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1-01
ELASTOGRAPHY IN THE THYROID NODULE DIAGNOSIS: PROSPECTIVE STUDY

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Background. There is a generally considerable difference between the rigidity of normal thyroid tissue and malignant nodules. The objective of this study is to analyze the differences between benign and malignant thyroid nodules.

Material and Method. Study: Prospective. Selection Criteria: Unique nodules or multinodular goiters with a dominant nodule. Study design: We used an ultrasound, with an elastograph, a B mode ultrasound and Color Doppler. The elastography was classified into 5 groups.

Results. 178 patients were analyzed; 40 were malignant according to histology. The elastograph diagnosis score was 4-5 in 40 (23%), 3 in 34 (19%) and 1-2 in 104 (58%).

All the patients with 5 in the elastograph diagnosis score were malignant. All the patients except four, with elastograph 4 were malignant. In three patients with elastograph score 4-5, cytology was benign and the histology revealed malignancy. Of the patients with the elastograph 3, in four cases (12%) the diagnosis was malignancy. All the nodules with elastograph 1-2 were benign.

Conclusions. Elastograph score 4-5 is a strong predictor of malignancy. Elastograph score 1-2 is a strong predictor of benignity. The elastography could be useful as a diagnostic technique for ruling out malignancy in the thyroid nodule.

1-02
Could 18F-FDG-PET/CT avoid unnecessary thyroidectomies in patients with cytological diagnosis of follicular neoplasm?

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Background: Preoperative diagnosis of thyroid nodules with “follicular neoplasm” in fine-needle aspiration biopsy (FNAB) forces thyroidectomy to exclude malignancy. This study evaluates the role of 18F-fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG-PET/CT) to prevent unnecessary thyroidectomies in this clinical setting. Patients and methods: Prospective study of 42 patients scheduled for thyroidectomy due to follicular neoplasm cytology in FNAB (32 follicular, 10 Hürthle cell neoplasms, according to Bethesda classification) since May 2009. All patients underwent preoperative 18F-FDG-PET/CT. Abnormal 18F-FDG thyroid uptake was assessed visually and by measuring the maximum standardized uptake value (SUVmax). Results were compared with final pathology reports.

Results: 12 of 42 patients (28%) were finally diagnosed as thyroid cancer. Focal uptake correlated with a greater risk of malignancy (p=0.031). 18F-FDG-PET/CT uptake showed sensitivity, specificity, positive and negative predictive values and overall accuracy of 92%, 47%, 41%, 93% and 60%, respectively. The optimal threshold SUVmax to discriminate malignancy was 4.5 (area under ROC curve of 0.73). Use of 18F-FDG-PET/CT could reduce by 47% the thyroidectomies performed for finally benign nodules.

Conclusions: 18F-FDG-PET/CT can play a role in the management of nodules cytologically reported as “follicular neoplasm”, allowing the avoidance of a significant number of thyroidectomies for finally benign lesions.

1-03
Coexistence of papillary thyroid cancer with Hashimoto thyroiditis.

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Background: Conflicting data have been reported with regard to the Hashimoto thyroiditis (HT) and risk of malignancy. The aim of this study was to evaluate coexistence of papillary thyroid cancer (PTC) with HT.

Patients/methods: A retrospective cohort study. HT was diagnosed in 452 (F:M ratio = 405:47, median age 53.5±12.1 years) of 7545 patients qualified for thyroidectomy through the years 2002 and 2010. Pathological reports were reviewed to identify prevalence of PTC in HT versus non-HT patients.

Results: PTC was diagnosed in 106 of 452 (23.5%) HT patients versus 530 of 7093 (7.5%) non-HT patients (p<0.001).

Conclusions: HT was associated with three-fold increased prevalence of PTC than other non-HT thyroid diseases and spread of PTC to level VI lymph nodes was four-fold more frequent in HT than in non-HT patients.
1-04 S-shaped electrode for continuous vagal nerve stimulation in thyroid surgery
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Background: Intra-operative neuromonitoring of the recurrent laryngeal nerve and vagal nerve are performed as an adjunct to the gold standard of optical visualisation of the RLN during thyroid surgery to prevent injury of the RLN, and subsequently paralysis of the vocal cords. Actually there are no data available about continuous vagal stimulation and it’s value in predicting vocal cord injury.

Methods: A single institution prospective study was performed: 100 thyroidectomies with continuous vagal nerve stimulation were analysed. The monitoring has been performed with Avalanche XT® from Dr. Langer.

Results: 180 nerves at risk were monitored with 4 temporary recurrent laryngeal nerve palsies, with a clear demonstration of diminution of the amplitude, recovering partially with release of traction. Changes in latency time were not significant. Loss of signal was obtained in 4 cases with localisation of the suspected area of injury by bipolar stimulation of the recurrent laryngeal nerve.

Conclusion: Continuous neuromonitoring of the vagal nerve can help in predict vocal cord palsy. It is of tremendous importance that the vagal electrode is a-traumatic and gives a stable signal. The exact parameters regarding “warning signs” have yet to be determined, but amplitude changes play a major role. Further studies are needed.

1-05 Can intraoperative frozen section influence the extension of central neck dissection in cN0 papillary thyroid carcinoma?
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Background: Ipsilateral central compartment node dissection (CCD) has been proposed to reduce the morbidity of prophylactic bilateral CCD in papillary thyroid carcinoma (PTC), despite bilateral metastases are found in about 25% of patients. We aimed to verify if frozen section examination (FSE) can identify patients who could benefit from bilateral CCD.

Methods. All the consenting patients with clinically unifocal PTC, without any preoperative evidence of lymph node involvement, treated between September 2010 and September 2011 underwent total thyroidectomy plus bilateral CCD. Ipsilateral central compartment nodes were sent for FSE.

Results. Forty-eight patients were included. Mean number of removed nodes was 12.8±6.8. Final histology showed lymph node metastases in 20 patients: ipsilateral in 14, bilateral in 6. FSE accurately predicted lymph node status in 43 patients (28 node negative, 15 node positive). Five node metastases were not detected at FSE: 3 were micrometastases (<2 mm). Sensitivity, specificity and overall accuracy of FSE in definition of N status were 75%,100% and 89%, respectively.

Conclusions. FSE is accurate in predicting node metastases in clinically unifocal NO PTC and can be useful in determining the extension of CCD. False negative results are reported mainly in case of micrometastases, which usually have limited clinical implications.

1-06 Does the number of positive lymph nodes in the central compartment have any prognostic impact in papillary thyroid cancer?
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Background: Central compartment lymph node (CCLN) metastasis in papillary thyroid cancer (PTC) is associated with higher risk of locoregional recurrence and distant metastasis. This study evaluated the prognostic implication of the number of metastatic CCLN in PTC.

Methods: Prospective data collection on 91 patients who underwent total thyroidecomy and CCLN dissection with or without lateral neck dissection due to PTC between Jan2005-Dec2010. Number of positive CCLN was correlated with known prognostic factors (age, gender, tumour size, extrathyroidal extension, and lateral node metastasis).

Results: Patients were divided into three groups according to the number of positive CCLN: group A = 0 (n=35); B = 1-2 (n=32) and C = >3 (n=24). The risk of lateral compartment disease increased in parallel with the number of positive CCLN (31% vs 50% vs 75% in groups A-B-C respectively; p<0.004). Gender/age/tumour size/extrathyroidal extension did not correlate with number of positive CCLN. At 1-yr follow-up the mean Tg values increased with number of nodes positive (12.3 vs 42.3 vs 91.48) but with no significant difference in RAI* uptake (1.25 vs 1.14 vs 2.63).

Conclusions: The number of CLN metastasis is a risk factor for lateral compartment disease with no impact on any other prognostic markers.
Free paper session 2: PARATHYROID

2-01
Normocalcemic primary hyperparathyroidism: bone status, imaging localization and pathological features.
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Background: from 1953 normocalcemic hyperparathyroidism has been described by many authors. But most of its peculiarities remain unknown.

Patients: A retrospective case-control study has been realized in our endocrine surgery department from January 2001 and November 2011. We compared 108 patients suspected to have a parathyroid adenoma with either normocalcemic or hypercalcemic status. Personal antecedents, biochemical registers, imaging, surgery, pathological features and rate of cure have been analyzed.

Results: Bone loss before surgery was higher among normocalcemic patients (46.3% vs. 24.1%; p=0.023) and pathological fractures (25.9% vs. 11.1%; p=0.048). Also alkaline phosphatase was increased in normocalcemic patients (129mg/dl vs. 95mg/dl; p=0.001). Multiple gland resections were necessary in more normocalcemic patients (16% vs. 3.7%; p=0.001). Sensitivity (85.2% vs. 88.9%) and positive predictive value (59.3 vs. 83.3%) were inferior for normocalcemic cases with statistical significance (p=0.001). Weight gland was lesser in normocalcemic (0.44g vs. 0.86g; p=0.03) even when 43 cases were matched by PTH levels (0.4g vs. 0.77; p=0.014). Finally cure rate was different against normocalcemic (62.7% vs. 95.7%, p=0.001), but not in case of using PTH levels as cure parameter after surgery (66.7% vs. 68.1%; p=0.831).

Discussion: There are many differences between both hyperparathyroidism conceptions, prospective studies are needed for corroborate those findings.

2-02
Evaluation of cystatin C in patients operated for primary hyperparathyroidism
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Background: Serum cystatin C has been suggested as a new sensitive marker of renal function. Our objective was to evaluate preoperative cystatin C in patients operated for primary hyperparathyroidism and to identify factors associated with it.

Methods: All patients with primary hyperparathyroidism undergoing parathyroidectomy during a 3-year period were prospectively included. Parameters evaluated for association with cystatin C were: demographics, hyperparathyroidism symptoms, bone mineral density, parathyroid weight and diameter, preoperative 24-hour urinary calcium, and preoperative serum creatinine, albumin, T3, T4, FT3, FT4, TSH, anti-Tg, anti-TPO, calcium, phosphate, PTH and 25(OH)D3.

Results: Ninety-one patients were included (age:58.6±7.1years “female:74.7%). Elevated cystatin C was noticed in 47 (51.6%) patients whereas creatinine in only 7 (7.7%). Cystatin C had a positive association with preoperative PTH (p=0.04), calcium (p=0.04) and albumin (p=0.01). In the multivariate analysis, cystatin C was correlated with PTH (p=0.02) and albumin (p=0.02).

Conclusion: Cystatin C is independently correlated with PTH and may therefore be elevated in primary hyperparathyroidism. This association is likely indicating renal impairment but other mechanisms may also be involved. Cystatin C seems to be an earlier and more accurate marker of renal function in primary hyperparathyroidism patients than other traditionally used parameters.
2-03 Vitamin D status and bone remineralization after surgery for primary hyperparathyroidism

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Background
It is not clear if postoperative gain in bone mineral density (BMD) after surgery for primary hyperparathyroidism (PHPT) is influenced by vitamin D status. The aim of this study was to investigate if PHPT patients from Spain and Sweden differed in vitamin D status, disease activity and bone remineralization after surgery.

Patients/Methods
This investigation was a prospective observational study of two cohorts of postmenopausal women from Spain (n=126) and Sweden (n=128) that had surgery for sporadic PHPT. Biochemical variables reflecting bone metabolism and disease activity including vitamin D and BMD was measured pre and one year postoperatively.

Results
25(OH)D3 levels were lower in the Spanish patients and they had higher preoperative levels of PTH (13.5 vs 11.0 pmol/L, p<0.001), 1.25 (OH)2D3 (142 vs 56 pmol/L, p>0.001), urinary calcium (7.3 vs 4.1 mmol/L, p<0.001) and heavier adenomas (620 vs 500 g, p<0.001).Increase in BMD one year after surgery was correlated to vitamin D levels, disease activity and nationality.

Conclusion
Postmenopausal women with PHPT from Spain have a more advanced disease and lower vitamin 25(OH)D3 levels. Improvement in bone density one year after surgery is correlated to disease severity and vitamin D levels.

2-04 Regulation of parathyroid hormone secretion by caffeine: Potential impact on osteoporosis

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Background: Independent studies have reported associations between caffeine consumption, low bone mineral density, as well as impaired bone development in vitro and in vivo. Besides calcium (Ca2+) and vitamin D, secretion of parathyroid hormone (PTH) is known as a critical regulator of bone remodeling. The effect of caffeine on parathyroid hormone secretion in parathyroid cell has never been explored.

Methods: Using short term cultured parathyroid cells from patients with primary hyperparathyroidism (PHPT), we assessed the effects of caffeine on PTH secretion, intracellular Ca2+ [Ca2+]i and cAMP.

Results: We showed that 200µM and higher doses of caffeine inhibited intact PTH secretion in human parathyroid adenoma cells using perifusion technique. However, [Ca2+]i determined by Fura-2 was not affected by caffeine at any of the doses (50, 200, 500µM or 5mM). Two main caffeine targets, Adenosine receptors A1 and A2A, were demonstrated in human normal parathyroid and parathyroid adenomas. Measurements of intracellular cAMP showed decreased cAMP at 50µM caffeine, and gradually increased cAMP at higher concentrations.

Conclusion: High doses of caffeine inhibit PTH secretion in human parathyroid cells independent of intracellular Ca2+ and cAMP level. The inhibition of PTH secretion caused by high doses of caffeine may contribute to bone loss in human.
Failed surgery in PHPT - have improved pre- and intraoperative imaging or diagnostic tools changed the outcome?

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Background: Advanced preoperative imaging of parathyroid adenomas and intraoperative parathyroid hormone determination optimized the results in the surgical treatment of PHPT patients. Nevertheless, surgery is not always successful. We asked, whether reasons for failure have changed during the last 25 years.

Patients/Methods: We retrospectively analyzed operations for persistent PHPT in our department between 2001 and 2011 (n=62) and compared these results to our experience between 1986 and 2001 (n=81).

Results: Of 757 operations for PHPT between 2001 and 2011, 62 (8%) were for persistent disease. Main reasons for failure were a misdiagnosed multiple gland disease (n=15/25, 60%) in our own group of patients, and an undetected solitary adenoma (n=22/37, 59%) in patients being operated primarily somewhere else. All patients with persistent PHPT were cured. Between 1986 and 2001, main indications for reoperation were an undiagnosed multiple gland disease (15/24, 63%) in our own patients, and a missed solitary adenoma (38/57, 67%) in outward patients. All patients with persistent PHPT were cured. Between 1986 and 2001, main reasons for failure were a misdiagnosed multiple gland disease (n=15/25, 60%) in our own group of patients, and an undetected solitary adenoma (n=22/37, 59%) in patients being operated primarily somewhere else. All patients with persistent PHPT were cured. Between 1986 and 2001, main indications for reoperation were an undiagnosed multiple gland disease (15/24, 63%) in our own patients, and a missed solitary adenoma (38/57, 67%) in outward patients.

Conclusions: Comparing our experience in 143 patients with persistent PHPT being operated between 2001-2011 and 1986-2001, not much has changed, despite the new armamentarium of improved preoperative imaging or intraoperative biochemical control. These results support the referral of PHPT patients to experienced endocrine surgery units.

Current trends in surgery for renal hyperparathyroidism (RHPT) – an international survey

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Background:
Indications and results of cryopreservation and replantation of cryopreserved parathyroid tissue and the application of intraoperative PTH-monitoring are not well documented in RHPT. The current trends in surgery for RHPT should be evaluated in an international online survey.

Patients and methods:
33 questions regarding parathyroid surgery, surgical management of RHPT, parathyroid cryopreservation and PTH-monitoring were sent to members of various societies of endocrine surgeons.

Results:
86 surveys were analyzed. 61.6% reported more than 50 parathyroid surgeries per year. 62.7% operated on less than 16 patients with RHPT per year. Total (with/without autotransplantation) or subtotal parathyroidectomy was the standard procedure in 98.8%. 40.7% performed immediate autotransplantation. In most cases the onset of graft function was documented later than one week after autotransplantation. Cryopreservation was routinely performed in 27.4% 10.7% performed replantation in more than 5 patients (hypo- or hypoparathyroidism: n=41; fresh graft failure: n=13; reoperations: n=9. 46.2% used routinely intraoperative PTH-monitoring in RHPT. Its influence on surgical strategy was stated in 40%.

Conclusions:
Cryopreservation is only performed in 27.4% routinely to avoid hypoparathyroidism in selected patients. Intraoperative PTH-monitoring has a surprisingly high acceptance with criteria similar to primary hyperparathyroidism. The survey reflects the divergent strategies for autotransplantation, cryopreservation and PTH-monitoring.
The influence of parathyroidectomy on restless legs syndrome in patients with renal hyperparathyroidism

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Background: Restless legs syndrome (RLS) is a common and poorly understood movement disorder that can cause significant sleep disruption. Although RLS is familial in about 50%, secondary aetiologies such as iron deficiency and renal failure associated with hyperparathyroidism are common. The aim of this study was to analyze the influence of parathyroidectomy on RLS in patients with renal hyperparathyroidism.

Patients: All patients who underwent parathyroidectomy between January and November 2011 were prospectively screened by a validated RLS-screening-questionnaire preoperatively and on the fifth postoperative day. Perioperative PTH and calcium levels as well as the score of the questionnaire were analyzed.

Results: 21 patients (14 men, 7 women) with a mean age of 47.8±3.2 years underwent parathyroidectomy. PTH levels (normal range 11-65 pg/ml) dropped perioperatively from 1171±120 pg/ml to 17±8 pg/ml and calcium levels (normal range 2.2-2.7 mmol/l) from 2.40±0.04 mmol/l to 1.95±0.04 mmol/l. The score of the questionnaire (range 0-10) indicating a RLS significantly dropped from 6.10±0.5 to 4.29±0.6 (p=0.0038).

Conclusions: Parathyroidectomy seems to have a significant influence on the severity of RLS. The restoration of an adequate calcium- and mineral-balance as indicated by the decrease of PTH-levels may be one reason. However, large prospective trials are required to analyze this observation in patients undergoing parathyroidectomy for renal hyperparathyroidism.
Pheochromocytoma revealed by acute heart failure. A multicenter study about morbidity and mortality of surgery

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Background: Acute heart failure (AHF) secondary to catecholamine overproduction rarely reveals a pheochromocytoma. The aim of this study was to evaluate the management of patients with pheochromocytoma diagnosed at the time of an AHF.

Patients/methods: Data of 12 patients were retrospectively reviewed. The diagnosis of AHF was defined by the decrease of left ventricular ejection fraction or the use of a circulatory assist. They had adrenalectomy in emergency surgery or later. Morbidity and mortality of surgery was studied.

Results: Adrenalectomy was performed in emergency for 4 patients (33%) and for the 8 other patients (67%) with a median delay of 37 days (7-180). 8 patients had circulatory assist (67%). 5 of them had a circulatory assist and a delayed surgery (42%), 2 of them had a circulatory assist followed by emergency surgery and 1 had emergency surgery immediately followed by circulatory assist. Emergency surgery had perioperative complications: 1 circulatory arrest, 2 major bleedings, 1 intestinal ischemia, 1 hémoperitoneum. 1 patient died at day 5. Postoperative course of patients with delayed surgery was uneventful.

