 3;370(14):1327-34. doi: 10.1056/NEJMoa1308893. (IF:25.89)

### **Thyroid hormone inactivation in gastrointestinal stromal tumors.**

Maynard MA<sup>1</sup>, Marino-Enriquez A, Fletcher JA, Dorfman DM, Raut CP, Yassa L, Guo C, Wang Y, Dorfman C, Feldman HA, Frates MC, Song H, Jugo RH, Taguchi T, Hershman JM, Larsen PR, Huang SA.

#### Author information

#### **Abstract**

Gastrointestinal stromal tumors (GISTs) are resistant to traditional chemotherapy but are responsive to the tyrosine kinase inhibitors imatinib and sunitinib. The use of these agents has improved the outcome for patients but is associated with adverse effects, including hypothyroidism. Multiple mechanisms of this effect have been proposed, including decreased iodine organification and glandular capillary regression. Here we report the finding of consumptive hypothyroidism caused by marked overexpression of the thyroid hormone-inactivating enzyme type 3 iodothyronine deiodinase (D3) within the tumor. Affected patients warrant increased monitoring and may require supernormal thyroid hormone supplementation.

PMID: [24693892](#)

2. [Autoimmun Rev.](#) 2014 Apr-May;13(4-5):391-7. doi: 10.1016/j.autrev.2014.01.007. Epub 2014 Jan 13. (IF: 8.60)

### **Hashimoto thyroiditis: clinical and diagnostic criteria.**

Caturegli P<sup>1</sup>, De Remigis A<sup>2</sup>, Rose NR<sup>3</sup>.

#### Author information

#### **Abstract**

Hashimoto thyroiditis (HT), now considered the most common autoimmune disease, was described over a century ago as a pronounced lymphoid goiter affecting predominantly women. In addition to this classic form, several other clinico-pathologic entities are now included under the term HT: fibrous variant, IgG4-related variant, juvenile form, Hashitoxicosis, and painless thyroiditis (sporadic or post-partum). All forms are characterized pathologically by the infiltration of hematopoietic mononuclear cells, mainly lymphocytes, in the interstitium among the thyroid follicles, although specific features can be recognized in each variant. Thyroid cells undergo atrophy or transform into a bolder type of follicular cell rich in mitochondria called Hürthle cell. Most HT forms ultimately evolve into hypothyroidism, although at presentation patients can be euthyroid or even hyperthyroid. The diagnosis of HT relies on the demonstration of circulating antibodies to thyroid antigens (mainly thyroperoxidase and thyroglobulin) and reduced echogenicity on thyroid sonogram in a patient with proper clinical features. The treatment remains symptomatic and based on the administration of synthetic thyroid hormones to correct the hypothyroidism as needed. Surgery is performed when the goiter is large enough to cause significant compression of the surrounding cervical structures, or when some areas of the thyroid gland mimic the features of a nodule whose cytology cannot be ascertained as benign. HT remains a complex and ever expanding disease of unknown pathogenesis that awaits prevention or novel forms of treatment.

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**KEYWORDS:**

Autoimmunity; Hashimoto; Thyroiditis

PMID: [24434360](#)

3. [Autoimmun Rev.](#) 2014 Apr-May;13(4-5):398-402. doi: 10.1016/j.autrev.2014.01.013. Epub 2014 Jan 12. (IF: 8.60)

## Diagnosis and classification of Graves' disease.

Menconi F<sup>1</sup>, Marcocci C<sup>2</sup>, Marinò M<sup>2</sup>.

Author information

**Abstract**

Graves' disease (GD) is an autoimmune disorder involving the thyroid gland, typically characterized by the presence of circulating autoantibodies that bind to and stimulate the thyroid hormone receptor (TSHR), resulting in hyperthyroidism and goiter. Organs other than the thyroid can also be affected, leading to the extrathyroidal manifestations of GD, namely Graves' ophthalmopathy, which is observed in ~50% of patients, and Graves' dermopathy and acropachy, which are quite rare. Presumably, the extrathyroidal manifestations of GD are due to autoimmunity against antigens common to the thyroid and other affected organs. Although its exact etiology remains to be completely understood, GD is believed to result from a complex interaction between genetic susceptibility and environmental factors. Clinically, GD is characterized by the manifestations of thyrotoxicosis as well as by its extrathyroidal features when present, the latter making the diagnosis almost unmistakable. In the absence of ophthalmopathy, the diagnosis is generally based on the association of hyperthyroidism and usually diffuse goiter confirmed with serum anti-TSHR autoantibodies (TRAbs). Hyperthyroidism is generally treated with anti-thyroid drugs, but a common long term treatment strategy in patients relapsing after a course of anti-thyroid drugs (60-70%), implies the use of radioactive iodine or surgery.

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PMID: [24424182](#)

4. [J Clin Endocrinol Metab.](#) 2014 Apr;99(4):1253-63. doi: 10.1210/jc.2013-2928. Epub 2013 Nov 25. (IF: 7.02)

## The accuracy of thyroid nodule ultrasound to predict thyroid cancer: systematic review and meta-analysis.

Brito JP<sup>1</sup>, Gionfriddo MR, Al Nofal A, Boehmer KR, Leppin AL, Reading C, Callstrom M, Elraiyyah TA, Prokop LJ, Stan MN, Murad MH, Morris JC, Montori VM.

Author information

**Abstract**

**CONTEXT:**

Significant uncertainty remains surrounding the diagnostic accuracy of sonographic features used to predict the malignant potential of thyroid nodules.

**OBJECTIVE:**

The objective of the study was to summarize the available literature related to the accuracy of thyroid nodule ultrasound (US) in the prediction of thyroid cancer.

**METHODS:**

We searched multiple databases and reference lists for cohort studies that enrolled adults with thyroid nodules with reported diagnostic measures of sonography. A total of 14 relevant US features were analyzed.

**RESULTS:**

We included 31 studies between 1985 and 2012 (number of nodules studied 18,288; average size 15 mm). The frequency of thyroid cancer was 20%. The most common type of cancer was papillary thyroid cancer (84%). The US nodule features with the highest diagnostic odds ratio for malignancy was being taller than wider [11.14 (95% confidence interval 6.6-18.9)]. Conversely, the US nodule features with the highest diagnostic odds ratio for benign nodules was spongiform appearance [12 (95% confidence interval 0.61-234.3)]. Heterogeneity across studies was substantial. Estimates of accuracy depended on the experience of the physician interpreting the US, the type of cancer and nodule (indeterminate), and type of reference standard. In a threshold model, spongiform appearance and cystic nodules were the only two features that, if present, could have avoided the use of fine-needle aspiration biopsy.

**CONCLUSIONS:**

Low- to moderate-quality evidence suggests that individual ultrasound features are not accurate predictors of thyroid cancer. Two features, cystic content and spongiform appearance, however, might predict benign nodules, but this has limited applicability to clinical practice due to their infrequent occurrence.

PMID: [24276450](#)

5. [Cancer](#). 2014 Apr 15;120(8):1155-61. doi: 10.1002/cncr.28463. Epub 2014 Feb 24. (IF: 5.54)

## Comparison of secondary and primary thyroid cancer in adolescents and young adults.

[Goldfarb M<sup>1</sup>](#), [Freyer DR](#).

[Author information](#)

### Abstract

#### BACKGROUND:

Thyroid cancer is one of the 5 most common malignancies in adolescent and young adult (AYA) patients (ages 15-39 years) and may develop de novo or in patients previously treated for cancer. This study compared the tumor characteristics, treatment, and overall survival (OS) of secondary malignant neoplasm (SMN) versus primary thyroid cancer in AYA patients.

**METHODS:**

All cases of AYA thyroid cancer contained in the 1998 to 2010 American College of Surgeons National Cancer Database were divided into 2 cohorts according to primary or secondary occurrence. Comparisons using appropriate statistical methods were performed.

**RESULTS:**

Of 41,062 cases, 1349 (3.3%) had experienced a prior malignancy. Compared with cases of primary thyroid cancer, SMNs were more likely multifocal (odds ratio [OR] = 1.173, 95% confidence interval [CI] = 1.049-1.313) microcarcinomas < 1 cm (OR = 1.496, 95% CI = 1.327-1.687) with tall/columnar cells (OR = 2.187, 95% CI = 0.534-0.692), of white race (OR = 2.643, 95% CI = 1.310-5.331) and age 35-39 years (OR = 1.239, 95% CI = 1.093-1.404) and less likely female (OR = 0.608, 95% CI = 0.534-0.692), Hispanic (OR = 0.779, 95% CI = 0.642-0.946) age 15-19 years (OR = 0.624, 95% CI = 0.510-0.763) or 25-29 years (OR = 0.711, 95% CI = 0.604-0.837), or less likely > 4 cm in size (OR = 0.610, 95% CI = 0.493-0.758). There was a 6.63-fold (95% CI = 4.97-8.86, P < .001) relative risk of death for secondary versus primary thyroid cancers after adjusting for demographic, tumor, and thyroid treatment factors. Only Hispanic origin, tall/columnar cell histology, and distant metastases decreased OS for SMNs.

**CONCLUSIONS:**

AYAs who develop thyroid cancer as a SMN have a significantly decreased OS compared to AYAs with primary thyroid cancer. Multiple demographic and tumor differences exist between these 2 cohorts. Whether the outcome disparity results from previous cancer treatment or differences in biology, environment, or access to care are areas needing further investigation.

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**KEYWORDS:**

AYA; adolescent; second cancer; thyroid; young adult

PMID: [24615715](#)

6. [Br J Surg.](#) 2014 Apr;101(5):446-56. doi: 10.1002/bjs.9448. (IF: 5.09)

## Systematic review and meta-analysis of wound drains after thyroid surgery.

[Woods RS<sup>1</sup>](#), [Woods JF](#), [Duignan ES](#), [Timon C.](#)

[Author information](#)

### Abstract

#### BACKGROUND:

Drainage after routine thyroid and parathyroid surgery remains controversial. However, there is increasing evidence from a number of randomized clinical trials (RCTs) suggesting no benefit from the use of drains.

#### METHODS:

A systematic review and meta-analysis was performed according to PRISMA guidelines. A literature search was carried out, and RCTs comparing the use of drains versus no drains in patients who underwent thyroid or parathyroid surgery were included. Trials including patients who underwent lateral neck dissection were excluded. Methodological quality was graded and data were extracted by independent reviewers. Risk ratio (RR) or mean difference (MD) with 95 per cent confidence interval (c.i.) was calculated and heterogeneity was assessed.

#### RESULTS:

Twenty-five RCTs were included in the meta-analysis comprising 2939 patients. There was no significant difference between the two groups in rate of reoperation for neck haematoma (RR 1·90, 95 per cent c.i. 0·87 to 4·14), ultrasound-assessed fluid volume on day 1 after surgery (MD 2·30 (95 per cent c.i. -0·73 to 5·34) ml), wound collection requiring intervention (RR 0·64, 0·38 to 1·09) or not (RR 0·93, 0·66 to 1·30), transient voice change (RR 2·33, 0·91 to 5·96) and persistent recurrent laryngeal nerve palsy (RR 1·67, 0·22 to 12·51). Length of hospital stay was significantly greater in the drain group (MD 1·25 (0·83 to 1·68) days), as were wound infection rates (RR 2·53, 1·23 to 5·21) and pain score measure using a visual analogue scale from 1 to 10 on day 1 after surgery (MD 1·46 (0·67 to 2·26) units).

#### CONCLUSION:

The results indicate that drain use after routine thyroid surgery does not confer a benefit to patients.

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PMID: [24633830](#)

7. [Cancer Cytopathol.](#) 2014 Apr;122(4):241-9. doi: 10.1002/cncy.21391. Epub 2014 Jan 16. (IF: 4.01)

## Hürthle cells in fine-needle aspirates of the thyroid: a review of their diagnostic criteria and significance.

[Auger M.](#)

[Author information](#)

### Abstract

Although the cytological assessment of Hürthle cell lesions is challenging, the literature offers good, albeit imperfect, guidance to aid in the crucial distinction between nonneoplastic and neoplastic lesions. The significance of a cytologic diagnosis of follicular neoplasm, Hürthle cell type, lies in the rate of malignancy on follow-up surgical excision, ranging in the literature from 10% to 45%. A cytodiagnosis of atypia of undetermined significance (AUS), Hürthle cell type, appears to be associated with a lower risk of malignancy on follow-up than other subtypes of AUS; however, this area warrants further investigation.

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### KEYWORDS:

Hürthle cells; cytology; fine-needle aspirate; oncocytes; thyroid

PMID: [24436122](#)

8. [FEBS Lett.](#) 2014 May 2;588(9):1644-51. doi: 10.1016/j.febslet.2014.03.002. Epub 2014 Mar 12. (IF: 3.83)

## MiR-129-5p is down-regulated and involved in the growth, apoptosis and migration of medullary thyroid carcinoma cells through targeting RET.

[Duan L<sup>1</sup>, Hao X<sup>2</sup>, Liu Z<sup>3</sup>, Zhang Y<sup>4</sup>, Zhang G<sup>5</sup>.](#)

[Author information](#)

### Abstract

Dysregulation of the REarranged during Transfection proto-oncogene (RET) pathway and microRNA (miRNAs) are crucial for the development of medullary thyroid carcinomas (MTC). Here we demonstrate that miR-129-5p is down-regulated in MTC tissues and cell lines and inhibits RET expression by directly binding its 3' untranslated regions. Ectopic expression of miR-129-5p significantly decreases cell growth, induces apoptosis and suppresses migration ability in MTC cells through decreasing the phosphorylated AKT, thus functioning as a tumor suppressor. These findings give new clues for understanding MTC carcinogenesis and may help in developing a therapeutic approach for the treatment of RET-activated MTC.

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### KEYWORDS:

Cell apoptosis; Cell growth; Cell migration; Medullary thyroid carcinoma; MiR-129-5p; REarranged during Transfection proto-oncogene

PMID: [24631532](#)

9. [Eur J Endocrinol](#). 2014 Apr 10;170(5):R203-11. doi: 10.1530/EJE-13-0995. Print 2014 May. (IF: 3.64)

## Quantification of cancer risk of each clinical and ultrasonographic suspicious feature of thyroid nodules: a systematic review and meta-analysis.

[Campanella P<sup>1</sup>](#), [Ianni F](#), [Rota CA](#), [Corsello SM](#), [Pontecorvi A](#).

### Author information

#### **Abstract**

#### **OBJECTIVE:**

In order to quantify the risk of malignancy of clinical and ultrasonographic features of thyroid nodules (TNs), we did a systematic review and meta-analysis of published studies.

#### **METHODS:**

We did a literature search in MEDLINE for studies published from 1st January 1989 until 31st December 2012. Studies were considered eligible if they investigated the association between at least one clinical/ultrasonographic feature and the risk of malignancy, did not have exclusion criteria for the detected nodules, had histologically confirmed the diagnoses of malignancy, and had a univariable analysis available. Two reviewers independently extracted data on study characteristics and outcomes.

#### **RESULTS:**

The meta-analysis included 41 studies, for a total of 29678 TN. A higher risk of malignancy expressed in odds ratio (OR) was found for the following: nodule height greater than width (OR: 10.15), absent halo sign (OR: 7.14), microcalcifications (OR: 6.76), irregular margins (OR: 6.12), hypoechoicity (OR: 5.07), solid nodule structure (OR: 4.69), intranodular vascularization (OR: 3.76), family history of thyroid carcinoma (OR: 2.29), nodule size  $\geq 4\text{ cm}$  (OR: 1.63), single nodule (OR: 1.43), history of head/neck irradiation (OR: 1.29), and male gender (OR: 1.22). Interestingly, meta-regression analysis showed a higher risk of malignancy for hypoechoic nodules in iodine-sufficient than in iodine-deficient geographical areas.

#### **CONCLUSIONS:**

The current meta-analysis verified and weighed out each suspicious clinical and ultrasonographic TN feature. The highest risk was found for nodule height greater than width, absent halo sign, and microcalcifications for ultrasonographic features and family history of thyroid carcinoma for clinical features. A meta-analysis-derived grading system of TN malignancy risk, validated on a large prospective cohort, could be a useful tool in TN diagnostic work-up.

PMID: [24536085](#)

10. [Eur J Endocrinol](#). 2014 Mar 14;170(4):R133-46. doi: 10.1530/EJE-13-0917. Print 2014 Apr. (IF: 3.64)

## Diagnosis of endocrine disease: thyroid ultrasound (US) and US-assisted procedures: from the shadows into an array of applications.

[Papini E](#), [Pacella CM](#), [Hegedus L](#).

#### **Abstract**

In patients with thyroid nodules, ultrasound (US) imaging represents an indispensable tool for assessment of the risk of malignancy. Over approximately four decades, innovative technology and successive improvements have facilitated its entry into the routine management and greatly improved its predictive value. When US features cannot reliably rule out thyroid cancer, US guidance allows a correct and safe sampling also of small or deeply located thyroid lesions. Obtained in this way, cytological or microhistological specimens may reliably define the nature of most thyroid nodules, and the information from histochemical or molecular markers shows promise in the classification of the remaining indeterminate cases. While a prompt surgical treatment can be offered in the minority of suspicious or definitely malignant cases, most individuals warrant only a follow-up. However, at initial evaluation, or over the years, a fraction of these benign lesions may grow and/or become symptomatic. Such cases may benefit from US-guided minimally invasive procedures as an alternative to surgery. Image-guided percutaneous treatments most often achieve relief of neck complaints, are inexpensive, and can be performed on an outpatient basis. The risk of major complications, after adequate training, is very low. Importantly, thyroid function is preserved. Currently, percutaneous ethanol injection for cystic lesions and thermal ablation, with laser or radiofrequency, for solid nodules are increasingly used and disseminated beyond the initial core facilities. In centres with expertise and high patient volume, their use should be considered as first-line treatment alternatives to surgery for selected patients with benign enlarging or symptomatic thyroid lesions.

PMID: [24459238](#)

11. *Occup Environ Med.* 2014 May;71(5):366-80. doi: 10.1136/oemed-2013-101929. Epub 2014 Mar 6.

(IF: 3.32)

## Occupation and thyroid cancer.

[Aschebrook-Kilfoy B<sup>1</sup>](#), [Ward MH](#), [Della Valle CT](#), [Friesen MC](#).

[Author information](#)

### Abstract

Numerous occupational and environmental exposures have been shown to disrupt thyroid hormones, but much less is known about their relationships with thyroid cancer. Here we review the epidemiology studies of occupations and occupational exposures and thyroid cancer incidence to provide insight into preventable risk factors for thyroid cancer. The published literature was searched using the Web of Knowledge database for all articles through August 2013 that had in their text 'occupation' 'job' 'employment' or 'work' and 'thyroid cancer'. After excluding 10 mortality studies and 4 studies with less than 5 exposed incident cases, we summarised the findings of 30 articles that examined thyroid cancer incidence in relation to occupations or occupational exposure. The studies were grouped by exposure/occupation category, study design and exposure assessment approach. Where available, gender-stratified results are reported. The most studied (19 of 30 studies) and the most consistent associations were observed for radiation-exposed workers and healthcare occupations. Suggestive, but inconsistent, associations were observed in studies of pesticide-exposed workers and agricultural occupations. Findings for other exposures and occupation groups were largely null. The majority of studies had few exposed cases and assessed exposure based on occupation or industry category, self-report, or generic (population-based) job exposure matrices. The suggestive, but inconsistent findings for many of the occupational exposures reviewed here indicate that more studies with larger numbers of cases and better exposure assessment are necessary, particularly for exposures known to disrupt thyroid homeostasis.

PMID: [24604144](#)

12. [AJR Am J Roentgenol.](#) 2014 Apr;202(4):W379-89. doi: 10.2214/AJR.12.9785. (IF:3.25)

## Diagnostic accuracy of sonoelastography in detecting malignant thyroid nodules: a systematic review and meta-analysis.

Ghajarzadeh M<sup>1</sup>, Sodagari F, Shakiba M.

[Author information](#)

### Abstract

#### OBJECTIVE:

The aim of this systematic review was to determine the diagnostic accuracy of sonoelastography in detecting malignant thyroid nodules.

#### MATERIALS AND METHODS:

A systematic search in MEDLINE and bibliographic databases was performed for the terms "thyroid nodule" and "sonoelastography." The inclusion criteria were the report of a 4- or 5-point scoring scale for elasticity score by qualitative sonoelastography as the index test and fine-needle aspiration (FNA) cytology or histopathology for thyroid nodules as the reference standard. Studies in which only the strain ratio was reported and studies of patients with underlying medical conditions were excluded. The methodologic quality of the studies was assessed using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool. A meta-analysis of diagnostic accuracy measures for sonoelastography was performed using Meta-DiSc freeware software (version 1.4).

#### RESULTS:

A total of 12 studies assessing 1180 thyroid nodules (817 benign and 363 malignant) were included. The most commonly used threshold for characterizing malignancy--that is, elasticity scores between 2 and 3--showed a sensitivity of 86.0% (95% CI, 81.9-89.4%) and specificity of 66.7% (95% CI, 63.4-69.9%) with positive and negative likelihood ratios and a diagnostic odds ratio of 3.82 (95% CI, 2.38-6.13), 0.16 (95% CI, 0.08-0.32), and 27.51 (95% CI, 9.21-82.18), respectively. The highest sensitivity of the test was achieved by a threshold elasticity score of between 1 and 2 with a sensitivity of 98.3% (95% CI, 96.2-99.5%).

#### CONCLUSION:

Sonoelastography can be considered as a reliable screening tool for characterizing thyroid nodules. An elasticity score of 1 is indicative of benign pathology in almost all cases and can be used to exclude many patients from further invasive assessments.

PMID: [24660737](#)

13. [JAMA Otolaryngol Head Neck Surg.](#) 2014 Apr;140(4):317-22. doi: 10.1001/jamaoto.2014.1. (IF: 1.68)

## Current thyroid cancer trends in the United States.

Davies L<sup>1</sup>, Welch HG<sup>2</sup>.

[Author information](#)

### Abstract

#### IMPORTANCE:

We have previously reported on a doubling of thyroid cancer incidence--largely due to the detection of small papillary cancers. Because they are commonly found in people who have died of other causes, and because thyroid cancer mortality had been stable, we argued that the increased incidence represented overdiagnosis.

#### OBJECTIVE:

To determine whether thyroid cancer incidence has stabilized.

**DESIGN:**

Analysis of secular trends in patients diagnosed with thyroid cancer, 1975 to 2009, using the Surveillance, Epidemiology, and End Results (SEER) program and thyroid cancer mortality from the National Vital Statistics System.

**SETTING:**

Nine SEER areas (SEER 9): Atlanta, Georgia; Connecticut; Detroit, Michigan; Hawaii; Iowa; New Mexico; San Francisco-Oakland, California; Seattle-Puget Sound, Washington; and Utah.

**PARTICIPANTS:**

Men and women older than 18 years diagnosed as having a thyroid cancer between 1975 and 2009 who lived in the SEER 9 areas.

**INTERVENTIONS:**

None.

**MAIN OUTCOMES AND MEASURES:**

Thyroid cancer incidence, histologic type, tumor size, and patient mortality. RESULTS Since 1975, the incidence of thyroid cancer has now nearly tripled, from 4.9 to 14.3 per 100,000 individuals (absolute increase, 9.4 per 100,000; relative rate [RR], 2.9; 95% CI, 2.7-3.1). Virtually the entire increase was attributable to papillary thyroid cancer: from 3.4 to 12.5 per 100,000 (absolute increase, 9.1 per 100,000; RR, 3.7; 95% CI, 3.4-4.0). The absolute increase in thyroid cancer in women (from 6.5 to 21.4 = 14.9 per 100,000 women) was almost 4 times greater than that of men (from 3.1 to 6.9 = 3.8 per 100,000 men). The mortality rate from thyroid cancer was stable between 1975 and 2009 (approximately 0.5 deaths per 100,000).

**CONCLUSIONS AND RELEVANCE:**

There is an ongoing epidemic of thyroid cancer in the United States. The epidemiology of the increased incidence, however, suggests that it is not an epidemic of disease but rather an epidemic of diagnosis. The problem is particularly acute for women, who have lower autopsy prevalence of thyroid cancer than men but higher cancer detection rates by a 3:1 ratio.

PMID: [24557566](#)

14. *Otolaryngol Head Neck Surg.* 2014 Apr;150(4):520-32. doi: 10.1177/0194599814521779. Epub 2014 Feb 5. (IF: 1.68)

## Systematic review and meta-analysis of robotic vs conventional thyroidectomy approaches for thyroid disease.

Sun GH<sup>1</sup>, Peress L, Pynnonen MA.

Author information

**Abstract**

**OBJECTIVE:**

This study compared postoperative technical, quality-of-life, and cost outcomes following either robotic or open thyroidectomy for thyroid nodules and cancer.

**DATA SOURCES:**

PubMed, Ovid MEDLINE, EMBASE, ISI Web of Science, and the Cochrane Central Register of Controlled Trials.

**REVIEW METHODS:**

We examined relevant controlled trials, comparative effectiveness studies, and cohort studies for eligible publications. We calculated the pooled relative risk for key postoperative complications, mean differences for operative time, and standardized mean differences for length of stay (LOS) using random effects models. Quality-of-life outcomes were summarized in narrative form.

## RESULTS:

The meta-analysis comprised 11 studies with 726 patients undergoing robotic transaxillary or axillo-breast thyroidectomy and 1205 undergoing open thyroidectomy. There were no eligible cost-related studies. Mean operative time for robotic thyroidectomy exceeded open thyroidectomy by 76.7 minutes, while no significant difference in LOS was identified. There were no significant differences in hematoma, seroma, recurrent laryngeal nerve injury, hypocalcemia, or chyle leak rates. The systematic review included 12 studies. Voice, swallowing, pain, and paresthesia outcomes showed no significant differences between the 2 approaches. The robotic cohort reported higher cosmetic satisfaction scores, although follow-up periods did not exceed 3 months and no validated questionnaires were used.

## CONCLUSIONS:

Transaxillary and axillo-breast robotic and open thyroidectomy demonstrate similar complication rates, but robotic approaches may introduce the risk of new complications and require longer operative times. Robotic thyroidectomy appears to improve cosmetic outcomes, although longer follow-up periods and use of validated instruments are needed to more rigorously examine this effect.

## KEYWORDS:

brachial plexus injury; hemorrhage; hoarseness; hypocalcemia; hypoparathyroidism; length of stay; operative time; quality of life; recurrent laryngeal nerve injury; robotic surgery; thyroid cancer; thyroid nodule

PMID: [24500878](#)

15. [Emerg Med Clin North Am.](#) 2014 May;32(2):303-17. doi: 10.1016/j.emc.2013.12.003. Epub 2014 Mar 6. (IF:1.14)

## Hypothyroidism: causes, killers, and life-saving treatments.

[Dubbs SB<sup>1</sup>](#), [Spangler R<sup>2</sup>](#).

[Author information](#)

### Abstract

Hypothyroidism is a very common, yet often overlooked disease. It can have a myriad of signs and symptoms, and is often nonspecific. Identification requires analysis of thyroid hormones circulating in the bloodstream, and treatment is simply replacement with exogenous hormone, usually levothyroxine (Synthroid). The deadly manifestation of hypothyroidism is myxedema coma. Similarly nonspecific and underrecognized, treatment with exogenous hormone is necessary to decrease the high mortality rate.

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## KEYWORDS:

Coma; Hypothyroidism; Levothyroxine; Myxedema; Thyroid; Thyroid-stimulating hormone

PMID: [24766934](#)

**16.** [Emerg Med Clin North Am.](#) 2014 May;32(2):277-92. doi: 10.1016/j.emc.2013.12.001. Epub 2014

Mar 15. (IF:1.14)

## **Hyperthyroidism and thyrotoxicosis.**

[Devereaux D<sup>1</sup>](#), [Tewelde SZ<sup>2</sup>](#).

[Author information](#)

### **Abstract**

Hyperthyroidism and thyrotoxicosis are hypermetabolic conditions that cause significant morbidity and mortality. The diagnosis can be difficult because symptoms can mimic many other disease states leading to inaccurate or untimely diagnoses and management. Thyroid storm is the most severe form of thyrotoxicosis, hallmarked by altered sensorium, and, if untreated, is associated with significant mortality. Thyroid storm should be considered in the differential of any patient presenting with altered mental status. The emergency medicine physician who can rapidly recognize thyrotoxicosis, identify the precipitating event, appropriately and comprehensively begin medical management, and facilitate disposition will undoubtedly save a life.

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### **KEYWORDS:**

Graves disease; Hyperthyroidism; Thyroid storm; Thyroiditis; Thyrotoxicosis

PMID: [24766932](#)

# TİROID

## PROSPEKTİF

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1. [J Clin Endocrinol Metab.](#) 2014 Apr;99(4):E625-33. doi: 10.1210/jc.2013-3977. Epub 2014 Jan 21.

(IF: 7.02)

### Regulation of IL-1 receptor antagonist by TSH in fibrocytes and orbital fibroblasts.

Li B<sup>1</sup>, Smith TJ.

[Author information](#)

#### Abstract

#### CONTEXT:

The IL-1 family plays important roles in normal physiology and mediates inflammation. The actions of IL-1 are modulated by multiple IL-1 receptor antagonists (IL-1RA), including intracellular and secreted forms. IL-1 has been implicated in autoimmunity, such as that occurring in Graves' disease (GD) and its inflammatory orbital manifestation, thyroid-associated ophthalmopathy (TAO). We have previously reported that CD34(+) fibrocytes, monocyte-lineage bone marrow-derived cells, express functional TSH receptor, the central antigen in GD. When activated by TSH, they produce IL-6, IL-8, and TNF- $\alpha$ . Moreover, they infiltrate the orbit in TAO in which they transition into CD34(+) fibroblasts and comprise a population of orbital fibroblasts (OFs). Little is known currently about any relationship between TSH, TSH receptor, and the IL-1 pathway.

#### OBJECTIVE:

The objective of the study was to determine whether TSH regulates IL-1RA in fibrocytes and OFs.

#### DESIGN/SETTING/PARTICIPANTS:

Fibrocytes and OFs were collected and analyzed from healthy individuals and those with GD in an academic clinical practice.

#### MAIN OUTCOME MEASURES:

Real-time PCR, Western blot analysis, reporter gene assays, and cell transfections were performed.

#### RESULTS:

TSH induces the expression of IL-1RA in fibrocytes and GD-OFs. The patterns of induction diverge quantitatively and qualitatively in the two cell types. This results from relatively small effects on gene transcription-related events but a greater influence on secreted IL-1RA and intracellular IL-1RA mRNA stabilities. These actions of TSH are dependent on the intermediate induction of IL-1 $\alpha$  and IL-1 $\beta$ .