Conclusions: The AHF revealing a pheochromocytoma is a rare and serious event. Patients with emergency surgery have more complications than those with delayed surgery.

Retroperitoneoscopic versus laparoscopic adrenalectomy - a meta-analysis

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Background: Laparoscopic adrenalectomy (LA) is the gold standard approach to most non malignant adrenal tumours. Retroperitoneoscopic adrenalectomy (RA) is an increasingly popular alternative to this approach but the potential benefits derived from this approach have not been clearly defined.

Patients/methods: A literature search was performed for all comparative studies between RA and LA. Meta-analysis was performed according to PRISMA guidelines. Odds ratios (OR) and standardised mean differences (SMD) were used to compare dichotomous and continuous outcomes respectively.

Results: Twenty studies were included reporting on 873 LA and 573 RA. Length of hospital stay (LOS) was significantly shorter in the RA group (SMD -0.77, 95% CI -1.29 — -0.25). On subgroup analysis only posterior RA was associated with reduced LOS (SMD -1.45, 95% CI -2.76 — -0.14) when compared to LA. There was no difference in operative time, blood loss, time to ambulation and oral intake or complication rates between techniques. No difference was found in any of the outcomes for studies matched for tumour size, body mass index or published after 2005.

Conclusions: RA overall has equivalent outcomes to LA but is associated with a reduced LOS. A large-scale randomised controlled trial is necessary to provide definitive conclusions.
3-04
Long term survival after adrenalectomy for Adrenocortical Carcinoma. Case control study of Laparoscopic versus Open approach.
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Background. Laparoscopic adrenalectomy (LA) is the gold standard for benign adrenal lesions. The laparoscopic approach is increasingly accepted for adrenal metastases but remains controversial for adrenocortical carcinoma (ACC). We compared in a case-control study the outcome of LA versus open adrenalectomy (OA) in the treatment of ACC.

Patients and Methods. Case-control study comparing the outcome of patients with ENSAT Stage I/II ACC and a size under 10 cm submitted to LA or OA in a referral center, from 1985 to 2011. Main outcomes analyzed were: peri-operative morbidity, overall survival, and disease free survival.

Results. Among 111 consecutive operations for ACC, 34 matched the inclusion criteria. LA and OA were performed respectively in 13 and 21 patients. Patient’s characteristics were similar between groups. No conversion necessary in LA group. No difference in peri-operative morbidity. LA allowed an earlier discharge (p=0.289, respectively).

Conclusions. LA reported a shorter post-operative stay without jeopardizing the long-term oncological outcome in Stage I/II ACC ≤10 cm. LA can be safely proposed for potentially malignant adrenal lesions ≤10 cm, without evidence of extra-adrenal extension.

3-05
Variant adrenal venous anatomy in 546 laparoscopic adrenalectomies
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Background. Identification and control of the adrenal vein is a critical step in laparoscopic adrenalectomy. Few prior studies describe variant adrenal venous anatomy and its relationship to tumor size, pathologic diagnosis, or operative outcomes.

Methods: We reviewed 546 consecutive laparoscopic adrenalectomies performed between 1993 and 2011 and compared tumor characteristics and outcomes of patients with variant anatomy to those with normal venous anatomy.

Results: Variant venous anatomy was encountered in 68 (13%) adrenalectomies. Variants included no adrenal vein identified (n=18), one central adrenal vein with additional small veins (n=11), two (n=20) or more than two (n=14) adrenal veins, and variants of the adrenal vein with the hepatic or phrenic vein (n=5). Variants occurred more often on the right than on the left (n=42, 62% versus n=26, 38%). Compared to patients with normal anatomy, patients with variant anatomy had larger tumors (5.1 versus 3.3cm, p<0.001), more pheochromocytomas (n=24, 35% versus n=100, 21%, p=0.016), and more blood loss (120 versus 66mL, p=0.041). The rate of intra- and postoperative bleeding complications was similar between groups (p=0.243 and p=0.289, respectively).

Conclusions: Understanding variants in adrenal venous anatomy is important to preventing excessive bleeding during laparoscopic adrenalectomy, particularly in patients with large tumors or pheochromocytoma.

3-06
Resection strategies for neuroendocrine pancreatic tumors
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Background. Due to its rarity and lack of prospective trials, the optimal treatment of PNETs is still debated. Recommendations gathered by retrospective analyses of patient data should be based on the new classification of neuroendocrine neoplasms.

Methods: In a retrospective single-centre study (1990 to 2011), 127 PNETs patients were analyzed. Tumor stage and type of resections were analyzed to evaluate successful treatment strategies.

Results. Among 111 consecutive operations for ACC, 34 matched the inclusion criteria. LA and OA were performed respectively in 13 and 21 patients. Patient’s characteristics were similar between groups. No conversion necessary in LA group. No difference in peri-operative morbidity. LA allowed an earlier discharge (p=0.243 and p=0.016, respectively).

Conclusions: LA reported a shorter post-operative stay without jeopardizing the long-term oncological outcome in Stage I/II ACC ≤10 cm. LA can be safely proposed for potentially malignant adrenal lesions ≤10 cm, without evidence of extra-adrenal extension.

Conclusion PNETs have a good prognosis, if they are well-differentiated and resected completely. Organ-preserving resection does not impair the prognosis of tumors of stage I or II. In case of hepatic metastasis and advanced tumor stage, surgical reduction can reduce symptoms and improve the survival.
Free paper session 4: THYROID/PARATHYROID

4-01
A randomised trial of hemithyroidectomy vs. Dunhill for asymmetrical goiter
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Background & Aim: Half of the patients presenting with an unilateral benign thyroid nodule have contralateral subclinical disease. There is controversy whether these patients should be treated with hemithyroidectomy or with a bilateral procedure.

Patients & Methods: Adult patients (18-65 yrs.) with a benign unilateral dominant nodule and contralateral nodule(s) <10 mm. detected on neck US were randomized to hemithyroidectomy (HMT) or Dunhill-Near total thyroidectomy (DNT). Rates of complications, remnant growth, incidental carcinoma and reoperation were assessed.

Results: One-hundred eighteen patients (F/M:118/8, mean age 43 yrs.) were initially included and randomized: 65 to HMT and 53 to DNT. After randomization 28 patients were excluded leaving 47 HMT and 43 DNT long-term (55±35 months) evaluable patients. Mean nodule size was 38 and 6 mm for the dominant and contralateral nodules respectively. No differences were found in operative time, accidental parathyroidectomy, parathyroid autotransplantation, histopathology or wound complications. Transient hypocalcemia (s-Ca<8 mg at 24h) was more common in DNT (30 vs. 8%; P<.001). No permanent complications were observed in either group. 30% of HMTs required T4 supplementation. At the last follow-up visit, [TSH] was the same in both groups. Remnant growth (20 vs 0%; P<.001), appearance of new nodules (55 vs 14%; P<.001) and overall reoperation rate as per intention to treat (9.2 vs 1.8%, P=0.2) were more common in HMT.

Conclusions: DNT appears superior to HMT in terms of reoperation and progression/recurrence rates and has a similarly uneventful immediate postoperative course.

4-02
Efficacy on pain of Pubivacaine versus Ropivacaine infiltration before thyroidectomy: prospective randomized study.
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Background
Control of pain after thyroidectomy is very important. The efficacy of wound infiltration with local analgesics are not settled. We run a prospective double blinded study comparing Pubivacaine 0.5% versus Ropivacaine 0.75% efficacy in reducing pain after thyroidectomy.

Patients/methods
Inclusion criteria were: age 18-65, thyroid volume lower than 90 ml, benign disease. Exclusion criteria were: redo surgery, malignancy, operative time longer than 90 min, incision longer than10 cm 60 patients were randomly divided into Group A: control group (no wound infiltration); group B: infiltration of 10 ml Pubivacaine 0.5%, group C: infiltration of 10 ml Ropivacaine 0.75%. Pain was assessed by Visual Analogue Scale after 1,4,8,16 hours postoperatively. Surgery was performed by the same surgeon with standard technique. Local infiltration was done immediately before incision. All patients received the same analgesic therapy postoperatively.

Results
Ropivacaine group showed a statistically significant decrease in pain perception at 1 hour postoperatively. After 4 hours of operation neither Ropivacaine nor Pubivacaine showed an effect on pain perception.

Conclusion
Ropivacaine proved to significantly decrease pain perception within one hour of operation, then we suggest the use of this drug to improve immediate postoperative recovery after thyroidectomy.
4-03
MORBIDITY FOLLOWING THYROID SURGERY: DOES SURGICAL VOLUME MATTER?
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BACKGROUND
The aim was to evaluate the surgical volume and morbidity of patients operated on by endocrine surgery dedicated surgeons (group EndS) compared with general department surgeons (group GenS) in a tertiary institution.

PATIENTS / METHODS
We present the results of a prospective cohort study of all patients submitted to thyroid surgery in our Institution (between January 2008 and August 2010). They have been followed for 12 months at least. Postoperative recurrent nerve function was assessed by laryngoscopy. Calcaemia was monitored in all patients until achieving normality with no need for vitamin D and oral calcium supplementation.

RESULTS
We studied 225 patients, 195 in group EndS (2 surgeons with >40 procedures per surgeon and year) and 30 in group GenS (6 surgeons with <5 procedures). Number of exposed nerves was 325 and 46 respectively. Prevalence of recurrent nerve palsy persisting beyond 12 months was 1/325 and 2/46 of exposed nerves (p=0.04). Prevalence of persisting hypocalcaemia beyond 12 months was 3/195 and 3/30 of patients (p=0.03).

CONCLUSIONS
1. Morbidity in terms of permanent recurrent nerve palsy and hypocalcaemia was less frequent among patients operated by endocrine surgeons.
2. Differences in surgical volume may explain these variations in morbidity.

4-04
3-Tesla Apparent Diffusion Coefficient Values in Differentiating Thyroid Nodules: Preliminary Report
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Background: The aim of this study was to assess the diagnostic value of 3-T diffusion-weighted imaging for the characterization of thyroid nodules.

Patients/methods: This initial report included 15 prospectively investigated thyroidectomized patients, where 3-T diffusion-weighted imaging had been performed prior to surgery. A total of 35 nodules were assessed with the b factors 500 and 1000 mm2/s, by using single-shot echo-planar imaging. Apparent diffusion coefficient (ADC) values of thyroid nodules in subjects were calculated and correlated with the postoperative histopathological results. The Mann-Whitney U test was used for statistical analysis.

Results: Histologically, there were 7 carcinomas with a minimum size of 1,3 cm. The mean ADC values differed significantly among malignant and benign nodules for both b factors (p<0.001). The mean ADC values for carcinoma and adenoma were 1,03 × 10⁻³ mm²/s and 2,09 × 10⁻³ mm²/s, for b-500; 0,85 × 10⁻³ mm²/s and 1,90 × 10⁻³ mm²/s, for b-1000, respectively. The ranges (95% confidence interval) of the ADC values for carcinoma (b-500:0,59–2,1; b-1000:0,60–1,5) and adenoma (b-500:1,75–3,30; b-1000:1,40–3,0) showed slight overlaps. When ADC values of <1.75 × 10⁻³ mm²/s (for b-500) and <1,40 × 10⁻³ mm²/s (for b-1000) were used for predicting malignancy, obtained sensitivity and specificity rates were 86% and 100%, respectively.

Conclusion: 3-Tesla ADC values show potential for differentiating malignant nodules from benign ones. Although it seems feasible, more patients are required for confirmation of our initial results.
Free papers session 5: VARIOUS

5-01
Sentinel Lymph Node Biopsy in Differentiated Thyroid Carcinoma and Decision for Selective Modified Radical Neck Dissection
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Background: The accuracy of sentinel lymph node biopsy in decisions for surgical management of lymph nodes in differentiated thyroid carcinoma was demonstrated in few previous studies.

Patients and methods: We have performed SLN biopsy in 172 patients with DTC. Before mobilization of the thyroid gland, 0.2 ml of 1% solution of methylene blue dye was injected peritumorally. After 10 minutes the dissection was continued around omohyoid muscle, towards the internal jugular vein and carotid artery until blue stained LN were found and sent for frozen-section examination. An extended dissection of level III and IV was done consecutively. All LN were examined by frozen-section and conventional histopathology examination. If positive, MRND was performed after total thyroidectomy and routine dissection of central neck compartment.

Results: Identification rate of SLN was 93.5%. Specificity and sensitivity of the method were 100% and 80% respectively. Negative and positive predictive values were 94.7% and 100%. Overall accuracy of the method was 95.6%.

Conclusions: Our results imply that SLNb in the jugulo-carotid chain using methylene blue dye mapping, is feasible and accurate method for estimating LN status in the lateral neck compartment. The method may support a decision to perform selective MRND in patients with DTC.

5-02
The relevance of “false positive” calcitonin stimulation testing: Spectrum and surgical implication
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Background: Routine calcitonin measurements should discriminate c-cell-hyperplasia (CCH) from medullary thyroid carcinoma (MTC). Elevated calcitonin levels effect stimulation testing, determining indication and extent of surgery.

Patients and Methods: 50 patients underwent stimulated calcitonin determination with pentagastrin (80%) or calcium (20%) pre- and postoperatively. Indications to surgery were nodular goiter (BNG), suspected CCH or MTC, RET-geencarriership and suspected differentiated thyroid cancer. Prevalent extrinsic sources of hypercalcitonemia were excluded.

Results: Mean calcium-stimulated calcitonin were 398 thyroiditis, 44 RET-carriers, 152 non-MTC thyroid carcinoma and 161 BNG, with Pentagastrin 78 thyroiditis, 32 RET-carriers, 122 non-MTC thyroid carcinoma, 96 BNG. All underwent total thyroidectomy, bilateral cervical central (9), lateral (1) lymphadenectomy. Histology showed 9 non-medullary carcinomas, 4 thyroiditis, 28 BNG. Immunohistochemistry excluded CCH and MTC. Except 1, all showed normalized basal and stimulated calcitonin postoperatively.

Conclusions: Calcium stimulation provokes higher calcitonin and increased response factors compared to pentagastrin. Thyroid pathology without CCH and MTC evidence sequentially associates with calcium stimulation: RET-carriers, BNG, thyroiditis, non-MTC thyroid carcinoma. Discriminating these, extrinsic sources, CCH and MTC determine indication and extent of surgery. Lacking defined cut-off values, ranges of basal calcitonin below 50 pg/ml and below 400 in calcium-stimulation revealed no c-cell disease in this series.
Feasibility of video-assisted bilateral neck exploration for patients with primary hyperparathyroidism.

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Background
Video-assisted parathyroidectomy (MIVAP) is generally adopted for patients affected by primary hyperparathyroidism (pHPT) with clear preoperative localization. Standard bilateral neck exploration (BNE) is considered the obligate operation for patients with unlocalized glands. We reviewed our experience of minimally invasive video-assisted BNE in patients with pHPT and negative or discordant localization studies.

Methods
From a prospective series of 548 minimally invasive video-assisted parathyroidectomies for pHPT, 95 patients (17 male, 78 female; mean age: 58 years) who had failed localization studies underwent BNE using the video-assisted technique. Operative time, complications, conversions to standard cervical exploration and cure rate were analyzed.

Results
MIVAP with BNE was successfully completed in 90 (95%) patients with 5 conversions. Mean operative time was 56±34 minutes (range: 20–180 minutes). Recurrent laryngeal nerve palsy occurred in one patient. Biochemical cure was achieved in 93 patients (98%), in 89 patients after the first operation, in 4 patients by video-assisted (n=2) or conventional (n=2) re-exploration. One patient remained with persistent disease even after repeated open BNE; a second one developed recurrence disease three years after the first exploration.

Conclusion
In experienced hands, video-assisted BNE for pHPT is feasible, safe and gives results equivalent to the conventional open technique.

Bone mineral density improvements after operation for primary hyperparathyroidism.

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Background: In primary hyperparathyroidism one of the arguments for operation is decreased BMD in the spine, hip or forearm. However, it can be an option to observe patients in asymptomatic cases.

Methods: Analysis of a historic consecutive cohort of 236 PHPT patients where DXA scans pre- and one year post-operatively, clinical data, and biochemical data were available.

Results: Mean age was 60 years (range 19–86) and 81% were women. A significant postoperative increase in spine BMD of 3.4% was seen. In a multiple regression model the BMD increase was positively associated with preoperative PTH but not with other clinical or biochemical variables. Hip BMD increased 2.1%. The BMD increase was positively associated with preoperative PTH and negatively associated with creatinine and weight. Forearm BMD decreased by -0.6% and the BMD change was positively associated with PTH. In 91 patients with mild PHPT (iCa <1.45 mmol/l) there were significant postoperative increases in BMD in both the spine (2.6%) and hip (1.3%), but a decrease in the forearm BMD (-0.7%).

Conclusions: Significant postoperative BMD improvements in both the hip and spine were seen. BMD improvements were also significant in mild cases. At all scan sites there was a positive association with PTH and BMD increase. This improvement may be due to reduced remodeling activity.
Short oral presentations

6-01
The effect of scar perceptions after thyroid and parathyroid surgery on patients’ physical and mental health
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Background. There is lack of rigorously validated evidence on how the scar appearance and self-consciousness as perceived by patients following thyroidectomy or parathyroidectomy surgery, affect their physical and mental health.

Patients/Methods. We analysed a random sample of 696 patients who underwent thyroidectomy or parathyroidectomy between January 2000 and March 2010. Patients’ perception with respect to their scars was assessed using the validated Patient Scar Assessment Questionnaire (PSAQ), while their physical and mental health was measured using the SF-36 health survey questionnaire. After performing validity and reliability analysis, we estimated the effect of scar appearance and self-consciousness PSAQ subscales to the patients’ physical and mental health, controlling for 12 sociodemographic and surgical characteristics.

Results. The PSAQ appearance and consciousness subscale scores are significantly correlated (p<0.005) with patients’ mental health. Lower patients’ self-consciousness regarding their scar, is significantly related (p<0.005) to worse physical and mental health. This result holds true irrespectively of the surgical procedure used (conventional or minimal invasive), the histological diagnosis (benign or malignant disease), or the presence of postoperative complications.

Conclusions. Self-consciousness regarding the scar might lead to worse physical and mental health, irrespectively of the length of the scar from a minimally invasive or not thyroidectomy or parathyroidectomy.

6-02
Esophageal motility changes after thyroidectomy: possible associations with postoperative voice and swallowing disorders
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Background: Swallowing and voice impairment are common after thyroidectomy. Several studies investigated these symptoms by means of interviews or questionnaires. We evaluated short term functional changes of esophageal motility in a series of patients underwent total thyroidectomy and their associations with these disorders.

Patients/Methods: 36 consenting patients were prospectively recruited. Eligibility criteria: thyroid volume ≤ 60 ml, benign disease, age between 18 and 65 years. Exclusion criteria: previous neck surgery, severe thyroiditis, hyperthyroidism, pre- or postoperative vocal cord palsy. Voice Impairment Score (VIS), Swallowing Impairment Score (SIS), LES pressure, esophageal motility, UES pressure and coordination were evaluated pre-operatively and 30-45 days postoperatively.

Results: Postoperative swallowing impairment (appearance or worsening of dysphagia) was found in 20% of patients. Voice impairment in 30%. Both preoperative and postoperative esophageal motility were similar. All patient showed an average decrease of 25% of UES pressures, even though it was within normal range. Swallowing alterations were associated with UES incoordination (Conclusions: After uncomplicated thyroidectomy, decreased UES pressure could explain both pharyngeal (dysphagia) and laryngeal (vocal impairment) acid exposure. Perspectively, PPI therapy protocols should be evaluated.

6-03
Surgery for retrosternal goitre
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Background. Patients with goitre descending below the plane of the thoracic inlet are usually recommended surgery although this recommendation is not based on much scientific evidence. This study was carried out to see whether the complication rates after these operations differ from those after ordinary neck surgery. Patients. 107 women and 41 men with retrosternal goitre were operated in the District Hospital at Eksjö, Sweden, between 1984 and 2011. Median age was 63 years (17-84). Only 40 of them (27%) complained of compressive symptoms. All except 3 goitres were removed via a standard collar incision.

Results. Reoperation due to bleeding occurred in 3 patients (2,0%). 13 had palsy of one recurrent laryngeal nerve; 7 of them (4,7%) became permanent. Another 2 patients (1,4%) had permanent hypoparathyroidism. 3 old patients died postoperatively. - The corresponding complication frequencies in 549 patients with non-thoracic thyroid surgery at the same institution were 2,0 and 1,8% for reoperations and permanent nerve palsy, respectively, and 1,6% for permanent hypoparathyroidism.

Conclusions. Transcervical removal of retrosternal goitres may lead to a high risk for permanent palsy of the recurrent laryngeal nerve. Surgery for retrosternal goitre, particularly in old people without compressive symptoms, needs to be evaluated in randomized studies.
6-04
Immunohistochemistry in surgical selection of follicular thyroid nodules with indeterminate cytology
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Fine-needle aspiration biopsy (FNAB) has a central role in the diagnosis of thyroid nodules. An important limitation of FNAB is the lack of sensitivity in the evaluation of “follicular lesions.” Immunohistochemistry could improve the diagnostic accuracy, enabling a better selection of patients requiring surgery versus follow-up and reducing the number of unnecessary thyroidectomies for benign lesions.
From March 2008 to April 2011 1342 thyroid FNABs were carried out in our Endocrinology Unit. The diagnoses of “follicular lesions” (THY3) were 63 (4.7%). We evaluated 38 of these “follicular lesions,” looking for immunohistochemistry expression of Galectin-3, HBME-1 and CK-19. Out of these 38 THY3, 14 (36.8%) resulted carcinoma at histology, 1 UMP, 5 adenomas and 18 benign lesions.
The concordant panel between two markers resulted positive in 10 cases (4 benign and 6 malignant) and negative in 8 cases (6 benign and 2 malignant), with a sensibility of 75% and specificity of 60%.
According to the literature, our results suggest that the application of this antibodies’ panel in THY3 lesions may improve the accuracy of morphologic evaluation and it may optimize the management of patients, in terms of surgery versus follow-up, type of surgery and priority inherent waiting lists.

6-05
Immunocytochemical Panel as an Adjunct to Fine-needle Aspiration of the Thyroid in Various Thyroid Pathologies
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Background: Fine needle aspiration biopsy (FNA) with cytologic evaluation is the most reliable tool for distinction between benign and malignant thyroid tumors, but cytologic diagnosis remains undetermined in 20% of cases. The study was performed to investigated the diagnostic potential of a set of three molecular markers in preoperative evaluation of different thyroid tumors.
Patients/methods: Sixty-eight thyroid FNA cases confirmed by subsequent surgical resection specimens were selected.
Immunocytochemistry for HBME-1, CD56 and E-Cadherin was performed. The study group consisted of 25 papillary carcinomas (PC) and 1 follicular carcinoma (FC) as well as 22 follicular adenomas (FA) and 20 cases of colloid goiter (CG).
Results: Notable HBME-1 expression was found in PC 24/25 (96%), none of benign lesions. E-Cadherin and CD56 expression was significantly weakened in PC but enhanced in FA 16/22 (72.7%) and 12/22 (54.5%) respectively. In case of CG markers expression was not reaching 10%.
Conclusions: Immunocytochemistry is of value as an ancillary test to enhance the diagnostic accuracy of thyroid FNA biopsies. The expression profiles of three markers (HBME-1, E-Cadherin and CD56) served as adjunct to standard cytomorphology criteria to enhance its diagnostic accuracy.

6-06
Correlation of histological subtypes of papillary thyroid carcinoma with clinical outcome: A single centre experience
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Background: Papillary thyroid cancer is the most common thyroid cancer with good overall survival. Histologic subtypes, may play a role in varied clinical presentation and prognosis.
Aim: To study the co-relation of papillary thyroid cancer subtypes with their clinical behaviour and prognosis.
Material and method: retrospective analysis of cases with confirmed PTC, who underwent total thyroidectomy as primary treatment from 1997 till 2009 at our institute.
Results: Total 194 cases. Classical Variants (CV) (78.4%), Follicular Variants (FV)(9.3%), Poorly differentiated Variants (PDV)(4.6%), Tall cell Variants (TCV)(3.6%), Oncocytic Variants (OV)(1.5%), and not available 2.5%. PDV present at older age, all subtypes were common in females, mean tumour size was large in PDV. Lymph node metastasis was high in OV & CV but the extrathyroidal invasion was common in PDV. Multicentricity was common in TCV and bilaterality was common in n OV. The follow-up ranges from 02 to 218 months; recurrence was commonest in PDV(33.3% vs CV 13.2%) and Overall survival was lowest in PDV (19.4/month vs CV 27.9months).
Conclusion: The poorly differentiated subtypes of PTC present in older age, aggressive and have poor survival than the other variants including the tall cell subtypes. Follicular subtypes have relatively better outcome.
Early prediction of persistent or recurrent secondary hyperparathyroidism after parathyroidectomy and autotransplantation

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Background Persistent and recurrent hyperparathyroidism are still the most common complications of parathyroidectomy for secondary hyperparathyroidism. Intraoperative identification of valid predictive factors for recurrent disease may have important influence on surgical strategy and significantly reduce percent of patient with persistent or recurrent disease.

Patients/methods This study included forty-three consecutive patients who underwent parathyroidectomy for a severe form of secondary hyperparathyroidism that is unresponsive to medical treatment. The serum parathyroid hormone, calcium, and phosphorus levels were measured prior to surgery, every morning after surgery for five days, and on the first, sixth, and eighth postoperative months.

Results Intraoperative decline of the parathyroid hormone for more than 91.6 percent from preoperative values, fifteen minutes after excision of the last gland, showed 100 percent sensitivity and 86 percent specificity in prediction of persistent hyperparathyroidism. We did not confirm predictive value of any other biochemical parameters that were measured in this study.

Conclusions Intraoperative monitoring of the parathyroid hormone decline during parathyroidectomy for secondary hyperparathyroidism can reliably identify patients with unsuccessful operation. The application of this technique during parathyroidectomy could have significant impact on surgical strategy and increase percent of successfully treated patients.

Tissue selection with or without stereomicroscopy in surgical treatment for renal hyperparathyroidism

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Background: The best surgical approach for renal hyperparathyroidism is yet to be defined, since neither high recurrence rates nor risks of definitive hypoparathyroidism are intended.

Patients/METHODS: 123 patients underwent total parathyroidectomy with presternal intramuscular autotransplantation, being divided in: G1: 66 patients operated 04/2000-04/2005 with tissue selection based on macroscopic findings; G2: 57 patients operated 03/2008-10/2009 with tissue selection by resorting to Leica StereoZoom-S8APO Stereomicroscope. Intraoperative PTH (Elecsys-Roche) measured in 100 patients (81.3%). Data presented as average.

RESULTS: G1: 38 haemodialysis patients, 28 renal- graft, 38 Female/28 Male, aged 40.8 (14-62); intact parathormone (iPTH) 73.5 pg/mL, 82 pg/mL and 80 pg/mL 12, 24, 36 months post-operative respectively in dialysis patients, and 54.9pg/mL, 61.7pg/mL and 70.5pg/mL in renal-graft patients. Hypoparathyroidism was observed in 4 (6.06%) and graft recurrence in 6, all in dialysis patients. G2: 32 dialysis patients, 25 renal-graft, 32Female/32Male, aged 48.4 (26-74); intact parathormone (iPTH) 73.5 pg/mL, 82 pg/mL and 80 pg/mL 12, 24, 36 months post-operative respectively in dialysis patients, and 54.9pg/mL, 61.7pg/mL and 70.5pg/mL in renal-graft patients. All patients were cured except 1, from dialysis group, who presented graft-dependent recurrence 6 months post-operative, and 1 renal-graft patient with definitive hypoparathyroidism.

CONCLUSION: Stereomicroscopy in tissue selection was helpful in obtaining low incidence of hypoparathyroidism and graft-dependent recurrence.
P101
SURVIVAL AND PROGNOSTIC FACTORS OF ANAPLASTIC THYROID CARCINOMA
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Background. Anaplastic thyroid carcinoma (ATC) is relatively rare, but it is one of the most aggressive tumours. The aims of this study were to analyze survival rate and prognostic factors in ATC patients.
Patients/Methods. In a retrospective study, from 1995 to 2005, ATC was found in 150 patients, 95 female and 55 male, median age 64 years. Survival was calculated by Kaplan-Meier curve and log-rank test. Potential prognostic factors were compared by univariate and multivariate analyses by Cox.
Results. Median survival was 16 weeks, whereas 1-year and 5-year survival was 12% and 8% respectively. More than 10% and 50% of the patients died during the first and fourth month respectively. Multivariate analysis, for all of the patients, showed that the patients age, goitre and surgical treatment were independent prognostic factors of survival. According to multivariate analysis by Cox, among the operated ATC patients, completely resected tumour, distant metastasis and multicentric tumour were independent prognostic risk factors of survival. Postoperative radiotherapy was the protective factor of survival.
Conclusion. Younger patients with pre-existing goitre, who undergo complete resection of unilocular early stage ATC without distant metastases and with postoperative external radiotherapy, stand a better chance of long-term survival.

P103
Fine-needle aspiration puncture (FNAP) and core needle biopsy (CNB). Comparative study in the diagnosis of thyroid nodule.
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BACKGROUND: To compare the sensitivity and specificity of the Fine-needle aspiration puncture and of the core needle biopsy in thyroid nodules.
PATIENTS/METHODS: Years 2006-2011 with all the patients diagnosed clinically and through ultrasound of thyroid nodule and operated on subsequently. 399 patients in two random distribution groups were counted. In 222 cases Fine-needle aspiration puncture was performed and core needle biopsy in 177.
RESULTS: In the group of the Fine-needle aspiration puncture, insufficient sample was obtained in 22 cases (5.5%) with a sensitivity of 60%, specificity of 94.6%, a positive predictive value of 66.7% and a negative predictive value of 93%. The proportion of false positives was 5.4% and that of false negatives of 40%. In the group of the core needle biopsy, no insufficient sample was obtained with a sensitivity of 79.2%, specificity of 98.4%, a positive predictive value of 95.5% and a negative predictive value of 91.8%. The proportion of false positives was 1.6% and that of false negatives was 20.8%.
CONCLUSIONS: The core needle biopsy is a technique well tolerated by the patients, with a low incidence of complications, nil percentage of invalid tests and sensitivity and specificity that improve the results of the Fine-needle aspiration puncture.

P102
PROGNOSTIC FACTORS FOR SPORADIC MEDULLARY THYROID CANCER
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Background: Medullary thyroid cancer (MTC) has two distinct forms, familial and sporadic. Nowadays, given the fact that the standard for treating familial MTC is prophylactic thyroidectomy, it only makes sense to study prognostic factors for sporadic MTC, which was the aim of our study.
Material/Methods: The study group consisted of 98 patients with sporadic MTC, treated consecutively between 1995 and 2005. Of the 98 patients studied we were able to gather complete data for 32 patients (12 males and 20 females, age ranged form 12 to 75 years old) which we analyzed using univariate and multivariate Cox regression. Survival was calculated by Kaplan-Meier curve and log-rank test.
Results: The mean survival was 90.1 months. The 1-year and 5-year survival was 91% and 75% respectively. In univariate analysis sex (p<0.041), radio-therapy (p<0.016), tumor size (p<0.020), T4 stage (p<0.001) and N1 stage (p<0.050) were significant prognostic factors for survival. Only T stage (RR=41.2, 95%CI 1.6-988.6), remained an independent prognostic factor for sporadic forms of MTC in multivariate analysis according to multivariate logistic regression.
Conclusion: T stage at presentation proved to be the only independent predictor of survival. The study should be repeated on a larger group of patients.
Efficacy of Simvastatin for Reducing Reoperative Risk in Neck Surgery: An Experimental Study

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Background: The aim was to investigate whether simvastatin has any impact on adhesion formation after thyroidectomy in a rat model.

Patients/methods: This controlled study was performed in 66 Wistar albino rats randomized into 3 experimental groups. The lateral aspect of the trachea was dissected and a right hemithyroidectomy was carried out in all rats. Simvastatin was administered locally at a dose of 0.5 mg/kg (Group B) and 0.8 mg/kg (Group C). Group A consisted of rats where only a saline solution was administered. Changes during the 1st week, 1st month and 3rd month were evaluated. Efficacy of the treatment in all phases was assessed by using a scoring system ranging between 1 and 4. Histopathological analysis was performed to study the effect of the statin. Scores were calculated based on collagen, fibrosis, fibroblasts, granulation tissue, histiocytes, mononuclear giant cells, inflammation and vascular proliferation.

Results: No side effects associated with simvastatin were observed during the study. The severity of adhesions in Group B was significantly less than Group A and C during the 1st and 3rd month (p<0.05). In addition, adhesions were less in Group C during the 3rd month, when compared to Group A (p<0.05). Moreover, fibrosis and fibroblast scores, which represent adhesions, were significantly lower in Group B and C at month 1 and 3, compared to Group A (p<0.05).

Conclusion: We investigated the influence of simvastatin application on post-thyroidectomy adhesion formation in rats. Adhesions causing technical difficulties during neck re-surgery can be reduced by the use of low and high doses of simvastatin.

Neck pain after thyroid surgery: do neck stretching exercises help? Results of a randomized controlled study

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Background: We aimed to evaluate the effect of neck stretching exercises on pain after thyroid surgery.

Patients/methods: Ninety patients undergoing thyroidectomy were included. Patients were randomised into two groups; the control group (Group I) and the exercise group (Group II). All patients were evaluated by means of pain score (visual analogue scale - VAS), a questionnaire addressing their symptoms and patient satisfaction (5 point verbal scala). Group II received neck exercises with an illustrative leaflet. Exercises were repeated every 8 hours. Pain scores were recorded for each individual on the 2nd, 6th, 12th and 24th postoperative hours. The questionnaire was applied both on the day of discharge and on the last day of first postoperative week. Analgesic consumption was also recorded for each individual.

Results: Both groups showed homogeneity according to variables such as operation time and complications as well as demographic variables. No difference was found between groups regarding neck symptoms and VAS scores (p>0.05). Although the analgesic consumption was slightly lower in Group II, this was not significant (p>0.05).

Conclusion: Results of this randomized controlled study did not show any additive effect of neck stretching exercises on neck pain and patient satisfaction of the thyroidectomized patient.
What Adds Valsalva Manoeuvre to Trendelenburg Positioning during Haemostasis in Thyroid Surgery?

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Background: The aim was to determine whether Valsalva manoeuvre helps to detect any further bleeding following Trendelenburg positioning in order to achieve adequate haemostasis in thyroid surgery.

Patients/methods: This prospective study included 68 consecutive thyroidectomized patients. Study protocol consisted in performing manual intraabdominal pressure increase and Valsalva manoeuvre to check haemostasis and treating any bleeding point identified after Trendelenburg positioning. The operating table was tilted 30 degrees for 1 minute and haemostasis was checked; manual compression on the epigastric region was carried out for 10 seconds and finally the anesthesist was asked to increase the intrathoracic pressure up to 30 mmH2O. Haemostasis was checked again and treated accordingly. Number of bleeding vessels identified and treatment was recorded.

Results: Total thyroidectomy was carried out in 86.7% of patients. Median operation time was 90 min (range 45-180 min.). A drain was used in only 11.8% of cases, where most of them were complicated cases like retrosternal goiters. Bleeding points were identified in 43 of the 68 cases. The total number of bleeding vessels identified in Trendelenburg tilt was 49, while it was 41 when using Valsalva manoeuvre (p>0.05). Manual intraabdominal pressure increase, before Valsalva manoeuvre, identified 14 bleeding points (p

Conclusion: Although nearly all detected bleeding points were minor, Valsalva manoeuvre helped to detect any further bleeding following Trendelenburg positioning. Our suggestion is to give patients routinely the Trendelenburg position and continue with the Valsalva manoeuvre during haemostasis after thyroidectomy.

The change in MIVAT’s inclusion criteria: analysis of 358 cases.

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Background: The first cases treated with MIVAT were characterized by inclusion and exclusion criteria that are changing with the experience of the endocrine surgeons.

Materials and methods: We have analyzed the patients treated from july 2005 to october 2011 with MIVAT All these cases were treated in accord with Miccoli’s technique. We have divided the cases on the surgical period highlighting the inclusion criteria and the adverse events (first period: 0-211 cases;second period: 212-358 cases). All the cases treated were followed up at days 7 (ambulatory visit) and days 30-180 (ambulatory visit or telephone contact). The patients classified in the II° period were characterized by the exclusion of the clinical thyroiditis. The data of MIVAT were matched with Conventional Thyroidectomy (CT).

Results: No differences in postoperative pain,nerve palsy and hypocalcemia in MIVAT group and CT group. We have registered a postoperative pain at 24 hours lower in MIVAT group. The percentage of transitory nerve palsy in the MIVAT group in the first period was 2.84% versus 1.36% in the second period.

Conclusion: MIVAT technique is safe and reproducible, with an excellent cosmetic results. The videoassisted thyoidectomy is more safe if the endocrine surgeon doesn’t candidate to videoassisted procedure the clinical thyroiditis.
P108
USEFULNESS OF SELECTIVE SENTINEL LYMPH NODE BIOPSY IN THE DIAGNOSIS OF EXTENSION OF PAPILLARY THYROID CANCER
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AIM: To evaluate the usefulness of selective biopsy of the sentinel lymph node (SLN) for lymph node staging of patients with papillary thyroid carcinoma (PTC).

RESULTS:
The sensitivity of the SLN biopsy was 95%
- One case had no drainage in lymphoscintigraphy
- In 9 (42.8 %) cases, all the SLNs found were negative and there were no other positive nodes in definitive specimen.
- In 14 (66,6 %) cases, SLNs found were in the lateral, of which 4 were positive (28.6 %) and it means 4 lateral LDNs would have been performed.
- Two cases of probably false negative were found: One due to micrometastasis and the other due to a bulky laterocervical mass.

CONCLUSIONS: Our results show that the SLN biopsy could be useful in staging and surgical approach of PTC. Although preliminarily, we can expect a high impact on surgical strategy.