#### CONCLUSIONS:

Our findings for the first time directly link activities of the TSH and IL-1 pathways. Furthermore, they identify novel molecular interactions that could be targeted as therapy for TAO.

PMID: [24446657](#)

2. [J Clin Endocrinol Metab.](#) 2014 Apr;99(4):E572-81. doi: 10.1210/jc.2013-2321. Epub 2014 Jan 1.  
(IF: 7.02)

## **CLM3, a multitarget tyrosine kinase inhibitor with antiangiogenic properties, is active against primary anaplastic thyroid cancer in vitro and in vivo.**

[Antonelli A<sup>1</sup>](#), [Bocci G](#), [Fallahi P](#), [La Motta C](#), [Ferrari SM](#), [Mancusi C](#), [Fioravanti A](#), [Di Desidero T](#), [Sartini S](#), [Corti A](#), [Piaggi S](#), [Materazzi G](#), [Spinelli C](#), [Fontanini G](#), [Danesi R](#), [Da Settimo E](#), [Miccoli P](#).

### Author information

### **Abstract**

#### **CONTEXT AND OBJECTIVE:**

We have studied the antitumor activity of a pyrazolo[3,4-d]pyrimidine compound (CLM3) proposed for a multiple signal transduction inhibition [including the RET tyrosine kinase, epidermal growth factor receptor, and vascular endothelial growth factor (VEGF) receptor and with antiangiogenic activity] in primary anaplastic thyroid cancer (ATC) cells, in the human cell line 8305C (undifferentiated thyroid cancer), and in an ATC-cell line (AF).

#### **DESIGN AND MAIN OUTCOME MEASURES:**

CLM3 was tested in primary ATC cells at the concentrations of 5, 10, 30, and 50 μM; in 8305C cells, in AF cells, at 1, 5, 10, 30, 50, or 100 μM; and in AF cells in CD nu/nu mice.

#### **RESULTS:**

CLM3 significantly inhibited the proliferation of 8305C and AF cells, also inducing apoptosis. A significant reduction of proliferation with CLM3 in ATC cells ( $P < .01$ , ANOVA) was shown. CLM3 increased the percentage of apoptotic ATC cells dose dependently ( $P < .001$ , ANOVA) and inhibited migration ( $P < .01$ ) and invasion ( $P < .001$ ). The AF cell line was injected sc in CD nu/nu mice, and tumor masses became detectable 15 days later. CLM3 (50 mg/kg per die) significantly inhibited tumor growth (starting 16 d after the beginning of treatment). CLM3 significantly decreased the VEGF-A expression and microvessel density in AF tumor tissues. Furthermore, CLM3 inhibited epidermal growth factor receptor, AKT, and ERK1/2 phosphorylation and down-regulated cyclin D1 in 8305C and AF cells.

#### **CONCLUSIONS:**

The antitumor and antiangiogenic activity of a pyrazolo[3,4-d]pyrimidine compound (CLM3) is very promising in anaplastic thyroid cancer, opening the way to a future clinical evaluation.

PMID: [24423321](#)

3. [J Clin Endocrinol Metab.](#) 2014 Apr;99(4):E694-702. doi: 10.1210/jc.2013-3682. Epub 2014 Jan 16.  
(IF: 7.02)

## **Thyroglobulin suppresses thyroid-specific gene expression in cultures of normal but not neoplastic human thyroid follicular cells.**

Ishido Y<sup>1</sup>, Yamazaki K, Kamimori M, Sugishita Y, Luo Y, Yamada E, Yamada T, Sellitti DF, Suzuki K.

**Author information**

**Abstract**

**CONTEXT:**

It was shown in the rat thyroid that thyroglobulin (Tg) stored in the follicular lumen is a potent regulator of thyroid-specific gene expression to maintain the function of individual follicles. However, the actions of Tg as a regulatory molecule in human thyroid have not been studied.

**OBJECTIVE:**

Our objective was to determine the effect of Tg on gene expression in normal and diseased human thyroid and to examine whether the proposed model of negative-feedback autocrine regulation of thyroid function by Tg is applicable in the human as well as the rat.

**DESIGN:**

Primary cultures of human thyrocytes were established from normal thyroid, Graves' disease thyroid, adenomatous goiter, follicular adenoma, and papillary carcinoma tissues obtained during surgery. Cells were stimulated with physiologic (ie, follicular) concentrations of Tg, and mRNA and protein expression of genes involved in thyroid hormonogenesis were evaluated. The effects of Tg on thyroid-specific gene expression were also assessed in 2 human papillary carcinoma cell lines.

**RESULTS:**

Transcript levels of genes participating in thyroid hormone biosynthesis were significantly reduced by Tg in thyrocyte cultures derived from normal and Graves' thyroid, but not in cultures derived from thyroid neoplasms and adenomatous goiter.

**CONCLUSION:**

It was confirmed that Tg acts as a negative-feedback regulator of gene expression in human thyrocytes, suggesting that Tg signaling may constitute a common mechanism for maintaining thyroid homeostasis in species with follicular thyroid morphology. However, certain diseases of intrinsic thyroid overgrowth appear to be associated with an escape from the regulatory mechanism of Tg.

PMID: [24433000](#)

4. [Eur J Endocrinol](#). 2014 Mar 13;170(4):619-25. doi: 10.1530/EJE-13-0944. Print 2014 Apr. (IF: 3.64)

## **Pre-operative role of BRAF in the guidance of the surgical approach and prognosis of differentiated thyroid carcinoma.**

Danilovic DL<sup>1</sup>, Lima EU, Domingues RB, Brandão LG, Hoff AO, Marui S.

**Author information**

**Abstract**

**OBJECTIVE:**

The p.V600E BRAF and RAS mutations are found in 30-80% of differentiated thyroid carcinoma (DTC). BRAF mutation has been associated with poor prognosis. This study investigated the role of molecular studies in preoperative diagnosis of DTC and the association of p.V600E mutation with prognostic factors.

**DESIGN:**

Prospective study.

**METHODS:**

A total of 202 patients with cytological diagnosis of Bethesda III-VI underwent preoperative molecular studies and subsequent thyroidectomy. p.V600E and RAS mutations were studied in the cytology smears,

using real-time PCR genotyping technique. The BRAF mutation (BRAF(+) or BRAF(-)) was correlated with histological and clinical findings.

## **RESULTS:**

Molecular study of 172 nodules with Bethesda III-V cytology improved negative predictive value and accuracy of Bethesda III and IV diagnosis. BRAF mutation was present in 65% of 94 DTC and p.Q61R NRAS in one. Except for age, BRAF(+) and BRAF(-) did not differ in sex, tumor size, histological subtype, multifocality, vascular invasion, extrathyroidal extension, or prognostic staging. Among papillary carcinomas, lymph node (LN) metastasis was diagnosed in 23% BRAF(+) and 37% BRAF(-). Distant metastasis occurred in four BRAF(-). Recurrent or persistent disease was more frequent in BRAF(-) (26.7 vs 3.3% BRAF(+), P=0.002) along follow-up of  $29.8 \pm 10$  months. BRAF(+) patients without LN metastasis by pre-operative evaluation submitted to thyroidectomy with central neck dissection (CND) had more frequent LN metastasis (45 vs 5% no CND, P=0.002), but no difference in clinical outcome was observed.

## **CONCLUSIONS:**

Pre-operative identification of BRAF mutation improved cytological diagnosis of DTC, but it was not associated with poor prognostic factors. Prophylactic CND did not guarantee better outcome in BRAF(+) patients.

PMID: [24468978](#)

5. [J Surg Res.](#) 2014 Apr;187(2):484-9. doi: 10.1016/j.jss.2013.11.1093. Epub 2013 Nov 22. (IF: 2.08)

## **Comparison of surgical outcomes between papillary thyroid cancer patients treated with the Harmonic ACE scalpel and LigaSure Precise instrument during conventional thyroidectomy: a single-blind prospective randomized controlled trial.**

[Kwak HY<sup>1</sup>](#), [Chae BJ<sup>1</sup>](#), [Park YG<sup>2</sup>](#), [Kim SH<sup>1</sup>](#), [Chang EY<sup>1</sup>](#), [Kim EJ<sup>1</sup>](#), [Song BJ<sup>1</sup>](#), [Jung SS<sup>1</sup>](#), [Bae JS<sup>3</sup>](#).

### Author information

### **Abstract**

#### **BACKGROUND:**

The aim of this study was to evaluate the safety and efficacy of thyroidectomy using the Harmonic ACE scalpel (HS) or the LigaSure Precise (LS) instrument in conventional thyroidectomy.

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

A prospective, randomized controlled trial was performed. Between August 2011 and June 2012, 832 patients who required thyroidectomy for papillary thyroid cancer were randomized into groups treated with either the HS or the LS instrument. Operative time and surgical morbidities were analyzed.

## **RESULTS:**

A total of 320 patients (HS group, N = 164; LS instrument group, N = 156) were randomized for analysis according to the intention-to-treat principle. There were no statistically significant differences in the operative times (HS group versus LS instrument group:  $71.93 \pm 18.26$  versus  $75.15 \pm 20.13$ ; P = 0.423), postoperative transient hypoparathyroidism (13.4% versus 14.1%; P = 0.858), and permanent recurrent laryngeal nerve injuries between the two groups.

## **CONCLUSIONS:**

In this study, both hemostatic devices were safe and effective in terms of postoperative results and complications without any differences.

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## **KEYWORDS:**

Clinical trials; Harmonic scalpel; Hemostasis; LigaSure; Thyroid cancer; Thyroidectomy

PMID: [24332551](#)

6. *Otolaryngol Head Neck Surg.* 2014 Apr;150(4):542-7. doi: 10.1177/0194599813519405. Epub 2014 Jan 15. (IF: 1.68)

## **Accuracy of intraoperative determination of central node metastasis by the surgeon in papillary thyroid carcinoma.**

Ji YB<sup>1</sup>, Lee DW, Song CM, Kim KR, Park CW, Tae K.

[Author information](#)

### **Abstract**

#### **OBJECTIVE:**

Prophylactic central neck dissection (CND) in papillary thyroid carcinoma (PTC) remains controversial. If the presence of central lymph node metastasis could be assessed preoperatively or intraoperatively, unnecessary CND could be avoided. The aim of this study was to evaluate the accuracy of intraoperative determination of central lymph node metastasis by the surgeon using palpation and inspection in clinically node-negative PTC.

#### **STUDY DESIGN:**

Prospective study.

#### **SETTING:**

University tertiary care facility.

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

A total of 122 consecutive patients with clinically node-negative PTC were enrolled. Any suspicious lymph nodes on intraoperative palpation or inspection were sent for frozen biopsy, and then bilateral CND with total thyroidectomy was carried out in all patients. The criteria for a suspicious lymph node included palpable hardness, dark discoloration, or size exceeding 5 mm in diameter. We compared the surgeon's judgments with the final pathologic results.

#### **RESULTS:**

Suspicious lymph nodes were found in 37 (30.3%) patients, and 15 of them had metastasis on permanent biopsy. Of 85 patients with no suspicious lymph nodes, 27 (31.8%) had metastasis on permanent biopsy. The sensitivity and specificity as well as positive and negative predictive values of intraoperative determination of central lymph node metastasis were 35.7%, 72.5%, 40.5%, and 68.2%, respectively. The positive predictive values of enlarged lymph nodes, dark discoloration, and hardness were 30.4%, 50.0%, and 78.6%, respectively.

#### **CONCLUSION:**

Intraoperative determination of central lymph node metastasis by the surgeon is a limited guide for CND in clinically node-negative PTC because of its low sensitivity and specificity.

#### **KEYWORDS:**

central lymph node metastasis; central neck dissection; intraoperative assessment; papillary thyroid carcinoma; thyroid cancer

PMID: [24429357](#)

7. [Laryngoscope](#). 2014 Apr;124(4):1035-41. doi: 10.1002/lary.24446. Epub 2014 Jan 23. (IF: 1.32)

## **Superior laryngeal nerve quantitative intraoperative monitoring is possible in all thyroid surgeries.**

Darr EA<sup>1</sup>, Tufano RP, Ozdemir S, Kamani D, Hurwitz S, Randolph G.

### **Author information**

#### **Abstract**

#### **OBJECTIVES/HYPOTHESIS:**

To report normative electromyography (EMG) data on the external branch of the superior laryngeal nerve (EBSLN) and to compare this to analogous data of the recurrent laryngeal nerve (RLN) and vagus nerve (VN) during intraoperative neural monitoring (IONM) using both the standard monopolar stimulator probe and a novel bipolar stimulator probe.

#### **STUDY DESIGN:**

Prospective multiple tertiary care center study.

#### **METHOD:**

A prospective study of EBSLN, RLN and VN EMG data in 22 thyroid surgeries was performed. Subjects with preoperative vocal fold paralysis were excluded. Postoperative laryngoscopy was normal in all subjects. Normative EMG data were acquired using both a standard monopolar and a novel bipolar stimulator probe, as well as a novel endotracheal tube. Cricothyroid muscle (CTM) twitch response during EBSLN stimulation was analyzed.

#### **RESULTS:**

In 100% of cases, EBSLN was identified and quantifiable EMG response was observed. EMG amplitude did not change despite extensive nerve dissection and multiple nerve stimulations. EBSLN amplitude was similar for left and right sides for patients under age 50 and aged 50 or older, for both genders, and with monopolar and bipolar stimulators.

#### **CONCLUSIONS:**

Intraoperative neural monitoring may be used to safely assist in EBSLN identification during thyroid surgery in 100% of patients. A novel endotracheal tube allows for quantifiable EBSLN EMG activity in 100% of cases. Monopolar and bipolar stimulator probes produce similar EMG data.

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

4.

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#### **KEYWORDS:**

Intraoperative nerve monitoring (IONM); NIM TriVantage EMG Tube; cricothyroid muscle (CTM) twitch; electromyography (EMG); external branch of superior laryngeal nerve identification (EBSLN); monopolar and bipolar probe; recurrent laryngeal nerve

PMID: [24115215](#)

# TİROID

## RETROSPEKTİF

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1. [J Clin Endocrinol Metab.](#) 2014 Apr;99(4):1245-52. doi: 10.1210/jc.2013-3842. Epub 2014 Feb 10.  
(IF: 7.02)

### **Outcomes in patients with poorly differentiated thyroid carcinoma.**

Ibrahimpasic T<sup>1</sup>, Ghossein R, Carlson DL, Nixon I, Palmer FL, Shaha AR, Patel SG, Tuttle RM, Shah JP, Ganly I.

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Poorly differentiated thyroid cancer (PDTC) accounts for only 1-15% of all thyroid cancers. Our objective is to report outcomes in a large series of patients with PDTC treated at a single tertiary care cancer center.

#### **METHODS:**

A total of 91 patients with primary PDTC were treated by initial surgery with or without adjuvant therapy at Memorial Sloan-Kettering Cancer Center from 1986 to 2009. Outcomes were calculated by the Kaplan-Meier method. Clinicopathological characteristics were compared for PDTC patients who died of disease to those who did not by the  $\chi^2$  test. Factors predictive of disease-specific survival (DSS) were calculated by univariate and multivariate analysis using the log rank and Cox proportional hazards method, respectively.

#### **RESULTS:**

With a median follow-up of 50 months, the 5-year overall survival and DSS were 62 and 66%, respectively. The 5-year locoregional and distant control were 81 and 59%, respectively. Of 27 disease-specific deaths, 23 (85%) were due to distant disease. Age  $\geq$  45 years, pathological tumor size  $>4$  cm, extrathyroidal extension, higher pathological T stage, positive margins, and distant metastases (M1) were predictive of worse DSS on univariate analysis. Multivariate analysis showed that only pT4a stage and M1 were independent predictors of worse DSS.

#### **CONCLUSIONS:**

With appropriate surgery and adjuvant therapy, excellent locoregional control can be achieved in PDTC. Disease-specific deaths occurred due to distant metastases and rarely due to uncontrolled locoregional recurrence in this series.

#### **Comment in**

- [Is poorly differentiated thyroid cancer poorly characterized?](#) [J Clin Endocrinol Metab. 2014]

PMID: [24512493](#)

2. [Ann Surg.](#) 2014 Apr;259(4):800-6. doi: 10.1097/SLA.0b013e3182a6f43a. (IF: 6.85)

### **Surgical curability of medullary thyroid cancer in multiple endocrine neoplasia 2B: a changing perspective.**

Brauckhoff M<sup>1</sup>, Machens A, Lorenz K, Bjøro T, Varhaug JE, Dralle H.

## Author information

### **Abstract**

#### **OBJECTIVE:**

This investigation aimed at exploring the suitability of nonendocrine manifestations preceding medullary thyroid cancer (MTC) for early diagnosis of multiple endocrine neoplasia type 2B (MEN 2B).

#### **BACKGROUND:**

MEN 2B patients, running a high risk of metastatic MTC, must be diagnosed early for biochemical cure.

#### **METHODS:**

Forty-four MEN 2B patients carrying inherited (3 patients) and de novo (41 patients) M918T RET mutations were examined for signs and symptoms prompting MEN 2B.

#### **RESULTS:**

All 3 patients with inherited mutations were diagnosed before the age of 1 year and cured of their C-cell disease. Among 41 patients with de novo mutations, MEN 2B was diagnosed in 12 patients after recognition of nonendocrine manifestations [intestinal ganglioneuromatosis (6 patients), oral symptoms (5 patients), ocular ("tearless crying") (4 patients), and skeletal stigmata (1 patient) alone or concomitantly]. In the remaining 29 patients with de novo mutations, the diagnosis of MEN 2B was triggered by symptomatic MTC (28 patients) or pheochromocytoma (1 patient). The former patients, being significantly ( $P < 0.001$ ) younger (means of 5.3 vs 17.6 years) and having lower calcitonin levels (means of 115 vs 25,519 pg/mL), smaller tumors (67% vs 0% were  $\leq 10$  mm) and less often extrathyroidal extension (0% vs 81%), lymph node (42% vs 100%), and distant metastases (8% vs 79%), were biochemically cured more often (58% vs 0%).

#### **CONCLUSIONS:**

MTC is curable in patients with de novo mutations when nonendocrine MEN 2B components are quickly appreciated and surgical intervention is performed before patients turn 4 years old.

PMID: [23979292](#)

3. [Radiology](#). 2014 Apr;271(1):272-81. doi: 10.1148/radiol.13131334. Epub 2014 Jan 16. (IF: 6.40)

## **Thyroid nodules with benign findings at cytologic examination: results of long-term follow-up with US.**

[Kim SY<sup>1</sup>](#), [Han KH](#), [Moon HJ](#), [Kwak JY](#), [Chung WY](#), [Kim EK](#).

### Author information

### **Abstract**

#### **PURPOSE:**

To investigate the natural history of thyroid nodules found to be benign at initial fine-needle aspiration biopsy (FNAB) to determine the percentage of nodules that increased in volume by more than 50% as being an indicator of malignancy.

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

This retrospective observational cohort study was approved by the institutional review board, and the need to obtain informed consent was waived. The study included 854 FNAB-confirmed benign thyroid nodules. Suspicious ultrasonographic (US) features included marked hypoechogenicity, irregular or microlobulated margin, microcalcification, and taller-than-wide shape. Univariate and multivariate generalized linear mixed models were used to assess the association with nodule growth greater than 50% in volume.

#### **RESULTS:**

For the 854 nodules, the initial mean diameter was 19.92 mm (range, 3.10-60.00 mm), and the initial mean volume was 3.19 cm<sup>3</sup> (range, 0.01-4.64 cm<sup>3</sup>). The majority (682 [79.9%] of 854) of thyroid nodules with benign cytologic results at initial FNAB did not grow more than 50% in volume during 4 years of mean follow-up (range, 7-101 months). More than 4 years of follow-up time versus less than 2 years, younger

age, a cystic component of less than 25%, and nodule size 1 cm or larger versus less than 1 cm were independently associated with growth. There was only one malignant nodule (0.6%) among 172 thyroid nodules with a volume increase of 50% or greater during the entire follow-up time. Ten malignant nodules (overall malignancy rate: 1.2%) were detected among the 854 total nodules, and eight of these 10 nodules showed suspicious features at US.

#### **CONCLUSION:**

Repeat FNAB for nodules showing more than 50% growth in volume is unlikely to result in a diagnosis of malignancy. A positive FNAB result for malignancy is significantly more likely in the presence of suspicious US features.

RSNA, 2014

PMID: [24475857](#)

4. [J Am Coll Surg.](#) 2014 Apr;218(4):674-83. doi: 10.1016/j.jamcollsurg.2013.12.021. Epub 2013 Dec 24. (IF: 4.11)

## **Surgeon-driven thyroid interrogation of patients presenting with primary hyperparathyroidism.**

[Sloan DA<sup>1</sup>](#), [Davenport DL<sup>2</sup>](#), [Eldridge RJ<sup>2</sup>](#), [Lee CY<sup>2</sup>](#).

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Primary hyperparathyroidism (pHPT) is an increasingly prevalent disease affecting all age groups. The authors sought to determine the impact of a "thyroid interrogation" practice protocol on the surgical treatment of patients with the diagnosis of pHPT referred to a single surgeon.

#### **STUDY DESIGN:**

We performed a retrospective review of prospectively gathered data on parathyroidectomy (PTX) patients undergoing both a prospective clinical thyroid evaluation and thyroid ultrasound between January 2008 and October 2012.

#### **RESULTS:**

Only 5.6% of 468 PTX patients were referred to a single surgeon for both parathyroid and thyroid surgical evaluation; 31% of patients had known pre-existing thyroid disease (hypothyroidism most commonly), and 22% of patients had palpable thyroid abnormalities unrecognized in 67% of cases by the referring physician. Of the 468 patients, 2.6% had a history of classic head and neck radiation exposure, 2.6% a history of radio-iodine treatment, and 3% a family history of thyroid cancer. Thyroid abnormalities were found on ultrasound in 61% of patients, and 26% of patients underwent thyroid biopsies. Parathyroid and thyroid surgery was combined for 18.4% of patients; indications included obstructive symptoms (3.2%), hyperthyroidism (0.9%), intraoperative findings (5.1%), and concern for malignancy (9.2%). Malignancy was diagnosed in 23 patients (4.9%), only 8 of whom had been referred for thyroid evaluation.

#### **CONCLUSIONS:**

The majority of patients referred for PTX had evidence of thyroid pathology. For an important minority of these patients, benign and malignant disease was identified that merited surgical treatment at the time of PTX. We recommend comprehensive thyroid evaluation of patients referred for PTX.

Published by Elsevier Inc.

#### **Comment in**

- [Discussion. \[J Am Coll Surg. 2014\]](#)

PMID: [24529807](#)

5. [Cancer Cytopathol.](#) 2014 Apr;122(4):274-81. doi: 10.1002/cncy.21383. Epub 2013 Dec 10. (IF: 4.01)

## A 4-MicroRNA signature can discriminate primary lymphomas from anaplastic carcinomas in thyroid cytology smears.

[Fassina A<sup>1</sup>](#), [Cappellessa R](#), [Simonato F](#), [Siri M](#), [Ventura L](#), [Tosato F](#), [Busund LT](#), [Pelizzo MR](#), [Fassan M](#).

### Author information

### **Abstract**

#### **BACKGROUND:**

Anaplastic thyroid carcinoma (ATC) and primary thyroid lymphoma (PTL) are uncommon tumors of the thyroid gland with several overlapping clinical and pathologic features that may render their differentiation difficult in fine-needle aspiration (FNA) cytology. MicroRNA (miRNA) signatures have been recently reported as useful diagnostic tools applied to cytology specimens.

#### **METHODS:**

Smears of 23 ATCs, 14 PTLs, and 20 non-neoplastic materials with multinodular goiter (MNG) were retrieved and classified based on their cytologic features and flow cytometric profiles. The ATC-related expression of hsa-miR-26a, hsa-miR-146b, hsa-miR-221, and hsa-miR-222 was quantified using quantitative reverse transcriptase-polymerase chain reaction analysis.

#### **RESULTS:**

All miRNAs were remarkably up-regulated in ATC samples compared with PTL samples ( $P < .01$ ). Moreover, expression levels of hsa-miR-146b, hsa-miR-221, and hsa-miR-222 were significantly higher in ATCs than in MNG samples ( $P < .01$ ). Significant down-regulation of hsa-miR-26a was observed in PTLs compared with MNG samples, whereas hsa-miR-146b was overexpressed. Receiver operating characteristic analysis was used to determine the optimal cutoff for distinguishing ATC from PTL. The estimated receiver operating characteristic thresholds displayed a sensitivity level greater than 0.80 in achieving a diagnosis of PTL, allowing the correct identification of 13 of 14 PTL samples (93%).

#### **CONCLUSIONS:**

Histotype-specific miRNA signatures can provide new insight into the molecular mechanisms of thyroid carcinogenesis. The tested 4-miRNA signature is a promising diagnostic tool for differentiating ATC from PTL and non-neoplastic MNG, even in the presence of scant material obtained from minimally invasive procedures.

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#### **KEYWORDS:**

fine-needle cytology; mantel zone lymphoma; microRNAs; primary thyroid lymphoma; thyroid cancer

PMID: [24327568](#)

6. [Cancer Cytopathol.](#) 2014 Apr;122(4):266-73. doi: 10.1002/cncy.21382. Epub 2013 Dec 3. (IF: 4.01)

## **Comparison of fine-needle aspiration and fine-needle capillary sampling of thyroid nodules: a prospective study with emphasis on the influence of nodule size.**

[Zhou JQ<sup>1</sup>](#), [Zhang JW](#), [Zhan WW](#), [Zhou W](#), [Ye TJ](#), [Zhu Y](#), [Yao JJ](#), [Liu J](#), [Hu YY](#), [Grant EG](#).

### Author information

#### **Abstract**

#### **BACKGROUND:**

The objective of this study was to compare the sampling efficiency of ultrasound-guided fine-needle aspiration (FNA) and fine-needle capillary (FNC) sampling in thyroid nodules, in which the authors specifically analyzed the influence of nodule size.

#### **METHODS:**

This study included 280 thyroid nodules in 275 consecutive patients. The nodules were divided into 4 size subgroups: ≤5.0 mm, from 5.1 to 10.0 mm, from 10.1 to 20.0 mm, and >20.0 mm. Each nodule was sampled by both FNA and FNC. The final cytopathologic findings were reported. The smears were scored and then categorized as diagnostically inadequate, adequate, or superior on the basis of 4 parameters, which included background clot or blood, the number of obtained cells, preserved tissue architecture, and cellular degeneration.

#### **RESULTS:**

The κ scores for agreement of the cytopathologic results between FNA and FNC sampling in the 4 size subgroups were 0.377, 0.455, 0.751, and 0.352 for nodules that measured ≤5.0 mm, from 5.1 to 10.0 mm, from 10.1 to 20.0 mm, and >20.0 mm, respectively. The proportion of nondiagnostic of FNAs was significantly lower than the proportion of nondiagnostic FNC samples in nodules that measured >20.0 mm ( $P = .037$ ). Scores for the 4 diagnostic parameters were significantly greater in FNAs than in FNC samples in nodules that measured from 5.1 to 10.0 mm and >20.0 mm (all  $P < .05$ ); however, similar results were not observed in the nodules that measured ≤5.0 mm or from 10.1 to 20.0 mm (all  $P > .05$ ). Also, FNA yielded significantly more diagnostically superior specimens than FNC sampling in nodules that measured from 5.1 to 10.0 mm and >20.0 mm ( $P < .05$  for both).

#### **CONCLUSIONS:**

The current findings indicated that FNA may be more suitable than FNC for sampling nodules that measure from 5.1 to 10.0 mm and >20.0 mm; whereas, for nodules that measure ≤5.0 mm and from 10.1 to 20.0 mm, the 2 techniques could yield specimens with similar quality.

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#### **KEYWORDS:**

cytopathology; fine-needle aspiration; fine-needle capillary; thyroid nodule

PMID: [24302655](#)

7. [Eur J Endocrinol.](#) 2014 Apr 10;170(5):659-66. doi: 10.1530/EJE-13-0903. Print 2014 May. (IF: 3.64)

## **Impact of pregnancy on prognosis of differentiated thyroid cancer: clinical and molecular features.**

Messuti I<sup>1</sup>, Corvisieri S, Bardesono F, Rapa I, Giorcelli J, Pellerito R, Volante M, Orlandi E.

Author information

**Abstract**

**OBJECTIVE:**

Differentiated thyroid cancer (DTC) commonly occurs in women of child-bearing age and represents the second most frequent tumor diagnosed during pregnancy only behind breast cancer. It is possible that associated physiological changes could favor tumor development and growth. However, few data are available about the outcome of DTC related to pregnancy, leading to conflicting results.

**METHODS:**

Among the study population, 340 patients with DTC <45 years old were retrospectively studied. Patients were divided into three groups according to the time of tumor diagnosis in respect of pregnancy. Group 1, diagnosis of DTC at least 2 years after delivery; group 2, diagnosis during pregnancy or within the second year after delivery; and group 3, nulliparous patients at the time of diagnosis. We evaluated clinical outcome and immunohistochemical expression of estrogen receptor α (ERα), ERβ, progesterone receptor, and aromatase. We also analyzed the gene expression of NIS (SLC5A5) and the prevalence of BRAF(V600E) mutations.

**RESULTS:**

Persistence/recurrence of disease was significantly higher in group 2 patients than control groups ( $P=0.023$ ). No significant differences were observed in other clinical parameters. Furthermore, no differences among the groups were recorded about ER pattern, NIS expression, and BRAF mutations.

**CONCLUSIONS:**

Persistence/recurrence of DTC is significantly higher in pregnant patients, suggesting that pregnancy could really exert a negative prognostic role in patients with DTC. The underlying mechanisms are not yet clarified and further studies are required. Our results suggest that a more careful follow-up is needed when diagnosis of DTC occurs during pregnancy or shortly after.

PMID: [24510913](#)

8. Eur J Endocrinol. 2014 Mar 8;170(4):593-9. doi: 10.1530/EJE-13-1003. Print 2014 Apr. (IF: 3.64)

## **TSH measurement is not an appropriate screening test for autonomous functioning thyroid nodules: a retrospective study of 368 patients.**

Chami R<sup>1</sup>, Moreno-Reyes R, Corvilain B.

Author information

**Abstract**

**OBJECTIVE:**

Based on the assumption that normal TSH concentration rules out the presence of autonomous functioning thyroid nodules (AFTNs), clinical guidelines on the management of thyroid nodules only recommend a thyroid scan if TSH concentration is subnormal. However, the proportion of AFTN presenting with a normal TSH is unknown. Our objective is therefore to determine the proportion of AFTNs with a normal TSH level to ascertain whether a normal TSH really rules out an AFTN.

**DESIGN:**

Retrospective study on 368 patients with an AFTN.

**METHODS:**

Thyroid scans with a diagnosis of AFTN were reviewed retrospectively by one of us (R Moreno-Reyes), blinded to the clinical data. The diagnosis of solitary AFTN was confirmed in 368 patients. Among them, we

selected 217 patients based on the absence of another thyroid nodule >10mm, the absence of medical conditions able to interfere with thyroid function, and the completeness of the data.

## **RESULTS:**

The proportion of AFTNs with normal TSH was 49%. This proportion increased to 71% in patients for whom thyroid scan was performed in the workup of a thyroid nodule.

## **CONCLUSIONS:**

Our data suggest that serum TSH is not an effective screening tool to diagnose AFTNs. Using 'TSH-only' screening, as recommended by the majority of guidelines, the diagnosis of AFTN would have been missed in 71% of our patients in the workup of a thyroid nodule. Thyroid scan remains the gold standard for detecting AFTN and should be considered before performing fine-needle aspiration cytology (FNAC), as the reliability of FNAC in an unsuspected AFTN remains unclear.

PMID: [24451082](#)

9. [Eur J Endocrinol](#). 2014 Mar 8;170(4):575-82. doi: 10.1530/EJE-13-0825. Print 2014 Apr. (IF: 3.64)

## **Tyrosine kinase inhibitor treatments in patients with metastatic thyroid carcinomas: a retrospective study of the TUTHYREF network.**

Massicotte MH<sup>1</sup>, Brassard M, Claude-Desroches M, Borget I, Bonichon F, Giraudet AL, Do Cao C, Chougnat CN, Leboulleux S, Baudin E, Schlumberger M, de la Fouchardière C.

### Author information

### **Abstract**

#### **OBJECTIVE:**

Tyrosine kinase inhibitors (TKIs) are used to treat patients with advanced thyroid cancers. We retrospectively investigated the efficacy of TKIs administered outside of clinical trials in metastatic sites or locally advanced thyroid cancer patients from five French oncology centers.

#### **DESIGN AND METHODS:**

THERE WERE 62 PATIENTS (37 MEN, MEAN AGE: 61 years) treated with sorafenib (62%), sunitinib (22%), and vandetanib (16%) outside of clinical trials; 22 had papillary, five had follicular, five had Hürthle cell, 13 had poorly differentiated, and 17 had medullary thyroid carcinoma (MTC). Thirty-three, 25, and four patients were treated with one, two, and three lines of TKIs respectively. Primary endpoints were objective tumor response rate and progression-free survival (PFS). Sequential treatments and tumor response according to metastatic sites were secondary endpoints.

## **RESULTS:**

Among the 39 sorafenib and 12 sunitinib treatments in differentiated thyroid carcinoma (DTC) patients, partial response (PR) rate was 15 and 8% respectively. In the 11 MTC patients treated with vandetanib, 36% had PR. Median PFS was similar in second-line compared with first-line sorafenib or sunitinib therapy (6.7 vs 7.0 months) in DTC patients, but there was no PR with second- and third-line treatments. Bone and pleural lesions were the most refractory sites to treatment.

## **CONCLUSIONS:**

This is the largest retrospective study evaluating TKI therapies outside of clinical trials. DTC patients treated with second-line therapy had stable disease as best response, but had a similar median PFS compared with the first-line treatment.

PMID: [24424318](#)

10. [J Cancer Res Clin Oncol.](#) 2014 Jun;140(6):1021-6. doi: 10.1007/s00432-014-1629-z. Epub 2014

Mar 12.

(IF: 3.25)

## The study of the coexistence of Hashimoto's thyroiditis with papillary thyroid carcinoma.

[Zhang Y<sup>1</sup>, Dai J, Wu T, Yang N, Yin Z.](#)

[Author information](#)

### Abstract

#### PURPOSE:

Hashimoto's thyroiditis (HT) is the most common type of autoimmune thyroid disease, and the incidence is rising in recent years. The aim of this study was to evaluate the pathological characteristics, treatment and prognosis of HT with papillary thyroid carcinoma (PTC).

#### METHODS:

From July 2004 to December 2011, 8,524 patients underwent thyroid surgery in our hospital and 1,735 patients were diagnosed with PTC. The data from these patients were statistically analyzed using SAS software.

#### RESULTS:

There were 839 patients with a final diagnosis of HT in this study. A greater incidence of PTC was found in those with HT (29.4 %) than those without HT (19.4 %; p < 0.05). Male HT patients had a significantly higher rate of PTC (27/61, 44.3 %) when compared to female patients (220/778, 28.3 %; p < 0.05). The HT patients with co-occurring PTC were more likely to be younger (43.1 vs. 46.6, p < 0.01) and had smaller nodules (1.10 vs. 1.34 cm, p < 0.05), less external invasion (0.4 vs. 2.5 %, p < 0.05), less lymph node metastasis in lateral neck area (17.2 vs. 26.9 %, p < 0.05) and less advanced TNM stages than PTC patients without HT.

#### CONCLUSIONS:

Hashimoto's thyroiditis is associated with a significantly higher risk of PTC, and the incidence of PTC is much higher in male HT patients. More attention should be paid to HT patients, especially male HT patients, for signs of PTC. Based on the less aggressive pathological features in HT-PTC group, we should not blindly expand the indication and extent of surgery.

PMID: [24619663](#)

11. [Virchows Arch.](#) 2014 Apr;464(4):435-42. doi: 10.1007/s00428-014-1552-3. Epub 2014 Feb 19. (IF:

3.12)

## Morphology predicts BRAF (V<sup>600</sup>E) mutation in papillary thyroid carcinoma: an interobserver reproducibility study.

[Virk RK<sup>1</sup>, Theoharis CG, Prasad A, Chhieng D, Prasad ML.](#)

[Author information](#)

### Abstract

Papillary thyroid carcinomas (PTC) with BRAF (V600E) mutation are morphologically distinctive. They are typically classic or tall cell variants, show infiltrative borders, and are associated with desmoplasia/fibrosis, psammoma bodies, and well-developed nuclear features of papillary carcinoma. We hypothesize that morphologic features of PTC can help in the prediction of BRAF (V600E) mutation, and we evaluate the accuracy and the interobserver reproducibility of such prediction. Hematoxylin and eosin-stained sections from 50 PTCs comprising of 26 mutation-positive and 24 mutation-negative tumors were examined. BRAF

(V600E) mutation was predicted correctly in 42/50 tumors (accuracy, 84 %) with 96 % sensitivity, 71 % specificity, and 78 % positive and 94 % negative predictive values (NPV). Subtle nuclear features of PTC ( $n = 10$ ) had the highest (100 %) negative predictive value followed by well-circumscribed non-infiltrative tumor borders (17/22 mutation-negative tumors, 95 % NPV). The positive predictive value of infiltrative tumor borders (21/28 [75 %] mutation-positive), desmoplasia/fibrosis (23/31 [74 %] mutation-positive), and psammoma bodies (13/20 [65 %] mutation-positive) increased to 100 % when all three features were present ( $n = 8/8$  mutation-positive). To assess interobserver reproducibility, two pathologists blinded to the mutational status evaluated 30 PTCs (15 mutation-positive and 15 mutation-negative) after self-training on 10 PTCs with known BRAF (V600E) mutational status (five mutation-positive and five mutation-negative). The prediction of the mutation was achieved with substantial agreement ( $\kappa$  value, 0.79) and accuracy (25/30, 83 %). This study demonstrates that BRAF (V600E) mutation in papillary thyroid carcinoma can be predicted on morphology with accuracy and with substantial interobserver agreement.

PMID: [24549591](#)

12. *Am J Surg.* 2014 Apr;207(4):596-601. doi: 10.1016/j.amjsurg.2013.06.012. Epub 2013 Oct 25. (IF: 2.39)

## Evaluation of genetic biomarkers for distinguishing benign from malignant thyroid neoplasms.

Nagar S<sup>1</sup>, Ahmed S<sup>2</sup>, Peeples C<sup>3</sup>, Urban N<sup>3</sup>, Boura J<sup>4</sup>, Thibodeau B<sup>2</sup>, Akervall J<sup>5</sup>, Wilson G<sup>6</sup>, Long G<sup>3</sup>, Czako P<sup>3</sup>.

### Author information

#### **Abstract**

#### **BACKGROUND:**

Fine-needle aspiration (FNA) aids in the diagnosis of thyroid nodules. The expression of previously implicated genes was examined to potentially discriminate between benign and malignant thyroid samples.

#### **METHODS:**

Patients included for study had cytology demonstrating follicular cells of undetermined significance, atypical cells of undetermined significance, follicular neoplasm, or suspicion of malignancy with one of the following postoperative diagnoses: follicular thyroid adenomas, follicular thyroid carcinomas, or follicular variant of papillary thyroid carcinomas (FV-PTCs). FNA and tumor expression of human telomerase reverse transcriptase (hTERT), high-mobility group A2 (HMGA2), and trefoil factor 3/galactoside-binding lectin (T/G ratio) were analyzed.

#### **RESULTS:**

T/G ratios were not significantly different in the malignant and benign groups. HMGA2 was overexpressed in carcinoma states; however, only FV-PTCs were significant ( $P = .006$ ). Tumor hTERT expression was detected in 25% of follicular thyroid carcinomas, whereas 5% of FV-PTCs and 10% of follicular thyroid adenomas had expression. FNA aspirates showed similar results.

#### **CONCLUSIONS:**

Although HMGA2 and hTERT showed differential expression, they did not consistently differentiate benign from malignant. Further study based on global gene expression is needed to identify markers that could serve as a diagnostic tool.

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#### **KEYWORDS:**

Fine-needle aspiration; Follicular thyroid cancer; Gene expression; Real-time polymerase chain reaction

PMID: [24713092](#)

13. *J Surg Res.* 2014 Jun 1;189(1):68-74. doi: 10.1016/j.jss.2014.02.012. Epub 2014 Feb 15. (IF: 2.08)

## MicroRNA-21 regulates biological behaviors in papillary thyroid carcinoma by targeting programmed cell death 4.

Zhang J<sup>1</sup>, Yang Y<sup>2</sup>, Liu Y<sup>3</sup>, Fan Y<sup>3</sup>, Liu Z<sup>3</sup>, Wang X<sup>3</sup>, Yuan Q<sup>3</sup>, Yin Y<sup>3</sup>, Yu J<sup>3</sup>, Zhu M<sup>3</sup>, Zheng J<sup>3</sup>, Lu X<sup>4</sup>.

### Author information

#### **Abstract**

#### **BACKGROUND:**

Our recent study has found that microRNA-21 (miRNA-21) was significantly upregulated in papillary thyroid carcinoma (PTC) tissues compared with nontumor tissues by using miRNA microarray chip. However, the function of miRNA-21 is unknown in PTC. The aim of this study was to investigate the roles of miRNA-21 in PTC and the mechanism of gene regulation by it.

#### **METHODS:**

We transfected PTC cell line (TPC-1) with pEZX-eGFP-miRNA-21 plasmid to determine the biological functions of miRNA-21. Western blot assay was applied to investigate the correlation between miRNA-21 and programmed cell death 4 (PDCD4) expression in TPC-1 cell line.

#### **RESULTS:**

Overexpression of miRNA-21 could significantly enhance proliferation and invasion and inhibit the apoptosis of TPC-1 cells. In addition, miRNA-21 and PDCD4 expression showed a significantly negative correlation in TPC-1 cells.

#### **CONCLUSIONS:**

These data suggest that miRNA-21 may play an oncogenic role by directly targeting PDCD4 in the cellular processes of PTC. In addition, the findings in our present study also may represent new clues for the diagnostic and therapeutic strategies in the treatment of PTC.

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#### **KEYWORDS:**

MicroRNA-21; Papillary thyroid carcinoma; Programmed cell death 4; TPC-1

PMID: [24650454](#)

14. *Otolaryngol Head Neck Surg.* 2014 May;150(5):754-61. doi: 10.1177/0194599814521365. Epub

2014 Feb 4. (IF: 1.68)

## Incidental parathyroidectomy during thyroid surgery using capsular dissection technique.

Praženica P<sup>1</sup>, O'Driscoll K, Holy R.

### Author information

#### **Abstract**

#### **OBJECTIVE:**

To identify incidence, preoperative features, surgical factors, and postoperative events of incidental parathyroidectomy (IP) during thyroidectomy.

#### **STUDY DESIGN:**

A total of 1068 consecutive patients who underwent thyroidectomy performed by a single surgeon between January 2003 and April 2012 were enrolled in retrospective study with prospectively collected data.

**SETTING:**

University hospital.

**SUBJECTS AND METHODS:**

To assess the impact of IP on study variables, patients were stratified into 2 study groups: IP group and non-IP group. Univariate and multivariate analyses identified significant correlates of IP.

**RESULTS:**

In all, 5.4% patients experienced IP. Significant difference ( $P < .001$ ) was in incidence of temporary hypocalcemia between IP group (36.2%) and non-IP group (16.8%). Multivariable logistic regression model identified total thyroidectomy (odds ratio 3.937, 95% confidence interval [CI] 1.462-10.601,  $P = .007$ ) and Graves' disease (odds ratio 2.192, 95% CI 1.157-4.158,  $P = .016$ ) as risk-adjusted factors associated with IP. Multivariate analysis of repeated measures identified statistically significant difference of repeated total calcium level ( $P < .001$ ) and ionized calcium level ( $P = .020$ ) between study groups.

**CONCLUSION:**

IP during thyroidectomy might be potential complication. Total thyroidectomy, Graves' disease, longer operation time, and identification 3 and more parathyroid glands seemed to be predictive factors for IP. IP is significantly associated with temporary hypocalcemia, but not with permanent hypoparathyroidism.

**KEYWORDS:**

capsular dissection; hypocalcemia; incidental parathyroidectomy; thyroid; thyroidectomy

PMID: [24496742](#)

15. [Otolaryngol Head Neck Surg](#). 2014 May;150(5):770-4. doi: 10.1177/0194599814521568. Epub 2014 Feb 3. (IF: 1.68)

## Barriers to same-day discharge of patients undergoing total and completion thyroidectomy.

Rutledge J<sup>1</sup>, Siegel E, Belcher R, Bodenner D, Stack BC Jr.

[Author information](#)

**Abstract**

**OBJECTIVE:**

Describe barriers to same-day surgery for patients undergoing total and completion thyroidectomy.

**STUDY DESIGN:**

Case series with chart review.

**SETTING:**

Academic health sciences center.

**SUBJECTS AND METHODS:**

The subjects were patients who underwent total thyroidectomy or completion thyroidectomy and remained in hospital overnight or longer. A review was performed on patients who were operated on by a single surgeon from July 2005 through June 2013.

**RESULTS:**

Two hundred and sixty-eight cases were planned for same-day surgery. One hundred patients were not discharged on the same day (37%). Patients observed overnight or admitted to hospital had significantly lower postoperative calcium levels, 8.4 mg/dL ( $P < .0001$ ), and lower intraoperative parathyroid hormone (PTH), mean 6.0 pg/mL ( $P < .0001$ ). Those significantly more likely to require overnight observation were

male patients ( $P = .0117$ ), black patients ( $P = .0045$ ), those with completion thyroidectomy ( $P = .0039$ ), and those with a complication of surgery ( $P = .003$ ).

#### **CONCLUSION:**

Intraoperative PTH less than 10 pg/mL was the most frequent factor (25.7%) precluding same-day discharge, followed by admission for social/financial/transportation reasons (22.6%), large dead space from goiter (15.5%), multiple comorbidities (13.4%), multiple surgical reasons (5.2%), airway observation (5.2%), pain management (3.1%), and intractable nausea due to general anesthetic (2.1%). Hypocalcemia and postoperative bleeding still remain obstacles to outpatient thyroid surgery; however, the use of rapid PTH testing, modern hemostatic techniques, appropriate calcium prophylaxis, and experienced clinical decision making can effectively stratify which patients require overnight observation.

#### **KEYWORDS:**

barriers; discharge; outpatient; thyroidectomy

PMID: [24493789](#)

16. *Otolaryngol Head Neck Surg.* 2014 Apr;150(4):548-57. doi: 10.1177/0194599814521381. Epub 2014 Jan 30. (IF: 1.68)

## **Epidemiology of vocal fold paralyses after total thyroidectomy for well-differentiated thyroid cancer in a Medicare population.**

Francis DO<sup>1</sup>, Pearce EC, Ni S, Garrett CG, Penson DE.

[Author information](#)

#### **Abstract**

#### **OBJECTIVES:**

The population-level incidence of vocal fold paralysis after thyroidectomy for well-differentiated thyroid carcinoma (WDTC) is not known. This study aimed to measure longitudinal incidence of postoperative vocal fold paralyses and need for directed interventions in the Medicare population undergoing total thyroidectomy for WDTC.

#### **STUDY DESIGN:**

Retrospective cohort study.

#### **SETTING:**

US population.

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

Subjects were Medicare beneficiaries. SEER-Medicare data (1991-2009) were used to identify beneficiaries who underwent total thyroidectomy for WDTC. Incident vocal fold paralyses and directed interventions were identified. Multivariate analyses were used to determine factors associated with odds of developing these surgical complications.

#### **RESULTS:**

Of 5670 total thyroidectomies for WDTC, 9.5% were complicated by vocal fold paralysis (8.2% unilateral vocal fold paralysis [UVFP]; 1.3% bilateral vocal fold paralysis [BVFP]). Rate of paralyses decreased 5% annually from 1991 to 2009 (odds ratio 0.95; 95% confidence interval, 0.93-0.97;  $P < .001$ ). Overall, 22% of patients with vocal fold paralysis required surgical intervention (UVFP 21%, BVFP 28%). Multivariate logistic regression revealed that the odds of postthyroidectomy paralysis increased with each additional

year of age, with non-Caucasian race, with particular histologic types, with advanced stage, and in particular registry regions.

#### **CONCLUSION:**

Annual rates of postthyroidectomy vocal fold paralyses are decreasing among Medicare beneficiaries with WDTC. High incidence in this aged population is likely due to a preponderance of temporary paralyses, which is supported by the need for directed intervention in less than a quarter of affected patients. Further population-based studies are needed to refine the population incidence and risk factors for paralyses in the aging population.

#### **KEYWORDS:**

Medicare; bilateral vocal fold paralysis; epidemiology; incidence; thyroid cancer; thyroidectomy; unilateral vocal fold paralysis; vocal fold paralysis

PMID: [24482349](#)

17. [Laryngoscope](#). 2014 Apr;124(4):1042-7. doi: 10.1002/lary.24511. Epub 2013 Dec 11. (IF: 1.32)

## **Comparison of surgical completeness between robotic total thyroidectomy versus open thyroidectomy.**

Tae K<sup>1</sup>, Song CM, Ji YB, Kim KR, Kim JY, Choi YY.

[Author information](#)

#### **Abstract**

#### **OBJECTIVES/HYPOTHESIS:**

The aim of this study was to investigate the surgical completeness of robotic total thyroidectomy compared with conventional open thyroidectomy.

#### **STUDY DESIGN:**

Retrospective, case-control study.

#### **METHODS:**

We studied 245 patients with papillary thyroid carcinoma who underwent total thyroidectomy and postoperative radioactive iodine (RAI) ablation. Of these, 62 patients underwent robotic thyroidectomy by a gasless unilateral axillo-breast (GUAB) or axillary (GUA) approach, and 183 underwent conventional open thyroidectomy. We analyzed serum TSH-stimulated thyroglobulin (Tg) and RAI uptake at the time of RAI remnant ablation to compare surgical completeness in the two groups.

#### **RESULTS:**

Tumor characteristics and complications did not differ between the two groups except TNM stage. The mean TSH-stimulated Tg at the first RAI ablation was significantly higher in the robotic group ( $10.20 \pm 9.98$  ng/ml) than in the open group ( $3.85 \pm 6.79$  ng/ml) ( $P < 0.001$ ). In subgroup analysis of the robotic group by the period in which operations took place, TSH-stimulated Tg was significantly higher than in the open group in the first ( $13.28 \pm 11.91$  ng/ml) and second ( $10.45 \pm 9.30$  ng/ml) periods, but there was no significant difference in the third period ( $6.00 \pm 6.26$  ng/ml,  $P = 0.141$ ). The RAI uptake rate at the first RAI ablation did not differ between the two groups, and TSH-stimulated Tg after RAI ablation was similar.

#### **CONCLUSION:**

The surgical completeness of robotic total thyroidectomy by a GUAB/GUB approach is comparable to that of open thyroidectomy, if performed by experienced robotic thyroid surgeons in properly selected patients.

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

3b. Laryngoscope, 124:1042-1047, 2014.

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**KEYWORDS:**

Robotic thyroidectomy; endoscopic thyroidectomy; gasless unilateral axillary approach; gasless unilateral axillo-breast approach; papillary thyroid carcinoma

PMID: [24338236](#)

18. [Laryngoscope](#). 2014 May;124(5):1272-7. doi: 10.1002/lary.24519. Epub 2014 Feb 10. (IF: 1.32)

## Preservation of the inferior thyroidal vein reduces post-thyroidectomy hypocalcemia.

Lee DY<sup>1</sup>, Cha W, Jeong WJ, Ahn SH

Author information

### Abstract

#### OBJECTIVES/HYPOTHESIS:

We present a novel surgical method to preserve the inferior thyroidal vein and investigated its effectiveness in reducing postoperative transient hypocalcemia.

#### STUDY DESIGN:

Retrospective cohort study.

#### METHODS:

From January 2012 to October 2012, 109 total thyroidectomy patients with bilateral central neck dissection were included in this study. The controls were 96 sex- and age-matched patients who underwent a conventional total thyroidectomy from January 2011 to December 2011. Differences in the incidence of postoperative hypocalcemia, serial ionized calcium levels, and postoperative day 1 intact parathyroid hormone levels were analyzed using  $\chi^2$  and independent t tests.

#### RESULTS:

Age, male-to-female ratio, T stage, N stage, thyroid size, number of inadvertently excised parathyroid glands, operation time, number of harvested central lymph nodes, and total drainage amount were not significantly different between the groups. By saving the bilateral inferior thyroidal veins, the incidence of both biochemical and symptomatic hypocalcemia were significantly decreased compared to the controls ( $P = .044$  and  $.012$ , respectively). The number of patients whose postoperative day 1 intact parathyroid hormones were  $<10$  pg/mL was significantly lower in the study group ( $P = .000$ ). Average ionized calcium levels were significantly higher in study-group patients; among the hypocalcemic patients, postoperative ionized calcium levels in the study group showed significantly faster recovery times than the control group.

#### CONCLUSIONS:

The described surgical method preserves the inferior thyroidal vein and may reduce post-thyroidectomy hypocalcemia without disturbing the extent of central lymph node harvesting. Preservation of the bilateral inferior thyroidal veins is important for reducing hypocalcemia and promoting faster recovery following thyroidectomy.

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**KEYWORDS:**

Papillary thyroid carcinoma; central neck dissection; hypocalcemia; thyroid vein; total thyroidectomy

PMID: [24222097](#)

**19.** [Rofo](#). 2014 May;186(5):489-95. doi: 10.1055/s-0034-1366282. Epub 2014 Apr 9. **(IF: 0.96)**

## Differential diagnostic ultrasound criteria of papillary and follicular carcinomas: a multivariate analysis.

Cordes M<sup>1</sup>, Kondrat P<sup>2</sup>, Uder M<sup>3</sup>, Kuwert T<sup>4</sup>, Sasiadek M<sup>2</sup>.

### Author information

#### **Abstract**

##### **PURPOSE:**

The purpose of the study was to test the hypothesis that papillary thyroid carcinomas (PTCs) and follicular thyroid carcinomas (FTCs) appear with different ultrasound characteristics.

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

90 patients (70 females, 20 males) were included in the study in whom after thyroidectomy the diagnoses of PTCs or FTCs were established. 33 patients (25 females, 8 males) with the diagnosis of follicular adenoma were included in the study as controls (KONs). All patients had ultrasound examinations of the thyroid preoperatively. These ultrasound examinations were evaluated retrospectively with respect to the ultrasound characteristics: "size", "shape", "contour", "structure", "echogenicity" and "calcifications".

##### **RESULTS:**

In PTCs, FTCs and KONs "size" was significantly different (PTCs: MW = 12.5 mm, SD = 8. mm - FTCs: MW= 35.4 mm, SD= 19.6 mm - KONs: MW= 22.7 mm, SD= 14.5 mm; p < 0.001 for PTCs vs. FTCs, p<0.001 for PTCs vs. KONs, p=0.013 for FTCs vs. KONs). Differences were also found with respect to "contour" and "echogenicity" among PTCs, FTCs and KONs (p ≤0.035). The parameters "size", "contour", "echogenicity" and "calcifications" correlated for PTCs, FTCs and KONs with a correlation coefficient r=0.57 (p<0.05, multivariate regressionanalysis).

##### **CONCLUSIONS:**

PTCs and FTCs appear with different sonographic characteristics. Although there is some overlapping of the sonographic appearances of PTCs and FTCs, the knowledge of these differences should have some impact of the risk adapted further work up.

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PMID: [24718869](#)

**20.** [Ann R Coll Surg Engl](#). 2014 Apr;96(3):219-23. doi: 10.1308/003588414X13814021679753.

**(IF:0.88)**

## Incidence and predictors of post-thyroidectomy hypocalcaemia in a tertiary endocrine surgical unit.

Edafe O<sup>1</sup>, Prasad P, Harrison BJ, Balasubramanian SP.

### Author information

#### **Abstract**

##### **BACKGROUND:**

Post-thyroidectomy hypocalcaemia is a common complication with significant short and long term morbidity. The aim of this study was to determine the incidence and predictors of post-thyroidectomy hypocalcaemia (as defined by a corrected calcium <2.1 mmol/l) in a tertiary endocrine surgical unit.

##### **METHODS:**

A total of 238 consecutive patients who underwent completion or bilateral thyroid surgery between 2008 and 2011 were included in this retrospective study. Clinical and biochemical data were obtained from electronic and hard copy medical records.

**RESULTS:**

The incidence of post-thyroidectomy hypocalcaemia on first postoperative day (POD1) was 29.0%. There was variation in the incidence of hypocalcaemia depending on the timing of measurement on the first postoperative day. At six months following surgery, 5.5% of patients were on calcium and/or vitamin D supplementation. Factors associated with post-thyroidectomy hypocalcaemia were lower preoperative corrected calcium ( $p=0.005$ ) and parathyroid gland (PTG) auto-transplant ( $p=0.001$ ). Other clinical factors such as central lymph node dissection, inadvertent PTG excision, ethnicity, preoperative diagnosis and Lugol's iodine were not associated with post-thyroidectomy hypocalcaemia.

**CONCLUSION:**

The incidence of post-thyroidectomy hypocalcaemia was underestimated by 6% when only POD1 measurements were considered. The timing of measurement on POD1 has an impact on the incidence of post-thyroidectomy hypocalcaemia. Auto-transplantation and lower preoperative calcium were associated with post-thyroidectomy hypocalcaemia.

PMID: [24780788](#)

21. *Ann R Coll Surg Engl*. 2014 May;96(4):284-8. doi: 10.1308/003588414X13814021679997.

(IF:0.88)

## Thyroid surgery as a 23-hour stay procedure.

Perera AH<sup>1</sup>, Patel SD, Law NW.

Author information

**Abstract****INTRODUCTION:**

The main barriers to short stay thyroidectomy are haemorrhage, bilateral recurrent laryngeal nerve palsy causing respiratory compromise and hypocalcaemia. This study assessed the safety and effectiveness of thyroidectomy as a 23-hour stay procedure.

**METHODS:**

All patients undergoing total or completion thyroidectomy were prescribed calcium and vitamin D3 supplements following surgery. Retrospective analysis identified patients admitted for longer than 23 hours and any readmissions.

**RESULTS:**

A total of 164 patients were admitted for 23-hour stay thyroid surgery over a 25-month period between 2008 and 2010. Four patients (2%) required admission for longer than 23 hours. No patients required emergency intervention for postoperative haemorrhage or airway compromise. Biochemical hypocalcaemia (despite calcium supplements) was detected in one patient when measured at the outpatient clinic two weeks following surgery. Twelve patients (7.3%) attended the accident and emergency department following discharge; four required admission for intravenous antibiotics for wound infection and one for biochemical hypocalcaemia.

**CONCLUSIONS:**

This single centre UK experience demonstrates that thyroidectomy can be carried out both safely and effectively as a 23-hour stay procedure. Prophylactic prescription of calcium and vitamin D3 reduces hypocalcaemia, and thereby also prolonged admission and readmission due to hypocalcaemia. Supplements are an acceptable, cost effective method of reducing hypocalcaemia and shortening postoperative length of stay.

PMID: [24780020](#)

# TİROID

## Vaka sunumu

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1. [Ann Afr Med.](#) 2014 Apr-Jun;13(2):91-4. doi: 10.4103/1596-3519.129891. (IF: 0.62)

### **Metastatic papillary carcinoma of the thyroid in a patient previously treated for Graves' disease.**

[Yunusa GH<sup>1</sup>](#), [Kotze T](#), [Brink A](#).

[Author information](#)

#### **Abstract**

Incidental papillary carcinoma of the thyroid in patients treated surgically for benign thyroid diseases including Graves' disease is a known phenomenon. However, the management of these patients remains an issue of concern and controversy for those who care for them. We report a case of metastatic papillary carcinoma of the thyroid in a patient previously treated for Graves' disease. The subject of this presentation is a 50-year-old lady who was diagnosed with Graves' disease at the age of 29, for which she had a subtotal thyroidectomy following failure of medical and radioactive iodine treatment. Three years later, the patient was referred to our nuclear medicine department with a clinical diagnosis of suspected metastatic lymph nodes presumably from a thyroid malignancy. She had an  $^{123}\text{I}$  diagnostic whole body scan that showed  $^{123}\text{I}$  avid areas in the thyroid bed as well as left cervical lymph nodes, which later turned out to be metastatic papillary carcinoma of the thyroid on histology. She was treated with therapeutic doses of  $^{131}\text{I}$ . Follow-up radioactive iodine scans and serum thyroglobulin assays showed no evidence of malignant thyroid tissue. The occurrence of papillary carcinoma of the thyroid after a subtotal thyroidectomy for Graves' disease is hereby reported. The need for vigilance and regular follow-up in patients who receive all forms of treatment for benign thyroid diseases is emphasized.