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EXPORTING THE GERMAN SURGICAL ENDOCRINE ACCREDITATION MODEL TO OTHER EUROPEAN COUNTRIES: A SPANISH PERSPECTIVE
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BACKGROUND:
The German Society for General and Visceral Surgery awards certificates of competence in neck endocrine surgery to surgical departments. This study aims to evaluate the surgery volumes of the Spanish Endocrine Surgical Units compared with the minimum required by the German model (120 benign thyroid, 15 cancer thyroid and 5 parathyroid procedures performed yearly).

RESULTS:
We received 33 forms. There were 28 established Endocrine Surgical Units. Thyroid surgery volumes were higher at departments with established units than those without (151+/−75 procedures vs. 73+/−42, p=0.008) as well as when analysed per surgeon (44+/−20 procedures/surgeon vs. 16+/−12, p=0.001). Eleven (39%) Endocrine Surgical Units perform >120 benign thyroid, 23(82%) >15 thyroid cancer and 28(100%) >5 parathyroid procedures yearly.

CONCLUSIONS:
1. Spanish departments of surgery with established Endocrine Units have higher surgery volumes than departments without them.
2. Benign thyroid surgery volumes in Spanish Endocrine Units do not meet the requirements of the German model in many cases. However, thyroid cancer and parathyroid surgery volumes mostly adhere to them.
3. Surgical volume requirements should be adapted to the epidemiologic profile of every country.

On behalf of the "SPANISH ENDOCRINE SURGERY AUDIT TASKFORCE".
UNUSUAL METASTATIC SITE OF MEDULLARY THYROID CANCER: WHAT THERAPY?

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Medullary thyroid cancer (MTC) often appears as a painless cervical mass and may be associated with lymphadenopathy in the neck. The most common sites of distant metastases are lungs, liver and bones. Secondary localizations have also been described to skin, brain, pancreas and ovary.

A 72 years-old man, with recent onset of diffuse bone pain, weight loss, clinical and ultrasonographic findings of testicular mass underwent orchiectomy. The pathologist reported the presence of MTC metastasis. The subsequent work-up showed a 3 cm mass in the right thyroid lobe, with microcalcifications and supraclavicular adenopathies. Serum calcitonin level was 6500 pg/ml. FNA revealed atypical cells suspicious for MTC. PET-CT scan revealed increased uptake in the right thyroid lobe and in the bones diffusely.

The patient underwent total thyroidectomy plus central neck dissection with a debulking aim, in order to prevent infiltration of neighboring organs and with a view of the possible inclusion of the patient in therapy protocols with biological agents.

This unusual case of MTC, highlights the clinical and biological variability of this thyroid cancer that should be considered in patients with metastasis with neuroendocrine features. MTC requires an attentive diagnostic work-up, a rigorous operative strategy, and a periodic postoperative surveillance program.

Small Minimally Invasive Follicular Thyroid Carcinoma Presenting with Distant Bone Metastases

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Background

Small minimally invasive follicular thyroid carcinomas (FTC) are considered extremely low-risk tumours and distant metastases are anecdotally reported.

Patients/Methods

We report a 61 year old woman referred to us after investigation for long standing left hip pain. An x-ray and a bone-scan showed metastatic uptake in the sacrum and a bone-biopsy was consistent with metastasized FTC.

Results

A 1.5 cm lesion in the left thyroid lobe with no signs of enlarged lymph nodes was noted on clinical and neck-ultrasound examinations. Cytology indicated follicular neoplasia. An uncomplicated total thyroidectomy was performed with no lymph-node engagement noted. Histopathology revealed a left lobe 16 mm FTC without widely invasive growth. Ki 67 was low (3-5%). Radio iodine ablation was given postoperatively.

The patient is doing well without signs of progressive disease two years after surgery and is planned for local radiation therapy of the bone-metastasis due to pain.

Conclusion

Small minimally invasive FTC is a low-risk tumour but can give rise to distant metastases in extremely rare cases.
CONCLUSIONS: The fibrin sealant only reduces the debit at 48 hours (p=0.03) and 9.2 cc with the fibrinogen sealant with thrombin it as 35.6 cc at 24 hours and 24.9 cc at 48. In comparison, with fibrin sealant at 24 and 48 hours without sealants, with fibrin sealants and with fibrinogen sealants plus thrombin in the complete thyroidectomy for carcinoma.

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Haemostatic sealants in complete thyroidectomy. Comparative study.

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BACKGROUND: To compare the drainage debit at 24 and 48 hours without sealants, with fibrin sealants and with fibrinogen sealants plus thrombin in the complete thyroidectomy for multinodular goiter.

PATIENTS AND METHODS: 324 patients operated on between 2008 and 2010. In 83 (25.6%) no sealant was used (control group), in 128 (39.6%) we used fibrin sealant and in 113 (34.8%) fibrinogen sealant with thrombin. The drains were correlated in 30, 7 and 8 cases.

RESULTS: Altogether, 107 cycles of chemotheraphy were given. Tumor size decreased for more than 50% in 20 patients (44%). Chemotherapy was effective in follicular, papillary and Hürthle cell thyroid carcinoma in 47%, 44% and 43%. R0, R1 and R2 resection was performed in 17, 20 and 8 cases. The 5-year and 10-year cause-specific survivals of the patients were 78% and 51%. Twenty-one patients died of distant metastases, three of locoregional and distant disease, and one of locoregional disease.

Conclusions: Neoadjuvant chemotherapy decreases tumor size in 44% of patients with locally advanced differentiated thyroid carcinoma.

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History of one picture of American and Russian Surgeons collaboration in beginning of 20 Century

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Background. William Mayo and, as assumed, Charles Mayo of Rochester (Min. USA) have visited Russia, Finland, Norway, Denmark and Belgium. They attended clinics in Moscow, Saint-Petersburg in Russia and were highly impressed with the level of surgery, traumatology, orthopedy, obstetrics, gynecology. Sergey P. Fedorov clinic was well-known in Europe for kidneys surgery that is why the American doctors were interested to observe such operations. W. Mayo has called Doctor Fedorov as “Master of Surgery” after that operation.

Results. The only one photo that has been done during that visit at Fedorov’s clinic remained. Print of it was presented to the Mayo museum by author of presentation (2007). There are a few mistakes connected with that picture, such as visit’s date (May - June 1914 but not 1912) and persons have presented on the photo. It was established, that Doctors William J. Mayo, Christopher Graham (but no Ch. Mayo), Fedorov’s colleagues and pupils have been represented on the photo. Among them were prominent Russian Doctors: A.A. Opokin (1878 - 1939), V.N. Shevkunenko (1872-1952), P.S. Ikonnikov (1879-1915), V.I. Dobrotvorsky (1867-1937).

Conclusion. The time has come to restore the lost connections and collaboration of Surgeons from different countries for advantage of patient’s treatment.

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TOTAL THYROIDECTOMY AS A TREATMENT FOR THE MALIGNANT STRUMA OVARII

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Background. Struma ovarii is a rare ovarian teratoma containing thyroid tissue (>50%). Like the thyroid gland, this tissue can become malignant. Management alternatives include radical surgery or salpingo oophorectomy (if fertility is desired), with or without thyroidectomy, followed by adjuvant therapy (external radiotherapy, chemotherapy, thyroid suppression)

We report an unusual case of papillary thyroid cancer in struma ovarii with a review of the literature including the diagnosis and treatment modalities.

Patients. Female 34 years old without a remarkable past endocrine history. She underwent surgery for a left ovarian tumour. The pathologic diagnosis was malignant struma ovarii.

Results. The diagnosis of struma ovarii was made after the oophorectomy. It was decided to perform a thyroidectomy and radiiodine treatment subsequently. The thyroid specimen confirmed no malignancy, and the exon 15 BRAF’s gene didn’t show mutations. Conclusions The optimum treatment of malignant struma ovarii is controversial. The management with a total thyroidectomy has some advantages: It confirms the diagnosis. It allows the metastases identification by a whole body 131I scintigraphy and, if positive, the patient would be treated with radiiodine ablation.
**P116**

Different ways of presentation of metastases in thyroid

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Background.

Thyroid metastases have a variable clinical and timing presentation. Identification of the primary tumor could be difficult, but it is essential for the subsequent treatment.

Patients.

Patient a) Female 61 years old with hyperthyroidism and a multinodular goitre with hyperfunctioning nodule. Fine needle aspiration: suggested an adenocarcinoma of breast origin (unknown until that moment).

Patient b) Man 53-year-old with a thyroid tumor in the left lobe. Cytology was not useful, and consequently a lobectomy was performed.

Results.

Patient a) The thyroidectomy confirmed the diagnosis. Subsequent studies revealed a breast carcinoma HER 2 with bone metastases

Patient b) The pathologic diagnosis was of small cell carcinoma. The primary tumor in any other organ was ruled out. The patient had a previous history of a cystectomy two years ago because of a urinary bladder tumor. A pathologic review of this tumor and an immunohistochemical and molecular study showed that the bladder carcinoma was the primary tumor responsible for the thyroid metastasis

Conclusions.

Sometimes a metastatic thyroid nodule can lead to the diagnosis of the primary malignancy, but others do not. This originates diagnostic problems and management dilemmas. Regardless of the time elapsed, past tumors should be investigated as the primary malignancies. Proper treatment depends on this.

**P117**

Anaplastic carcinoma of the thyroid gland: treatment and outcome over a 13-year period at one institution

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Background: Anaplastic thyroid carcinoma (ATC) is a highly aggressive, although rare, malignancy of the thyroid gland. Patients at our institution are treated with external radiotherapy up to 46 Gray and low-dose doxorubicin prior to surgery. We retrospectively evaluated the outcome of patients diagnosed with ATC over a 13 year-period.

Methods: Clinical, histopathological and follow-up data for 59 patients diagnosed with ATC by fine needle aspiration biopsy between 1997 and 2010 were collected and analyzed.

Results: Median age at diagnosis was 77 years. Female-male ratio was 2.5:1. Median survival was 3.3 months from time of diagnosis. Thirty-six patients completed the treatment protocol (including surgery), of which one succumbed due to local tumor growth. Absence of metastases at diagnosis and tumor size ≤ 5 cm were factors significantly associated with longer survival among operated patients. By contrast, gender, extent of surgical resection, microscopic radicality or absence of extrathyroidal invasion showed no impact on survival time.

Conclusions: Despite aggressive treatment, survival rates in ATC patients remain low. Locoregional control is possible to achieve for most patients, underscoring the importance of an intense, multimodal treatment regimen. Further oncological intervention is of crucial importance to achieve a better prognosis for ATC patients.

**P118**

Changes in prevalence of incidental thyroid cancer in a 20-year perspective.

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Background: Diagnosis of incidental thyroid cancer (ITC) is common following thyroid surgery and often requires completion thyroidectomy. The aim of this study was to analyze trends in prevalence of ITC in a 20-year period.

Patients/methods: A retrospective cohort study of 15.127 patients with bilateral thyroid disease operated on in a single institution throughout the years 1991 and 2010. Within the study period 7.547 patients underwent bilateral subtotal thyroidectomy, 2.931 patients underwent Dunhill operation and 4.649 patients underwent total thyroidectomy. The analysis included: prevalence of ITC and need for completion thyroidectomy.

Results: Utilization of total thyroidectomy for bilateral benign thyroid disease has increased from 1.9% in 1990 to 100% in 2010 (p<0.001). Prevalence of thyroid cancer increased from 5.0% to 12.8% (p<0.001), prevalence of ITC decreased from 55.4% to 45.7% (p<0.001), and need for completion thyroidectomy decreased from 35.8% to 0% (p<0.001), respectively.

Conclusions: Despite progress in preoperative work-up in patients with various thyroid diseases thyroid cancer is diagnosed on incidental basis in a high proportion of patients following thyroidectomy. Utilization of total thyroidectomy for bilateral benign thyroid disease was compared to more limited thyroid resections allowed for abolishing the need for completion thyroidectomy for ITC.
Re-do Surgery for Medullary Thyroid Carcinoma (MTC)

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Redo surgery is supposed to reduce calcitonin levels and justified when initial surgery inadequate. Complete biological response is rare. The aim of this study was to evaluate outcomes of redo surgery for persistent/recurrent (P/R) MTC and to define prognostic factors.

Methods: Records of 61 redo surgeries (24 patients) with P/R MTC treated (1975-2011). A significant partial response was defined as a decrease in calcitonin by >50%. The effects of different factors (initial surgical expertise, adequate primary surgery, size, extra-nodal extension, stage, calcitonin levels) were evaluated by means of univariate analysis.

Results: Each patient had an average of 3.54 (1-15) redo. Redo was lateral neck (34%), lateral bilateral neck (18%) and mediastinal dissections (21%). Twenty four redo (39.4%) resulted in more than 50% reduction of calcitonin. Reduction in calcitonin was 43.4% (Min : -760%, Max : 100%). At a median follow-up of 76 months, there were 1 death, 15 persistent diseases, 2 partial responses, 6 complete responses. Within univariate analysis, the lymph node invasion (stade pN) was found to be a statistically significant factor.

Conclusions: Redo surgery in P/R MTC may achieve biochemical cure in 25% of the cases. Its impact on survival remains debatable.

Preexisting recurrent laryngeal nerve palsy and positive intraoperative neurostimulation: What’s the meaning?

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Background: The past decade application of intraoperative neuromonitoring in thyroid surgery vastly increased. However, standard application, definition of parameters and their interpretation remain unclear, especially in preexisting laryngeal nerve palsy (RLNP).

Patients and Methods: In 303 patients with preexisting RLNP intraoperative neuromonitoring was performed to assess quantitative parameters and compare with normal functional nerves.

Results: In 32 (11%) permanent RLNP quantitative parameters of intraoperative neuromonitoring were measurable, the majority revealed no valid neuromonitoring responses. Analyses of quantitative parameters showed dispersed parameters of amplitude, latency and signal width; however, comparison to normal parameters in functional nerves did not demonstrate significant quantitative differences.

Conclusions: Preexisting laryngeal nerve palsy reveals a spectrum of electrophysiological findings with a minority demonstrating measurable intraoperative neuromonitoring, irritatingly similar to normal values. Assessment of quantitative parameters in the setting of RLNP clearly exemplifies the mainstay importance of preoperative laryngoscopy and investigation of vocal cord mobility in thyroid surgery as a prerequisite to enable interpretation of intraoperative neuromonitoring.
P121
Outcome after thyroid surgery - patients' perspective
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Background. The quoted risk of morbidity after thyroidectomy is based on published data from large series but patients’ perception remains insufficiently explored.

Methods. A standardized questionnaire was mailed to 312 patients who underwent thyroid surgery in a large university hospital between Jan 2008-Dec 2010.

Results. Replies were received from 192 (62%) patients (33M:159F, age 54±16 yrs) at 4-40 months (median 21m) after lobectomy (n=119) or total thyroidectomy (n=73) for benign (n=151) or malignant (n=41) conditions.

Voice Handicap Index scores remained normal in 122 patients and increased in 70 (36%) patients to a median of 17 (range 11-29). Voice-Related-Quality-of-Life outcome was excellent in 100 (53%) patients, fair-good in 81 (41%) patients, poor-fair in 11 (6%) patients. Subjective assessment of swallowing was normal in 80 patients and moderately affected in 112 (58%) patients (median score 16, range 11-40). Calcium supplements were interrupted within 4 weeks in 54 (74%) patients and none had persistent hypoparathyroidism. Asked whether they would consider robotic thyroid surgery in order to avoid a scar 40 (21%) patients were in favour and 55 (29%) were against it.

Conclusion. On direct questioning a large proportion of patients report persistent moderate voice and swallowing problems after thyroid surgery. These findings are similar to the recent international multicentre survey of 2900 patients with thyroid cancer.

P122
SONOGRAPHIC MARKERS OF MALIGNANCY IN COURSE OF CARCINOMA OF THYROID GLAND.
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BACKGROUND: Carcinoma of thyroid gland is rarely occurring neoplasma, although it is the most frequent carcinoma of endocrine glands. In Poland about 200 cases of thyroid carcinoma is detected every year. The crucial problems are connected with early diagnostics. Absence of characteristic symptoms causes that the diagnostic starts when carcinoma is advanced and there are metastasis to regional lymph nodes or distant organs.

METHODS: We retrospectively analyzed patients treated surgically due to nodular changes within the thyroid gland. Ultrasound images were analyzed and then compared with histopathology. Attention was paid on echographic patterns, like quantity/size of nodules, echogenecity, calcification, halo sign, vascularity or irregular margins.

RESULTS: Cancer has been found in 11%. In group with calcifications cancer was detected in 23% of cases, while only 4% in patients without calcifications. Nodules with halo sign were malignant changes in 80%, while 10% without this feature. When lymphadenopathy was found cancer occurred in 53% of cases, and 6% when the nodes were within the normal range.

CONCLUSIONS: The presence of calcification, halos or enlarged lymph nodes in ultrasound image, with accompanying changes in nodular, may provide additional prognostic factor for thyroid cancer and it should lead to the further implementation of the diagnostic.
P123
Surgery of Papillary Thyroid Carcinoma in Children and Adolescents
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Background:
Papillary thyroid carcinoma in children and adolescents is rare but it shows extremely aggressive behavior. Gross lymph node metastases and distant metastases are common on first clinical presentation.

Patients and methods: Forty five children and adolescents were operated due to PTC. Mean age was 16.6 years (range 7-21). At the time of diagnosis 13% had lung metastases. Total thyroidectomy or completion of thyroidectomy was performed in all cases followed with central neck dissection and frozen section examination of lower jugulo-carotid compartments.

Results: Median tumor size was 1.9 cm. PTC was found in 44 and FTC in one patient. Multifocal tumors were found in 37% and capsular invasion in 29% and vascular invasion in 24% of cases. LNM in either central or lateral neck compartments were found in 76% of patients. Capsular and vascular invasion were significantly more frequent in children less than 16 years of age.

Conclusion: PTC in children is characterized with high incidence of loco-regional aggressiveness, multifocality, lymph node metastases and distant metastases at the time of diagnosis. Extensive surgical approach should be performed in both primary and recurrent disease in young patients with PTC.

P124
Evaluation of BNP and NT-pro-BNP in patients undergoing thyroid surgery
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Background: Brain natriuretic peptide (BNP) and NT-pro-BNP are useful for diagnosing and monitoring heart failure. Our aim was to evaluate preoperative serum BNP and NT-pro-BNP in patients undergoing thyroidectomy and to identify factors associated with these peptides in euthyroid cases without cardiac insufficiency.

Methods: All total thyroidectomies during an 18-month period were prospectively included. Cases with heart failure, recent myocardial infarction, arrhythmia, cardiac valvular disease, pulmonary hypertension, history of pulmonary embolism and renal or hepatic failure were excluded. All patients underwent preoperative echocardiography and BNP and NT-pro-BNP measurement. Parameters evaluated for potential association with BNP or NT-pro-BNP were: demographics, thyroid specimen weight, final diagnosis, and preoperative T3, T4, FT3, FT4, TSH, anti-Tg, anti-TPO, calcium, phosphate, PTH and 25(OH)VitD3.