PMID: [24705115](#)

# PARATİROID

## DERLEME

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1. [Autoimmun Rev.](#) 2014 Apr-May;13(4-5):417-22. doi: 10.1016/j.autrev.2014.01.044. Epub 2014 Jan 11. (IF:8.60)

### **Diagnosis and classification of autoimmune parathyroid disease.**

Betterle C<sup>1</sup>, Garelli S<sup>2</sup>, Presotto F<sup>3</sup>.

[Author information](#)

#### **Abstract**

Hypoparathyroidism (HP) is clinically characterized by the presence of hypocalcemia, usually associated with specific signs and symptoms that depend on how severe and chronic the disease becomes. HP is usually caused by surgical removal of all four parathyroids, while other forms are rarer. Autoimmune HP can occur as an isolated disease or as part of an autoimmune polyendocrine syndrome. Here we review what is known about parathyroid gland autoimmunity, focusing on recently-proposed parathyroid autoantibody markers, and particularly those directed against NACHT leucine-rich-repeat protein 5 and calcium-sensing receptor. We also describe the clinical characteristics of HP and design a diagnostic algorithm for autoimmune HP.

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#### **KEYWORDS:**

Autoimmune hypoparathyroidism; Autoimmune polyendocrine syndromes; Calcium-sensing receptor autoantibodies; Chronic hypoparathyroidism; NACHT leucine-rich-repeat protein 5 autoantibodies

PMID: [24424178](#)

2. [J Clin Endocrinol Metab.](#) 2014 Apr 23;jc20141379. [Epub ahead of print] (IF: 7.02)

### **Renal impairment as a surgical indication in primary hyperparathyroidism: does the data support this recommendation?**

Hendrickson CD<sup>1</sup>, Castro Pereira DJ, Comi RJ.

[Author information](#)

#### **Abstract**

**Content.** Management of primary hyperparathyroidism has evolved over the past two decades, yet impaired renal function has consistently been a surgical indication. This recommendation has been based upon the historical association between primary hyperparathyroidism and renal impairment, and a review of the literature is needed to determine if such a recommendation is warranted. **Evidence Acquisition and Synthesis.** PubMed was utilized to identify English-language articles published between January 1990 and February 2014 using keywords related to hyperparathyroidism and renal function. The keywords were "primary hyperparathyroidism," "surgery," "parathyroidectomy," "kidney," "renal," "glomerular filtration rate," and "creatinine." Of the 1,926 articles obtained with this search, all articles germane to the topic that quantified the relationship between primary hyperparathyroidism and renal function were included. All references within these articles were investigated for inclusion. When helpful, data tables were constructed

to summarize the results succinctly. Conclusions. A secondary elevation of parathyroid hormone levels has not been consistently shown to occur at the threshold currently indicated for surgical intervention. While renal impairment is seen with more significant disease, mild asymptomatic primary hyperparathyroidism has not been conclusively associated with renal impairment. Furthermore, there is no evidence to suggest that surgically curing primary hyperparathyroidism via a parathyroidectomy has any impact upon renal function.

PMID: [24758187](#)

3. [Surg Oncol.](#) 2014 Jun;23(2):107-114. doi: 10.1016/j.suronc.2014.03.005. Epub 2014 Apr 3. (IF: 2.26)

## **Parathyroid carcinoma.**

[Al-Kurd A<sup>1</sup>](#), [Mekel M<sup>2</sup>](#), [Mazeh H<sup>3</sup>](#).

### [Author information](#)

#### **Abstract**

Parathyroid carcinoma is a rare form of endocrine malignancy accounting for only a small minority of cancer cases. Due to the rarity of this cancer, there are no generalized guidelines for its management; however, surgery remains to be the mainstay therapy. The purpose of this article is to review and summarize the available literature on parathyroid carcinoma, while discussing proposed staging systems and the role of available adjuvant therapies.

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#### **KEYWORDS:**

Carcinoma; Management; Parathyroid; Review

PMID: [24742584](#)

# PARATİROID

## PROSPEKTİF

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1. [Ann Surg Oncol.](#) 2014 May 28. [Epub ahead of print] (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](#)

2. [Eur Radiol.](#) 2014 Jun 4. [Epub ahead of print] (IF:3.80)

### **US-guided high-intensity focused ultrasound as a promising non-invasive method for treatment of primary hyperparathyroidism.**

[Kovatcheva R<sup>1</sup>](#), [Vlahov J](#), [Stoinov J](#), [Lacoste F](#), [Ortuno C](#), [Zaletel K](#).

#### Author information

#### **Abstract**

#### **OBJECTIVES:**

To investigate the long-term efficacy and safety of ultrasound (US)-guided high-intensity focused ultrasound (HIFU) treatment in patients with primary hyperparathyroidism (PHPT).

#### **METHODS:**

In our prospective study, 13 of 72 screened patients with PHPT were eligible for HIFU treatment, which was performed in one or two sessions. Parathyroid adenoma size and function were evaluated at baseline, 1, 3, 6, 9, and 12 months after the final HIFU session.

#### **RESULTS:**

In 11 females and 2 males, mean age  $55.2 \pm 12.41$  years, the mean applied energy was  $15.2 \pm 7.7$  kJ. Parathyroid size and parathyroid hormone decreased significantly one month after HIFU therapy ( $p < 0.002$  and  $p < 0.02$ , respectively). Calcium concentration decreased slowly to reach significant reduction nine months later ( $p < 0.05$ ). Complete remission was noted in three patients (23 %) after one year, good disease control was achieved in nine (69 %), and procedure was unsuccessful in one patient (8 %). Number of sessions was significantly related to treatment success ( $p < 0.05$ ). Transitory side effects were impaired vocal cord mobility in three patients (23.1 %), subcutaneous oedema in three patients (23.1 %), and a combination of both in two patients (15.4 %).

#### **CONCLUSIONS:**

HIFU is a promising non-invasive technique for PHPT treatment, which could serve as therapeutic alternative for selected patients.

#### **KEY POINTS:**

- US-guided HIFU is a new non-invasive ablative technique for parathyroid adenomas.
- The method is efficient and ensures good disease control in most patients.
- HIFU is a good alternative for patients not meeting surgery criteria.
- Treatment is well-tolerated with only transient side effects.

PMID: [24895038](#)

3. [Head Neck](#). 2014 Jun;36(6):853-8. doi: 10.1002/hed.23384. Epub 2013 Oct 4. (IF: 2.85)

## **Intraoperative near-infrared fluorescence imaging of parathyroid adenomas with use of low-dose methylene blue.**

[van der Vorst JR<sup>1</sup>](#), [Schaafsma BE](#), [Verbeek FP](#), [Swijnenburg RJ](#), [Tummers QR](#), [Hutteman M](#), [Hamming JF](#), [Kievit J](#), [Frangioni JV](#), [van de Velde CJ](#), [Vahrmeijer AL](#).

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Intraoperative identification of parathyroid adenomas can be challenging. We hypothesized that low-doses methylene blue (MB) and near-infrared fluorescence (NIRF) imaging could be used to identify parathyroid adenomas intraoperatively.

#### **METHODS:**

MB was injected intravenously after exploration at a dose of 0.5 mg/kg into 12 patients who underwent parathyroid surgery. NIRF imaging was performed using the Mini-FLARE imaging system.

#### **RESULTS:**

In 10 of 12 patients, histology confirmed a parathyroid adenoma. In 9 of these patients, NIRF could clearly identify the parathyroid adenoma during surgery. Seven of these 9 patients had a positive preoperative (<sup>99m</sup>Tc-sestamibi single photon emission CT (SPECT) scan. Importantly, in 2 patients, parathyroid adenomas could be identified only using NIRF.

#### **CONCLUSION:**

This is the first study to show that low-dose MB can be used as NIRF tracer for identification of parathyroid adenomas, and suggests a correlation with preoperative (99m) Tc-sestamibi SPECT scanning.

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**KEYWORDS:**

hyperparathyroidism; image-guided surgery; methylene blue; near-infrared fluorescence imaging; parathyroid adenoma

PMID: [23720199](#)

4. [World J Surg.](#) 2014 Jun;38(6):1274-81. doi: 10.1007/s00268-014-2450-1. (IF: 2.47)

## The small abnormal parathyroid gland is increasingly common and heralds operative complexity.

McCoy KL<sup>1</sup>, Chen NH, Armstrong MJ, Howell GM, Stang MT, Yip L, Carty SE.

Author information

**Abstract**

**BACKGROUND:**

Over decades, improvements in presymptomatic screening and awareness of surgical benefits have changed the presentation and management of primary hyperparathyroidism (PHPT). Unrecognized multiglandular disease (MGD) remains a major cause of operative failure. We hypothesized that during parathyroid surgery the initial finding of a mildly enlarged gland is now frequent and predicts both MGD and failure.

**METHODS:**

A prospective database was queried to examine the outcomes of initial exploration for sporadic PHPT using intraoperative PTH monitoring (IOPTH) over 15 years. All patients had follow-up ≥6 months (mean = 1.8 years). Cure was defined by normocalcemia at 6 months and microadenoma by resected weight of <200 mg.

**RESULTS:**

Of the 1,150 patients, 98.9 % were cured and 15 % had MGD. The highest preoperative calcium level decreased over time ( $p < 0.001$ ) and varied directly with adenoma weight ( $p < 0.001$ ). Over time, single adenoma weight dropped by half ( $p = 0.002$ ) and microadenoma was increasingly common ( $p < 0.01$ ). MGD risk varied inversely with weight of first resected abnormal gland. Microadenoma required bilateral exploration more often than macroadenoma (48 vs. 18 %,  $p < 0.01$ ). When at exploration the first resected gland was <200 mg, the rates of MGD (40 vs. 11 %,  $p = 0.001$ ), inadequate initial IOPTH drop (67 vs. 79 %,  $p = 0.002$ ), operative failure (6.6 vs. 0.7 %,  $p < 0.001$ ), and long-term recurrence (1.6 vs. 0.3 %,  $p = 0.007$ ) were higher.

**CONCLUSIONS:**

Single parathyroid adenomas are smaller than in the past and require more complex pre- and intraoperative management. During exploration for sporadic PHPT, a first abnormal gland <200 mg should heighten suspicion of MGD and presages a tenfold higher failure rate.

PMID: [24510243](#)

5. [Langenbecks Arch Surg](#). 2014 Apr 13. [Epub ahead of print] (IF: 2.21)

## Transoral parathyroid surgery-a new alternative or nonsense?

[Karakas E](#), [Steinfeldt T](#), [Gockel A](#), [Mangalo A](#), [Sesterhenn A](#), [Bartsch DK](#).

### Author information

#### **Abstract**

#### **PURPOSE:**

In recent years, several endoscopic techniques have been explored in thyroid and parathyroid surgery, but only few gained acceptance among patients and surgeons. Based on extensive human cadaver and animal studies, we developed a technique for transoral partial parathyroidectomy (TOPP), which was performed for the first time in a patient with primary hyperparathyroidism (pHPT). We now report on results and the acceptance of this new technique 2 years after its implementation.

#### **METHODS:**

A pilot study was initiated to recruit a total of 10 patients with benign sporadic pHPT and a preoperatively localized parathyroid adenoma eligible for initial parathyroidectomy. The study protocol was approved by the ethics committee, and an insurance for unforeseen complications and risks was procured. Data of all patients evaluated and operated were prospectively collected, and follow-up examinations were carried out for 19 months on average, which included clinical examinations; ultrasonography; Ear, Nose, and Throat (ENT) investigations; and blood testing.

#### **RESULTS:**

Between January 2010 and May 2012, 75 patients with pHPT and a preoperative localized parathyroid adenoma were eligible for TOPP. After detailed information about the transoral procedure, only five (7 %) female patients consent to undergo TOPP. In three patients, a parathyroid adenoma could be removed via the transoral access, In two patients, the procedure had to be converted to the conventional technique. Median time until resection of a parathyroid adenoma was 122 min (range, 45-175). One patient had a transient recurrent laryngeal nerve palsy, while one patient suffered from a transient palsy of the right hypoglossal nerve and a slight but persisting dysgeusia. Three patients developed a hematoma of the mouth floor and swallowing problems. In four patients, the visual analog scale (VAS) pain score was high (>7) within the first 2 postoperative days.

#### **CONCLUSIONS:**

Although TOPP is feasible, it is poorly accepted by patients and its complication rate is high. Thus, TOPP is nonsense with currently available devices.

PMID: [24728604](#)

6. [Int J Clin Exp Med](#). 2014 Apr 15;7(4):1028-34. eCollection 2014. (IF:1.73)

## Clinical impact of SPECT-CT in the diagnosis and surgical management of hyper-parathyroidism.

[Tokmak H](#), [Demirkol MO](#), [Alagöl F](#), [Tezelman S](#), [Terzioglu T](#).

### Author information

#### **Abstract**

Hyper-functioning parathyroid glands with autonomous overproduction of PTH is the most frequent cause of hypercalcemia in outpatient populations with primary hyper-parathyroidism. It is generally caused by a solitary adenoma in 80%-90% of patients. Despite the various methodologies that are available for preoperative localization of parathyroid lesions, there is still no certain preoperative imaging algorithm to guide a surgical approach prior to the management of primary hyper-parathyroidism (P-HPT). Minimally

invasive surgery has replaced the traditional bilateral neck exploration (BNE) as the initial approach in parathyroidectomy at many referral hospitals worldwide. In our study, we investigated diagnostic contributions of SPECT-CT combined with conventional planar scintigraphy in the detection of hyperfunctioning parathyroid gland localization, since planar imaging has limitations. We also evaluated the efficacy of preoperative USG in adding to initial diagnostic imaging algorithms to localize a parathyroid adenoma.

#### **METHODS:**

A total of 256 consecutive surgically naive patients with hyper-parathyroidism diagnosis were included in the following preoperative localization study. The study consisted of 256 consecutive patients with HPT, with a selected 154 patients who had neck surgery with definitive histology reports. All patients had  $^{99m}\text{Tc}$ -methoxyisobutylisonitrile ( $^{99m}\text{Tc}$ -MIBI) double-phase scintigraphy. The SPECT-CT procedure, combined with standard  $^{99m}\text{Tc}$ -MIBI planar parathyroid scintigraphy with a pinhole and parallel-hole collimator to evaluate whether the SPECT-CT procedure was able to provide additional information in the localization of the pathology, caused hyper-parathyroidism in both P-HPT and S-HPT.

#### **RESULTS:**

In the 154 P-HPT patients, 168 lesions (142 adenomas including 2 intrathyroidal and 2 double adenoma, 2 carcinoma, and 22 hyperplastic glands (four patients had MEN I, each with four hyperplastic glands)), were found at surgery. SPECT-CT detected more lesions than planar imaging in P-HPT (97.8% vs. 87.6%). SPECT-CT detected all adenomas and increased sensitivity, particularly in small lesions. Regardless of their size, the number of detected hyperplastic glands by SPECT-CT was remarkably higher than planar imaging.

#### **KEYWORDS:**

Hyper-parathyroidism; SPECT-CT; minimally invasive parathyroidectomy; parathyroid adenoma; parathyroid scintigraphy

PMID: [24955177](#)

7. [Nucl Med Commun.](#) 2014 Apr;35(4):398-404. doi: 10.1097/MNM.0000000000000056. (IF: 1.48)

## **The effectiveness of low-dose versus high-dose $^{99m}\text{Tc}$ MIBI protocols for radioguided surgery in patients with primary hyperparathyroidism.**

[Gencoglu EA<sup>1</sup>](#), [Aras M](#), [Moray G](#), [Aktas A](#).

#### Author information

#### **Abstract**

#### **OBJECTIVE:**

The aim of this study was to compare the efficacy of low-dose and high-dose ( $^{99m}\text{Tc}$ ) methoxy isobutyl isonitrile (MIBI) protocols in intraoperative localization of parathyroid adenomas by means of a gamma probe in patients with primary hyperparathyroidism (PHPT).

#### **PATIENTS AND METHODS:**

The study included 62 patients with PHPT who were divided into two groups. Group 1 consisted of 32 patients who were injected with a low dose (1 mCi) of ( $^{99m}\text{Tc}$ ) MIBI in the surgical suite 10 min before incision. Group 2 included 30 patients who were intravenously administered a high dose (15 mCi) of ( $^{99m}\text{Tc}$ ) MIBI 2 h before surgery. With the aid of a gamma probe, intraoperative localization of parathyroid adenomas was performed in both groups of patients who underwent minimally invasive parathyroidectomy. All lesions thought to be parathyroid adenomas were excised and subsequently evaluated histopathologically.

#### **RESULTS:**

All parathyroid adenomas in both groups were localized and excised by means of an intraoperative gamma probe. The sensitivity, specificity, and accuracy of low-dose and high-dose (<sup>99m</sup>Tc MIBI) protocols in the intraoperative localization of adenomas in patients with PHPT were 100%.

#### **CONCLUSION:**

In the light of these findings, we conclude that low-dose (<sup>99m</sup>Tc MIBI) may be preferred to intraoperative identification of parathyroid adenomas by means of a gamma probe in PHPT patients because it appears to be as effective as high-dose (<sup>99m</sup>Tc MIBI). Moreover, the low-dose protocol does not have the disadvantages of high-dose protocol.

PMID: [24323310](#)

8. [Laryngoscope](#). 2014 Jun 16. doi: 10.1002/lary.24786. [Epub ahead of print] (IF: 1.32)

## **Modified robotic-assisted thyroidectomy: An initial experience with the retroauricular approach.**

[Kandil E<sup>1</sup>](#), [Saeed A](#), [Mohamed SE](#), [Alsaleh N](#), [Aslam R](#), [Moulthrop T](#).

#### Author information

#### **Abstract**

#### **OBJECTIVES/HYPOTHESIS:**

New approaches for robotic-assisted thyroidectomy, including the retroauricular approach, were recently described. We have modified the established surgical approach for retroauricular robotic thyroidectomy. Herein, we report our initial experience to identify challenges and limitations of this new surgical approach.

#### **STUDY DESIGN:**

Prospective case series.

#### **METHODS:**

This study was performed under institutional review board approval for patients who underwent retroauricular robotic hemithyroidectomy at an academic North American institution. The retroauricular approach was modified by using the space between the two heads of the sternocleidomastoid muscle as our working space. Additionally, selected patients underwent concomitant neck lift surgery with robotic thyroid surgery. Clinical characteristics, total operative time, blood loss, surgical outcomes, and length of hospital stay were evaluated.

#### **RESULTS:**

Twelve female patients were included in this study. Mean age was  $45 \pm 4.43$  years, and mean body mass index was  $28.6 \pm 2.15$ . Mean thyroid nodule size was  $1.15 \pm 0.26 \text{ cm}^3$ . All cases were completed successfully via single retroauricular incision. There was no conversion to an open approach. Four out of 12 patients (33%) underwent additional concomitant neck lift surgery, with a mean total operative time of  $156 \pm 15.88$  minutes. The mean operative time for the remaining eight patients who underwent the robotic approach without additional neck lift surgery was  $145.4 \pm 10.08$  minutes. There were no cases of permanent vocal cord paralysis or permanent hypoparathyroidism. Mean blood loss was  $22.4 \pm 4.32 \text{ mL}$ . Four patients (33%) were discharged home on the same day of surgery, and the remaining eight patients were discharged after an overnight stay.

#### **CONCLUSIONS:**

Single-incision retroauricular robotic hemithyroidectomy can be a safe and feasible alternative to other remote access techniques. Neck lift surgery can be performed safely in a select group of patients. However, future studies are warranted to further evaluate the benefits and limitations of this novel approach.

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

4. Laryngoscope, 2014.

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**KEYWORDS:**

Thyroid surgery; parathyroid; robotic thyroidectomy; thyroid

PMID: [24932761](#)

# PARATİROID

## RETROSPEKTİF

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1. [Ann Surg.](#) 2014 Jun 19. [Epub ahead of print] **(IF: 6.85)**

### Trends in the Frequency and Quality of Parathyroid Surgery: Analysis of 17,082 Cases Over 10 Years.

[Abdulla AG<sup>1</sup>](#), [Ituarte PH](#), [Harari A](#), [Wu JX](#), [Yeh MW](#).

[Author information](#)

#### Abstract

#### OBJECTIVE::

To examine trends in the frequency and quality of surgery for primary hyperparathyroidism (PHPT) in California during the period of 1999 to 2008.

#### BACKGROUND::

The quality of surgery for PHPT can be measured by the complication rate and the success rate of surgery. A fraction of patients with failed initial surgery undergo reoperation.

#### METHODS::

Data on patients undergoing parathyroidectomy (PTx) were obtained from the California Office of Statewide Health Planning and Development. Renal transplant recipients and dialysis patients were excluded. Hospitals were categorized by case volume: Very low: 1 to 4 operations annually; Low: 5 to 9; Medium, 10 to 19; High: 20 to 49; Very high: 50 or more. Complication rates and the percentage of cases requiring reoperation were analyzed.

#### RESULTS::

A total of 17,082 cases were studied. Annual case volume grew from 990 to 2746 (177% increase) over the study period, corresponding to a 147% increase in the per capita PTx rate. The proportion of cases performed by very high-volume hospitals increased from 6.4% to 20.5% ( $P < 0.001$ ). The overall complication rate declined from 8.7% to 3.8% ( $P < 0.001$ ). Complication rates were inversely related to hospital volume (very high volume, 3.9% vs very low volume, 5.2%,  $P < 0.05$ ). Reoperation was performed in 363 patients (2.1%). The reoperation rate increased from 0.91% to 2.73% during the study period ( $P < 0.01$ ). The reoperation rate was inversely and nonlinearly related to hospital volume, as described by the equation  $\% \text{ reoperation} = 100 / (\text{total hospital case volume})$ .

#### CONCLUSIONS::

Surgery for PHPT has grown safer and more common over time. High-volume centers have lower rates of complication and reoperation.

PMID: [24950283](#)

2. [Ann Surg Oncol.](#) 2014 Jun;21(6):1891-7. doi: 10.1245/s10434-014-3530-z. Epub 2014 Feb 13. (IF: 4.33)

## Oncologic resection achieving r0 margins improves disease-free survival in parathyroid cancer.

[Schulte KM<sup>1</sup>](#), [Talat N](#), [Galata G](#), [Gilbert J](#), [Miell J](#), [Hofbauer LC](#), [Barthel A](#), [Diaz-Cano S](#), [Bornstein SR](#).

### [Author information](#)

#### **Abstract**

##### **BACKGROUND:**

Parathyroid cancer has a poor mid-term prognosis, often because of local recurrence, observed in half of all patients. Modern diagnostic workup increasingly enables a preoperative diagnosis of parathyroid cancer. There is limited evidence that more comprehensive oncologic surgery can reduce the risk of local recurrence. This study aims to identify the best specific surgical approach in parathyroid cancer.

##### **METHODS:**

This observational cohort study comprises 19 consecutive patients who had undergone oncologic or nononcologic resection for parathyroid cancer. Baseline parameters were compared by using univariate analysis; outcomes were assessed by  $\chi^2$  testing and Kaplan-Meier statistics.

##### **RESULTS:**

Fifteen of 19 patients were primarily operated on in our tertiary center between 1996 and 2013, and four were referred for follow-up because of their cancer diagnosis. Patient cohorts defined by histologic R-status were comparable for established risk factors: sex, calcium levels, low-risk/high-risk status, and presence of vascular invasion. Oncologic resections were performed in 13 of 15 patients primarily treated in the center and 0 of 4 treated elsewhere ( $\chi^2$  = 5.6;  $p < 0.01$ ). R0 margins were achieved in 11 of 13 (85 %) undergoing oncologic resection and 1 of 6 (17 %) undergoing local excision ( $\chi^2$  = 8.1;  $p < 0.01$ ). R0 margins and primary oncologic resection were associated with higher disease-free survival rates ( $\chi^2$  = 7.9;  $p = 0.005$  and  $\chi^2$  = 4.7;  $p = 0.03$ , respectively). Revision surgery achieved R0 margins in only 2 of 4 (50 %) of patients.

##### **CONCLUSIONS:**

In parathyroid cancer, a more comprehensive surgery (primary oncologic resection) provides significantly better outcomes than local excision as a result of reduction of R1 margins and locoregional recurrence.

PMID: [24522991](#)

3. [Ann Surg Oncol.](#) 2014 Jun;21(6):1878-83. doi: 10.1245/s10434-013-3479-3. Epub 2014 Jan 23. (IF: 4.33)

## Operative failure in minimally invasive parathyroidectomy utilizing an intraoperative parathyroid hormone assay.

[Lee S<sup>1</sup>](#), [Ryu H](#), [Morris LF](#), [Grubbs EG](#), [Lee JE](#), [Harun N](#), [Feng L](#), [Perrier ND](#).

### [Author information](#)

#### **Abstract**

##### **BACKGROUND:**

Minimally invasive parathyroidectomy (MIP) is a targeted operation to cure primary hyperparathyroidism utilizing intraoperative parathyroid hormone monitoring (IOPTH). The purpose of this study was to quantify the operative failure of MIP.

**METHODS:**

Utilizing institutional parathyroid surgery database, demographic, operative, and biochemical data were analyzed for successful and failed MIP. Operative failure was defined as <6 months of eucalcemia after operation.

**RESULTS:**

Five hundred thirty-eight patients (96.6 %) had successful MIP with mean follow-up of 13 months, and 19 (3.4 %) had operative failure. The major cause of operative failure (11 of 19) was the result of surgeons' inability to identify all abnormal parathyroid glands. The remaining eight operative failures were the result of falsely positive IOPTH results. Eleven of 19 patients whose MIP had failed underwent a second parathyroid surgery. All but one of these patients achieved operative success, and 9 patients had missed multigland disease. Only 46 (8.3 %) of 557 patients had conversion to bilateral cervical exploration (BCE). Eighty percent of patients had more than 70 % IOPTH decrease, and all had successful operations. Patients with a marginal IOPTH decrease (50-59 %) had a treatment failure rate of 20 %.

**CONCLUSIONS:**

The most common cause of operative failure in MIP utilizing IOPTH was the result of surgeons' failure to identify all abnormal parathyroid glands. False positive IOPTH is rare, and a targeted MIP utilizing IOPTH can achieve an excellent operative success rate without routine BCE. Selective BCE on patients with marginal IOPTH decrease may improve surgical outcome.

PMID: [24452409](#)

4. [Ann Surg Oncol.](#) 2014 Apr;21(4):1369-73. doi: 10.1245/s10434-013-3402-y. Epub 2013 Dec 4. (IF: 4.33)

## Parathyroid surgery in the elderly: should minimally invasive surgery be abandoned?

Mekel M<sup>1</sup>, Gilshtein H, Chapchay K, Bishara B, Krausz MM, Freund HR, Kluger Y, Eid A, Mazeh H.

### Author information

#### **Abstract**

Single adenoma is the cause of 80 % of primary hyperparathyroidism (PHPT) resulting in wide acceptance of minimally invasive parathyroidectomy (MIP). The incidence of PHPT increases with age. Little information is available regarding the prevalence of multiglandular disease (MGD) in older patients.

**METHODS:**

The records of 537 patients that underwent parathyroid surgery between January 2005 and October 2012 at two endocrine surgery referral centers were retrospectively reviewed. Comparison was performed between patients younger than 65 and older than 65 years of age. Clinical variables included preoperative laboratories and imaging, extent of neck exploration, number of glands excised, and intraoperative parathyroid hormone levels during surgery.

**RESULTS:**

There were 374 (70 %) patients in the younger age group (YG) and 163 (30 %) patients in the older age group (OG). The mean age was  $50 \pm 0.5$  and  $71 \pm 0.4$  years, respectively. There was no difference between the groups in terms of gender or laboratory results. MGD was significantly more common in the OG (24 % vs. 12 %; p = 0.001) and similarly MIP was less commonly completed in the OG (49 % vs. 68 %;

$p < 0.001$ ). Cure rates were comparable between the OG and YG (93 % vs. 95 %;  $p = 0.27$ ). In the OG, patients with MGD had significantly smaller glands as compared to patients with single adenomas in this group ( $331 \pm 67$  vs.  $920 \pm 97$  mg;  $p = 0.006$ , respectively).

#### **CONCLUSIONS:**

MGD in PHPT was found to be more prevalent in older patients. Planning a bilateral neck exploration should be considered in older patients, especially when a relatively small gland is suggested by imaging or encountered during surgery.

PMID: [24306663](#)

5. *Cancer Cytopathol.* 2014 Jun 18. doi: 10.1002/cncy.21453. [Epub ahead of print] **(IF:4.01)**

## **Cytologic features of parathyroid fine-needle aspiration on ThinPrep preparations.**

Odronic SI<sup>1</sup>, Reynolds JP, Chute DJ.

Author information

#### **Abstract**

#### **BACKGROUND:**

Previous studies have provided cytologic criteria that aid in the recognition of parathyroid tissue on aspirate smears, including high cellularity, the presence of naked nuclei, loose 2-dimensional clusters, and papillary architecture. However, to the authors knowledge, the cytomorphologic features of parathyroid fine-needle aspiration (FNA) on liquid-based preparations have not been previously described.

#### **METHODS:**

The authors retrospectively reviewed all parathyroid FNAs that had aspirate smears and a ThinPrep preparation performed over 10 years at 1 institution. The FNA smears and ThinPrep preparations from each case were deidentified and independently reviewed for cellularity, naked nuclei, architecture, and colloid-like material.

#### **RESULTS:**

Forty patients were included in the current study. When individual cases were compared, the ThinPrep preparation was more likely to have lower cellularity, lack papillary architecture, lack naked nuclei, and have areas with a microfollicular pattern compared with the FNA smear.

#### **CONCLUSIONS:**

The cytologic features of parathyroid tissue vary depending on preparation. Many of the common features of parathyroid aspirates are lost on ThinPrep preparations, and an increased percentage of parathyroid FNA specimens have a microfollicular pattern on ThinPrep. This may lead to difficulty in recognizing parathyroid origin on FNA. *Cancer (Cancer Cytopathol)* 2014. © 2014 American Cancer Society.

© 2014 American Cancer Society.

#### **KEYWORDS:**

biopsy; endocrine; head and neck; liquid-based preparation; nongynecologic cytology; thyroid

PMID: [24943645](#)

6. [AJNR Am J Neuroradiol](#). 2014 Jun 5. [Epub ahead of print] (IF: 3.34)

## Dynamic CT for Parathyroid Disease: Are Multiple Phases Necessary?

Raghavan P<sup>1</sup>, Durst CR<sup>2</sup>, Ornan DA<sup>2</sup>, Mukherjee S<sup>2</sup>, Wintermark M<sup>2</sup>, Patrie JT<sup>2</sup>, Xin W<sup>2</sup>, Shada AL<sup>2</sup>, Hanks JB<sup>2</sup>, Smith PW<sup>2</sup>.

### Author information

#### **Abstract**

#### **BACKGROUND AND PURPOSE:**

A 4D CT protocol for detection of parathyroid lesions involves obtaining unenhanced, arterial, early, and delayed venous phase images. The aim of the study was to determine the ideal combination of phases that would minimize radiation dose without sacrificing diagnostic accuracy.

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

With institutional review board approval, the records of 29 patients with primary hyperparathyroidism who had undergone surgical exploration were reviewed. Four neuroradiologists who were blinded to the surgical outcome reviewed the imaging studies in 5 combinations (unenhanced and arterial phase; unenhanced, arterial, and early venous; all 4 phases; arterial alone; arterial and early venous phases) with an interval of at least 7 days between each review. The accuracy of interpretation in lateralizing an abnormality to the side of the neck (right, left, ectopic) and localizing it to a quadrant in the neck (right or left upper, right or left lower) was evaluated.

#### **RESULTS:**

The lateralization and localization accuracy (90.5% and 91.5%, respectively) of the arterial phase alone was comparable with the other combinations of phases. There was no statistically significant difference among the different combinations of phases in their ability to lateralize or localize adenomas to a quadrant ( $P = .976$  and  $.996$ , respectively).

#### **CONCLUSIONS:**

Assessment of a small group of patients shows that adequate diagnostic accuracy for parathyroid adenoma localization may be achievable by obtaining arterial phase images alone. If this outcome can be validated prospectively in a larger group of patients, then the radiation dose can potentially be reduced to one-fourth of what would otherwise be administered.

© 2014 American Society of Neuroradiology.

PMID: [24904051](#)

7. [Head Neck](#). 2014 Apr 3. doi: 10.1002/hed.23613. [Epub ahead of print] (IF: 2.85)

## Dissection and identification of parathyroid glands during thyroidectomy: Association with hypocalcemia.

Praženica P<sup>1</sup>, O'Keeffe L, Holý R.

### Author information

#### **Abstract**

#### **BACKGROUND:**

The purpose of this study was to evaluate preoperative features, surgical details, and postoperative findings related to the identification of parathyroid glands and to establish the relationship between identification of parathyroid glands and postoperative hypocalcemia.

#### **METHODS:**

Seven hundred eighty-eight total thyroidectomies performed between January 2002 and April 2012 by a single surgeon were studied. To evaluate the impact of parathyroid glands identification on study variables,

patients were stratified into 2 study groups: group 1 with 0 to 2 parathyroid glands identified and group 2 with 3 to 4 parathyroid glands identified.

## **RESULTS:**

Multivariate analysis identified younger age ( $p = .007$ ), female sex ( $p = .001$ ), and no usage of the Biclamp hemostatic technique ( $p < .001$ ) related to the higher number of parathyroid glands identified. Univariate analysis revealed a higher incidence of temporary hypocalcemia ( $p = .015$ ) and permanent hypoparathyroidism ( $p = .040$ ) in group 2 than in group 1.

## **CONCLUSION:**

Identification of a higher number of parathyroid glands is associated with a higher incidence of postoperative temporary hypocalcemia and permanent hypoparathyroidism. © 2014 Wiley Periodicals, Inc. Head Neck, 2014.

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## **KEYWORDS:**

hypocalcemia; identification; incidental parathyroidectomy; parathyroid gland; total thyroidectomy

PMID: [24700518](#)

8. [Surgery](#). 2014 Jun 12. pii: S0039-6060(14)00284-0. doi: 10.1016/j.surg.2014.05.020. [Epub ahead of print] (IF: 3.19)

## **A novel technique to improve the diagnostic yield of negative sestamibi scans.**

[Nagar S<sup>1</sup>](#), [Walker DD<sup>2</sup>](#), [Embria O<sup>3</sup>](#), [Kaplan EL<sup>3</sup>](#), [Grogan RH<sup>3</sup>](#), [Angelos P<sup>3</sup>](#).

### Author information

#### **Abstract**

#### **INTRODUCTION:**

Minimally invasive parathyroidectomy is successful in achieving cure for most patients with primary hyperparathyroidism. Most surgeons rely on preoperative imaging as part of the workup for localization. Ultrasonography and sestamibi are the 2 most commonly used preoperative imaging studies. When these 2 studies are positive and concordant the preoperative localization is straightforward. However, when  $\geq 1$  of these studies is negative, the preoperative localization is suspect. We hypothesize that the yield of useful localizing information from "negative" sestamibi scans can be increased in certain situations. Specifically, in cases where the thyroid lobe length seen on sestamibi is discordant from the lobe length of the ultrasonography, this often represents a "hidden" parathyroid adenoma. If our hypothesis is correct, this could lead to decreased resource utilization in cases of nonlocalized parathyroid adenomas.

#### **METHODS:**

We retrospectively analyzed our database of patients with primary hyperparathyroidism who underwent parathyroidectomy from 2005 to 2011. The anteroposterior views of early phase sestamibi were analyzed for thyroid lobe lengths. A ratio of the length of the right lobe to left lobe was calculated. The thyroid lobe lengths on ultrasonography were measured and similar ratios were calculated. The difference in ratios between sestamibi and ultrasonography was calculated for each patient. A difference in ratios from sestamibi and ultrasonography that corresponded with a "hidden" parathyroid on the side of the additional length on sestamibi at the time of surgery was considered a positive finding. When the difference in ratios from the 2 images did not correspond with a "hidden" parathyroid at the time of operation, it was considered a negative finding.

#### **RESULTS:**

There were 59 patients with single-gland disease, negative sestamibi, and images available for review. There were 32 patients (54%) with the positive finding of a "hidden" parathyroid corresponding with a

difference in thyroid lobe length ratios from sestamibi and ultrasonography. The overall mean difference in ratios between sestamibi and ultrasonography was  $0.37 \pm 0.32$ . The mean ratio difference in the group of patients with a negative "hidden" parathyroid was  $0.11 \pm 0.02$ , and the mean ratio difference in the group of patients with a positive "hidden" parathyroid was  $0.58 \pm 0.05$  ( $P < .001$ ). When a difference in ratios of  $\geq 0.23$  was obtained, this predicted a "hidden" parathyroid with a sensitivity of 93.8% and specificity of 85.2%. There were 39 patients with multigland disease, negative sestamibi, and images available for review. None of these patients had a ratio difference of  $\geq 0.23$ . The mean ratio difference for patients with multigland disease was significantly lower than that of the single-gland disease ( $0.08 \pm 0.06$  vs  $0.37 \pm 0.32$ ;  $P < .001$ ).

#### **CONCLUSION:**

Discordance between thyroid lobe lengths on the early phase sestamibi compared with ultrasonography has led to successful preoperative identification of parathyroid adenomas, even though the sestamibi was traditionally read as negative. This finding has not been previously described, seems to be reliable, and can lead to improved preoperative localization and decreased resource utilization in this subset patients.

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PMID: [24931283](#)

9. [Surgery](#). 2014 Apr;155(4):682-8. doi: 10.1016/j.surg.2013.12.019. Epub 2013 Dec 25. (IF: 3.19)

## **Subcutaneous injection is a simple and reproducible option to restore parathyroid function after total parathyroidectomy in patients with secondary hyperparathyroidism.**

[Ng JC<sup>1</sup>](#), [Wang W<sup>2</sup>](#), [Chua MJ<sup>1</sup>](#), [Tan MS<sup>1</sup>](#), [Tan NC<sup>3</sup>](#), [Soo KC<sup>3</sup>](#), [Tan HK<sup>3</sup>](#), [Iyer NG<sup>4</sup>](#).

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Secondary hyperparathyroidism is a common clinical problem seen in patients with end-stage renal disease (ESRD) undergoing hemodialysis. In patients with severe persistent hyperparathyroidism, parathyroidectomies are often required.

#### **OBJECTIVES:**

We sought to evaluate the feasibility and efficacy of total parathyroidectomy followed by subcutaneous injection of parathyroid autograft compared with surgical implantation.

#### **METHODS:**

We conducted a retrospective study of 132 patients with confirmed diagnoses of ESRD treated with hemodialysis or peritoneal dialysis, with secondary hyperparathyroidism who had undergone total parathyroidectomies. Clinical and biochemical characteristics, including preoperative and postoperative intact parathyroid hormone levels were recorded and compared between patients who had undergone subcutaneous injection or surgical implantation of autograft.

#### **RESULTS:**

From February 2005 to February 2012, 132 patients who had undergone total parathyroidectomies were included in our study. To compare the techniques of subcutaneous injection and surgical implantation, pre- and postoperative biochemistry was recorded and analyzed. Preoperative biochemistry was comparable in both groups. However, autograft recovery was significantly faster in the group with subcutaneous injection compared with surgical implantation ( $P = .03$ ). Median time to parathyroid recovery was 2 months for injection compared with 9 months for implantation. There was no remarkable difference in the recurrence rates between the 2 groups.

#### **CONCLUSION:**

Subcutaneous injection of parathyroid tissue is a feasible and simple alternative to the more commonly used method of surgical implantation.

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PMID: [24612625](#)

10. [Eur J Surg Oncol.](#) 2014 Jul;40(7):865-8. doi: 10.1016/j.ejso.2014.03.007. Epub 2014 Apr 3.

(IF:3.07)

## Does the ultrasound dissector improve parathyroid gland preservation during surgery?

Pelizzo MR<sup>1</sup>, Sorgato N<sup>1</sup>, Isabella Merante Boschin I<sup>1</sup>, Marzola MC<sup>2</sup>, Colletti PM<sup>3</sup>, Rubello D<sup>4</sup>.

Author information

**Abstract**

### BACKGROUND:

The most common complication of thyroid surgery is hypoparathyroidism, usually temporary. Ischemic injury or parathyroid avulsion are the causes of surgical hypoparathyroidism. We assessed the value of an ultrasound scalpel, the Harmonic Focus® (HF), could prevent surgical-related hypoparathyroidism.

### METHODS:

Patients consecutively undergoing total thyroidectomy using the HF from November 2009 to February 2011 were recruited and their clinical characteristics, type of operation, histology, and postoperative calcium levels (normal range: 2.10-2.55 mMol/l) were recorded. The prevalence of transient and permanent hypocalcemia was calculated for benign vs. malignant diseases and compared with a control group of 147 patients treated surgically in 2005 using manual technique.

### RESULTS:

139 patients treated by the same surgeon with a total thyroidectomy (41.7% for a malignant disease) were considered. Prevalence of transient hypoparathyroidism (THP) was 45.2% and of definitive hypoparathyroidism (DHP) 1.4%. None of the patients with malignancies were hypocalcemic at 1-year follow-up. In the control group THP was found in 51.7% of cases and DHP in 5.4% ( $p < 0.001$ ).

### CONCLUSIONS:

Use of the ultrasound scalpel improved the likelihood of the parathyroid glands preservation during thyroid surgery. Paradoxically, the HF appears to be more effective in treating malignant disease, i.e. when central node dissection is required.

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**KEYWORDS:**

Parathyroid gland preservation; Thyroidectomy; Ultrasound dissector

PMID: [24742590](#)

11. [World J Surg.](#) 2014 Jun 26. [Epub ahead of print] (IF: 2.47)

## Changing Trends in Thyroid and Parathyroid Surgery over the Decade: Is Same-day Discharge Feasible in the United Kingdom?

Rajeev P<sup>1</sup>, Sutaria R, Ezzat T, Mihai R, Sadler GP.

Author information

**Abstract**

**BACKGROUND:**

A recent British Association of Endocrine and Thyroid Surgeons consensus document suggested that day-case thyroidectomy is feasible in a small proportion of patients but has to be balanced against risks. Currently, there is no large reported series of same-day discharge in thyroid and parathyroid surgery from the UK. The aim of this study was to assess the outcomes of day-case thyroid and parathyroid surgery.

**METHODS:**

We conducted a retrospective study of patients who underwent thyroid or parathyroid surgery between January 2000 and December 2011 at Oxford University Hospitals. The end points analysed were complications in the form of bleeding, hypocalcaemia, wound infection, and seroma.

**RESULTS:**

A total of 2,102 patients (495 males and 1,607 females, age range = 13-90 years) underwent surgery for parathyroid ( $n = 776$ ) or thyroid ( $n = 1,326$ ) conditions. The operations included minimally invasive parathyroidectomy (MIP) ( $n = 331$ ), open parathyroidectomy ( $n = 445$ ), lobectomy ( $n = 687$ ), isthmusectomy ( $n = 23$ ), total thyroidectomy ( $n = 580$ ) and thyroglossal cyst excision ( $n = 36$ ). Routine arrangements were in place for consideration of same-day discharge for lobectomies, thyroglossal cyst surgery, and MIPs; lobectomies accounted for 63 % of same-day cases, followed by parathyroidectomy (35 %). Over the decade, day-case surgery increased from 4 to 17 % for thyroid surgery and from 20 to 40 % for parathyroid surgery. None of the 435 patients who had same-day discharge was readmitted for bleeding [confidence interval (CI) 0-0.6 %]. There was no 30-day mortality for the whole cohort. Complications in patients who underwent surgery in the whole cohort versus those who were discharged the same day were temporary hypocalcaemia (4 vs. 0.2 %), permanent hypocalcaemia (1 vs. 0.4 %), bleeding (0.4 vs. 0 %), seroma (0.3 vs. 0 %), and wound infection (0.3 vs. 0 %).

**CONCLUSION:**

Current protocols for thyroid or parathyroid surgery make same-day discharge feasible and safe in carefully selected patients.

PMID: [24964756](#)

12. [BMC Surg.](#) 2014 May 5;14(1):26. doi: 10.1186/1471-2482-14-26. (IF: 2.06)

## Total parathyroidectomy with trace amounts of parathyroid tissue autotransplantation as the treatment of choice for secondary hyperparathyroidism: a single-center experience.

He Q<sup>1</sup>, Zhuang D, Zheng L, Fan Z, Zhou P, Zhu J, Duan S, Li Y, Ge Y, Lv Z, Cao L.

### Author information

#### **Abstract**

**BACKGROUND:**

The aim of the study was to evaluate total parathyroidectomy with trace amounts of parathyroid tissue (30 mg) as a surgical option in secondary hyperparathyroidism (sHPT) treatment.

**METHODS:**

From January 2008 to March 2012, 47 patients underwent parathyroidectomy. Comparisons of demographic data, symptoms, and preoperative or postoperative biochemistry were made between total parathyroidectomy with trace amounts of parathyroid tissue autotransplantation group and total parathyroidectomy group.

**RESULTS:**

Out of 47 cases, 45 had successful operation. 187 parathyroid glands identified at the initial operation were reported in 47 patients. 43 patients had been diagnosed with parathyroid hyperplasia, and 4 patients had a benign adenoma. After operation, pruritus, bone pain and muscle weakness disappeared, also serum PTH and serum phosphate were declined markedly as well. After discharge, two patients (in total

parathyroidectomy group) were readmitted because of postoperative hypoparathyroidism. Graft-dependent recurrence was not observed in an average follow-up of 42 months.

#### **CONCLUSIONS:**

Total parathyroidectomy with sternocleidomastoid muscle trace amounts of parathyroid tissue autotransplantation is considered to be a feasible, safe and effective surgical option for the patients with sHPT.

PMID: [24886230](#)

13. [Cytopathology](#). 2014 May 12. doi: 10.1111/cyt.12153. [Epub ahead of print] (IF: 2.05)

## **Large non-functioning parathyroid cysts: our institutional experience of a rare entity and a possible pitfall in thyroid cytology.**

[Rossi ED<sup>1</sup>](#), [Revelli L](#), [Giustozzi E](#), [Straccia P](#), [Stigliano E](#), [Lombardi CP](#), [Pontecorvi A](#), [Fadda G](#).

#### Author information

#### **Abstract**

#### **OBJECTIVE:**

Large non-functioning parathyroid cysts represent a rare entity with a benign clinical course. They may be misdiagnosed as thyroid cystic neoplasms on fine needle aspiration cytology (FNAC), resulting in inappropriate surgical treatment. We evaluated our institutional experience in the diagnosis of large parathyroidcystic lesions underlining all the differential diagnoses and pitfalls.

#### **METHODS:**

In the period between 1998 and 2012, we reported the cytology of eight large (>2.5 cm) parathyroidcystic lesions (all female patients) with histological control. The aspirations were performed with a 25-gauge needle with ultrasonographic guidance. The aspirated material was processed with liquid-based cytology (LBC). All the patients had normal serum parathyroid hormone (PTH) and calcium.

#### **RESULTS:**

The cytological samples showed a fluid watery component without colloid and few or absent epithelial cells. The resulting negativity for thyroglobulin and positivity for PTH, carried out on the cystic fluids, suggestedparathyroid lesions rather than either thyroid cystic lesions (including follicular thyroid neoplasm) or cystic malignant lesions. All the patients underwent surgery without complications.

#### **CONCLUSIONS:**

To the best of our knowledge, this is one of the largest series with cytohistological evaluation of large parathyroid cysts. The incidence of large parathyroid cysts remains controversial as most patients are asymptomatic. FNAC may be performed with conclusive results in the majority of cystic cases. The detection of PTH and calcium on the cystic liquid is likely to achieve a correct cytological diagnosis, allowing adequate treatment and ruling out a more frequent thyroid lesion.

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#### **KEYWORDS:**

cystic lesions; liquid-based cytology; non-functioning lesions; parathyroid lesions

PMID: [24816067](#)

14. [Int J Surg.](#) 2014 May 24. pii: S1743-9191(14)00118-6. doi: 10.1016/j.ijsu.2014.05.019. [Epub ahead of print] (IF:1.73)

## **Long-term function of parathyroid subcutaneous autoimplantation after presumed total parathyroidectomy in the treatment of secondary hyperparathyroidism. A clinical retrospective study.**

Conzo G<sup>1</sup>, Della Pietra C<sup>2</sup>, Tartaglia E<sup>3</sup>, Gambardella C<sup>4</sup>, Mauriello C<sup>5</sup>, Palazzo A<sup>6</sup>, Santini L<sup>7</sup>, Fei L<sup>8</sup>, Rossetti G<sup>9</sup>, Docimo G<sup>10</sup>, Perna A<sup>11</sup>.

### Author information

#### **Abstract**

#### **INTRODUCTION:**

Parathyroidectomy (PTx) is recommended in patients affected by secondary hyperparathyroidism (2HPT) of chronic kidney disease-mineral bone disorders (CKD-MBD), resistant to medical treatment. Analyzing total parathyroidectomy with muscular or subcutaneous autoimplantation (TPai) outcomes in hemodialysis (HD) 2HPT patients, and monitoring intact parathyroid hormone (iPTH) levels, we evaluated long-term functional results of subcutaneous parathyroid glandular tissue autoimplantation.

#### **METHODS:**

40 HD 2HPT patients, resistant to medical treatment, and awaiting for renal transplantation, underwent total parathyroidectomy with subcutaneous autoimplantation of 9-12 fragments of not nodular hyperplasiaparathyroid tissue in not dominant forearm. iPTH were analyzed 24 h, and 3-6-12-24 months after surgery. The 1.08-6.99 pmol/L range was taken as reference of normal iPTH level based on which eu- (1.08-6.99), hypo- (<1.08), aparathyroidism (0) and persistence or relapse (>6.99) of disease were determined.

#### **RESULTS:**

In every case PTai determined an extraordinary improvement of quality of life, associated with a notable reduction of iPTH serum level. Immediate normalization of iPTH was achieved in 50% of cases; hypoparathyroidism in 25% of cases and persistence of disease in 25% were observed. Long term follow-up showed a reduction of hypoparathyroidism and an increase of relapse rate up to 20%. Grafting resection was never performed.

#### **DISCUSSION:**

Subcutaneous autotrasplantation is a very simple and fast surgical technique. Nevertheless, similar success and recurrence rates were reported following muscular or subcutaneous grafting, as confirmed in our experience.

#### **CONCLUSIONS:**

Subcutaneous grafting was effective as muscular implantation, with comparable functional results, but avoiding its potential complications.

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#### **KEYWORDS:**

Autotransplantation; Chronic kidney disease; Muscular implantation; Parathyroidectomy; Secondary hyperparathyroidism; Subcutaneous implantation

PMID: [24866066](#)

15. [Int J Surg.](#) 2014 May 22. pii: S1743-9191(14)00141-1. doi: 10.1016/j.ijsu.2014.05.042. [Epub ahead of print] (IF:1.73)

## Postoperative hypocalcemia: Assessment timing.

Sperlongano P<sup>1</sup>, Sperlongano S<sup>2</sup>, Foroni F<sup>2</sup>, De Lucia FP<sup>2</sup>, Pezzulo C<sup>2</sup>, Manfredi C<sup>2</sup>, Esposito E<sup>2</sup>, Sperlongano R<sup>2</sup>.

### Author information

#### **Abstract**

180 total thyroidectomy case studies performed by the same operator in the years 2006-2010, all done with sutureless technique (Ligasure precise®). The monitoring of patients involved a dose of serum calcium on the 1st, 2nd, 3rd and seventh post-operative, before the ambulatory monitoring of the patient. Treatment of post-operative thyroidectomy also includes the administration from the first day of post-surgery, of 2 g/day of calcium (calcium lactate gluconate 2940 mg, calcium carbonate 300 mg). Hypocalcemia was observed in 27 cases (15%) of which 23/180 (12.8%) were transitional and 4/180 (2.2%) were permanent. The average postoperative hospitalization was 2.5 days with a minimum of 30 h. The peak of hypocalcemia was of 11 patients on the first postoperative day (40.7%) in 6 patients on the second postoperative day (22.2%), in 8 patients on the third postoperative day (29.6%), in 1 patient on the fourth postoperative day (3.7%) and in another one on the fifth postoperative day (3.7%). The second postoperative day is crucial for the determination of early discharge (24-30 h). When the surgeon identifies and manages to preserve at least 3 parathyroid glands during surgery, the risk of hypocalcemia together with evaluations of serum calcium on the first and second post-operative day, eliminates the hypocalcemic risk.

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### **KEYWORDS:**

Early discharge; Hypocalcemia; Postoperative hospitalization; Total thyroidectomy

PMID: [24859407](#)

16. [Ann Nucl Med.](#) 2014 Jun 20. [Epub ahead of print] (IF: 1.63)

## Parathyroid dual tracer subtraction scintigraphy: small regions method for quantitative assessment of parathyroid adenoma uptake.

Koljević Marković A<sup>1</sup>, Janković MM, Marković I, Pupić G, Džodić R, Delaloye AB.

### Author information

#### **Abstract**

#### **OBJECTIVE:**

The aim was quantitative assessment of parathyroid adenoma (PTA) uptake in dual tracer dynamic scintigraphy.

#### **METHODS:**

In 78 patients, median age 58 (19-80) years, surgically treated for primary hyperparathyroidism (PHPT), with parathyroid hormone median 125 (70-658) pg/ml, we performed preoperative parathyroid scintigraphy, following EANM guidelines of subtraction and double-phase protocol (2009) using two tracers: Tc-99m pertechnetate and Tc-99m MIBI. In addition to standard subtraction processing and visual interpretation of delayed MIBI planar images of neck and mediastinum in oblique sections (positions according to ultrasound PTA localisation), we developed Submarine processing software that enables selecting custom regions grid sizes ≥6 mm (as this solution was not present in commercial software) to follow time activity curve changes in thyroid tissue and PTA. Histopathology in 53/78 patients revealed PHPT and in 25/78 patients thyroid nodular disease only, and thyroid malignancy occurred in total of 15/78 (19 %) patients. PHPT group included 44 solitary PTA, 8 patients with hyperplasia and one parathyroid carcinoma. The

median macroscopic volume of PTA was 717.5 (15-6125) mm<sup>3</sup>. Concomitant PHPT and thyroid nodular disease occurred in 24/53 patients and among them 8 patients had thyroid malignancies.

#### **RESULTS:**

PTA showed typical pattern of late peak on time activity curves characterized by median start time on 15 (10-25) min, the peak amplitude mean 19 ( $\pm 5$ ) % above thyroid declining washout curve, and duration of peak 6 (4-10) min, allowing PTA to "emerge" like submarine, independent from thyroid tissue and lesions. The ratio of PTA-to-normal thyroid uptake at peak maximum was 1.35 ( $\pm 0.21$ ). The thyroid TACs results of normal 29/78 (37 %) patients, benign nodular 34/78 (44 %) patients, and malignancy in 15 (19 %) patients were all presented by declining exponential curves. The slope analysis of TACs in normal thyroid tissue, thyroid benign and malignant lesions (linear fitted logarithm of TAC) showed no difference (the same negative slope: -0.04). Submarine processing was sensitive in detection of small lesions, in hyperplasia, and concomitant thyroid nodular disease.

#### **CONCLUSIONS:**

The novel Submarine processing confirmed specific PHPT pattern and was effective in the group with potential pitfalls of standard interpretation, increasing sensitivity and specificity of standard processing subtraction algorithm. Prolonged MIBI accumulation was present in malignant as well as benign thyroid nodules with identical TAC slope.

PMID: [24947176](#)

17. *Rev Esp Med Nucl Imagen Mol.* 2014 Apr 3. pii: S2253-654X(14)00062-6. doi:

10.1016/j.remn.2014.02.005. [Epub ahead of print] (IF: 0.68)

## **The Efficacy of Low- and High-Dose <sup>99m</sup>Tc-MIBI Protocols for Intraoperative Identification of Hyperplastic Parathyroid Glands in Secondary Hyperparathyroidism.**

Gencoglu EA<sup>1</sup>, Aktas A<sup>2</sup>.

#### Author information

#### **Abstract**

#### **OBJECTIVE:**

The aim of this study was to compare the efficacy of low- and high-dose <sup>99m</sup>Tc-MIBI protocols for intraoperative identification of hyperplastic parathyroid glands via gamma probe in secondary hyperparathyroidism.

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

This retrospective study was conducted using a prospective database of 59 patients who had undergone radioguided subtotal parathyroidectomy between 2004-2012. The patients were studied in 2 groups. Group 1 (n=31) received 37 MBq <sup>99m</sup>Tc-MIBI intravenously in the surgical room approximately 10min before the beginning of the intervention and surgery was performed under gamma probe guidance. Group 2 (n=28) received 555 MBq <sup>99m</sup>Tc- MIBI intravenously 2h before surgery, which was also performed under gamma probe guidance. Intraoperative gamma probe findings, laboratory findings, and histopathological findings were evaluated together.

#### **RESULTS:**

Using acceptance of the histopathological findings as gold standard, sensitivity and specificity of intraoperative gamma probe for identifying hyperplastic parathyroid glands was 98% and 100%, respectively, in both groups.

#### **CONCLUSIONS:**

In the light of these findings, it is concluded that the low-dose <sup>99m</sup>Tc-MIBI protocol might be preferable for intraoperative identification of hyperplastic parathyroid glands in secondary hyperparathyroidism patients

because it was observed to be as effective as the high-dose  $^{99m}$ Tc-MIBI protocol. Furthermore, the low-dose protocol does not have the disadvantages that are associated with the high-dose protocol.

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**KEYWORDS:**

( $^{99m}$ Tc MIBI; ( $^{99m}$ Tc-MIBI; Cirugía radioguiada; Gamma probe; Hiperparatiroidismo secundario; Radio-guided surgery; Secondary hyperparathyroidism; Sonda gamma

PMID: [24703993](#)

18. *Nucl Med Commun.* 2014 Apr;35(4):391-7. doi: 10.1097/MNM.0000000000000062. (IF: 1.48)

## Radioguided parathyroidectomy in patients with secondary hyperparathyroidism due to chronic renal failure.

Chen J<sup>1</sup>, Wang JD.

Author information

### Abstract

#### OBJECTIVE:

The aim of the study was to determine the effectiveness of radioguided parathyroidectomy in patients with secondary hyperparathyroidism (sHPT) due to chronic renal failure (CRF).

#### METHODS:

Between August 2003 and October 2011, CRF patients undergoing parathyroidectomy for sHPT received conventional parathyroidectomy with preoperative ultrasound localization or radioguided surgery. For radioguided surgery, 370 MBq of ( $^{99m}$ Tc)-sestamibi was injected intravenously 1.5-2 h before surgery, and a gamma probe was used intraoperatively to identify the parathyroid glands by radioactivity count.

#### RESULTS:

Twenty-five patients underwent conventional parathyroidectomy and 25 underwent radioguided parathyroidectomy. The median patient age was 55 years (range, 37-75 years). In the conventional surgery group, the parathyroid glands were removed in 18 patients, and seven patients experienced recurrence as determined by intact parathyroid hormone (iPTH) levels. One patient in the radioguided surgery group experienced recurrence due to ectopic parathyroid tissue in the mediastinum. The operative time of radioguided surgery was shorter than that of conventional surgery [median (interquartile range), 100.0 (84.0-118.0) vs. 114.0 (103.0-134.0) min, respectively; P=0.015]. On postoperative day 1, iPTH and serum calcium levels were significantly lower in the radioguided surgery group than in the conventional surgery group [median (interquartile range), iPTH: 3 (3-20) vs. 53 (11-230) ng/l; P=0.006, calcium: 1.72 (1.63-1.85) vs. 2.06 (1.92-2.12) mmol/l; P<0.001]. Radioactivity counts of parathyroid glands were significantly higher than in thyroid tissue, lymph nodes, and fat (all, P<0.001).

#### CONCLUSION:

Radioguided localization of the parathyroid glands improves the success rate of surgery in patients with CRF undergoing parathyroidectomy for sHPT.

PMID: [24335878](#)

# PARATİROID

## VAKA SUNUMU

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1. [Arg Bras Endocrinol Metabol.](#) 2014 Apr;58(3):313-6. (IF: 1.05)

### **Successful parathyroid tissue autograft after 3 years of cryopreservation: a case report.**

[Leite AK<sup>1</sup>](#), [Junior CP<sup>1</sup>](#), [Arap SS<sup>1</sup>](#), [Massoni L<sup>1</sup>](#), [Lourenço DM<sup>2</sup>](#), [Brandão LG<sup>1</sup>](#), [Montenegro FL<sup>1</sup>](#).

#### Author information

#### **Abstract**

After a total parathyroidectomy, well-established protocols for the cryopreservation of parathyroid tissue and for the delayed autograft of this tissue exist, especially in cases of secondary hyperparathyroidism (HPT) or familial or sporadic parathyroid hyperplasia. Although delayed autografts are effective, the published success rates vary from 10% to 83%. There are numerous factors that influence the viability, and therefore the success, of an autograft, including cryopreservation time. Certain authors believe that the tissue is only viable for 24 months, but there is no consensus on how long the parathyroid tissue can be preserved. A 63-year-old male who was diagnosed with sporadic multiple endocrine neoplasia type 1 and primary hyperparathyroidism, and was submitted to a total parathyroidectomy and an autograft in the forearm. The implant failed, and the patient developed severe hypoparathyroidism in the months following the surgery. Thirty-six months after the total parathyroidectomy, the cryopreserved autograft was successfully transplanted, and hypoparathyroidism was reversed (most recent systemic parathyroid hormone, PTH, of 36 pg/mL, and total calcium of 9.1 mg/dL; no oral calcium supplementation). The case presented here indicates that cryopreserved parathyroid tissue may remain viable after 24 months in storage, and may retain the capacity to reverse permanent postsurgical hypoparathyroidism. These data provide reasonable evidence that the time limit for cryopreservation remains undetermined and that additional research would be valuable. Arq Bras Endocrinol Metab. 2014;58(3):313-6.