Results: Three hundred and fifty cases were included (age: 51.2 ± 7.6 years - female: 74.6%). Predominant diagnoses were multinodular goiter (52.2%) and papillary carcinoma (26.8%). BNP showed a positive correlation with age, thyroid weight and PTH and negative association with phosphate (pConclusion: BNP and NT-pro-BNP correlate with age, thyroid weight and PTH. These factors should be taken into consideration during evaluation of those peptides in patients with thyroid and, especially, cardiac diseases.

P125
Recurrent laryngeal nerve delivery and reconstruction during the operation of thyroid cancer and recurrent goiter
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Introduction: Recurrent laryngeal nerve palsy is a major obstacle in thyroid and parathyroid surgery. According to relevant literature data permanent RLN paralysis was reported in 0.5 to 10% of cases.

Patients and Methods: RLN paralysis was verified preoperatively by direct laryngoscopy examination and voice disfunction in 16 patients. Thirteen were previously operated in other regional hospitals in Serbia and three primary operated in our Institute due to locally advanced papillary thyroid carcinoma in two cases and one with MTC.

Results: We performed operation and re-operations due to primary PTC, papillary, medullary and follicular cancer recurrence and benign colloid goiter within 3 months to 23 years after the first surgery. After removing the suture and delivering RLN and after the direct suture or anastomosis with ansa cervicalis we observed voice recovery within 3 weeks to 6 months. Only in one case we detected full recovery by direct laryngoscopy and other patients had improved voice due to restoring tension of vocal cords thus recovering from atrophy.

Conclusion: It is important to explore the neck in order to identify RLN and to deliberate it in the case of ligation. Nerve reconstruction either by direct suture or anastomosis is developing procedure depending to surgeons skills and experience.
Preoperative evaluation of cystatin C in patients submitted to thyroideectomy

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Background: Cystatin C has been suggested as a useful marker for several neoplasms but has not been evaluated in thyroid carcinoma. Our objective was to evaluate preoperative serum cystatin C in patients undergoing thyroideectomy and to identify factors associated with it.

Methods: All thyroideectomies during 2010 were prospectively included. Parameters evaluated for association with cystatin C were: demographics, diagnosis, thyroid weight, preoperative T3, T4, FT3, FT4, TSH, anti-Tg, anti-TPO, calcium, phosphate, PTH and 25(OH)VitD3. Separate analysis was performed regarding benign or malignant pathology.

Results: One hundred and seventy patients were included (age: 52.7±3.8 years female: 71.7%). Predominant diagnoses were: multinodular goiter (54.7%) and papillary carcinoma (22.9%). Elevated cystatin C was noticed in 3 cases (27%). LN metastases were found in six patients (50%); MRND was done in 5 cases and central neck dissection in 2 cases. Cystatin C was correlated with age (p=0.001), gender (p=0.007) and PTH (p=0.001).

Conclusion: Cystatin C was not found to be a useful marker for thyroid cancer. In contrast, it was independently correlated with PTH.

Surgical Management of Primary Thyroid Carcinoma Arising in Thyroglossal Duct Cyst

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BACKGROUND: Thyroid carcinoma in a thyroglossal duct cyst is very rare and surgical management is based on the individual experience.

PATIENTS AND METHODS: Twelve cases of primary TDC thyroid carcinoma operated in one Institution during last 25 years. Sistrunk’s procedure was done in all cases followed by dissection of submental and prehyoid lymph nodes and bilateral biopsy of level 3. In the same act 11 of 12 patients underwent total thyroideectomy. In cases of synchronous thyroid gland carcinomas central neck dissection and frozen-section examination of level 4 LN was done. In cases of LN involvement modified radical neck dissections (MRND) were performed. RESULTS: Definitive pathology revealed 11 papillary and one follicular TC in TDC. Synchronous thyroid gland carcinoma was found in 3 cases (27%). LN metastases were found in six patients (50%); MRND was done in 5 cases and central neck dissection in four cases. Radioiodine therapy was applied in five patients. All our patients are alive.

CONCLUSION: Our results imply that TC in TDC were associated with synchronous thyroid gland carcinomas in one-third and LN metastases in half of cases. In a lack of surgical consensus, this algorithm can be safely applied to obtain optimal radical surgery in those patients.

Segmental tracheal resection for invasive differentiated thyroid carcinoma: our experience in six cases

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Background. In thyroid carcinoma complete resection of local disease provides the longest survival and the best palliation. In pursuit of this goal, in our Institution segmental laryngotraceal and tracheal resection was applied whenever possible to patients with invasion of the airway.

Patients/methods. Between 2007 and July 2011, six patients (age 33-67, three males) with differentiated thyroid carcinoma were submitted to laryngotraceal or tracheal resection. Two patients presented with local recurrent disease, whereas four underwent airway resection at the time of thyroideectomy (two cases) or shortly after.

Results. All the patients received a circumferential sleeve resection of the trachea (2-4 tracheal rings) that in two cases extended to the lower part of the cricoid, followed by end to end anastomosis. Pathologic evaluation identified five papillary and one poorly differentiated carcinomas. Postoperatively no deaths occurred; two air leaks were observed, that resolved with conservative treatment; one patient required re-exploration because of bleeding. Functional results were excellent. One patient died 30 months later because of recurrence in distant sites; two patients had local recurrence; in another one a slightly elevated thyroglobulin persists; two patients are free of disease.

Conclusions. Segmental airway resection is safe and can warrant complete resection of local disease.
P129
Strong safety profile for surgical treatment of Graves’ disease
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BACKGROUND: Optimal treatment of Graves’ disease remains controversial.
METHODS: We retrospectively reviewed 300 thyroidectomies for Graves’ at a single center over 26 years (257 female, 43 male) divided over three periods (1985 -93 (n = 32), 1994 -02 (91) and 2003- 10 (177).
RESULTS: Mean age was 39 (3-82), median follow-up 25 months; 36.3% had co-morbidities. Indications for surgery were failed medical/RAI therapy, ophthalmopathy, and patient preference. 90 underwent subtotal and 210 total /near total thyroidectomy. By period 3, most had total thyroidectomy. Total thyroidectomy was associated with higher age (p = 0.006), preoperative co-morbidity (p = 0.04), lower operative times, hospital stay and drain use (all p no differences by operation; lower morbidity was associated with β blockers (p = 0.025). Specific morbidity included: 5% temporary and 1% permanent hypoparathyroidism, 3.3% temporary and 1% permanent RLN injury, 1% hematoma and 0.3% infection. Incidental malignancy was higher in total thyroidectomies (9.6% vs. 0.6%, p = 0.004).
CONCLUSIONS: Total thyroidectomy for Graves’ shows an excellent safety profile; even with increasing age and co-morbidities there is a decrease in hospital stay, operative time and complications. β blockers may protect against surgical morbidity.

P130
Non recurrent laryngeal nerve: peroperative finding using neuromonitoring
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Background: A non recurrent laryngeal nerve (NRLN) is an extremely rare anatomical variation and is vulnerable during thyroid surgery. The aberrant course is due to a congenital disorder and is often associated with malformation of the primitive aortic arches.
Methods + Results: We present two female patients, one thirty-seven year old patient and one seventy-four year old patient where a NRLN was observed during thyroid surgery. Neuromonitoring prevented injury to the non recurrent laryngeal nerve thanks to early detection using the intraoperative vagal neuromonitoring. Post-operatively a computed tomography scan (CT-scan) was performed and showed us an associated extra-anatomical course of the subclavian artery well known as a lusorian artery.
Conclusion: The NRLN is an important surgical challenge because unilateral palsy can lead to permanent hoarseness. This anomaly, which is difficult to discover in the pre-operative setting, emphasises the importance of a thorough surgical dissection and the use of intra-operative neuromonitoring.

P131
Experiences of thyroid surgery in children and adolescents
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Background
Total or subtotal thyroidectomy is a therapeutic option for definitive treatment of thyreotoxosis and goitre.
Thyroidecmy with central lymphnode dissection is the standard procedure for thyroid cancer. Here we present our experience from these procedures in children and adolescents.
Patients
58 patients 6–20 years of age, underwent total/subtotal thyroidectomy (53/5) in our department 2006–2011. Mean age was 14.4 years. The gender distribution was 40/18, F/M. 40 had Grave’s disease, 1 toxic nodular oifte, 2 nodular goitre with mechanical symptoms, 1 thyreotoxosis caused by Cordarone, 10 thyroidcancer and 4 underwent prophylactic thyreoidectomy due to MEN II. The parathyroid glands were preserved either in situ or autotransplanted to muscle.
Results
There were no major adverse events in the perioperative period. 43 patients needed calcium substitution at discharge, 15 of these also needed vitamin D. At long term follow up, 7 patients still needed calcium, and 2 of these also vitamin D. There were no clinical signs of damage to the recurrent laryngeal nerve in any patient.
Conclusions
Surgical treatment for thyreotoxosis, goitre and thyroid cancer is a safe therapeutic option in young people. In our department we have concentrated the surgical management of children and adolescents on the hands, which may be favourable.
Normal early postoperative PTH levels predicts normocalcaemia and permits safe day surgery after total thyroidectomy.

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BACKGROUND: Hypocalcaemia after total thyroidectomy has traditionally required 48 hours or longer inpatient monitoring of calcium levels. The use of parathyroid hormone (PTH) levels to predict postoperative hypocalcaemia is well established. This study is focused on the usefulness of a management plan based on postoperative PTH on achieving safe early discharge postthyroidectomy.

PATIENTS/METHODS: A prospective cohort study including 85 patients undergoing total or completion thyroidectomy was performed. Serum PTH level was measured 4 hours postoperatively and used to stratify patients into two groups: normal (> 13 pg/mL) or low PTH (<13 pg/mL).

RESULTS: 25 patients had low PTH levels, 32% of them had symptomatic hypocalcaemia. 60 patients had normal PTH level, 88% were successfully discharged on day 1 without complications or readmissions. Two patients (3.3%) from normal-PTH group had symptomatic hypocalcaemia. Sensitivity, specificity and overall accuracy of PTH test for prediction of symptomatic hypocalcaemia were 80%, 88% and 78%, respectively. No patient suffered permanent hypoparathyroidism.

CONCLUSIONS: A single postoperative PTH measurement allows for accurate prediction of patients at risk of hypocalcaemia. Patients with normal PTH level can be safely discharged on first postoperative day.

Is the second operation after lobectomy to ensure low-risk cancer standard procedure or overtreatment?

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Background

To remove a one-sided nodal goiter it is highly recommended to undergo lobectomy(LT). Sometimes there is found an unexpected carcinoma after the operation. Were an advanced tumor to be found (T2-T4) it would be absolutely necessary to finish the removal of the thyroid gland (TTE) in other words to perform second lobectomy. It is a question whether the next operation is of advantage or useless load for a patient with a low-risk carcinoma?

Patients

We examined retrogradely a number of 6800 patients, who were operated in Department of surgery in Motol-Hospital between years 1999 and 2009. During this time were 5119 TTE (75, 3%) and 1564 LT (23%) performed. Several patients underwent after lobectomy second operation.

Results

Out of 1564 executed lobectomies was 1528 benign and 36 malignant (T1, T2). The majority of these patients underwent second treatment (another lobectomy).

Conclusions

We suggest taking radical approach even for a low-risk cancer patients (complete removal of thyroid gland (TTE)) and we recommend this treatment mainly for patients, who are younger than 60 years old. IGA MZ CR NT/11455-5
P134
Preservation of the parathyroid function in thyroid surgery
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Background
Radical resections for benign and malignant thyroid diseases are associated with increased risk of postoperative hypoparathyroidism. Its debilitating character questions the preference of radical resections and demands the development of measures to preserve the parathyroid function.

Methods
647 patients with benign goiter (n=559) and thyroid carcinoma (n=88) were retrospectively analysed. Patients with preoperative conspicuous parathyroid hormone (PTH) level were excluded. Preoperative, early (day 1) and late postoperative (day 19) PTH and serum calcium levels were examined.

Results
We performed 363 total thyroidectomies, 165 hemithyroidectomies, 78 completion thyroidectomies, 25 Dunhill, and 16 partial resections. Hypoparathyroidism occurred in 159 (26.1%) cases early, in 48 (7.4%) cases late postoperatively. Multivariate analysis revealed that the extent of resection, the level of preoperative PTH and the number of resected parathyroid glands predicted the early postoperative impairment. The late postoperative impairment is predicted by the underlying diagnosis, the preoperative, and early postoperative PTH and the preoperative calcium.

Conclusion
In single center experience, the extent of resection is only associated with early, usually temporary hypoparathyroidism, resolving during 3 weeks after surgery. Permanent hypoparathyroidism occurred independent of the extent of resection and maybe associated to pre-existing unrecognized impairments of the parathyroid function and/or calcium homeostasis, respectively.

P135
Thyroglobulin measurement in FNAB washouts Vs cytology in the diagnosis of lymph node metastases of papillary thyroid carcinoma
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Background. Ultrasound-guided fine-needle aspiration biopsy cytology (FNAB-C) is the most common procedure for diagnosing lymph node metastases from papillary thyroid carcinoma (PTC). The measurement of thyroglobulin in the wash-out of the needle (FNAB-Tg) has been proposed to improve its accuracy.

Methods. FNAB-C was performed on 55 lymph nodes in 38 patients with PTC before initial surgery or during post-thyroidectomy follow up. After obtaining a FNAB-C specimen, the needle was washed with 1.0 ml of saline solution. Levels of FNAB-Tg/serum Tg >1 ng/ml in thyroidectomized patients and FNAB-Tg/serum-Tg ratio >1 in non-thyroidectomized patients were considered positive.

Results. Overall, lymph node metastases were found at final histological examination in 35 cases (63.6%). Overall accuracy, positive and negative predictive values were 80%, 100% and 65%, respectively, for FNAB-C and 93%, 100% and 83%, respectively, for FNAB-Tg. The integration of both methods resulted in 95% overall accuracy, 100% positive predictive value and 87% negative predictive value. One out 4 patients with false negative FNAB-Tg result was correctly diagnosed by FNAB-C. Nine out of 10 non-diagnostic FNAB-C were correctly classified by FNAB-Tg.

Conclusions. FNAB-Tg should integrate but not substitute FNAB-C to detect PTC lymph node metastases. FNAB-Tg is particularly useful in presence of non diagnostic FNAB-C.

P136
Non palpable small thyroid nodules: Is it time to turn off the Ultrasound machines?
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Background: There is considerable controversy whether small ultrasound-detected thyroid lesions (<10 mm) should be further evaluated in the absence of risk factors. The aim of the study was to look at clinical and financial benefit of treating small thyroid nodules.

Methods: Retrospective study of patients referred for a neck USS for thyroid symptoms treated over 5 years in a tertiary referral centre.

Results: Between Jan2006-Dec2010, 287 patients (43M-244F, mean age 52 years, range 13-90) underwent USS for thyroid symptoms. In 77(27%) patients, USS assessment showed a nodule less than10 mm and of these 58 patients underwent USS-guided FNA. Five patients underwent surgery and none were diagnosed with thyroid cancer.

The current UK tariff (neck USS £220, thyroidectomy £2003) extrapolated to these 77 patients amounted to £30800. The cost of intervention with surgery for five patients amounted to £10015. The total cost of investigating and treating 77 patients with non palpable nodule less than 10 mm is averaged at £530 per patient for no proven benefit.

Conclusion: Realizing the outcome of screening and treating non palpable lesions of the thyroid, it well might be better to turn off the USS machines for the small thyroid nodules.
Follicular thyroid carcinoma: actual incidence and clinical behavior

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Background. We aimed to determine the incidence and the clinical behavior of follicular thyroid carcinoma (FTC), which classically accounts for up to 15% of all thyroid malignancies.

Methods. The records of all the patients who underwent thyroidectomy from October 1998 to March 2011 for thyroid malignancies were reviewed. Those who had a histological diagnosis of FTC were included.

Results. Among 4821 patients, 126 (2.6%) had a FTC: 59 had an oxyphilic variant (Hurthle cell carcinoma - HCC). Sixty-four patients had a minimally invasive (MI) and 62 a widely invasive (WI) FTC. MI/WI ratio was 41/26 for usual FTC and 23/36 for HCC (P<0.05). Patients with HCC were significantly older than usual FTC (P<0.005). Patients with WI tumors were significantly older, had larger tumors and more frequently HCC than MI (P<0.05). One patient presented lymph node metastases, 5 distant metastases and 5 recurrent disease. No significant difference was found between WI and MI tumors and between usual FTC and HCC for nodal and distant metastases and recurrence rate (P=NS).

Conclusions. The incidence of FTC is much lower than reported. Aggressive treatment, including total thyroidectomy and radioiodine ablation, should be proposed to all FTC patients. Prophylactic node dissection should not be recommended.

Patterns of lateral nodes metastases do not justify limited therapeutic lateral neck dissection in papillary thyroid carcinoma

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Background. Compartment oriented lateral neck dissection (LND), including levels II-V, is generally performed in patients with lateral neck node metastases of papillary thyroid carcinoma (PTC). Because of the risk of complications, recently more limited selective lateral neck dissections based on preoperative ultrasonographic findings have been proposed.

Methods. All the patients who underwent therapeutic LND (levels II-V) (with/without concomitant thyroidectomy) for PTC between January 2008 and October 2011 were prospectively recruited. Exclusion criteria was the preoperative evidence of node metastases at level II and/or V.

Results. Eighty-seven patients were included. Fourteen underwent bilateral LND. LND-related complications included: 2 self-limiting chyle leaks, 1 bleeding and 1 transient ischemic attack. 101 specimens were analyzed. The mean number of removed and metastatic nodes was 31.6+/−13.5 and 5.1+/−5.6, respectively. Lymph node metastases were found in 47.5%, 70.3%, 69.3% and 19.8% of the cases at level II, III, IV and V, respectively. No significant risk factor for levels II and V metastases was found at univariate analysis.

Conclusions. LND can be accomplished with limited morbidity. Because of the high rate of node metastases at level II and V, even in the absence of any preoperative evidence, limited selective LND are not appropriate for metastatic PTC.
DIFFUSE LARGE B-CELL NON-HODGKIN LYMPHOMA OF THYROID GLAND

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Background
Thyroid lymphoma is very rare. Here, we present two cases of primary diffuse large B-cell lymphoma in female patients involving thyroid gland.

Patients
A 54 years old woman was referred to our Endocrine Unit due to the thyroid swelling and hoarseness. Physical examination revealed gland enlargement. Ultrasonography showed signs of thyroiditis, enlargement of the gland and bilateral cervical lymph nodes with malignant appearance. Tomography demonstrated a mass lesion with a 12x7x6 cm size in the right lobe of the thyroid that surrounds the trachea and larynx. Fine needle aspiration biopsy (FNAB) was reported as consistent with malignant cells, which associate to the anaplastic carcinoma. We performed total thyroidectomy and bilateral neck dissection. The other patient was 76 years old women, who referred to our unit with swelling in the neck, respiratory distress and dysphagia. Ultrasonography showed diffuse enlargement of the thyroid. A FNAB revealed lymphocytic thyroiditis. A mass which invaded the trachea and esophagus, prevertebral space and both common carotid artery was detected on tomography. Total thyroidectomy was performed. Both pathological analyses were reported as B-cell non-Hodgkin's lymphoma.