PMID: [24863096](#)

2. [J Clin Ultrasound.](#) 2014 May;42(4):212-4. doi: 10.1002/jcu.22090. Epub 2013 Sep 4. (IF:0.90)

### **Intrathyroidal parathyroid carcinoma mimicking a thyroid nodule in a MEN type 1 patient.**

[Lee KM<sup>1</sup>](#), [Kim EJ<sup>1</sup>](#), [Choi WS<sup>1</sup>](#), [Park WS<sup>1</sup>](#), [Kim SW<sup>1</sup>](#).

#### Author information

#### **Abstract**

A 59-year-old woman with classic manifestations of hyperparathyroidism associated with multiple endocrine neoplasia type 1 presented with a right adrenal mass and two pituitary microadenomas on imaging studies. For evaluation of hypercalcemia, (99m) Tc-MIBI scintigraphy was done and showed focal uptake at the thyroid level of the right anterior neck. Subsequent neck sonography showed several thyroid nodules, but there was no parathyroid tumor. Percutaneous fine-needle aspiration of the dominant thyroid nodule indicated a follicular nodule. After surgery, final histopathology revealed intrathyroidal parathyroid carcinoma. This case illustrates the difficulty in diagnosing parathyroid carcinoma via fine-needle aspiration.

**KEYWORDS:**

multiple endocrine neoplasia type 1; parathyroid, carcinoma, ectopic location; ultrasonography

PMID: [24037737](#)

3. [J Clin Diagn Res.](#) 2014 Apr;8(4):QD07-8. doi: 10.7860/JCDR/2014/7724.4297. Epub 2014 Apr 15.  
(IF:0.22)

## **Functioning oxyphil parathyroid adenoma: a case report.**

Metgudmath RB<sup>1</sup>, Metgudmath VV<sup>2</sup>, Malur PR<sup>3</sup>, Das AT<sup>4</sup>, Metgudmath AR<sup>5</sup>.

### Author information

#### **Abstract**

Oxyphil parathyroid adenomas are rare and clinical features of patients with this entity are not well defined. We are presenting a case of primary hyperparathyroidism with marked elevation of parathyroid hormone (PTH) and near normal calcium levels, that underwent parathyroidectomy. Histopathology revealed an oxyphil adenoma which showed positivity for PTH on immunohistochemical staining. Post - operatively, there was a significant decline in both PTH and alkaline phosphatase levels. Benign oxyphil adenomas may mimic parathyroid carcinomas, both in terms of clinical features and tumour size; and they should be considered in the differential diagnosis of patients with primary hyperparathyroidism.

**KEYWORDS:**

Hyperparathyroidism; Oxyphilic adenoma; Parathyroidectomy

PMID: [24959490](#)

# ADRENAL

## DERLEME

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1. [Nat Rev Endocrinol.](#) 2014 May;10(5):282-92. doi: 10.1038/nrendo.2014.26. Epub 2014 Mar 18.  
(IF: 3.73)

### Surgical management of adrenocortical tumours.

[Miller BS<sup>1</sup>](#), [Doherty GM<sup>2</sup>](#).

[Author information](#)

#### Abstract

The surgical treatment of adrenal tumours has evolved over the past century, as has our understanding of which hormones are secreted by the adrenal glands and what these hormones do. This article reviews the preoperative evaluation of patients with adrenal tumours that could be benign or malignant, including metastases. The biochemical evaluation of excess levels of hormones is discussed, as are imaging characteristics that differentiate benign tumours from malignant tumours. The options for surgical management are outlined, including the advantages and disadvantages of various open and laparoscopic approaches. The surgical management of adrenocortical carcinoma is specifically reviewed, including controversies in operative approaches as well as surgical management of invasive or recurrent disease.

PMID: [24637859](#)

2. [Clin Anat.](#) 2014 Apr 15. doi: 10.1002/ca.22374. [Epub ahead of print] (IF: 1.26)

### A review of the anatomy and clinical significance of adrenal veins.

[Cesmebasi A<sup>1</sup>](#), [Du Plessis M](#), [Iannatuono M](#), [Shah S](#), [Tubbs RS](#), [Loukas M](#).

[Author information](#)

#### Abstract

The adrenal veins may present with a multitude of anatomical variants, which surgeons must be aware of when performing adrenalectomies. The adrenal veins originate during the formation of the prerenal inferior vena cava (IVC) and are remnants of the caudal portion of the subcardinal veins, cranial to the subcardinal sinus in the embryo. The many communications between the posterior cardinal, supracardinal, and subcardinal veins of the primordial venous system provide an explanation for the variable anatomy. Most commonly, one central vein drains each adrenal gland. The long left adrenal vein joins the inferior phrenic vein and drains into the left renal vein, while the short rightadrenal vein drains immediately into the IVC. Multiple variations exist bilaterally and may pose the risk of surgical complications. Due to the potential for collaterals and accessory adrenal vessels, great caution must be taken during an adrenalectomy. Adrenal venous sampling, the gold standard in diagnosing primary hyperaldosteronism, also requires the clinician to have a thorough knowledge of the adrenal vein anatomy to avoid iatrogenic injury. The adrenal vein acts as an important conduit in portosystemic shunts, thus the nature of the anatomy and hypercoagulable states pose the risk of thrombosis. Clin. Anat., 2014. © 2014 Wiley Periodicals, Inc.

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#### KEYWORDS:

adrenal variation; adrenal vein thrombosis; adrenal venous sampling; adrenalectomy complications; embryology; portosystemic shunt

PMID: [24737134](#)

3. [Minim Invasive Ther Allied Technol.](#) 2014 Apr 1. [Epub ahead of print] (IF: 1.25)

## The past, the present, and the future of minimally invasive therapy in laparoscopic surgery: A review and speculative outlook.

[Arezzo A.](#)

[Author information](#)

### Abstract

Abstract It took nearly a hundred years until laparoscopy overlooked the realm of general surgery, but rarely in the history of surgery did we observe a similar revolution. Few surgical procedures have changed so rapidly and so profoundly the daily activities of each surgeon. As with any innovation, laparoscopy represented a robust incitement to test its application to almost all the abdominal districts and soon demonstrated clear advantages in surgery of the spleen, adrenal gland and the urinary tract. Today laparoscopy has proven to actually be the most important advancement also in colorectal surgery since the introduction of surgical stapling, with large meta-analyses demonstrating undeniable advantages also in rectal cancer treatment. To be true, the concept of minimal invasiveness was first applied to the rectum even earlier than laparoscopy when transanal endoscopic microsurgery (TEM) was introduced into clinical practice, and today represents a modern platform with extending indications. Looking at the future, economy is going to influence strategic social decisions of governments, which will condition the development of new technologies. The significant increase in prevention through screening programs will lead to the diagnosis of a vast majority of early lesions, which will favour a further decrease of invasiveness.

PMID: [24690023](#)

4. [Interact Cardiovasc Thorac Surg.](#) 2014 Apr;18(4):495-7. doi: 10.1093/icvts/ivt526. Epub 2013 Dec

18. (IF: 1.25)

## Adrenalectomy for isolated metastasis from operable non-small-cell lung cancer.

[Sastry P<sup>1</sup>, Tocock A, Coonar AS.](#)

[Author information](#)

### Abstract

A best evidence topic in cardiothoracic surgery was written according to a structured protocol. The question addressed was 'in [patients with isolated adrenal metastasis from operable/operated non-small cell lung cancer] is [adrenalectomy] superior [to chemo/radiotherapy alone for achieving long-term survival]?' Altogether >160 papers were found using the reported search, of which 3 represented the best evidence to answer the clinical question. The authors, journal, date and country of publication, patient group studied, study type, relevant outcomes and results of these papers are tabulated. We conclude that the body of evidence is small, retrospective and not formally controlled. As such interpretation is limited by selection bias in assignment of patients. These limitations notwithstanding, surgical resection is associated with prolonged survival for patients with isolated adrenal metastasis from non-small cell lung cancer (NSCLC). Patient selection is probably critical. Factors that are important are: otherwise early tumour, node (TN) status of the lung primary and R0 resection, long disease-free interval and confidence that there are no other sites of metastasis. Patients with ipsilateral adrenal metastasis may derive the greatest survival benefit from adrenalectomy, since spread to the ipsilateral gland may occur via direct lymphatic channels in

the retroperitoneum. Involvement of the contralateral adrenal may signify haematogenous spread and therefore, a more aggressive process. Adrenalectomy must be accompanied by regional lymph node clearance to reduce the chance of further spread from the adrenal itself.

**KEYWORDS:**

Adrenal gland; Adrenal gland neoplasms; Adrenalectomy; Carcinoma non-small-cell lung; Neoplasm metastasis; Review

**Comment in**

- [eComment. Does adrenalectomy in lung cancer improve survival?](#) [Interact Cardiovasc Thorac Surg. 2014]

PMID: [24357471](#)

# ADRENAL

## PROSPEKTİF

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1. [Nutr Metab Cardiovasc Dis.](#) 2014 May;24(5):476-82. doi: 10.1016/j.numecd.2013.09.009. Epub 2013 Nov 2. (IF: 3.89)

### **Primary aldosteronism and essential hypertension: assessment of cardiovascular risk at diagnosis and after treatment.**

Turchi F<sup>1</sup>, Ronconi V<sup>2</sup>, di Tizio V<sup>2</sup>, Ceccoli L<sup>2</sup>, Boscaro M<sup>2</sup>, Giachetti G<sup>3</sup>.

[Author information](#)

#### **Abstract**

#### **BACKGROUND AND AIMS:**

Primary aldosteronism (PA), the most frequent form of secondary hypertension, is characterized by a higher rate of cardiovascular (CV) events than essential hypertension (EH). Aim of the study was to evaluate the cardiovascular risk according to the ESH/ESC 2007 guidelines, in patients with PA and with EH, at diagnosis and after treatment.

#### **METHODS AND RESULTS:**

We prospectively studied 102 PA patients (40 with aldosterone producing adenoma-APA and 62 with idiopathic hyperaldosteronism-IHA) and 132 essential hypertensives at basal and after surgical or medical treatment (mean follow-up period 44 months for PA and 42 months for EH). At baseline evaluation the stratification of CV risk was significantly different: the predominant risk category was the high CV risk (50% in total PA, 53% in PA matched for blood pressure values and 55% in EH), but the very high risk category was twice in PA than in EH patients (36% in total PA and 33% in matched PA vs. 17% in EH, p < 0.05). The worse risk profile of PA was due to a higher prevalence of glycemic alterations, metabolic syndrome and left ventricular hypertrophy (LVH) (p < 0.05). After adequate treatment, the CV risk was significantly reduced becoming comparable in PA and in EH patient due to a reduction of hypertension grading, prevalence of metabolic syndrome, hypertension persistence and LVH (p < 0.05).

#### **CONCLUSION:**

Patients with PA present a high CV risk, which is in part reversible after specific treatment, due both to the reduced blood pressure values and to the improvement of end-organ damage.

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#### **KEYWORDS:**

Adrenal gland; Cardiovascular risk; Primary aldosteronism

PMID: [24630976](#)

# ADRENAL

## RETROSPEKTİF

1. [Lancet Oncol.](#) 2014 May;15(6):648-55. doi: 10.1016/S1470-2045(14)70154-8. Epub 2014 Apr 15.  
(IF: 26.69)

### Outcomes of adrenal-sparing surgery or total adrenalectomy in phaeochromocytoma associated with multiple endocrine neoplasia type 2: an international retrospective population-based study.

Castinetti F<sup>1</sup>, Qi XP<sup>2</sup>, Walz MK<sup>3</sup>, Maia AL<sup>4</sup>, Sansó G<sup>5</sup>, Peczkowska M<sup>6</sup>, Hasse-Lazar K<sup>7</sup>, Links TP<sup>8</sup>, Dvorakova S<sup>9</sup>, Toledo RA<sup>10</sup>, Mian C<sup>11</sup>, Bugalho MJ<sup>12</sup>, Wohllk N<sup>13</sup>, Kollyukh O<sup>14</sup>, Canu L<sup>15</sup>, Loli P<sup>16</sup>, Bergmann SR<sup>17</sup>, Biarnes Costa J<sup>18</sup>, Makay O<sup>19</sup>, Patocs A<sup>20</sup>, Pfeifer M<sup>21</sup>, Shah NS<sup>22</sup>, Cuny T<sup>23</sup>, Brauckhoff M<sup>24</sup>, Bausch B<sup>25</sup>, von Dobschuetz E<sup>26</sup>, Letizia C<sup>27</sup>, Barczynski M<sup>28</sup>, Alevizaki MK<sup>29</sup>, Czetwertynska M<sup>30</sup>, Ugurlu MU<sup>31</sup>, Valk G<sup>32</sup>, Plukker JT<sup>33</sup>, Sartorato P<sup>34</sup>, Siqueira DR<sup>4</sup>, Barontini M<sup>5</sup>, Szperl M<sup>6</sup>, Jarzab B<sup>7</sup>, Verbeek HH<sup>8</sup>, Zelinka T<sup>35</sup>, Vlcek P<sup>36</sup>, Toledo SP<sup>10</sup>, Coutinho FL<sup>10</sup>, Mannelli M<sup>15</sup>, Recasens M<sup>18</sup>, Demarquet L<sup>23</sup>, Petramala L<sup>27</sup>, Yaremchuk S<sup>37</sup>, Zabolotny D<sup>37</sup>, Schiavi F<sup>38</sup>, Opocher G<sup>39</sup>, Racz K<sup>40</sup>, Januszewicz A<sup>6</sup>, Weryha G<sup>23</sup>, Henry JF<sup>41</sup>, Brue T<sup>42</sup>, Conte-Devolx B<sup>42</sup>, Eng C<sup>43</sup>, Neumann HP<sup>44</sup>.

#### Author information

#### **Abstract**

#### **BACKGROUND:**

The prevention of medullary thyroid cancer in patients with multiple endocrine neoplasia type 2 syndrome has demonstrated the ability of molecular diagnosis and prophylactic surgery to improve patient outcomes. However, the other major neoplasia associated with multiple endocrine neoplasia type 2, phaeochromocytoma, is not as well characterised in terms of occurrence and treatment outcomes. In this study, we aimed to systematically characterise the outcomes of management of phaeochromocytoma associated with multiple endocrine neoplasia type 2.

#### **METHODS:**

This multinational observational retrospective population-based study compiled data on patients with multiple endocrine neoplasia type 2 from 30 academic medical centres across Europe, the Americas, and Asia. Patients were included if they were carriers of germline pathogenic mutations of the RET gene, or were first-degree relatives with histologically proven medullary thyroid cancer and phaeochromocytoma. We gathered clinical information about patients'RET genotype, type of treatment for phaeochromocytoma (ie, unilateral or bilateral operations as adrenalectomy or adrenal-sparing surgery, and as open or endoscopic operations), and postoperative outcomes (adrenal function, malignancy, and death). The type of surgery was decided by each investigator and the timing of surgery was patient driven. The primary aim of our analysis was to compare disease-free survival after either adrenal-sparing surgery or adrenalectomy.

#### **FINDINGS:**

1210 patients with multiple endocrine neoplasia type 2 were included in our database, 563 of whom had phaeochromocytoma. Treatment was adrenalectomy in 438 (79%) of 552 operated patients, and adrenal-sparing surgery in 114 (21%). Phaeochromocytoma recurrence occurred in four (3%) of 153 of the operated glands after adrenal-sparing surgery after 6-13 years, compared with 11 (2%) of 717 glands operated by adrenalectomy ( $p=0.57$ ). Postoperative adrenal insufficiency or steroid dependency developed in 292 (86%) of 339 patients with bilateral phaeochromocytoma who underwent surgery. However, 47

(57%) of 82 patients with bilateral phaeochromocytoma who underwent adrenal-sparing surgery did not become steroid dependent.

#### **INTERPRETATION:**

The treatment of multiple endocrine neoplasia type 2-related phaeochromocytoma continues to rely on adrenalectomies with their associated Addisonian-like complications and consequent lifelong dependency on steroids. Adrenal-sparing surgery, a highly successful treatment option in experienced centres, should be the surgical approach of choice to reduce these complications.

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PMID: [24745698](#)

2. [Eur Urol.](#) 2014 May 12. pii: S0302-2838(14)00316-9. doi: 10.1016/j.eururo.2014.04.003. [Epub ahead of print] (IF: 10.90)

## **Robot-assisted Laparoscopic Adrenalectomy: Step-by-Step Technique and Comparative Outcomes.**

Brandao LF<sup>1</sup>, Autorino R<sup>1</sup>, Zargar H<sup>1</sup>, Krishnan J<sup>1</sup>, Laydner H<sup>1</sup>, Akca O<sup>1</sup>, Mir MC<sup>1</sup>, Samarasekera D<sup>1</sup>, Stein R<sup>1</sup>, Kaouk J<sup>2</sup>.

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Recent evidence supports the use of robotic surgery for the minimally invasive surgical management of adrenal masses.

#### **OBJECTIVE:**

To describe a contemporary step-by-step technique of robotic adrenalectomy (RA), to provide tips and tricks to help ensure a safe and effective implementation of the procedure, and to compare its outcomes with those of laparoscopic adrenalectomy (LA).

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

We retrospectively reviewed the medical charts of consecutive patients who underwent RA performed by a single surgeon between April 2010 and October 2013. LA cases performed by the same surgeon between January 2004 and May 2010 were considered the control group.

#### **SURGICAL PROCEDURE:**

The main steps of our current surgical technique for RA are described in this video tutorial: patient positioning, port placement, and robot docking; exposure of the adrenal gland; identification and control of the adrenal vein; circumferential dissection of the adrenal gland; and specimen retrieval and closure.

#### **OUTCOME MEASUREMENTS AND STATISTICAL ANALYSIS:**

Demographic parameters and main surgical outcomes were assessed.

#### **RESULTS AND LIMITATIONS:**

A total of 76 cases (RA: 30; LA: 46) were included in the analysis. Median tumor size on computed tomography (CT) was significantly larger in the LA group (3cm [interquartile range (IQR): 3] vs 4cm [IQR: 3]; p=0.002). A significantly lower median estimated blood loss was recorded for the robotic group (50ml [IQR: 50] vs 100ml [IQR: 288]; p=0.02). The RA group presented five minor complications (16.7%) and one major (Clavien 3b) complication (3.3%), whereas four minor complications (8.7%) and one major (Clavien 3b) complication (2.3%) were observed in the LA group. No significant difference was noted between groups in terms of malignant histology (p=0.66) and positive margin rate (p=0.60). Distribution of pheochromocytomas in the LA group was significantly higher than in the RA group (43.5% vs 16.7%; p=0.02).

**CONCLUSIONS:**

The standardization of each surgical step optimizes the RA procedure. The robotic approach can be applied for a wide range of adrenal indications, recapitulating the safety and effectiveness of open surgery and potentially improving the outcomes of standard laparoscopy.

**PATIENT SUMMARY:**

In this report we detail our surgical technique for robotic removal of adrenal masses. This procedure has been standardized and can be offered to patients, with excellent outcomes.

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**KEYWORDS:**

Adrenalectomy; Laparoscopy; Robotic surgery; Surgical technique

PMID: [24830625](#)

3. [Surg Endosc.](#) 2014 Apr 25. [Epub ahead of print] (IF: 3.66)

## **The adrenal psoas sign: surgical outcomes following a simple technique to maximize removal of extracortical adrenal tissue during bilateral laparoscopic adrenalectomy.**

[Gilbert EW<sup>1</sup>](#), [Harrison VL](#), [Sheppard BC](#).

[Author information](#)

### **Abstract**

#### **BACKGROUND:**

Bilateral laparoscopic adrenalectomy (BLA) is an effective therapy for the management of persistent hypercortisolism in patients after failed transphenoidal pituitary tumor resection for Cushing's disease. Extracortical adrenal tissue has been identified as a source of persistent hypercortisolism and, if not resected along with both adrenal glands, may lead to treatment failure. We report a reliable and reproducible technique called the "psoas sign" for BLA in patients with Cushing's disease which reduces the likelihood of retained extra-adrenal cortical rests and may reduce intraoperative complications.

#### **METHODS:**

A 16-year retrospective review of all consecutive patients who underwent transabdominal BLA at a single tertiary care center was performed. All patients underwent BLA utilizing the psoas sign technique and all procedures were performed replicating these predetermined surgical steps: (1) Identification of the inferior pole of the gland. (2) Identification of the inferior aspect of the adreno-caval groove on the right or the adrenal vein/renal vein confluence on the left. (3) Division of the adrenal vein. (4) Dissection and removal of the adrenal gland with clearance of all retroperitoneal fat overlying the psoas muscle.

#### **RESULTS:**

Between October 1996 and December 2012, 92 patients underwent BLA for refractory Cushing's disease. Patients were predominantly female (90 %) with a median age of 40 years (17-71). There were 3 intraoperative complications (3.2 %), 2 conversions (2.2 %), and 1 death (1.09 %). Four patients were identified as having extracortical rests of adrenal tissue within the retroperitoneal fat (4.3 %). Mean operative time was 272 min ( $\pm 79.25$ , n = 68) and median estimated blood loss was 50 mL (10-800 mL).

**CONCLUSIONS:**

The psoas sign technique provides a clear view of the adrenal fossa and facilitates careful dissection of the anatomic planes around the adrenal gland. This technique is feasible, reproducible and in our experience allows for safe removal of both adrenal glands and all surrounding extracortical adrenal tissue.

PMID: [24763509](#)

4. [Surg Endosc.](#) 2014 Apr 16. [Epub ahead of print] (IF: 3.66)

## Laparoscopic transperitoneal anterior adrenalectomy in pheochromocytoma: experience in 62 patients.

[Paganini AM](#)<sup>1</sup>, [Balla A](#), [Guerrieri M](#), [Lezoche G](#), [Campagnacci R](#), [D'Ambrosio G](#), [Quaresima S](#), [Antonica MV](#), [Lezoche E](#).

### Author information

#### **Abstract**

#### **BACKGROUND:**

Aim was to evaluate the results in 62 patients undergoing laparoscopic adrenalectomy (LA) for the treatment of pheochromocytoma (PHE), with a transperitoneal anterior approach for lesions on the right side, and with a transperitoneal anterior submesocolic approach in case of left-sided lesions.

#### **METHODS:**

Sixty-two patients underwent LA for the treatment of PHE at two centers in Rome and Ancona (Italy). Two patients had bilateral lesions, for a total of 64 adrenalectomies. Sporadic PHE occurred in 57 patients (91.9 %) and in 5 (8.0 %) it was familiar. Thirty-six patients (58.0 %) underwent right adrenalectomy, 24 (38.7 %) left adrenalectomy, and in 2 cases (3.2 %) LA was bilateral. In 38 cases of right adrenalectomy (59.3 %) and in 5 cases of left adrenalectomy (7.8 %), the approach was a transperitoneal anterior one. A transperitoneal anterior submesocolic approach was used in 21 left adrenalectomy cases (32.8 %).

#### **RESULTS:**

Mean operative time for right and left transperitoneal anterior LA was 101 min (range 50-240) and 163 min (range 50-190), respectively. Mean operative time for left transperitoneal anterior submesocolic LA was 92 min (range 50-195). For bilateral adrenalectomy, mean operative time was 210 min (range 200-220). Conversion to open surgery occurred in 2 cases (3.22 %) due to extensive adhesions (1) and hemorrhage (1). One major and three minor complications were observed. Mobilization occurred on the first postoperative day. Hospitalization was 4.8 days (range 2-19). The lesions had a mean diameter of 4.5 cm (range 0.5-10).

#### **CONCLUSIONS:**

Early identification with no gland manipulation prior to closure of the adrenal vein is the main advantages of the transperitoneal anterior approach. PHE may be treated safely and effectively by a laparoscopic transperitoneal anterior approach for right-sided lesions and with a transperitoneal anterior submesocolic approach for left-sided ones.

PMID: [24737532](#)

5. [J Vasc Interv Radiol.](#) 2014 Apr;25(4):593-8. doi: 10.1016/j.jvir.2013.12.013. Epub 2014 Feb 6. (IF: 2.26)

## A single-institution experience in image-guided thermal ablation of adrenal glandmetastases.

[Welch BT](#)<sup>1</sup>, [Callstrom MR](#)<sup>2</sup>, [Carpenter PC](#)<sup>3</sup>, [Wass CT](#)<sup>4</sup>, [Welch TL](#)<sup>4</sup>, [Boorjian SA](#)<sup>5</sup>, [Nichols DA](#)<sup>2</sup>, [Thompson GB](#)<sup>6</sup>, [Lohse CM](#)<sup>7</sup>, [Erickson D](#)<sup>3</sup>, [Leibovich BC](#)<sup>5</sup>, [Atwell TD](#)<sup>2</sup>.

### Author information

#### **Abstract**

#### **PURPOSE:**

To assess safety, technical success, local control, and survival associated with percutaneous image-guided adrenal ablation.

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

Adult patients with adrenal metastases who underwent percutaneous image-guided adrenal ablation during the years 2003-2012 were identified. There were 32 patients with 37 adrenal tumors identified. Technical success, safety, local control, and survival were analyzed according to standard criteria.

#### **RESULTS:**

In 32 patients (25 men and 7 women; mean age, 66 y; age range, 44-88 y) with 37 adrenal tumors, 35 ablation procedures were performed. One patient with an 8.2-cm tumor underwent planned cryoablation debulking fully anticipating untreated margins owing to close proximity of the pancreas (ie, the intent was to diminish tumor burden rather than a curative intervention). Of the 36 patients treated with curative intent, technical success was achieved in 35 (97%) tumors. Follow-up imaging was performed on 34 of 37 tumors (excluding patients with intentional debulking [n = 1], technical failure [n = 1], and absence of follow-up [n = 1]). Local recurrence developed in 3 (8.8%) of 34 tumors. Local tumor control was achieved in 31 lesions at a mean of 22.7 months of follow-up. Recurrence-free survival and overall survival at 36 months were 88% and 52%, respectively, with a median survival of 34.5 months. A Common Terminology Criteria for Adverse Events version 4 grade 3 or 4 complication was observed in three (8.6%) ablation procedures.

#### **CONCLUSIONS:**

Image-guided ablation is safe and effective for local control of metastatic adrenal tumors and provides a minimally invasive alternative to surgical resection in appropriately selected patients.

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PMID: [24507995](#)

6. [J Surg Res.](#) 2014 Apr;187(2):496-501. doi: 10.1016/j.jss.2013.10.060. Epub 2013 Nov 7. (IF: 2.08)

## **Expanding the indications for laparoscopic retroperitoneal adrenalectomy: experience with 81 resections.**

[Epelboym I<sup>1</sup>](#), [Digesu CS<sup>1</sup>](#), [Johnston MG<sup>1</sup>](#), [Chabot JA<sup>1</sup>](#), [Inabnet WB<sup>2</sup>](#), [Allendorf JD<sup>1</sup>](#), [Lee JA<sup>3</sup>](#).

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Laparoscopic retroperitoneal (RP) adrenalectomy has gained popularity as the preferred approach over transabdominal (TA) method; however, surgeons have been reluctant to offer this operation to obese patients because of the concerns over inadequate working space and overall perceived higher rate of complications. The aim of the present study was to evaluate the feasibility and safety of RP adrenalectomy compared with TA adrenalectomy, specifically in morbidly obese patients.

#### **METHODS:**

All laparoscopic adrenalectomies performed at our institution between 2004 and 2012 were reviewed retrospectively. Presenting features, operative characteristics, and postoperative outcomes were evaluated. Complications were graded using Clavien system. Continuous variables were compared using Student t-test. Categorical variables were compared using  $\chi^2$ -test. Prediction models were constructed using linear or logistic regression as appropriate.

#### **RESULTS:**

Eighty-one RP and 130 TA procedures were performed, 26 (12.3%) and 60 (28.4%), respectively in obese patients ( $BMI > 30$ ). Among the obese patients, operative time and estimated blood loss were less for RP (90 versus 130 min;  $P < 0.001$  and 0 versus 50 mL;  $P < 0.001$ ). Differences in the length of stay, overall mortality, incidence and severity of postoperative complications, and rates of readmission were not

statistically significant between RP and TA procedures for all comers and in the obese patients. Controlling the operative characteristics and patient-specific factors, neither operative approach nor obesity was found to independently predict the postoperative complications.

#### **CONCLUSIONS:**

Laparoscopic RP adrenalectomy is a safe and feasible technique for obese patients. In the obese patients and for all comers, it offers shorter operative time, decreased estimated blood loss, with comparable length of stay and morbidity and mortality rates. We therefore recommend that this technique should be considered for patients undergoing adrenal resection.

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#### **KEYWORDS:**

Endocrine; Laparoscopic adrenalectomy; Obesity; Retroperitoneal adrenalectomy

PMID: [24314603](#)

7. [Anticancer Res.](#) 2014 May;34(5):2581-8. (IF: 1.89)

## **Contemporary review of large adrenal tumors in a tertiary referral center.**

Mege D<sup>1</sup>, Taieb D, Lowery A, Loundou A, DE Micco C, Castinetti F, Morange I, Henry JF, Sebag E.

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Large adrenal tumors (LATs, ≥6 cm) are uncommon and associated with malignancy in 25% of cases. Their surgical management remains debatable. The aim of the present report was to evaluate the current incidence, nature and management of LAT.

#### **PATIENTS AND METHODS:**

We carried out a retrospective review of LATs managed in a tertiary referral center (2002-2011).

#### **RESULTS:**

Eighty-one patients were included (out of a total of 750 with adrenal tumors, 11%). Nine patients had no surgical intervention (11%). Fifty-two LATs were malignant (64%): adrenocortical carcinoma (44%), metastasis (27%) and pheochromocytoma (21%). Patients with malignant tumors exhibited a poorer 5-year overall survival than those with benign tumors (53.4% versus 96.3%, p=0.001). Disease-related mortality was approximately 60%, 29% and 0% for those with metastasis, adrenal carcinoma and malignant pheochromocytoma, respectively. The recurrence rate was the same for the three malignant sub-groups (30%).