Conclusions
Thyroid lymphoma is sensitive to radiotherapy. However, total thyroidectomy should be the first choice in patients with severe respiratory distress.

THE GOITER IN THE MEDIEVAL MOSAICS, FRESCOS AND ICONS

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Background. Aim of the work is a presentation of the medieval mosaics, frescos and icons presenting the thyroid gland and the other manifestations of this disease.

Methods. There are mosaics, frescos and icons from Middle Ages (476-1492) which are analyzed. Is it really true that some mystical and other famous personalities had really suffered from various sorts of the thyroid gland disorders? Until today it has not been possible to prove and it's not the subject of this work.

Results. The first illustrations of the persons having enlarged thyroid gland can be found on the Persian, Indian and Roman mosaics and frescos (I-VI AD), and from VI century in the orthodox monasteries. There was a true development of medieval medicine, whilst the monastery hospitals had a lot of persons with goiter coming from the numerous goiter areas. The artists were commissioned for several years to paint frescos and icons in particular monasteries, and the models they used to paint mythical heroes often suffered from goiter.

Conclusions. Intentionally or not, great artists frequently presented characters with enlarged thyroid gland which simply reflected the time and environment in which they lived. The esthetic reasons for such illustrations have the minor importance.

UTILITY OF THYROID PATHOLOGY SCREENING IN FIRST GRADE FAMILY MEMBERS WITH FAMILIAL PAPILLARY THYROID CARCINOMA

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Background. Familial papillary carcinoma involves a greater risk of thyroid pathology. Familial screening for early diagnosis is not always performed. The objective of this study is to evaluate the utility of screening in first grade family members of patients with familial papillary carcinoma.

Material and Method. Inclusion criteria. First grade family members of patients with familial papillary carcinoma. Screening: physical examination, thyroid hormone levels and an ultrasound.

Variables: Patients with thyroid pathology. Utility of physical examination, blood test and ultrasound for detecting pathological cases. Thyroid pathology. Treatment.

Results. 52 family members of which 42 underwent screening (81%). Among the clinical findings 4 multinodular goiters (10%) and three solitary nodules (7%) were found.

Functional study: 3 patients had hypothyroidism and 2 hyperthyroidism.

Ultrasound: multinodular goiter in five cases (12%) and thyroid nodule in six (14%). Cytology was suspicious of malignancy in 3 cases, papillary carcinoma 2, and colloid 1. In 9(21%) surgery was performed. The definitive diagnosis was 3 multicentric papillary microcarcinomas (7%), 3 papillary carcinomas and two multinodular goiter (4%). In short, 12(28%) had thyroid pathology: 6 malignant and 6 benign.

Conclusion. Family screening in familial papillary carcinoma enables both early detection of papillary carcinomas and diagnosis of benign thyroid pathology.
P142
Frequency of postoperative insulin resistance in patients with oral glucose solution submitted thyroidec-tomy.

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Background
The aim of the study was the assessment of postoperative insulin resistance, frequency of subjective hunger affection before operation and nausea and vomiting after operation.

Patients/methods
71 patients were prepared to the operation with oral glucose 12.5% solution administered 12 and 2 hours before operation. The amount of the solution was 400 and 800ml respectively. 44 patients were prepared in traditional way - during the day before the last meal to 10.00a.m. and fluids to 10.00p.m. In both groups the glucose and insulin concentration in blood and insulin resistance rate were examined 24 hours before operation and 12 hours and 7 days after operation. There were assessed the frequency of nausea and vomiting and subjective hunger affection.

Results
There were noticed the statistically significant difference between groups in insulin concentration in blood and insulin resistance rate HOMA-IR and there were no statistically significant difference between glucose concentration after operation. There were observed the statistically significant higher frequency of hunger affection before operation and nausea and vomiting after operation in control group.

Conclusions
The patients preparations with oral glucose solutions causes reduction of postoperative insulin resistance frequency and abridgment of nausea and vomiting frequency in postoperative period.

P144
PAPILLARY MICROCARCINOMA OF THE THYROID: PROGNOSTIC FACTORS OF RECURRENCE

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BACKGROUND: Papillary microcarcinoma of thyroid is a subgroup of papillary thyroid carcinoma measuring 1centimeter or less of diameter. The management is controversial because presents a low mortality but it frequently spreads to the cervical lymph nodes. The aim of this study is to investigate the clinical course and prognostic factors for recurrent disease.

PATIENTS/METHODS: We have done a retrospective review between January 2000 and September 2011 of all patients with diagnosis of papillary microcarcinoma.

RESULTS: During these period 72 patients had a diagnosis of papillary microcarcinoma. 29 of these patients were suspected preoperatively, and 43 were found incidentally. The average age was 49.5 years. Multifocality was found in 33, bilateral microcarcinoma in 20, and extrathyroidal extension in 3 patients. At the time of diagnosis lymph node involvement was found in 13 patients. Median tumor size was 5.8 millimeters. Mean follow-up was 62.7 months. 9 patients had a recurrence or persistence of disease. Lymph node metastasis and extrathyroidal extension at presentation was statistically related with recurrence.

CONCLUSIONS: Despite the overall excellent prognosis for patients with papillary microcarcinoma, this disease was associated with 12% lymph node recurrence rate. Lymph node metastasis and extrathyroidal extension were identified as prognostic factors affecting recurrence.

P143
Lymph Nodes Metastases of the Papillary Thyroid Carcinoma in Realtime-PCR for TG and CK19

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Background:
Correct assessment of the neck lymph nodes (LNs) is very important for the treatment of the papillary thyroid carcinoma (PTC).

Patients and Methods:
The studied group covered 109 LNs from 30 patients with PTC. All LNs were examined by histopathology and realtime-PCR for TG and CK19.

Results:
Metastases were detected in 23 nodes from 9 patients. TG and CK19 expression levels differed vastly between nodes with and without metastases. ddCt of TG in genetic material from NO nodes equaled 9.97 +/- 4.20, while in nodes with metastases ddCt was 0.91 +/- 4.20 (p<0.0001). CK19 showed similar results with expression level (ddCt) in NO nodes of 10.96 +/- 2.58 vs 7.73 +/- 3.63 in nodes with metastasis (p=0.0001). Levels of CK19 and TG were strongly correlated with each other (R=0.48; p=0.0001), although the correlation was evident in samples without metastases (R=0.47; p=0.0001) and absent in samples with metastases (R=0.10; p=0.6623). Evaluation of utility of both parameters showed efficient differentiation of node involvement in case of TG, with area under the ROC curve equal to 0.91 (95%CI 0.85-0.96). The diagnostic efficacy of CK19 was lower (AUC 0.76 95%CI 0.64-0.88). The difference between the ROC curves was statistically significant in favor of TG (p=0.006).

Conclusion: TG is better than CK19 molecular marker for the assessment of the LNs of the PTC.
The role of preoperative Somatostatin Receptor Scintigraphy in Medullary Thyroid Carcinoma.
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Introduction: Medullary Thyroid Carcinoma (MTC) express somatostatin receptors (SSTR). ¹¹¹In-labelled Octreotide binds to SSTR and can be used for scintigraphic visualization of tumors and metastases (Octreoscan). The aim of this study was to investigate if preoperative Octreoscan could serve as a prognostic marker prior to primary surgery.
Patients and Methods: Twenty patients with MTC were examined preoperatively with Octreoscan. Preoperative work-up included s-CEA, s-calcitonin and Computed Tomography of chest and neck. Octreoscan was evaluated and related to tumor stage, Ki67-index, change in tumor markers and survival.
Results: Seventeen of the 20 patients had Octreoscan-positive primary tumors. Sixteen patients had metastatic disease. Octreoscan visualized the metastases in only nine of the patients. Median tumor size was higher in patients with scintigraphic uptake in the primary tumour as compared to patients with no uptake. Furthermore preoperative basal calcitonin and s-CEA was higher in groups with high uptake. We found no relation between uptake and tumor stage, Ki67-index, postoperative reduction of calcitonin or survival.
Conclusion: Octreoscan did not adequately detect metastatic disease in patients with MTC. There was a relation between tumor size and uptake but grading gave no prognostic information. Preoperative Octreoscan prior to surgery of MTC can thus be questioned.

Total thyroidectomy in multinodular goiter: possibility of procedure implementation in a district hospital.
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Background
Increasing number of surgical subspecialities causes general surgical wards staff have little experience with more complex procedures like total thyroidectomy. The aim of this study was to present the outcome of total thyroidectomy following its implementation in a district hospital where such procedure has not been performed previously.
Methods
293 patients were operated on for goiter between 01.10.2008 and 30.09.2011 in the District Hospital in Proszowice by one contracted endocrine surgeon working with 2 operating teams. Hemithyroidectomy was performed in 75 (25.7%) patients and total thyroidectomy in 191 (76.3%) patients for multinodular goiter and only the latter group was subjected for further analysis.
Results
There were no bilateral recurrent laryngeal nerve palsy. A unilateral transient recurrent laryngeal nerve palsy occurred in 6 patients (3.1%; 1.5% per risk) and postoperative hypocalcemia in 29 (15.7%) patients. 2 (1%) patients required wound revision due to a postoperative bleeding. Mean operating time decreased during study period up to 85 minutes during the third year.
Conclusions
1. Total thyroidectomy in a district hospital is still a safe way to operate on thyroid for nonmalignant disorders with low number of complications.
2. Team cooperation learning curve reaches its plateau having completed on average 67 procedures.
P147  
TREATMENT OF PATIENTS WITH CHOLEDOCHOLITHIASIS AND ENDOCRINE DISORDERS

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Endocrine and metabolic disorders leading to formation of stone in the gallbladder and bile ducts. 284 patients with cholecystocholedolithiasis were examined. 210 (73.9%) patients had endocrine and metabolic dysfunctions (main group); Metabolic syndrome in 98 (34.5%) patients, subclinical (74(26.1%) and manifested diabetes mellitus - 49(17.3%), hypothyroidism - 49(17.3%), thyrotoxicosis - 11(3.9%), thyroid nodules - 45(15.8%), etc.

Results. The patients of main group were older (p=0.035) and more often had acute cholecystitis (31.9% vs 18.9%; p=0.033) and purulent cholangitis (34.8% vs 21.6%; p=0.036). Treatment of patients with cholecystocholedolithiasis some steps included: endoscopic biliary procedure, correction of endocrine pathology, gallbladder removal. The endoscopic operations performed at 186(86.6%) patients with endocrine disorders and at 67 (90.5%) patients in control. Simultaneous operations performed in 17(8.1%) persons. There was no difference in postoperative complications (11.0% vs 6.8%; p=0.298) and mortality (1.9% vs 1.4%; p=0.756). Presence of endocrine disorders increased the hospital stay (p=0.001).

Conclusion. Cholecystectomy in patients with cholecystocholedolithiasis and endocrine disorders is favourable to perform after correction of endocrine problems. Simultaneous operation is one of routes to decrease the hospital stay.

P148  
Surgery for recurrent goiter: evaluation of complications and suppressive therapy efficacy in preventing relapse.

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Background

Recurrent goiter (RG) is not uncommon after partial thyroidectomy, whereas total thyroidectomy increases complications. We analyzed complications, first surgery and relapse interval and effectiveness of suppressive therapy in patients undergoing surgery for RG

Patients/methods

231 patients operated for RG between 2005 and 2008 were studied. There were 205 women and 26 men. Mean interval between first and second operation was 25.6 years. After first operation 85 patients received suppressive therapy (group A), 32 were treated with anti-thyroid drugs and were excluded, 92 did not receive treatment (group B), 22 were lost at follow-up. Complications were compared with 200 patients (group C) undergoing thyroidectomy in the same period.

Results

Mean age at intervention for relapse was significantly lower in Group A versus group B: (54.18 vs. 60.8 years). Mean interval between first and second intervention was lower in Group A. Complication rate was similar comparing group A + B vs group C.

Conclusions

Suppressive therapy is unable to reduce the risk of RG or to increase the latency of relapse, and in patients undergoing TSH-suppressive therapy, the interval between the two surgical interventions is shortened. Conversely, redo surgery is not burdened by a higher complication rate.

P149  
Thyroidectomy - a teaching operation

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Background

Thyroidectomy performed in an "old fashioned" way with ligating most of the vessels seems nowadays passe. But no one can deny its teaching potential. This procedure offers a young surgical adept a wide variety of situations where ligature placement has to be prompt and precise. The aim of this study is to track 4 sections of thyroidectomy end evaluate their teaching impact.

Methods

Procedure was divided into 4 parts: 1. opening 2. lobe devascularisation except from inferior thyroid artery and posterior plane 3. ligating branches of inferior thyroid artery and division of posterior plane 4. closing. Three surgical residents who previously haven't assisted for thyroidectomy were included in this study. Each one assisted for 20 thyroidectomies. Each resident was evaluated during procedures for 1. time of ligation knotting, 2. number of slipped ligations, 3. number of ruptured vessels.

Results

Each resident made a progress in ligating vessels. Average ligating time decreased from 26 seconds to 12 seconds, number of slipped ligations decreased from average 4 per operation to 1, number of ruptured vessels decreased from average 3 per operation to 0 (p<0.05).

Conclusions

1. Thyroidectomy is an excellent procedure for teaching residents basic surgical skills.
P150
The early postoperative prevent treatment of hypocalcemia after thyreoidectomy.

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Background
The aim of the study was to prepare the most effective prophylactic guideline to prevent clinical symptoms of hypocalcemia after thyreoidectomy.

Patients/methods
The prospective study includes group of 1650 patients after thyreoidectomy operated during 2009 - 2010 years. In this group there were assessed frequency of clinical symptoms of hypocalcemia according to blood serum calcium concentration and parathyroid hormone concentration marked 6 hours after operation. Moreover effects of oral calcium supplementation in group with decreased calcium concentration were analyzed.

Results
The frequency of postoperative hypocalcemia symptoms was significantly increased in group of patients with decreased calcium concentration in blood, in compare with group with decreased parathyroid hormone concentration. The oral supplementation in group with decreased calcium concentration significantly decreased frequency of postoperative hypocalcemia. The parathryoid hormone concentration wasn’t important for supplementation effectivity. In group of patients, with normal calcium concentrations and without supplementation the hypocalcemia’s symptoms rate wasn’t connected with parathryoid hormone concentration

Conclusions
The calcium concentration in blood direct after operation is more important prognostic parameter than parathyroid hormone concentration. The oral supplementation in group of patients with decreased not parathyroid hormone but calcium concentration lead to diminishing risk of clinical symptoms of hypocalcemia.

P151
Medullary thyroid carcinoma metastatic to the skin: the beginning of widely dissemination of disease

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BACKGROUND
Medullary thyroid cancer can metastatize to locorregional lymph nodes and spreads affecting liver and lungs. Metastases away this places are extremely rare. We report and document a case of medullary thyroid cancer with metastases to the skin as announcement of widely spread of disease.

PATIENTS
48 y-old women, total thyroidectomy due non familial medullary thyroid cancer 25 years earlier.

RESULTS
In 2008 left neck lymph node relapse. Lymphadenectomy was performed and metastatic disease was confirmed. At this time, an abdominal wall lump was removed with pathology report of metastatic medullary thyroid cancer. She was asymptomatic after surgery, and calcitonin levels significantly decreased. In 2010, left inguinal lymph node metastases were diagnosed and removed. Body spread studies were negative. In 2011, she complains with palpable lumps in breast. Pathology was positive for Chromogranin, sinaptotifin, calcitonin, Ki-67. E-Cadherin whereas negative for GCDFP-15, mamaglobulin, strogen and progesteron receptor. PET-scan showed breast, liver, and bone metastases. Nowadays she is asymptomatic with calcitonin levels significantly increased.

CONCLUSIONS
Skin metastases from medullary thyroid carcinoma are very uncommon and could known the advance of early spread disease. It is necessary to investigate new treatments that can improve survival and quality of life in these patients.

P152
Thyroid Papillary Carcinoma, 30 years of experience.

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Papillary carcinoma is the most common histological type of thyroid cancer. The optimal treatment remains controversial, particularly with regard to the papillary microcarcinoma (≤ 10 mm).

The aim of this study is the characterization of patients with this condition undergoing surgery in our hospital over a period of 30 years, evaluating treatment outcomes. Between January 1,1980 and December 31, 2010, a total of 564 patients underwent surgical treatment for thyroid disease, with histological confirmation of papillary carcinoma.

Of these, 461 patients were female (81.7%) and 103 males (18.3%), aged between 12 and 86 years. The presence of papillary thyroid microcarcinoma was found in 209 patients (37%). The morbidity and survival in our series were similar on the published literature.
P153
Paradigm of treatment of Graves’ disease
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The ideal treatment of Graves’ disease is controversial. Surgical treatment is a therapeutic option, whose nominations are still being debated.
This study aims to compare the surgical treatment of this disease performed in this institution, with other referral centers. A retrospective study was performed by analysis of the clinical process, for the period between January 2003 to October 2011. The sample consisted of 45 patients. The variables studied were age, sex, smoking habits, previous therapy with radioiodine, family history of Graves’ disease, duration of treatment with anti-thyroid drugs, and surgical indications. The average age at the time of surgery was 39 years with a maximum of 77, and a minimum of 16. The distribution by sex showed 7 males and 38 females.
In our series the surgical option, in all patients, was a total thyroidectomy. It is a therapeutic option with immediate effect, effective, and taking into account the low morbidity rate in our series, it is a safe procedure with our experience.

P154
Primary hyperparathyroidism in children and young adults
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Background: Primary hyperparathyroidism (pHPT) is a disorder of the parathyroid glands which is characterized by inappropriate secretion of the parathyroid hormone. The disease is common in the adult population, in children and young adults is extremely rare.
Patients/methods: In retrospective study of 522 patients with pHPT who underwent surgery (period 2004-2010), 7 were under age of 19. The following was analyzed: demographic characteristics, length of the disease, clinical presentation, preoperative and postoperative values of parathyroid hormone and serum calcium. Assessment was also conducted for ultrasound and scintigraphic for preoperative localization, as well as the types of operations and histopathology findings.
Results: Four male and three female patients were operated, average age of patients was 15.7 years. Most of the patients were symptomatic prior hospital admission. Mean serum level of calcium was 3.06 mmol/l, and mean PTH level was 620.6 pg/ml with significant decrease after surgery. Five parathyroidectomy of one enlarged parathyroid gland, one double parathyroidectomy and one subtotal parathyroidectomy were performed.
Conclusion: Primary hyperparathyroidism in children and young adults is rare entity. It occurs more frequent in young adults then in children, with slight predominance in male patients. Surgery is a successful method of treatment of these patients.