#### **CONCLUSION:**

LATs are rare and more frequently malignant than previously reported. Some are benign and do not require surgical intervention. Surgical indication and approach should be tailored for each patient.

#### **KEYWORDS:**

Adrenal; adrenocortical carcinoma; laparoscopy; large adrenal tumor; malignancy; pheochromocytoma

PMID: [24778080](#)

8. [World J Surg Oncol.](#) 2014 Jun 5;12(1):179. doi: 10.1186/1477-7819-12-179. (IF: 1.37)

## A modified adrenal gland-sparing surgery based on retroperitoneal laparoscopic radical nephrectomy.

Xu Z, Zhang Z, Gao J, Wei Z, Xu X, Dong J, Tang H, Yi X, Tang C, Zhou W<sup>1</sup>.

[Author information](#)

### Abstract

#### BACKGROUND:

The objective of this study was to modify the adrenal gland-sparing strategy based on retroperitoneal laparoscopic radical nephrectomy by reviewing the anatomic relationship between the kidney and the adrenal gland.

#### METHODS:

From June 2010 to October 2012, a total of 68 patients (45 males and 23 females) with localized renal cell carcinoma were treated at our hospital. The study included 35 cases that were right side and 33 cases that were left, and average patient age was 54.06 years. The average tumor size was 4.7 cm. Tumors were classified via the TNM staging system. All patients underwent adrenal gland-sparing surgery based on retroperitoneal laparoscopic radical nephrectomy.

#### RESULTS:

For each patient, surgery was successful without conversion to open surgery. The average operative time was  $56.65 \pm 26.60$  min, and the mean blood loss was  $70.61 \pm 60.96$  ml. All patients were discharged from the hospital 3 to 8 days after surgery. During surgery, the adrenal gland was slightly lacerated in three cases and the peritoneum showed perforation in six cases. Only one case recurred during the study follow-up.

#### CONCLUSIONS:

Based on retroperitoneal laparoscopy radical nephrectomy, this effective adrenal gland-sparing surgery showed direct exposure of tissue and little interference of the upper pole of the kidney. Elevation of the adrenal gland could help with the complete dissection of the adrenal gland from the kidney. The separation of the kidney was rapid, simple and accurate. The probability of adrenal gland damage was reduced. This strategy is recommended for widespread use in T1-2 renal neoplasms.

PMID: [24902995](#)

# ADRENAL

## VAKA SUNUMU

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1. [BMJ Case Rep.](#) 2014 May 28;2014. pii: bcr2014204023. doi: 10.1136/bcr-2014-204023. (IF: 3.71)

### Giant adrenal myelolipoma: when trauma and oncology collide.

Zorgdrager M<sup>1</sup>, Pol R<sup>1</sup>, van Hemel B<sup>2</sup>, van Ginkel R<sup>1</sup>.

[Author information](#)

#### Abstract

Three patients presented some decades after severe traumatic injury with atypical bowel symptoms which were caused by a giant myelolipoma of the adrenal gland. The aetiology of this rare, benign and generally asymptomatic tumour is virtually unknown at present and several hypotheses have been devised. This report describes a possible association between high-energy trauma and the development of giant myelolipomas, further contributing to the hypothesis that severe systemic stress could be an aetiological factor in the development of an adrenal myelolipoma.

2014 BMJ Publishing Group Ltd.

PMID: [24872487](#)

2. [BMJ Case Rep.](#) 2014 May 21;2014. pii: bcr2013202838. doi: 10.1136/bcr-2013-202838. (IF: 3.71)

### Surgical management of pheochromocytoma in a 13-week pregnant woman.

Memon MA, Aziz W, Abbas F.

[Author information](#)

#### Abstract

A 34-year-old 13-week pregnant woman presented with hypertension refractory to medical therapy and on workup was found to have a right adrenal mass. Due to her persistent increased blood pressure she was advised urinary vanillylmandelic acid (VMA) and its level was raised. MRI of the abdomen showed a well-circumsized lesion in the right adrenal of 3.0×2.5 cm suggestive of pheochromocytoma. The patient was started on antihypertensives including α-blockers and β-blockers and planned for right open adrenalectomy. Intraoperatively, blood pressure was raised up to 180/110 mm Hg on slight manipulation of adrenal gland which was controlled with glyceryl-trinitrate and volatile agents. Postoperatively urinary VMA decreased to normal range and all antihypertensives were gradually stopped. She had uneventful pregnancy and delivered vaginally. This case report highlights the importance of surgical management of pheochromocytoma in second trimester of pregnancy to avoid catastrophic complications later in pregnancy.

2014 BMJ Publishing Group Ltd.

PMID: [24850551](#)

3. [J Oral Maxillofac Surg.](#) 2014 Apr;72(4):672-5. doi: 10.1016/j.joms.2013.10.020. Epub 2013 Nov 9.  
(IF: 1.61)

## Intraoperative hypertensive crisis secondary to an undiagnosed pheochromocytoma during orthognathic surgery: a case report.

Bouchard C<sup>1</sup>, Chiniara G<sup>2</sup>, Valcourt AC<sup>3</sup>.

### Author information

#### **Abstract**

Increased blood pressure (BP) during orthognathic surgery may result in excessive blood loss, poor surgical field visualization, and longer surgical time and require blood transfusion. When uncontrollable high BP is encountered in an otherwise healthy patient during orthognathic surgery, the diagnosis of pheochromocytoma should be considered. Pheochromocytomas are rare neuroendocrine tumors of the chromaffin cells of the adrenal medulla or extra-adrenal paraganglia (sympathetic ganglia) that secrete catecholamine. They are present in approximately 0.05 to 0.2% of hypertensive patients. Patients can present with hypertension, tachycardia, headaches, and diaphoresis. The clinical presentation may vary and a wide spectrum of nonspecific symptoms may be encountered. The elevated BP can be intermittent (40%) or permanent (60%). About 10% of pheochromocytomas are hereditary and they can be a feature of multiple endocrine neoplasia type 2. This report describes the case of a 29-year-old patient with a large pheochromocytoma of the right adrenal gland undiagnosed before orthognathic surgery.

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PMID: [24480765](#)

4. [Diagn Cytopathol.](#) 2014 Jun 3. doi: 10.1002/dc.23178. [Epub ahead of print] (IF: 1.21)

## Perirenal myelolipoma diagnosed on imprint: Case report and review of the literature.

Bandler TC<sup>1</sup>, Reder I, Kahn L.

### Author information

#### **Abstract**

Myelolipomas are benign tumors containing adipose tissue and hematopoietic elements which occur most commonly in the adrenal glands. Extra-adrenal myelolipomas are uncommon with few cases of renal and perirenal myelolipomas in the literature. These cases may be difficult to diagnose based on radiology alone and intraoperative diagnosis can be extremely important in determining the course of surgery. Due to the lipomatous component of the tumor it may be technically difficult to prepare adequate frozen sections; this problem can be obviated by utilization of cytologic imprint preparations. We present a case of perirenal myelolipoma diagnosed intraoperatively utilizing cytologic imprint preparations stained with toluidine blue and hematoxylin and eosin. Diagn. Cytopathol. 2014. © 2014 Wiley Periodicals, Inc.

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#### **KEYWORDS:**

imprint; myelolipoma; perirenal; retroperitoneal; touch prep

PMID: [24895157](#)

# NET

## DERLEME

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1. [Endocr Relat Cancer.](#) 2014 May 6;21(3):R153-63. doi: 10.1530/ERC-13-0125. Print 2014 Jun. (IF: 5.67)

### Incidence of gastroenteropancreatic neuroendocrine tumours: a systematic review of the literature.

Fraenkel M<sup>1</sup>, Kim M, Faggiano A, de Herder WW, Valk GD; Knowledge NETwork.

#### Author information

#### **Abstract**

Based on the current medical literature, the worldwide incidence of neuroendocrine tumours (NETs) seems to have increased; however, a systematic literature overview is lacking. This study aimed to collect all available data on the incidence of gastroenteropancreatic (GEP)-NETs and characteristics of population to establish their epidemiology. A sensitive MEDLINE search was carried out. The papers were selected via a cascade process that restricted the initial pool of 7991 articles to 33, using predefined inclusion and exclusion criteria. Original articles evaluating the incidence of sporadic GEP-NETs in regional, institutional and national registries were considered. The majority of data originated from the US National Cancer Institute Surveillance, Epidemiology and End Results database and from national cancer registries in Western Europe. Generally, because of the retrospective nature of existing databases the outcomes of studies might be biased, which hinders the drawing of firm conclusions. The age-adjusted incidence of GEP-NETs has increased steadily over the past four decades (1973–2007), increasing 3.65-fold in the USA and 3.8- to 4.8-fold in the UK. Incidence has changed variably from one anatomical site to another. The greatest increase in incidence occurred for gastric and rectal NETs, while the smallest increase occurred for small intestine NETs. There were gender and racial differences, which differed site by site and, in some cases, changed over time. The incidence rates (IRs) of GEP-NETs have increased significantly in the last 40 years. Data are only available from North America, Western Europe and Japan. A site-by-site analysis revealed that the IRs of some NETs increased more than those of others.

#### **KEYWORDS:**

carcinoids; epidemiology; incidence; neuroendocrine tumours

PMID: [24322304](#)

2. [Cancer Epidemiol Biomarkers Prev.](#) 2014 May 9. [Epub ahead of print] (IF: 5.00)

### Risk Factors Associated with Rectal Neuroendocrine Tumors: A Cross-Sectional Study.

Jung YS<sup>1</sup>, Yun KE<sup>2</sup>, Chang Y<sup>3</sup>, Ryu S<sup>3</sup>, Park JH<sup>1</sup>, Kim HJ<sup>1</sup>, Cho YK<sup>1</sup>, Sohn CI<sup>1</sup>, Jeon WK<sup>1</sup>, Kim BI<sup>1</sup>, Park DI<sup>4</sup>.

#### Author information

#### **Abstract**

#### **BACKGROUND:**

The incidence of rectal neuroendocrine tumors (NET) has been increasing since the implementation of the screening colonoscopy. However, very little is known about risk factors associated with rectal NETs. We examined the prevalence of and the risk factors for rectal NETs in a Korean population.

**METHODS:**

A cross-sectional study was performed on 62,171 Koreans who underwent screening colonoscopy. The clinical characteristics and serum biochemical parameters of subjects with rectal NET were compared with those of subjects without rectal NET using multivariate logistic regression.

**RESULTS:**

Of a total of 57,819 participants, 101 [OR, 0.17%; 95% confidence interval (CI), 0.14-0.20] had a rectal NET. Young age (<50 years; OR, 2.09; 95% CI, 1.06-4.15), male gender (OR, 1.92; 95% CI, 1.15-3.20), alcohol drinking [adjusted OR (AOR), 1.56; 95% CI, 1.01-2.42], and a low high-density lipoprotein-cholesterol (HDL-C) level (AOR, 1.85; 95% CI, 1.10-3.11) were independent risk factors for rectal NETs. Cigarette smoking, fatty liver, metabolic syndrome, higher triglyceride level ( $\geq 150$  mg/dL), and higher homeostasis model assessment of insulin resistance ( $\geq 2.5$ ) were not independently associated with rectal NETs, although these factors were more common in individuals with rectal NETs in the univariate analysis.

**CONCLUSIONS:**

Young age (<50 years), male gender, alcohol drinking, and a low HDL-C level were risk factors for rectal NETs. Our results suggest that gender, behavioral factors, and dyslipidemia may affect the risk for developing rectal NETs.

**IMPACT:**

The findings of this study contribute to a better understanding of the influence of gender, behavioral factors, and dyslipidemia in developing rectal NETs. *Cancer Epidemiol Biomarkers Prev*; 23(7); 1-8. ©2014 AACR.

©2014 American Association for Cancer Research.

PMID: [24813818](#)

3. [Cancer](#). 2014 Apr 25. doi: 10.1002/cncr.28721. [Epub ahead of print] (IF: 5.54)

## Gastroenteropancreatic high-grade neuroendocrine carcinoma.

[Sorbye H<sup>1</sup>](#), [Strosberg J](#), [Baudin E](#), [Klimstra DS](#), [Yao JC](#).

### Author information

#### **Abstract**

Gastroenteropancreatic (GEP) neuroendocrine neoplasms are classified as low-grade, intermediate-grade, and high-grade tumors based on morphologic criteria and the proliferation rate. Most studies have been conducted in patients with well differentiated (low-grade to intermediate-grade) neuroendocrine tumors. Data are substantially scarcer on poorly differentiated, high-grade neuroendocrine carcinoma (NEC), which includes the entities of small cell carcinoma and large cell NEC. A literature search of GEP-NEC was performed. Long-term survival was poor even among patients who presented with localized disease. Several studies highlighted heterogeneity within the high-grade NEC category and a need for the further identification of discreet prognostic and predictive groups. Tumors with a Ki-67 proliferation index <55% were less responsive to platinum-based chemotherapy, and patients with such tumors or with well differentiated morphology had better survival than patients who had tumors with poorly differentiated morphology or a higher Ki-67 index. Treatment options beyond platinum-based chemotherapy are emerging. A revision of the World Health Organization high-grade NEC classification seems to be necessary based on recent data. Platinum-based chemotherapy may not be the optimal treatment for patients who have GEP-NEC with a moderately high proliferation rate. Adequate diagnostic and prognostic stratifications constitute the basis for future progress. *Cancer* 2014. © 2014 American Cancer Society.

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**KEYWORDS:**

carcinoma; endocrine; gastroenteropancreatic; gastrointestinal; neuroendocrine

PMID: [24771552](#)

4. [Ann Surg Oncol.](#) 2014 Apr 24. [Epub ahead of print] (IF: 4.33)

## A Retrospective Review of 126 High-Grade Neuroendocrine Carcinomas of the Colon and Rectum.

[Smith JD<sup>1</sup>](#), [Reidy DL](#), [Goodman KA](#), [Shia J](#), [Nash GM](#).

[Author information](#)

### Abstract

#### BACKGROUND:

High-grade neuroendocrine carcinomas (HGNECs) of the colon and rectum are rare, constituting less than 1 % of colorectal cancers. The purpose of this study was to identify the natural history and oncologic outcomes of this disease, describe the use of surgery, and determine the clinical and pathological factors associated with outcomes.

#### METHODS:

Following Institutional Review Board approval, patients with HGNEC were identified from our institutional database. Patient charts and pathology reports were analyzed retrospectively for clinical and pathological factors.

#### RESULTS:

A total of 126 patients with a median follow-up of 9 months were identified. Median survival was 13.2 months, and 85 (67 %) patients had metastatic disease at diagnosis. Three-year overall survival (OS) was 5 and 18 % for patients with and without metastatic disease, respectively. Factors associated with improved OS on multivariable analysis were absence of metastatic disease and presence of an adenocarcinoma component within the tumor. In patients with metastatic disease, response to chemotherapy was the only factor associated with survival. In patients with localized disease, an adenocarcinoma component within the tumor was the only factor associated with survival. Resection of tumor was not associated with survival in either localized or metastatic disease.

#### CONCLUSION:

High-grade colorectal NECs are extremely aggressive tumors with poor prognosis. Patients appear to have a marginally better prognosis if they present without metastatic disease, have an adenocarcinoma component within their tumor, or respond to chemotherapy. Surgery, particularly in the presence of metastatic disease, may not offer a survival benefit for the majority of patients.

PMID: [24763982](#)

5. [Mol Cell Endocrinol.](#) 2014 Apr 5;386(1-2):101-20. doi: 10.1016/j.mce.2013.07.015. Epub 2013 Jul

30. (IF: 4.17)

## Gastroenteropancreatic endocrine tumors.

[Meeker A<sup>1</sup>](#), [Heaphy C<sup>2</sup>](#).

[Author information](#)

### Abstract

Gastroenteropancreatic endocrine tumors (GEP-NETs) are relatively uncommon; comprising approximately 0.5% of all human cancers. Although they often exhibit relatively indolent clinical courses, GEP-NETs have the potential for lethal progression. Due to their scarcity and various technical challenges, GEP-NETs have been understudied. As a consequence, we have few diagnostic, prognostic and predictive biomarkers for these tumors. Early detection and surgical removal is currently the only reliable curative treatment for GEP-NET patients; many of whom, unfortunately, present with advanced disease. Here, we review the genetics and epigenetics of GEP-NETs. The last few years have witnessed unprecedented technological advances

in these fields, and their application to GEP-NETS has already led to important new information on the molecular abnormalities underlying them. As outlined here, we expect that "omics" studies will provide us with new diagnostic and prognostic biomarkers, inform the development of improved pre-clinical models, and identify novel therapeutic targets for GEP-NET patients.

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**KEYWORDS:**

ATRX; Carcinoid; DAXX; Epigenomics; Gastroenteropancreatic Neuroendocrine Tumor; Genomics

PMID: [23906538](#)

6. [J Clin Gastroenterol.](#) 2014 May 13. [Epub ahead of print] (IF:3.75)

## Endoscopic Diagnosis and Treatment of Pancreatic Neuroendocrine Tumors.

[Rustagi T<sup>1</sup>, Farrell JJ.](#)

[Author information](#)

**Abstract**

Pancreatic neuroendocrine tumors (PNETs) are rare pancreatic neoplasms comprising only 1% to 2% of all pancreatic tumors. In recent years, the number of incidentally discovered PNETs has greatly increased given the widespread use of axial imaging. However, a significant proportion of PNETs may not be visualized on conventional imaging such as computed tomography, magnetic resonance imaging, and somatostatin receptor scintigraphy. Endoscopic ultrasound (EUS) has become an integral part of the diagnosis of PNETs because of its high sensitivity for detecting, localizing, and diagnosing PNETs. EUS-guided tissue acquisition provides histologic and immunologic confirmation, and may also allow prognostication about tumor behavior. In addition to preoperative assessment of these tumors, EUS has also been shown to have an important role in nonoperative management of small nonfunctional PNETs. Finally, recent developments suggest that interventional EUS may be used to aid intraoperative localization of PNETs and to deliver therapeutic agents for the treatment of PNETs. This review will discuss the endoscopic diagnosis and treatment of PNETs, with focus on recent advances in the utility of EUS in the clinical management of these tumors.

PMID: [24828360](#)

7. [Eur J Endocrinol.](#) 2014 Jun 11. pii: EJE-14-0173. [Epub ahead of print] (IF: 3.64)

## GEP-NETS update: Surgery of Neuroendocrine Tumors.

[Partelli S<sup>1</sup>, Maurizi A<sup>2</sup>, Tamburrino D<sup>3</sup>, Baldoni A<sup>4</sup>, Polenta V<sup>5</sup>, Crippa S<sup>6</sup>, Falconi M<sup>7</sup>.](#)

[Author information](#)

**Abstract**

The incidence of neuroendocrine tumors (NET) is increasing in the last decades. Surgical treatment encompasses a panel of approaches ranging from conservative procedures to extended surgical resection. Tumor size and localisation usually represent the main drivers in the choice of the most appropriate surgical resection. In the presence of small (< 2 cm) and asymptomatic nonfunctioning NET, a conservative treatment is usually recommended. For localized NET > 2 cm surgical resection represents the cornerstone in the management of these tumours. As their relative indolent biological, an extended resection is often justified also in the presence of advanced NET. Surgical options for NET liver metastases range from limited resection up to liver transplantation. Surgical choices for metastatic NET 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.

PMID: [24920289](#)

8. [Eur J Endocrinol.](#) 2014 Apr 10;170(5):R173-83. doi: 10.1530/EJE-14-0077. Print 2014 May. (IF: 3.64)

## **GEP-NETS update: functional localisation and scintigraphy in neuroendocrine tumours of the gastrointestinal tract and pancreas (GEP-NETs).**

[de Herder WW.](#)

### Author information

#### **Abstract**

For patients with neuroendocrine tumours (NETs) of the gastrointestinal tract and pancreas (GEP) (GEP-NETs), excellent care should ideally be provided by a multidisciplinary team of skilled health care professionals. In these patients, a combination of nuclear medicine imaging and conventional radiological imaging techniques is usually mandatory for primary tumour visualisation, tumour staging and evaluation of treatment. In specific cases, as in patients with occult insulinomas, sampling procedures can provide a clue as to where to localise the insulin-hypersecreting pancreatic NETs. Recent developments in these fields have led to an increase in the detection rate of primary GEP-NETs and their metastatic deposits. Radiopharmaceuticals targeted at specific tumour cell properties and processes can be used to provide sensitive and specific whole-body imaging. Functional imaging also allows for patient selection for receptor-based therapies and prediction of the efficacy of such therapies. Positron emission tomography/computed tomography (CT) and single-photon emission CT/CT are used to map functional images with anatomical localisations. As a result, tumour imaging and tumour follow-up strategies can be optimised for every individual GEP-NET patient. In some cases, functional imaging might give indications with regard to future tumour behaviour and prognosis.

PMID: [24723670](#)

9. [Eur J Endocrinol.](#) 2014 Jun 2. pii: EJE-14-0113. [Epub ahead of print] (IF: 3.64)

## **THERAPY OF ENDOCRINE DISEASE: Treatment of malignant pheochromocytoma and paraganglioma.**

[Baudin E<sup>1</sup>](#), [Habra M<sup>2</sup>](#), [Deschamps F<sup>3</sup>](#), [Cote G<sup>4</sup>](#), [Dumont F<sup>5</sup>](#), [Cabanillas M<sup>6</sup>](#), [Arfi-Rouche J<sup>7</sup>](#), [Berdelou A<sup>8</sup>](#), [Moon B<sup>9</sup>](#), [Al Ghuzlan A<sup>10</sup>](#), [Patel S<sup>11</sup>](#), [Leboulleux S<sup>12</sup>](#), [Jimenez C<sup>13</sup>](#).

### Author information

#### **Abstract**

Mestastatic pheochromocytoma and paraganglioma (MPP) present clinicians with three major challenges: scarcity, complexity of characterization, and heterogeneous behavior and prognosis. As with the treatment of allneuroendocrine tumors, the control of hormonal symptoms and tumor growth are the main therapeutic objectives in MPP patients. A significant number of MPP patients still die from uncontrolled hormone secretion. In addition, the management of MPP remains palliative. Steps forward include proper characterization of MPP patients at large cancer referral centers with multidisciplinary teams; improved strategies to stratify patients prognostically; and implementation of trials within national and international networks. Progress in the molecular characterization and staging of MPP constitutes the basis for significant treatment breakthroughs.

PMID: [24891137](#)

**10.** [World J Gastroenterol](#). 2014 May 7;20(17):4908-16. doi: 10.3748/wjg.v20.i17.4908. (IF: 2.95)

## Laparoscopic resection of pancreatic neuroendocrine tumors.

[Al-Kurd A](#), [Chapchay K](#), [Grozinsky-Glasberg S](#), [Mazeh H](#).

### Author information

#### **Abstract**

Pancreatic neuroendocrine tumors (PNETs) are a rare heterogeneous group of endocrine neoplasms. Surgery remains the best curative option for this type of tumor. Over the past two decades, with the development of laparoscopic pancreatic surgery, an increasingly larger number of PNET resections are being performed by these minimally-invasive techniques. In this review article, the various laparoscopic surgical options for the excision of PNETs are discussed. In addition, a summary of the literature describing the outcome of these treatment modalities is presented.

#### **KEYWORDS:**

Laparoscopic resection of gastrointestinal; Laparoscopy; Pancreatic neuroendocrine tumor; Surgery

PMID: [24803802](#)

**11.** [Surg Clin North Am](#). 2014 Jun;94(3):689-708. doi: 10.1016/j.suc.2014.02.010. Epub 2014 Apr 13.

(IF: 2.42)

## Nonfunctional pancreatic neuroendocrine tumors.

[Kuo JH<sup>1</sup>](#), [Lee JA<sup>2</sup>](#), [Chabot JA<sup>1</sup>](#).

### Author information

#### **Abstract**

Pancreatic neuroendocrine tumors are a group of rare, heterogeneous neoplasms that have been increasing in incidence the past few decades largely because of the diagnosis of pancreatic incidentalomas on cross-sectional imaging. Although these tumors are classically associated with clinical syndromes that result from excess secretion of particular hormones, most pancreatic neuroendocrine tumors are nonfunctional tumors presenting with symptoms secondary to mass effect, metastatic disease, or as incidental findings. This article reviews the diagnostic algorithm, surgical management, and available systemic therapies for nonfunctional pancreaticneuroendocrine tumors.

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#### **KEYWORDS:**

Neuroendocrine; Neuroendocrine liver metastases; Nonfunctional; PanNET; Pancreas

PMID: [24857584](#)

**12.** [Int J Surg](#). 2014 May 23. pii: S1743-9191(14)00116-2. doi: 10.1016/j.ijsu.2014.05.017. [Epub

ahead of print] (IF: 1.73)

## The role of 68-Ga-DOTATOC CT-PET in surgical tactic for gastric neuroendocrine tumors treatment: Our experience.

[Cavallaro A<sup>1</sup>](#), [Zanghì A<sup>2</sup>](#), [Cavallaro M<sup>3</sup>](#), [Lo Menzo E<sup>4</sup>](#), [Di Carlo I<sup>5</sup>](#), [Di Vita M<sup>6</sup>](#), [Cardi F<sup>7</sup>](#), [Piccolo G<sup>8</sup>](#), [Di Mattia P<sup>9</sup>](#), [Cappellani A<sup>10</sup>](#).

### Author information

#### **Abstract**

Gastric neuroendocrine tumors (g-NETs), which originate from gastric enterochromaffin-like (ECL) mucosal cells and account for 2.4% of all carcinoids, are increasingly recognized due to expanding indications of upper gastrointestinal endoscopy. Often silent and benign, g-NETs may however, be aggressive and sometimes they mimic the course of gastric adenocarcinoma. Current nosography distinguishes those occurring in chronic conditions with hypergastrinemia, as the type 1 associated with chronic atrophic gastritis, and the type 2 associated with Zollinger-Ellison syndrome in MEN1. Conversely, type 3 and 4 (according to some authors) are unrelated to hypergastrinemia and are frequently malignant, with a propensity to develop distant metastases. While there is a general agreement concerning the treatment of malignant gastric neuroendocrine tumors, for types 1 and 2, current possibilities include surveillance, endoscopic polypectomy, surgical excision, associated or not with surgical antrectomy, or total gastrectomy. This report, based on our clinical experience, discusses how the size, number, depth, histological grading, staging with CT, MRI, and the use of recently developed somatostatin receptor tracers (68Ga-DOTATATE, 68Ga-DOTA-TOC) could allow the correct identification of a benign or malignant propensity of an individual tumor, thus avoiding underestimation or overtreatment of these uncommon neoplasms.

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**KEYWORDS:**

Dotataate; Dotatoc; Gastric carcinoids; Gastric lymphadenectomy; Neuroendocrine gastric tumors; g-net

PMID: [24862665](#)

13. *Presse Med.* 2014 Jun;43(6 Pt 1):645-59. doi: 10.1016/j.lpm.2013.08.007. Epub 2014 May 21.

(IF:0.76)

## [Malignant insulinoma: Recommendations for workup and treatment].

[Article in French]

Baudin E<sup>1</sup>, Caron P<sup>2</sup>, Lombard-Bohas C<sup>3</sup>, Tabarin A<sup>4</sup>, Mitry E<sup>5</sup>, Reznick Y<sup>6</sup>, Taieb D<sup>7</sup>, Pattou F<sup>8</sup>, Goudet P<sup>9</sup>, Vezzosi D<sup>2</sup>, Scoazec JY<sup>10</sup>, Cadiot G<sup>11</sup>, Borson-Chazot F<sup>12</sup>, Do Cao C<sup>13</sup>, pour la Société française d'endocrinologie et le Groupe d'étude des tumeurs endocrines.

### Author information

### Abstract

Insulinoma are malignant in 4 to 14 % of cases. Their rarity and the sparse data available in the literature have limited publication of specific guidelines for their management. The following review aim to provide up-to-date recommendations on initial evaluation including pathologic grading, measures to control hypoglycemia, antitumor strategies and long term follow-up. Will be discussed in detail respective indications of surgery, diazoxide, somatostatin analogs, everolimus, sunitinib, liver directed treatments including arterial embolization, chemotherapy and radiometabolic therapy. A Medline search using terms "insulinoma", "neuroendocrine pancreatic tumors", "islet cell carcinoma", "malignant insulinoma" was performed limiting the selection to English language articles and adult age cases, along with cross referencing.

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PMID: [24857257](#)

# NET

## PROSPEKTİF

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1. [J Am Coll Surg.](#) 2014 Apr;218(4):620-6. doi: 10.1016/j.jamcollsurg.2013.12.016. Epub 2013 Dec 24. (IF: 4.11)

### **Oncologic outcomes of patients undergoing videoscopic inguinal lymphadenectomy for metastatic melanoma.**

[Martin BM<sup>1</sup>](#), [Etra JW<sup>1</sup>](#), [Russell MC<sup>1</sup>](#), [Rizzo M<sup>1</sup>](#), [Kooby DA<sup>1</sup>](#), [Staley CA<sup>1</sup>](#), [Master VA<sup>2</sup>](#), [Delman KA<sup>3</sup>](#).

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Open inguinal lymphadenectomy for regionally metastatic melanoma is associated with a high wound-related morbidity. Videoscopic inguinal lymphadenectomy (VIL) is a minimally invasive approach with fewer wound-related complications, yet its adoption has been hindered by a lack of oncologic outcomes data.

#### **STUDY DESIGN:**

Data were prospectively collected on all VILs performed for melanoma from 2008 to 2012 ( $n = 40$ ) and compared with a retrospective cohort of open superficial inguinal lymphadenectomies from 2005 to 2012 ( $n = 40$ ). Continuous variables were analyzed with Student's t-test, binomial variables with chi-square, and survival curves using log-rank comparison.

#### **RESULTS:**

Median follow-up for patients undergoing VIL was 19.1 months compared with 33.9 months in the open inguinal lymphadenectomy group. There were no statistical differences in demographics (age, sex, body mass index, smoking status, Charlson comorbidity index) or clinicopathologic features (primary site, stage, Breslow depth, ulceration). Lymph node yield was similar (VIL, 12.6; open, 14.2;  $p = 0.131$ ). Overall recurrence rates were also similar: 27.5% in the VIL group and 30.0% in the open group ( $p = 0.805$ ). One patient in the VIL group and 2 in the open group suffered recurrence in the nodal basin. Although median survival was not reached in the VIL group, Kaplan-Meier estimates of disease-free survival ( $p = 0.226$ ) and overall survival ( $p = 0.308$ ) were similar. In a comprehensive analysis of wound complications including infection, skin necrosis, and seroma, patients undergoing VIL had markedly less morbidity (VIL, 47.5%; open, 80.0%;  $p = 0.002$ ).

#### **CONCLUSIONS:**

Videoscopic inguinal lymphadenectomy is associated with similar oncologic outcomes and markedly reduced wound complications when compared with open inguinal lymphadenectomy. The minimally invasive procedure may be the preferred method for inguinal lymphadenectomy in melanoma.

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#### **Comment in**

- [Discussion.](#) [J Am Coll Surg. 2014]

PMID: [24560569](#)

2. [Pancreas](#). 2014 Apr 8. [Epub ahead of print] (IF: 3.49)

## Radiofrequency Ablation of Pancreatic Neuroendocrine Tumors: A Pilot Study of Feasibility, Efficacy, and Safety.

Rossi S<sup>1</sup>, Viera FT, Ghittoni G, Cobianchi L, Rosa LL, Siciliani L, Bortolotto C, Veronese L, Vercelli A, Gallotti A, Ravetta V.

### Author information

#### **Abstract**

#### **OBJECTIVE:**

This study aimed to assess the feasibility, safety, and efficacy of radiofrequency ablation (RFA) of pancreatic neuroendocrine tumors(PNETs).

#### **METHODS:**

We performed RFA on 10 patients (7 women) aged 38 to 75 years with histologically diagnosed PNETs (secreting in 3 cases) who could not or would not undergo surgical resection. Tumor nodules (diameter, 0.9-2.9 cm; mean [SD], 1.6 [0.5] cm) were located in the head (n = 7) or body (n = 3) of the pancreas. Ultrasound-guided RFA was performed percutaneously (n = 7), endoscopically (n = 1), or intraoperatively (n = 2) using commercially available equipment. Complete ablation was defined as absence of enhancing tissue at the tumor site on contrast-enhanced imaging studies and normalization of previously elevated serum hormone levels.

#### **RESULTS:**

Complete ablation was achieved with 1 (n = 9) or 2 (n = 1) RFA procedures. All neuroendocrine syndromes regressed within 24 hours of treatment. No recurrences were observed during follow-up (range, 12-60 months; median [SD], 34 [14] months). No deaths occurred. Major complications included acute pancreatitis in 3 patients, 2 of whom developed pancreatic fluid collections that were successfully managed with ultrasound-guided drainage and endoscopy.

#### **CONCLUSIONS:**

Radiofrequency ablation is a feasible, safe, and effective option for patients with small PNETs who cannot or do not want to undergo surgical resection.

PMID: [24717825](#)

3. [Int J Surg](#). 2014 May 23. pii: S1743-9191(14)00151-4. doi: 10.1016/j.ijsu.2014.05.052. [Epub ahead of print] (IF: 1.73)

## Resection of Carotid Body Tumors reduces arterial blood pressure. An underestimatedneuroendocrine syndrome.

de Franciscis S<sup>1</sup>, Grande R<sup>2</sup>, Butrico L<sup>2</sup>, Buffone G<sup>3</sup>, Gallelli L<sup>4</sup>, Scarcello E<sup>5</sup>, Caliò FG<sup>6</sup>, De Vito D<sup>7</sup>, Compagna R<sup>8</sup>, Amato M<sup>7</sup>, Fugetto F<sup>9</sup>, Gasbarro V<sup>10</sup>, Amato B<sup>8</sup>, Serra R<sup>11</sup>.

### Author information

#### **Abstract**

#### **INTRODUCTION:**

Carotid Body Tumors (CBTs) are Paragangliomas (PGLs) located in the head and neck region which usually do not cause overt neuroendocrine symptoms and hypertension. Matrix Metalloproteinases (MMPs) have shown a strong correlation between CBTs and their clinical behavior. Aim of this study is to analyze the relationship between changes in arterial blood pressure and metalloproteinases levels after surgical resection of CBTs.

#### **METHODS:**

We performed a multicenter clinical study on 17 patients with benign and malignant CBTs (5 males; 12 females). Tumors were completely resected and biopsies, obtained at the time of surgery, were lysed for Western blot analysis to determine MMPs levels in tissues. An enzyme-linked immune sorbent assay (ELISA) kit was used to determine the concentration of MMPs in plasma fluid. Blood pressure values were measured at admission and at 10 days after surgery.

**RESULTS:**

At the time of the admission, blood pressure values were higher in patients with CBTs respect to control patients; moreover in patients with malignant CBTs blood pressure values were higher ( $P < 0.01$ ) respect to patients with benign CBTs. 10 days after the surgery, we documented a significant decrease ( $P < 0.01$ ) in blood pressure values and in MMPs levels in all patients with CBTs.

**CONCLUSION:**

These results suggest that, despite the CTBs are considered non-functional tumors, an "underestimated" neuroendocrine activity on arterial blood pressure may be detected.

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**KEYWORDS:**

Arterial blood pressure; Carotid Body Tumor; Metalloproteinases; Neuroendocrine syndrome; Surgery

[PMID: 24862677](#)

# NET

## RETROSPEKTİF

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1. [J Clin Endocrinol Metab.](#) 2014 Jun 6: jc20141315. [Epub ahead of print] (IF: 7.02)

### Parathyroid Hormone-Related Peptide (PTHrP) Secretion by Gastroenteropancreatic Neuroendocrine Tumors (GEP-NETs): Clinical Features, Diagnosis, Management, and Follow-Up.

Kamp K<sup>1</sup>, Feelders RA, van Adrichem RC, de Rijke YB, van Nederveen FH, Kwekkeboom DJ, de Herder WW.

#### Author information

#### **Abstract**

**Context:** Only a small number of case reports has been published on patients with PTHrP-hypersecreting metastatic gastroenteropancreatic (GEP) neuroendocrine tumors (NETs). **Objective:** The objective of this study was to evaluate the clinical, biochemical, and radiological features, management, and treatment outcome of patients with PTHrP-hypersecreting GEP-NETs. **Design:** Retrospective case series. **Setting:** Tertiary referral hospital. **Main Outcome Measures:** Clinical, biochemical, and radiological features were measured, as well as response to therapy and survival. **Patients:** Ten patients with PTHrP-secreting GEP-NETs (nine pancreatic and one unknown primary) with a median age of 50.4 years (range, 38.3-61.1) were studied. Multiple endocrine neoplasia type 1 patients were excluded. **Results:** The median follow-up was 57.2 months (range, 11.6-204.5 mo). Median overall survival was 86.0 months. In total, 51 different treatment interventions and combinations were applied. In seven of the 10 patients, somatostatin analog (SSA) treatment resulted in a temporary normalization of serum calcium levels with a long-term response observed in two patients (up to 35.2 mo). Peptide receptor radiotherapy (PRRT) with radiolabeled SSAs induced long-term responses ranging from 9.0-49.0 months in four of six patients treated with PRRT. **Conclusions:** Hypersecretion of PTHrP by metastatic GEP-NETs is very rare and seems to be exclusively associated with metastatic pancreatic NETs. PTHrP production has major clinical impact because poorly controllable hypercalcemia is associated with increased morbidity and mortality. The most successful treatment options for PTHrP-producing GEP-NETs are SSAs and PRRT using radiolabeled SSAs. Isotonic saline and bisphosphonates can be considered as supportive therapies.

PMID: [24905065](#)

2. [Am J Surg Pathol.](#) 2014 Apr;38(4):437-47. doi: 10.1097/PAS.0000000000000169. (IF: 5.53)

### Poorly differentiated neuroendocrine carcinomas of the pancreas: a clinicopathologic analysis of 44 cases.

Basturk O<sup>1</sup>, Tang L, Hruban RH, Adsay V, Yang Z, Krasinskas AM, Vakiani E, La Rosa S, Jang KT, Frankel WL, Liu X, Zhang L, Giordano TJ, Bellizzi AM, Chen JH, Shi C, Allen P, Reidy DL, Wolfgang CL, Saka B, Rezaee N, Deshpande V, Klimstra DS.

#### Author information

#### **Abstract**

#### **BACKGROUND:**

In the pancreas, poorly differentiated neuroendocrine carcinomas include small cell carcinoma and large cell neuroendocrine carcinoma and are rare; data regarding their pathologic and clinical features are very limited.

#### **DESIGN:**

A total of 107 pancreatic resections originally diagnosed as poorly differentiated neuroendocrine carcinomas were reassessed using the classification and grading (mitotic rate/Ki67 index) criteria put forth by the World Health Organization in 2010 for the gastroenteropancreatic system. Immunohistochemical labeling for neuroendocrine and acinar differentiation markers was performed. Sixty-three cases were reclassified, mostly as well-differentiated neuroendocrine tumor (NET) or acinar cell carcinoma, and eliminated. The clinicopathologic features and survival of the remaining 44 poorly differentiated neuroendocrine carcinomas were further assessed.

#### **RESULTS:**

The mean patient age was 59 years (range, 21 to 82 y), and the male/female ratio was 1.4. Twenty-seven tumors were located in the head of the pancreas, 3 in the body, and 11 in the tail. The median tumor size was 4 cm (range, 2 to 18 cm). Twenty-seven tumors were large cell neuroendocrine carcinomas, and 17 were small cell carcinomas (mean mitotic rate, 37/10 and 51/10 HPF; mean Ki67 index, 66% and 75%, respectively). Eight tumors had combined components, mostly adenocarcinomas. In addition, 2 tumors had components of well-differentiated NET. Eighty-eight percent of the patients had nodal or distant metastatic disease at presentation, and an additional 7% developed metastases subsequently. Follow-up information was available for 43 patients; 33 died of disease, with a median survival of 11 months (range, 0 to 104 mo); 8 were alive with disease, with a median follow-up of 19.5 months (range, 0 to 71 mo). The 2- and 5-year survival rates were 22.5% and 16.1%, respectively.

#### **CONCLUSIONS:**

Poorly differentiated neuroendocrine carcinoma of the pancreas is a highly aggressive neoplasm, with frequent metastases and poor survival. Most patients die within less than a year. Most (61%) are large cell neuroendocrine carcinomas. Well-differentiated NET and acinar cell carcinoma are often misdiagnosed as poorly differentiated neuroendocrine carcinoma, emphasizing that diagnostic criteria need to be clearly followed to ensure accurate diagnosis.

PMID: [24503751](#)

3. [Ann Surg Oncol](#). 2014 May 20. [Epub ahead of print] (IF: 4.33)

## **Impact of Extent of Surgery on Survival in Patients with Small Nonfunctional Pancreatic Neuroendocrine Tumors in the United States.**

[Gratian L<sup>1</sup>](#), [Pura J](#), [Dinan M](#), [Roman S](#), [Reed S](#), [Sosa JA](#).

#### Author information

#### **Abstract**

#### **BACKGROUND:**

Nonfunctional pancreatic neuroendocrine tumors (PNETs) ≤2 cm have uncertain malignant potential, and optimal treatment remains unclear. Objectives of this study were to better understand their malignant potential, determine whether extent of surgery or lymph node dissection is associated with overall survival (OS), and identify other factors associated with OS.

#### **METHODS:**

Patients with nonfunctional PNETs ≤2 cm were identified from the National Cancer Data Base (1998 to 2011). Descriptive statistics were used for patient characteristics and surgical resection patterns. Five-year OS was estimated using Kaplan-Meier analyses across extent of surgery and compared using the log-rank

test. Cox proportional regression modeling was used to test the association between survival and extent of surgery.

## **RESULTS:**

A total of 1854 patients with nonfunctional PNETs ≤2 cm were included. From 1998 to 2011, these tumors increased three-fold as a proportion of all PNETs. Among tumors ≤0.5 cm, 33 % presented with regional lymph node metastases and 11 % with distant metastases. Five-year OS for patients not undergoing surgery was 27.6 % vs. 83.0 % for partial pancreatectomy, 72.3 % for pancreaticoduodenectomy, and 86.0 % for total pancreatectomy ( $p < 0.01$ ). Multivariate analysis demonstrated no difference in OS based on type of surgery or the addition of regional lymphadenectomy ( $p = 0.16$ ). Younger age and later year of diagnosis were independently associated with improved survival.

## **CONCLUSIONS:**

Small nonfunctional PNETs represent an increasing proportion of all PNETs and have a significant risk of malignancy. Survival is improving over time despite older age at diagnosis. Type of surgical resection and the addition of lymph node resection were not associated with OS.

PMID: [24841347](#)

4. *Ann Surg Oncol.* 2014 Apr 18. [Epub ahead of print] (IF: 4.33)

## **Basing Treatment Strategy for Non-functional Pancreatic Neuroendocrine Tumors on Tumor Size.**

Kishi Y<sup>1</sup>, Shimada K, Nara S, Esaki M, Hiraoka N, Kosuge T.

Author information

### **Abstract**

#### **BACKGROUND:**

Surgical resection is advocated for all stages of pancreatic neuroendocrine tumors (PNETs); whether small PNETs can be managed by observation alone is controversial.

#### **METHODS:**

The prognoses of patients with non-functional PNET managed by surgical resection or observation alone were retrospectively analyzed. In patients who had undergone resection, correlation of pathologically assessed tumor extension and grade with tumor size were evaluated.

#### **RESULTS:**

Nineteen patients with PNET of median tumor diameters of 12 mm (range 6-38 mm) were followed up by observation for 19-162 months. Increase of tumor size >20 % occurred in three patients, resulting in 5-year progression-free survival of 83 %, but no distant metastases occurred. Surgical resection was performed in 71 patients. Tumor size correlated with the incidence of lymph node or hepatic metastases, portal vein invasion, and Ki-67 index. None of the 18 patients with a tumor size ≤15 mm developed lymph node or distant metastases, and all these patients survived without recurrence for 5-283 months. The smallest tumor size with lymph node metastases was 19 mm. The 5-year recurrence-free survivals of patients with a tumor size ≤15 mm (100 %) was significantly better than patients with tumor sizes 16-20 mm (86 %), 21-30 mm (71 %), 31-50 mm (83 %), and >50 mm (48 %).

#### **CONCLUSION:**

Because PNETs ≤15 mm in size have little risk of metastases or recurrence, careful observation with serial image studies is acceptable. Once the tumor size exceeds 15 mm, the risk of metastases and recurrence increases significantly.

PMID: [24740828](#)

5. [Ann Surg Oncol.](#) 2014 Apr 22. [Epub ahead of print] (IF: 4.33)

## Pancreastatin Predicts Survival in Neuroendocrine Tumors.

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

[Author information](#)

### Abstract

#### BACKGROUND:

Serum neurokinin A, chromogranin A, serotonin, and pancreastatin reflect tumor burden in neuroendocrine tumors. We sought to determine whether their levels correlate with survival in surgically managed small bowel (SBNETs) and pancreatic neuroendocrine tumors (PNETs).

#### METHODS:

Clinical data were collected with Institutional Review Board approval for patients undergoing surgery at one center. Progression-free (PFS) and overall (OS) survival were from the time of surgery. Event times were estimated by the Kaplan-Meier method. Preoperative and postoperative laboratory values were tested for correlation with outcomes. A multivariate Cox model adjusted for confounders.

#### RESULTS:

Included were 98 SBNETs and 78 PNETs. Median follow-up was 3.8 years; 62 % had metastatic disease. SBNETs had lower median PFS than PNETs (2.0 vs. 5.6 years; p < 0.01). Median OS was 10.5 years for PNETs and was not reached for SBNETs. Preoperative neurokinin A did not correlate with PFS or OS. Preoperative serotonin correlated with PFS but not OS. Higher levels of preoperative chromogranin A and pancreastatin showed significant correlation with worse PFS and OS (p < 0.05). After multivariate adjustment for confounders, preoperative and postoperative pancreastatin remained independently predictive of worse PFS and OS (p < 0.05). Whether pancreastatin normalized postoperatively further discriminated outcomes. Median PFS was 1.7 years in patients with elevated preoperative pancreastatin versus 6.5 years in patients with normal levels (p < 0.001).

#### CONCLUSIONS:

Higher pancreastatin levels are significantly associated with worse PFS and OS in SBNETs and PNETs. This effect is independent of age, primary tumor site, and presence of nodal or metastatic disease. Pancreastatin provides valuable prognostic information and identifies surgical patients at high risk of recurrence who could benefit most from novel therapies.

PMID: [24752611](#)

6. [Cancer Cytopathol.](#) 2014 Jun;122(6):435-44. doi: 10.1002/cncy.21403. Epub 2014 Mar 3. (IF: 4.01)

## Cystic pancreatic neuroendocrine tumors: The value of cytology in preoperative diagnosis.

[Morales-Oyarvide V<sup>1</sup>](#), [Yoon WJ](#), [Ingkakul T](#), [Forcione DG](#), [Casey BW](#), [Brugge WR](#), [Fernández-Del Castillo C](#), [Pitman MB](#).

[Author information](#)

### Abstract

#### BACKGROUND:

Cystic pancreatic neuroendocrine tumors (cPanNETs) account for 13% to 17% of PanNETs. Although the value of endoscopic ultrasound (EUS) imaging and cyst fluid analysis (CFA) in their preoperative diagnosis has been well described, limited information is available about the diagnostic role of cytology samples obtained from fine-needle aspiration (FNA).

#### METHODS:

Cytopathology records between 1992 and 2013 were searched for all reports of cysts interpreted as PanNET. Patient demographics, clinical and radiologic information, CFA, histopathology, and cytopathology findings were recorded. Performance characteristics of cytology and EUS for the accurate diagnosis of cPanNET were calculated.

## RESULTS:

In total, 35 FNAs from 33 patients with cPanNETs were identified, and 34 EUS were performed. Cytology made a specific diagnosis of a cPanNET in 71% of the biopsies compared with a specific diagnosis by EUS in 38% of cases. An interpretation of suspicious for cPanNET was given in 77% of cases by cytology and in 47% by EUS. Cytology identified 86% of the lesions as high-risk pancreatic cysts compared with 56% by EUS. Diagnostic morphology was present on both cytology and cell block preparations in 60% of aspirates, on cytology only in 20%, and on cell block only in 20%. CFA was performed on 51% cyst fluids. All cysts but 1 revealed low carcinoembryonic antigen levels (range, 0.2 to >500 ng/mL; mean, 29.5 ng/mL), and amylase levels were <500 U/L in all but 2 cases (range, 16-1493 U/L; mean, 205 U/L).

## CONCLUSIONS:

Cytology is the most accurate test for preoperative diagnosis of cPanNETs. EUS is insufficiently accurate for independent diagnosis, and carcinoembryonic antigen and amylase analyses are noncontributory. *Cancer (Cancer Cytopathol)* 2014;122:435-444. © 2014 American Cancer Society.

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## KEYWORDS:

cytology; endoscopic ultrasound-guided fine-needle aspiration; pancreatic cyst; pancreatic endocrine tumor

PMID: [24591417](#)

7. [Surg Endosc.](#) 2014 May;28(5):1720-6. doi: 10.1007/s00464-013-3381-x. Epub 2014 Jan 1. (IF: 3.66)

## Surgery for small-bowel neuroendocrine tumors: is there any benefit of the laparoscopic approach?

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[Author information](#)

### Abstract

#### BACKGROUND:

Surgery of small-bowel neuroendocrine (SBNE) tumors is demanding because of the need for associated extensive node dissection and assessment of possible synchronous lesions. For this reason, possible benefit of laparoscopy in SBNE tumors has not been reported to date.

#### METHODS:

From 1996, all patients operated on in Beaujon Hospital for SBNE tumors were retrospectively extracted from a prospectively maintained database of intestinal resections.

#### RESULTS:

Overall, 73 patients [55 % males, median age 55 years (range 27-79)] underwent small bowel resection (n = 38; 54 %), ileocolectomy (n = 25; 36 %), or both (n = 7; 10 %). In 18 patients, resection of synchronous liver metastasis was performed simultaneously. Resection was performed laparoscopically in 12 patients (16 %). Resection was R0 in 40 patients (55 %), R1 in 1 patient (1 %), and R2 in 32 patients (44 %) because of unresectable liver metastases (n = 29), nodal involvement (n = 1), or both (n = 2). Laparoscopy was associated with similar R0 (p = 0.06) and morbidity (p = 0.95) rates, but a shorter hospital stay (p = 0.003) compared with laparotomy. Median follow-up was 39 months. Progression-free survival (PFS) at 1, 3, and 5 years were 95, 83 and 75 %, respectively, for R0 patients without liver metastasis; 92, 83, and 57

%, respectively, for R0 patients with resected liver metastasis; and 82, 58 and 30 %, respectively, for R2 patients ( $p = 0.045$ ). Overall survival and PFS did not show any difference when comparing the laparoscopic and open groups.

#### **CONCLUSION:**

Complete resection of primary SBNE tumors with or without liver metastasis is associated with good long-term survival. In selected patients, laparoscopy for SBNE tumors is feasible and associated with a shorter hospital stay than laparotomy.

PMID: [24380996](#)

8. *Pancreas*. 2014 Jun 18. [Epub ahead of print] (IF: 3.49)

## **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](#)

#### **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 neuroendocrinumor G2, 14 patients had neuroendocrine carcinoma G3, and 4 patients had mixed adenoneuroendocrine 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](#)

9. *J Hepatobiliary Pancreat Sci.* 2014 Jun;21(6):418-25. doi: 10.1002/jhbp.47. Epub 2013 Oct 20. (IF: 2.44)

## **Analysis of risk factors for recurrence after curative resection of well-differentiated pancreatic neuroendocrine tumors based on the new grading classification.**

Tsutsumi K<sup>1</sup>, Ohtsuka T, Fujino M, Nakashima H, Aishima S, Ueda J, Takahata S, Nakamura M, Oda Y, Tanaka M.

Author information

**Abstract**

**BACKGROUND:**

It is difficult to predict the malignant potential of pancreatic neuroendocrine tumors (PNETs) precisely. This study investigated the validity of a new grading system adopted by the World Health Organization 2010 classification to determine risk factors for recurrence of PNETs.

**METHODS:**

Data of 70 patients with PNETs who underwent curative resection were retrospectively examined by uni- and multivariate analyses. Histopathological findings were re-reviewed by experienced pathologists. NET G1 was defined as mitotic count <2 per 10 high power fields (HPF) and/or ≤2% Ki67 index, and NET G2 as 2-20 mitosis per 10 HPF and/or 3-20% Ki67 index.

**RESULTS:**

There were 58 patients with NET G1 and 12 with NET G2. Incidence of recurrence was 11.4%. Univariate analysis demonstrated significant risk factors for recurrence including NET G2 of histological grade ( $P = 0.0089$ ), male gender ( $P = 0.0333$ ), tumor size  $\geq 20$  mm ( $P = 0.0117$ ), lymph node metastasis ( $P = 0.0004$ ), liver metastasis ( $P < 0.0001$ ), lymphatic invasion ( $P = 0.046$ ), and neural invasion ( $P = 0.0002$ ). By multivariate analysis, histological grade (hazard ratio; 59.76,  $P = 0.0022$ ) and neural invasion (hazard ratio; 147.49,  $P = 0.0016$ ) were significantly associated with recurrence of PNETs.

**CONCLUSIONS:**

This study confirmed the prognostic relevance of the new grading classification and that evaluation of perineural invasion and histological grade should be considered as prognostic predictors in well-differentiated PNETs (NET G1 and G2).

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**KEYWORDS:**

Grading classification; Neural invasion; Pancreatic neuroendocrine tumor; Predictors of recurrence; WHO 2010 classification

PMID: [24142395](#)

10. [HPB \(Oxford\)](#). 2014 May;16(5):397-406. doi: 10.1111/hpb.12162. Epub 2013 Nov 7. (IF: 2.13)

## Laparoscopic versus open pancreas resection for pancreatic neuroendocrine tumours: a systematic review and meta-analysis.

Drymousis P<sup>1</sup>, Raptis DA, Spalding D, Fernandez-Cruz L, Menon D, Breitenstein S, Davidson B, Frilling A.

Author information

**Abstract**

**BACKGROUND:**

Over the last decade laparoscopic pancreatic surgery (LPS) has emerged as an alternative to open pancreatic surgery (OPS) in selected patients with neuroendocrine tumours (NET) of the pancreas (PNET). Evidence on the safety and efficacy of LPS is available from non-comparative studies.

**OBJECTIVES:**

This study was designed as a meta-analysis of studies which allow a comparison of LPS and OPS for resection of PNET.

**METHODS:**

Studies conducted from 1994 to 2012 and reporting on LPS and OPS were reviewed. Studies considered were required to report on outcomes in more than 10 patients on at least one of the following: operative time; hospital length of stay (LoS); intraoperative blood loss; postoperative morbidity; pancreatic fistula rates, and mortality. Outcomes were compared using weighted mean differences and odds ratios.

## RESULTS:

Eleven studies were included. These referred to 906 patients with PNET, of whom 22% underwent LPS and 78% underwent OPS. Laparoscopic pancreatic surgery was associated with a lower overall complication rate (38% in LPS versus 46% in OPS;  $P < 0.001$ ). Blood loss and LoS were lower in LPS by 67 ml ( $P < 0.001$ ) and 5 days ( $P < 0.001$ ), respectively. There were no differences in rates of pancreatic fistula, operative time or mortality.

## CONCLUSIONS:

The nature of this meta-analysis is limited; nevertheless LPS for PNET appears to be safe and is associated with a reduced complication rate and shorter LoS than OPS.

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PMID: [24245906](#)

11. [J Surg Res.](#) 2014 May 21. pii: S0022-4804(14)00474-0. doi: 10.1016/j.jss.2014.05.031. [Epub ahead of print] (IF: 2.08)

## Limitations of somatostatin scintigraphy in primary small bowel neuroendocrine tumors.

[Maxwell JE<sup>1</sup>](#), [Sherman SK<sup>1</sup>](#), [Menda Y<sup>2</sup>](#), [Wang D<sup>1</sup>](#), [O'Dorisio TM<sup>3</sup>](#), [Howe JR<sup>4</sup>](#).

[Author information](#)

### Abstract

#### BACKGROUND:

Somatostatin receptor scintigraphy (SRS; octreoscan) is used in neuroendocrine tumors to locate the primary tumor site and delineate the extent of disease. SRS has decreased sensitivity for small bowelneuroendocrine tumors (SBNETs). The reasons for SRS nonlocalization are not clear. We sought to determine factors that correlate with successful primary tumor localization by SRS in patients with resected SBNETs, and also identify factors that confound interpretation of SRS reports.

#### METHODS:

Records of patients with resected SBNETs were reviewed for SRS results, tumor size, multifocality, N, and M status. Somatostatin receptor 2 (SSTR2) expression was analyzed in resected tumors by quantitative polymerase chain reaction. SRS reports were reviewed and categorized as localizing the primary tumor or not. A nuclear medicine physician independently reviewed available images.

#### RESULTS:

Of 37 patients with preoperative SRS, the primary tumor was localized in 37%. Of all the factors tested, only small tumor size correlated significantly with SRS nonlocalization. Overexpression of SSTR2 was not significantly different between tumors that were or were not localized by SRS, regardless of tumor size. There were three instances where the SRS report did not agree with the nuclear medicine physician's interpretation as to whether SRS localized the primary tumor. In each case, uptake in mesenteric nodes was a confounding factor.

#### CONCLUSIONS:

SBNETs <2 cm are most likely to be missed by SRS. SSTR2 expression did not correlate with SRS nonlocalization of the primary tumor. Uptake in mesenteric nodes may help indicate an SBNET primary but can also interfere with its visualization within the small bowel.

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**KEYWORDS:**

Octreoscan; SSTR2 expression; Small bowel neuroendocrine tumor; Somatostatin scintigraphy

PMID: [24950794](#)

# NET

## VAKA SUNUMU

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1. [J Surg Oncol.](#) 2014 May 23. doi: 10.1002/jso.23650. [Epub ahead of print] **(IF: 2.97)**

### Carcinoid abdominal crisis: A case report.

Jacobs RE<sup>1</sup>, Bai S, Hindman N, Shah PC.

#### Author information

#### **Abstract**

Over the past 40 years, the incidence of neuroendocrine tumors (NETs) has been increasing. Distal small bowel (i.e., midgut) NETs most often cause carcinoid syndrome manifested as cutaneous flushing, diarrhea, bronchial constriction, and cardiac involvement. Carcinoid abdominal crisis occurs when submucosal tumors impede the vascular supply to the gut leading to mesenteric ischemia and worsening abdominal pain. Here, we report the case of a young woman with progressively worsening abdominal pain. J. Surg. Oncol. © 2014 Wiley Periodicals, Inc.

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#### **KEYWORDS:**

carcinoid abdominal crisis; carcinoid crisis; carcinoid tumor; malignant carcinoid syndrome; neuroendocrine tumors

PMID: [24860963](#)

2. [Int J Surg.](#) 2014 May 24. pii: S1743-9191(14)00134-4. doi: 10.1016/j.ijsu.2014.05.035. [Epub ahead of print] **(IF: 1.73)**

### ACTH-secreting neuroendocrine pancreatic tumor: A case report.

Surace A<sup>1</sup>, Ferrarese A<sup>2</sup>, Benvenga R<sup>2</sup>, Marola S<sup>2</sup>, Cumbo J<sup>2</sup>, Rivelli M<sup>2</sup>, Martino V<sup>2</sup>, Solei M<sup>2</sup>, Nano M<sup>2</sup>.

#### Author information

#### **Abstract**

#### **INTRODUCTION:**

Incidence of neuroendocrine tumor (NET) is increased in the last thirty years from 1.1 to 5.2 cases per 100,000 people in the United States. They can originate from the pancreatic gland and for the majority of cases are not functioning (80%). A small percentage of functioning may produce adrenocorticotrophic hormone (ACTH) and lead to ectopic ACTH Syndrome (EAS), responsible of Cushing-Syndrome.

#### **RESULTS:**

We present a case of a 30 year-old woman suffering from EAS due to a neoformation of the pancreatic tail of the maximum diameter of 4 cm. The lesion was resectable at preoperative imaging. The patient was subjected to distal splenopancreatectomy. Histological examination showed a well-differentiated neuroendocrinecarcinoma pT3N0. The postoperative course was regular. At two years of follow-up patient is almost completely asymptomatic for Cushing's but she has developed multiple liver metastases, for which she began chemotherapy.

#### **DISCUSSION:**

p-NET responsible for EAS is usually malignant and the radical treatment of excision of the lesion is not possible because they occur at the time of diagnosis with liver metastases or unresectable. Our patient had a mass at the time of diagnosis resectable but despite radical surgery, she has developed multiple liver metastases at two years and she was undergoing chemotherapy.

**CONCLUSIONS:**

In agreement with previous literature we confirm the aggressive nature of pancreatic tumorssecreting ACTH, despite radical surgery. Conversely, surgical treatment is effective on the resolution of clinical symptoms.

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PMID: [24866074](#)