P155
Bisphosphonates and parathyroidectomy for hyperparathyroid crisis: Excellent short and long-term outcomes
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Background: Clinicians have been reluctant in using bisphosphonates in optimization of hyperparathyroid-induced hypercalcemic crisis because of concern of severe post-operative hypocalcaemia. Patient and Methods: Review of 177 patients of advanced primary hyperparathyroidism (PHPT) who underwent parathyroidectomy at a single institution from 1991 to 2010 was performed. All patients with serum calcium ≥14mg% (≥3.5 mmol/L) were included in hypercalcemic group
Results: We observed a higher incidence of hypercalcemic crisis in patients with pHPT who underwent surgery (period 2004-2010), 7 were under age of 19. The following was analyzed: demographic characteristics, length of the disease, clinical presentation, preoperative and postoperative values of parathyroid hormone and serum calcium. Assessment was also conducted for ultrasound and scintigraphic for preoperative localization, as well as the types of operations and histopathology findings.
Results: Four male and three female patients were operated, average age of patients was 15.7 years. Most of the patients were symptomatic prior hospital admission. Mean serum level of calcium was 3.06 mmol/l, and mean PTH level was 620.6 pg/ml with significant decrease after surgery. Five parathyroidectomy of one enlarged parathyroid gland, one double parathyroidectomy and one subtotal parathyroidectomy were performed.
Conclusion: Primary hyperparathyroidism in children and young adults is rare entity. It occurs more frequent in young adults then in children, with slight predominance in male patients. Surgery is a successful method of treatment of these patients.
Cosmetic Aspects in Minimally Invasive Parathyroidectomy: Is the Minimally Invasive Approach Superior?

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Background: The aim of this study was to determine whether minimally invasive parathyroid surgery has any positive impact on patient satisfaction and cosmesis.

Patients/methods: This case control study included 58 parathyroidectomized patients, who had been operated between January 2006-December 2008. A total 28 returned for long-term follow-up assessment. All patients were called back for at least 8 months after surgery. Demographics were recorded. Minimal invasive parathyroidectomy vs. conventional parathyroidectomy were compared by means of skin features (using Fitzpatrick’s classification), results of patient and independent observer scar assessment scales and photographic scar analysis by the blinded plastic surgeon.

Results: There were no differences in demographics and Fitzpatrick’s classification between both groups. As expected, incision length of the minimal invasive group was significantly shorter (2.6 ± 0.5cm vs. 4.9±1.0 cm, p<0.05). Meanwhile, no significant difference in patient satisfaction between groups was recorded. There was also no significant difference in photographic scar analysis between groups, while independent observer scar assessment scale scores were lower in the minimal invasive group (p<0.05).

Conclusion: Although superior results of independent observers, assessment of cosmesis by the plastic surgeon and the patient him/herself revealed no superiority of the minimally invasive approach, when compared to conventional parathyroid surgery.

Intraoperative parathyroid hormone monitoring during minimally invasive parathyroidectomy: Does it really help?

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Background: Intraoperative intact parathyroid hormone (IOPTH) monitoring has been used during minimally invasive parathyroidectomy (MIP) to assure cure. The aim of this study was to evaluate the assay added-value to surgical decisions during MIP.

Patients/methods: A retrospective cohort study of 380 patients with primary hyperparathyroidism undergoing MIP with IOPTH monitoring. The results of subtraction 99m-Tc-sestamibi scintigraphy with ultrasound of the neck for localization of parathyroid adenoma were reviewed and compared with findings at surgery and results of IOPTH monitoring. Primary outcome of the study was IOPTH added-value to surgical decisions.

Results: Use of IOPTH monitoring had influence on surgical decisions in 7 of 218 (3.2%) patients with concordant vs. 25 of 162 (15.4%) patients with discordant results of preoperative imaging studies (P<0.001). Miami criterion of IOPTH monitoring applied in this study had 97.4% overall accuracy, 97.8% sensitivity, 91.7% specificity, 99.4% positive predictive value, and 73.3% negative predictive value.

Conclusions: Use of IOPTH during MIP can be recommended in patients with discordant results of preoperative imaging but in patients with concordant results of these tests a higher number of negative conversions to bilateral neck explorations with only a marginal improvement in the success rate of primary operations should be expected.
Parathyroid surgery in the era of minimally invasive surgery: Experience from a district general hospital.

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Background:
The aim of this study was to determine the outcomes of minimally invasive parathyroidectomy (MIP) compared to bilateral neck exploration (BNE) for primary hyperparathyroidism in a district general hospital.

Patients/Methods:
Review of prospectively maintained database of a single surgeons’ practice for outcomes of MIP and BNE between August 1999 and December 2010. MIP was adopted in 2006.

Results:
368 patients underwent surgery; BNE (n=314) and MIP (n=54). 92 patients underwent preoperative localisation; ultrasound (n=92) and 99Tcsestamibi (MIBI) scan (n=91). Localisation from ultrasound and MIBI were noted in 65%(n=60) and 71%(n=65) respectively; however, concordance between scans was noted in only 59% (n=54). Conversion rate with MIP was 9% (n=5). Overall cure rate was 97%. Intention-to-treat analysis, based on preoperative imaging, showed cure rates of 96% with BNE and 98% with MIP (p=0.53), whereas intention-to-treat analysis, based on surgical approach, showed cure rates of 96.5% with BNE and 96.3% with MIP (p=1.0).

Conclusions:
Overall cure rates for both BNE and MIP are well within acceptable range. Cure rates were neither influenced by performance of imaging, nor by surgical approach. MIP is suitable in only 60% of patients undergoing preoperative localisation scans. BNE is, therefore, indispensable in this era of MIP.

Optimizing Preoperative Methods to Achieve Minimally Invasive Parathyroidectomy. A Single Centre Experience

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Background:
For years the standard operative parathyroidectomy approach was a bilateral full exploration of all four glands. Nowadays, minimally invasive parathyroidectomy (MIP) is accepted as an alternative for treatment of primary hyperparathyroidism. MIP has similar results to bilateral neck exploration (BNE), using a combination of preoperative Tc Sestamibi scintigraphy(TSS) and cervical US.

Patients/Methods:
83 patients underwent parathyroidectomy for primary hyperparathyroidism (single gland disease) from January 2007 to December 2010 at our Hospital. Patients were investigated with TSS and cervical US performed by a single radiologist. An immediate preoperative US was performed in the operative room.

Results:
In 71 of 83 patients, cervical US and TSS successfully made the localization. These patients underwent MIP. 12/83 patients, due to disagreement between preoperative US and TSS findings, immediate preoperative cervical US in the operative room was performed by the same radiologist. MIP was performed in 6 of those patients while the rest underwent BNE.

Conclusion:
Combined preoperative localization studies leads to a successful minimally invasive surgical treatment of primary hyperparathyroidism in single gland disease. Since we do not have the ability to measure intraoperative serum PTH levels, we perform immediate preoperative US in the operation room with success up to 96% in single parathyroid adenomas.
P160
THYROID SUPPRESSION IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM: DOES IT IMPROVE THE PREOPERATORY LOCALIZATION?
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BACKGROUND: The scintigraphy with Tc-sestamibi is the gold standard for the localization of the parathyroid adenoma. It has been suggested that the improvement in parathyroid visualization is related to a decrease in thyroid sestamibi uptake. The purpose of this study is to revise our experience in patients with HPTP and negative MIBI who underwent suppression with thyroxine.

PATIENTS AND METHODS: Between January 2006 and July 2011, 19 patients with diagnosis of HPTP and preoperative study with negative MIBI were treated with thyroid hormone. We revised the findings of MIBI after the suppression of the thyroid function and the correlation with the surgical intervention and the morphologic characteristics of the adenoma.

RESULTS: The mean of TSH at the moment of carrying out the scintigraphy after thyroid suppression was 0.15 ± 0.1 mIU/L. In 14 cases the scintigraphy with the subsequent treatment with thyroxine was positive and in 5 cases was not localizing. In all the cases in which MIBI was positive after the suppression the affected gland was found in the expected location.

CONCLUSIONS: The suppression of the thyroid function with thyroxine may increase the sensitivity of MIBI in patients with negative studies. This diagnostic strategy can help the treatment for patients with HPTP in a minimally invasive approach.

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LARGE PARATHYROID ADENOMAS: Clinical and surgical implications in the era of minimally invasive parathyroidectomy
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BACKGROUND: Large parathyroid adenomas (size > 2.5 cm, weight > 2.0 gr) pose certain therapeutic challenges.

Patients and Methods: From January 2008 to December 2010, among 126 patients, 17 patients (11F/6M, median age: 59) exhibited large parathyroid adenomas (group A). Demographics, symptom duration, operative time, complications, and surgical cure were compared to patients with smaller adenomas.

47F/11M (median age: 53.5) (group B)

Results: Female/Male ratio was 4.2 (group B) decreasing to 1.8 (group A). Patients of the latter group were older (median age: 59 vs median age: 55) and exhibited significantly longer duration of symptoms (23 months vs 4 months). Operative time was significantly longer for group A (median OR time: 50 min vs 32 min, p<0.05). Median tumor weight/size in group A was 2600 mg/2.2 cm, range: 2000-4960/2-4. Two transient symptomatic hypocalcemic episodes were noted in group A (11.7%) vs 8 in group B (13.8%). No permanent laryngeal nerve injury was encountered. At a median follow up of 12.5 months, we had one case of recurrent hyperparathyroidism in group B and none in group A.

Conclusions: Patients with large adenomas are older and experience longer duration of symptoms. Focused parathyroidectomy is safe, feasible and provides permanent biochemical cure with the expense of a slightly lengthier operative time.

P161
Totally endoscopic parathyroidectomy, the first results in Belgium.
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Times are changing, and undoubtedly it is the progress of imaging studies that has modified the surgical management of patients with primary hyperparathyroidism and helped the development of new surgical techniques. Today, the development and the reported efficacy of non-invasive techniques have tempted many endocrinologists and many surgeons to also order some of these new non-invasive techniques on patients undergoing first-time parathyroidectomy. Moreover, more than half the surgeons performing parathyroid surgery now consider that bilateral parathyroid exploration is no longer the only option in all patients with primary hyperparathyroidism. Patients presenting with solitary adenoma must be considered as candidates for new limited surgical procedures. This emphasizes the current role of preoperative localization studies in the surgical management of patients with primary hyperparathyroidism. We describe the first experience in Belgium concerning totally endoscopic parathyroidectomy, a technique offered to all patients who present with a unilateral posteriorly localized parathyroid adenoma, confirmed by concordant results on ultrasonography and scintigraphy/SPECT-CT.

P163
DOUBLE PARATHYROID ADENOMAS: HOW MANY OF THEM ARE DIAGNOSED PREOPERATIVELY?
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BACKGROUND: Double adenomas have been reported to occur in 3% to 12% of patients undergoing operation for primary hyperparathyroidism. Diagnosis of doubles adenomas should be available before surgery thus preventing staged surgery with higher complicated rates.

The aim of this study was to investigate the sensitivity and specificity of 99mTc-sestamibi as a preoperative localization method in these cases.

PATIENTS AND METHODS: Between October 2001 and November 2011, a total of 12 patients were found to have double parathyroid adenomas. The technique was a single dual-phase using 99mTc-sestamibi and a subtraction technique with 99mTc-pertechnetate. Imaging data were correlated with surgical results.

RESULTS: In 6 of 12 patients with primary hyperparathyroidism, double adenoma could be suspected preoperatively. Ultrasound was only performed in 6 cases and predicted the doubles adenomas in 2. If we consider only the last 5 years, 99mTc-sestamibi showed a sensitivity of 71.4%.

CONCLUSIONS: The sensitivity of 99m Tc-sestamibi for detection of double adenomas has increased significantly in the latest years. With the improvement of image techniques most of these patients will undergo surgery with an accurate preoperative diagnosis.
Intraoperative PTH Cut-Off Definition to Predict Successful Parathyroidectomy in Secondary/Tertiary Hyperparathyroidism

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Background: Several methods have been proposed improving the ultimate success rate in parathyroid surgery. In this study, intraoperative PTH (iOPTH) was proposed as an additional technological adjunct tool to avoid missing glands.

Patients/Methods: 85 patients submitted to total parathyroidectomy with intramuscular presternal autotransplantation 04/2000-10/2009, evaluated throughout 26.5 months and divided in secondary (dialysis treatment) and tertiary (renal-grafted) hyperparathyroidism. IOPTH was measured in anesthesia induction and 20 minutes after parathyroidectomy (Elecsys-PTH-Immunosassay/Roche). Data presented as average.

Results: Fifty-two were dialysis patients (29female/23male), aged 42.9 (14-64). In cured dialysis patients, IOPTH basal=1.613 pg/mL (318-4659), 20'+215 pg/mL (29-823) with 85.95% (67.8-93.5%) decrease. IOPTH prevented surgical failure in 2 patients, in whom 58.5% and 51.8% IOPTH drop was considered insufficient. Surgical exploration was continued and a supernumerary parathyroid gland was removed in both. Surgery failure was observed in 2, in whom IOPTH drop was 62% and 67.4%. Thirty-three patients were renal-grafted (19female/14male), aged 43.4 (24-63). IOPTH basal=533.5 pg/mL (120-2515), 20'+667 pg/mL (13-329) with 86.9% (72.6-94.3%) decrease. All 62 patients were cured.

Conclusion: IOPTH is a useful tool in surgical treatment of secondary/tertiary hyperparathyroidism, and 70% decrease or over baseline at 20 minutes predicted successful removal of hypersecretory parathyroid glands.

PARATHYROID CARCINOMA AND HUNGRY BONE SYNDROME:
CASE REPORTS

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We hereby report two patients with parathyroid carcinoma presenting extremely high calcium and PTH levels, severe bone disease and palpable neck mass at diagnosis. They both underwent parathyroidectomy, one of whom evolving to lung metastasis. Important hypocalcemia was observed after surgery in both, after parathyroidectomy in one patient, and only after metastasis surgical removal in the other. Both required intravenous calcium replacement, thus revealing the hungry bone syndrome. Hungry bone syndrome usually reflects the rapid mineralization after correction of hyperparathyroidism state. The more severe the bone disease is before surgery, the more prone the patient is to hungry bone syndrome after surgery. Despite being an unfavorable outcome, the hungry bone syndrome state suggests that surgical removal of hypersecretory parathyroid tissue was accomplished. In this study, hungry bone syndrome was observed in both patients, who presented with severe bone disease prior to surgery. Hungry bone syndrome would be expected in successful parathyroid carcinoma post-operative.
P168
Cryopreservation of parathyroid glands with a view of autologous replantation

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The first successful cryopreservation of the parathyroid tissue in humans was the first published in 1977. Many authors from around the world publish the results of treatment of hyperparathyroidism by parathyroidectomy. His published works are discussed in the context of cryopreservation, but instead of graft implantation. Most authors see as the basis for autotransplantation therapy of the parathyroid hyperplasia in nephropathy patients, patients MEN1A syndrome.

Another indication is the iatrogenic hypoparathyroidism after total thyroidectomy, which can be based on monitoring of parathyroid hormone intraoperative determine whether the persistent (i.e. PTH within 10 minutes will drop by 80%), with calcium levels below normal for 6 months and persisting decrease of PTH. Then, even at primary surgery can remove the parathyroid tissue cryopreservation for further use in a given patient.

In our conditions, the methodology for the cryopreservation of tissues chosen based on previous experience with tissue cultures, and results of published experiments on the transplantation of autologous parathyroid glands.

Thanks so far proven results, patients suffering from secondary or tertiary hyperparathyroidism, or iatrogenic hypoparathyroidism after total thyroidectomy opens the possibility of regulation of calcium and vitamin D in the body after the intervention of the parathyroid tissue.

P169
Mediastinal parathyromatosis as a cause of primary hyperparathyroidism

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INTRODUCTION: Parathyromatosis is a rare cause of primary hyperparathyroidism and is due to hyperfunctioning parathyroid tissue distributed throughout the neck or mediastinum. The purpose of this case is to describe the imaging appearance of parathyromatosis and the potential utility of videothoracoscopy surgery for the resection.

CASE REPORT: 36-year-old woman with a diagnosis of primary hyperparathyroidism was referred for surgical treatment. The SPECT-TC showed one abnormal focal accumulation localized in anterior mediastinum. The patient was operated by a videothoracoscopic approach and we did not identify the adenoma. We performed an extensive lymphadenectomy and partial thymectomy. Parathyromatosis was confirmed by the pathological study. The patient's calcium and parathormone levels became normal during the postoperative course and she remains normocalcemic 6 months after the procedure.

DISCUSSION: Mediastinal parathyromatosis is a rare cause of primary hyperparathyroidism. Accurate localization of the adenoma in a preoperative study mainly through scintigraphy with SPECT-TC has become the main tool to success with these patients. The endoscopic surgical procedure with videothoracoscopy performed in qualified experienced centres and with broad experienced surgeons is well tolerated and safe in this cases.

P170
Prolactin Receptor expression and functionality in Primary Hyperparathyroidism.

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Primary hyperparathyroidism is a common endocrine disorder frequently affecting postmenopausal women, thus suggesting the involvement of female hormones and/or their receptors in the tumour development. In this study we have investigated expression of the prolactin receptor (PRLR) in a panel of parathyroid tumours, as well as functionality in vitro in cultured parathyroid tumour cells. High levels of the prolactin receptor gene (PRLR) transcripts were demonstrated in parathyroid tissues as compared to other reference tissues. PRLR products were highly expressed in all parathyroid tumours. In parathyroid tumours subcellular localization of PRLR was revealed in the cytoplasm, the plasma membrane and/or enlarged lysosomes, as compared to normal parathyroid rim in which PRLR was confined to the cytoplasm and granulae. Short-term cultured human parathyroid tumour cells we observed that 200 g/L prolactin may stimulate parathyroid hormone secretion without altering the intracellular Ca2+ levels. Moreover, prolactin stimulation was associated with transcriptional changes in JAK/STAT, RIG-I like receptor and type II interferon pathways as documented by gene expression profiling. In conclusion, the prolactin receptor was found highly abundant in the human parathyroid gland, aberrantly expressed in parathyroid tumours, and functionally responsive to physiological levels of prolactin.

P171
Parathyroid adenoma within third branchial cysts: a rare case of primary hyperparathyroidism.

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Background: primitive thymus and inferior parathyroid derive from the third branchial cleft. Along embryonic development these structures come down to their final localization. Third branchial cleft anomalies usually are shown as fistula, abscess or cyst. However, there are no reports about parathyroid adenomas in literature, instead of being a morphological possibility.

Patient: A 47 years old man, with recently diagnosed arterial hypertension, presented a cervical mass at the edge of the lower third of the sternocleidomastoid. The mass had a cystic walled appearance in the ultrasound. Laboratory analysis only revealed a PTHi of 140,5 pg/mL. Sestamibi study showed a probable parathyroid adenoma in anterior mediastinum.

Results: During the operation a tract from beyond the superior thyroid pedicle to the superior mediastinum was dissected and removed. Within the inferior end of the tract a brown mass was visible. Pathological diagnosis revealed a thymus cyst and a parathyroid adenoma within it.

Discussion: In this case the primal alteration was the lack of division between thymus and inferior parathyroid gland and the prompt stoppage of their development. In that situation a parathyroid adenoma grew by chance.
Genetic Characterization of Large Parathyroid Adenomas

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Large parathyroid adenomas (LPTAs) are poorly defined subgroups of adenomas with pronounced clinical manifestation. We defined LPTAs as the 5% largest (≥ 4 grams) sporadic parathyroid adenomas identified among the 590 cases operated in our institution during 2005-2009. LPTAs had significantly higher total plasma and ionized serum calcium levels (P<0.001) and a relatively higher number of male cases. Twenty-one LPTAs were selected for this study. Immunostaining revealed low MIB-1 proliferation index (<1.5%) with total or partial loss of parafibromin expression in 9 tumors, two of which also showed loss of APC expression. Mutation screening identified MEN1 mutations in 5 cases and one HRPT2 mutation. Array-CGH demonstrated recurrent copy number alterations most frequently involving loss in 1p (29%), gain in 5 (38%) and loss in 11q (33%). While gain of chromosome 5 was the most frequent alteration observed in LPTAs, it was only detected in a small proportion (2/58 cases) of parathyroid adenomas (<4 grams) using qPCR. A significant positive correlation was observed between parathyroid hormone level and total copy number gain (r = 0.48, P = 0.031). These results support that LPTAs represent a group of patients with pronounced parathyroid hyperfunction and which is associated with specific genomic features.

Non-functional parathyroid carcinoma in the setting of Multiple Endocrine Neoplasia type 2A

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INTRODUCTION
Parathyroid carcinoma is a rare malignancy. It has been associated with hyperparathyroidism-jaw tumor syndrome, familial isolated primary hyperparathyroidism and multiple endocrine neoplasia syndromes type 1 and 2A.

CASE REPORT
We report a 54-year-old man with a family history of multiple endocrine neoplasia type 2A. The genetic study revealed a heterozygous mutation (Cys618Arg) in exon 10 of the oncogen RET. He has already underwent a surgery to remove a pheochromocytoma. Laboratory tests showed normal calcitonin, calcium and parathormone serum levels. A prophylactic total thyroidectomy with central lymphadenectomy was performed. The histopathological examination of the tumor revealed a parathyroid carcinoma with one positive lymph node metastasis. There was no evidence of medullar thyroid carcinoma.

DISCUSSION
Multiple endocrine neoplasia type 2A is an autosomal dominant disorder characterized by medullar thyroid cancer, pheochromocytoma and primary parathyroid hyperplasia. To our knowledge, only one case of parathyroid carcinoma has been reported in this syndrome. This patient represents a variation of the multiple endocrine neoplasia type 2A characterized by the simultaneous occurrence of parathyroid carcinoma and pheochromocytoma. It is a rare case both because of its clinical presentation as a non-functional parathyroid carcinoma, and because it appears in the setting of multiple endocrine neoplasia type 2A.
P174
Case report: Retroclavicular parathyroid adenoma in a patient with advanced ankylosing spondylitis
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Background: Ankylosing spondylitis, also known as Bekhterev's disease, is a chronic inflammatory, systemic rheumatic disease, mainly affecting the axial skeleton and leading to progressive stiffness of the spine.

Patients/Methods: We report the case of a 66-year-old male patient with ankylosing spondylitis as well as primary hyperparathyroidism. With a serum calcium of 3.03 mmol/l and a parathyroid hormone of 213.0 pg/ml, he suffered from progressive renal insufficiency due to nephrocalcinosis.

Results: Due to a maximum kyphosis and stiffness of the cervical spine, with the mandible fixed right above the sternum, a classical cervical approach was not feasible. Thus the patient had not been referred to surgery for a long time. Calciimetic medication had not been tolerated. Primary operation after a negative sestamibi-SPECT-CT and a questionable CT-scan failed. Eventually, a CT-scan with 3D-reconstruction and a C11-methionine-PET-CT localized the parathyroid adenoma on the right side, paratracheal and dorsal of the sternoclavicular joint. Via a retroclavicular approach, a hyperplastic parathyroid adenoma of 2 cm was resected. Postoperative parathyroid hormone dropped to 10.7 pg/ml. Conclusions: This case supports the requirement of exact and reliable preoperative localization studies for primary hyperparathyroidism reoperations and extraordinary anatomic settings.

P175
Presentation and outcome after surgery for sporadic primary hyperparathyroidism under an 18-year period
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Background: Is there a trend towards operating on patients with milder disease and does it reflect in a change of preoperative parameters and postoperative outcome?

Patients/methods: Data on 405 consecutive patients with sporadic pHPT subjected to first time surgery between 1989-2006 were analyzed. Pre- and postoperative levels of serum calcium, PTH, adenoma weight, glomerular filtration rate (GFR) and bone mineral density (BMD) in three time periods: 1989-1994, 1995-2000 and 2001-2006 were compared.

Results: Median age was 65 years, median preoperative ionized calcium level 1.50 mmol/l. Over the study period, preoperative ionized calcium levels and adenoma weight both decreased (p<0.005), whereas PTH levels, GFR and preoperative BMD were unchanged. There were no differences in postoperative renal function nor in BMD at one year across the study period.

Conclusion: Patients with pHPT had smaller adenomas and lower preoperative calcium levels in later time periods. Preoperative kidney function, measured as GFR, and bone mineral density, did not change over time. There was no apparent change in outcome regarding renal function or bone density.

P176
Dwarfs and giants of parathyroid adenomas – no difference in outcome
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Background. Single adenomas are found in the vast majority of patients with primary hyperparathyroidism (PHPT). Arguably the size of the adenoma influences the success rate of localisation studies and the cure rate.

Methods. Data were retrieved from a prospective database.

Results. Of 680 PHPT patients operated over the last decade, two groups of patients were identified based on the extreme 10% of their adenomas’ weight distribution curve: < 300 mg ("dwarfs", n=96) and >3000mg ("giants", n=69). There was no historical trend for the incidence of dwarf adenomas (23/173(13%, 2000-04) vs. 36/217(17%, 2007-11)). There was only a trend towards more severe biochemical abnormalities associated with giant adenomas ([Ca] 3.07±0.32 vs. 2.84±0.17 mmol/l, PTH 39.3±41.0 vs. 14.4±13.8 pmol/l, p=NS).

Significantly more patients with larger adenomas had scan-directed parathyroidectomy (46/69(67%) vs. 37/96(39%)). Persistent disease was diagnosed in three patients with small adenomas and all were cured after a second operation (median follow-up 13 months). Patients with giant adenomas had no recurrence (median follow-up 18 months) even though eight patients had histological features suggestive of atypical/malignant tumours.

Conclusion. Preoperative biochemistry is a poor predictor of adenomas’ size even at the extremes of the distribution curve. Cure rate is not influenced by extreme adenomas’ size.
Preoperative echocardiographic findings in patients operated for primary hyperparathyroidism

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Background: Primary hyperparathyroidism may affect cardiac function. Our objective was to evaluate the results of preoperative echocardiography in patients operated for primary hyperparathyroidism.

Methods: All primary hyperparathyroidism patients undergoing parathyroidectomy during a 3-year period were included in this prospective study. Cases with recent myocardial infarction, arrhythmia, valvular disease, pulmonary hypertension or history of pulmonary embolism were excluded. Evaluated echocardiographic parameters were: left ventricular ejection fraction (LVEF), pre-ejection period (PEP), ejection period (EP), aortic velocity time interval (VTI), isovolumetric relaxation time (IVRT), maximum (Pmax) and mean (Pmean) transvalvular aortic pressure gradient, maximum (Vmmax) and mean (Vmmean) aortic velocity, left ventricular diastolic volume (LVDV), left ventricular systolic volume (LVSV), left ventricular diameter (LVD) and left atrial diameter (LAD).

Results: Eighty-eight patients were included. Nine cases (10.2%) had decreased LVEF. 14 (15.9%) elevated LAD and 18 (20.4%) elevated LVD. Preoperative PTH had a negative correlation with EP (p=0.01), VTI (p=0.001), Pmax (p=0.003), Pmean (p=0.004), Vmmax (p=0.002) and Vmmean (p=0.003) and positive association with LAD (p=0.01). Additionally, 25(OH)VitD3 was negatively correlated with LVD (p=0.001).

Conclusion: A substantial proportion of primary hyperparathyroidism patients have cardiac impairment. Such dysfunction has positive correlation with PTH and negative correlation with 25(OH)VitD3.

Persistently Primary Hyperparathyroidism Caused by a Double Adenoma with an Undescended Parathymus

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Introduction: "Parathymus" are inferior parathyroid glands originated from the third pharyngeal pouch, as the thymus, arrested during their migration. Adenomas of such undescended glands are a rare cause of primary hyperparathyroidism, but they may not be uncommon among patients who have already had a failed cervical exploration.

Case report: 40-year-old man with a diagnosis of primary hyperparathyroidism was referred for surgical treatment. A preoperative Sestamibi scan demonstrated a right inferior parathyroid adenoma. A right superior descended adenoma weighing 1.8 g was removed. In an analytic control 6 month after the surgery persistent hyperparathyroidism was found. An ultrasound and Sestamibi scan was performed and failed to reveal a parathyroid adenoma. A MR image appreciated a cervical mass posterior to the submaxillary gland. New intervention was performed, removing an undescended right parathyroid adenoma weighing 12 g.

Discussion: Undescended parathymus, although is a rare cause of primary hyperparathyroidism, is the caused of a 10% of failed cervical explorations. It is important taking into account of that possibility when the adenoma is not localized, extended the dissection to these theoric localizations. Because of the improvement of localization techniques, Sestamibi-scan and MRI, preoperative localization of these adenomas decreased the persistent hyperparathyroidism cases.

Fully Robotic Parathyroidectomy using the Lateral Endoscopic Approach: an innovative technique.

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Background: Since several years minimal invasive surgery has found its place in endocrine surgery. For primary hyperparathyroidism a broad spectrum of techniques are available.

Methods: The authors describe the first fully robotic parathyroidectomy performed using the lateral endoscopic approach. This technique has been used since January 2010 in our center and has been modified using the Da Vinci robot. For this procedure a 30° angled 8,5 mm scope has been used together with 2 5mm working ports for a debakey forceps and monopolar hook cautery respectively. The operating time was not significantly prolonged using the robot.

Results: There was no difference in outcome and esthetic result was comparable with the non-robotically performed procedures.

Conclusion: The benefits using the Da Vinci robot are multiple: a magnified and more detailed image, rotation liberty inside the working space and surgeon’s comfort, but last but not least a smaller learning curve. The patient is taking maximal advantage by the symbiosis between thorough medical knowledge, teamwork, and advanced highly specified technology.
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THYROID HEMIAGENESIS AND BILATERAL PARATHYROID ADENOMA

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Background: We present a 66 year old patient with right thyroid hemiagenesis and double parathyroid adenoma one on the side of hemiagenesis and the other on the side of present lobe.

Methods: The patient came to our Clinic because of pain in the neck and was diagnosed a primary hyperparathyroidism with elevated parathormon as well as Hashimoto thyroiditis with high level antibodies. Ultrasound and technetium sestamibi scintigraphy determined the absence of the right lobe but not adenoma of parathyroid glands.

Results: The patient underwent exploration of the neck which confirmed right thyroid hemiagenesis. Left lobostmectomy was performed with excision of left inferior parathyroid adenoma. Five months after, parathormon level was still increased with calcium values at the upper limit. Sestamibi scintigraphy was performed again which showed increased accumulation of MIBI in the projection of the right lower parathyroid gland. We performed reexploration of the neck and excision of the right upper parathyroid adenoma. After surgery we observed a normalization calcium and parathormon value.

Conclusions: Thyroid hemiagenesis is a rare anomaly. The first to describe this anomaly was Handfield Jones in 1852. From available literature we have not found the case that described double parathyroid adenoma on the side of thyroid hemiagenesis.

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Weight of parathyroid glands and correlation with PTH, age and gender in patients with secondary hyperparathyroidism

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Background: A positive correlation between parathyroid gland weight (PGW) and preoperative PTH levels and female gender and a negative correlation between weight and age in patients undergoing initial parathyroidectomy (PTX) for secondary hyperparathyroidism (sHPT) is reported in several studies, each objectifying these findings in a larger cohort of patients.

Results: 475 patients were analyzed (A: n=88; B: n=172; C: n=108; D: n=62; E: n=45). Mean total PGW was 1269±55mg (A), 2841.7±134mg (B), 4852.1±115mg (C), 6708.1±72mg (D) and 1976.9±648mg (E). Mean PTH levels were 48.3±1.05years (B), 50.0±1.38years (C), 50.2±1.71years (D) and 48.3±1.05years (E). The female/male ratio was 1.3 (A), 0.95 (B), 0.66 (C), 0.82 (D) and 0.96 (E). Statistical analysis revealed no correlation between preoperative PTH levels, age or gender with total PGW.

Conclusions: Total PGW is not predictable by preoperative PTH values. Neither female gender nor age correlate with PGW in patients who undergo PTX for sHPT.

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EFFICIENCY OF MINIMALLY INVASIVE VIDEO ASSISTED PARATHYROIDECTOMY

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BACKGROUND: To reduce the price, minimize the incision, extent of exploration and length of hospital stay associated with parathyroidectomy have resulted in the development of a number of new surgical techniques, including minimally invasive video assisted. All of the new surgical techniques necessitate pre-operative localization.

PATIENTS/METHODS: We have diagnosed primary hyperparathyroidism in 22 patients since February 2010. For pre-operative localization we have used ultrasound and sestamibi scan. In 7 (31%) cases due to localization procedures we find solitary gland disease, these patients were performed minimally invasive video assisted parathyroidectomy. In other cases results of localization procedures were equivocal.

RESULTS: We have chosen central access to perform minimally invasive video assisted parathyroidectomy which allows a bilateral exploration of the neck when necessary and quick conversion. The mean operative time of the procedure was 56.2 min (ranging from 45 to 72 min). We didn’t perform conversion to conventional neck exploration. After operation all patients were hypo- or normocalcaemic. All removed parathyroid tumors were adenosas. CONCLUSION: We have received satisfactory results using minimally invasive video assisted parathyroidectomy; it means that precise pre-operative localization is critical for efficient surgery especially on the early introduction of minimally invasive parathyroid surgery.

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Secondary hyperparathyroidism and subtotal parathyroidectomy as treatment option

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The hyperparathyroidism (HPT) is a secondary condition with increasing prevalence. The non-surgical option has gained validity, especially with the introduction of new drugs that interfere with the pathophysiological mechanism of the disease, leading to a smaller number of patients operated. However, the long-term monitoring seems to demonstrate the failure of this attitude in some cases and surgery continues to be the solution. The subtotal parathyroidectomy, arises between the surgical options for treatment of secondary hyperparathyroidism, as for our institution, the more rational.

Retrospective study of clinical process analysis of 210 patients operated on for secondary HPT in the period between 1 January 1993 and 31 October 2011. 43 patients were excluded for inadequate records, leaving the follow-up.

Variables analyzed were grouped based on clinical, biochemical and imaging.

A subtotal parathyroidectomy was performed in 154 patients, subtotal parathyroidectomy 6 and 7 in aggregation of parathyroidectomy. Recurrence was observed in 10 cases and persistence of disease in other 10 patients. The postoperative complication was the most frequent symptomatic hypocalcaemia, 31 patients, followed by wound infection, 5 patients. The Subtotal parathyroidectomy remains a valid treatment option for the treatment of secondary HPT coursing with a low morbidity, recurrence and persistence of disease.
P184
Prognostic Factors for Primary Adrenocortical Carcinoma
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Introduction: Primary adrenocortical carcinomas (ACC) are relatively rare. Given that fact, prognostic factors of ACC still remain unknown. Aim of this study was to analyse the prognostic factors.
Patients/Methods: In this study we present analysis of 41 consecutive patients (25 female; 16 male), which underwent surgery for ACC in period from 1999 to 2008. Overall and specific survival was calculated by Kaplan-Meier curve and log-rank test. Potential prognostic factors were compared by univariate and multivariate analysis by Cox.
Results: The mean survival time was 65.5 months. According to the univariate analysis, factors associated with longer survival were female sex, extraperitoneal surgical approach to the tumor, tumor less than 500 gr, absence of local infiltration, absence of regional lymphnodes metastasis, first and second stage of the disease, and Mitotane therapy. Localisation of tumor, age, diameter of tumor, distant metastasis, hormone activity, smoking and presence of symptoms did not show statistical significance on survival in univariate analysis. According to the multivariate analysis independent prognostic factors are female sex (OR=4.2; 95%CI=1.2-14.5), and lower stage of disease (OR=4.1; 95%CI=1.4-11.5).
Conclusion: Based on our results independent factors associated with longer survival are female sex and first and second stage of the disease.

P185
BILATERAL ADRENAL MASSES AMONG INSTITUTIONAL SERIE OF 800 PATIENTS WITH ADRENAL ABNORMALITIES
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Bilateral adrenal masses (BAM) represent primary and secondary lesions of adrenal glands that need specific management. Patients/Methods. Totally 798 patients with adrenal abnormalities were observed in endocrine center within 1996-2011. Adrenalctomy was performed (predominantly laparoscopic) for 594 patients. There were 83 (40.7%) synchronous BAM among 204 non-operated patients and 34 (5.7%) of 594 operated.
Results. Non-operated BAM comprised micro-/macronodular adrenocortical hyperplasia in 47 cases: 31 – primary hyperaldosteronism(PHA), 11 – hypophysial Cushing syndrome (CS), 5 – ACTH independent macronodular adrenal hyperplasia (AIMAH); adrenal metastases in 23 cases, and inactive cortical adenomas in 13.
Operated BAM consisted of 11 adrenocortical adenomas with PHA or CS and asymmetrical secretion, 8 – AIMAH, 3 – primary pigmented nodular adrenal disease, 3 – ectopic CS, 1 – congenital adrenal hyperplasia (CAH), 6 hereditary pheochromocytomas and also – 1 bilateral hematoma, 2 metastases and 1 angiosarcoma.
Ten patients were treated by simultaneous bilateral laparoscopic adrenalectomy: 6 with hereditary pheochromocytoma, 3 with ectopic CS, 1 with CAH. 24 patients underwent unilateral adrenalectomy after detection of functional or anatomical asymmetry.
Conclusions. BAM need complex diagnosis (primary or metastatic, cortex or medullary, ACTH relationship, genetic syndromes) to be treated properly; from conservative (bilateral metastases, PHA) to unilateral (AIMAH, PHA) or bilateral (pheochromocytoma, ectopic Cushing) adrenalectomy.

P186
False Positive FDG-PET imaging of Adrenal Tumour in a Malignant Melanoma Patient
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Background:
FDG-PET is a sensitive examination modality for adrenal lesions in patients with a malignant history recommended by guide-lines prior to the decision of surgery to confirm malignancy and to rule out disseminated disease.
Patients/Methods
We report a 60 year old woman operated for a superficial malignant melanoma (Breslow 0.4) on her left leg. A CT-scan 6 weeks after melanoma surgery showed a solitary 4 cm left adrenal mass not consistent with a benign lipid rich adenoma. No other signs of metastases were seen on CT.
Results:
FDG-PET/CT was performed prior to planned adrenal surgery and showed a positive uptake solely in the adrenal tumour and no evidence of other metastases. A laparoscopic left adrenalectomy was performed and the patient was uneventfully discharged one day after surgery. Histopathology revealed a 35 mm benign cortical adenoma.
Conclusion:
FDG-PET, even though sensitive and recommended in the work-up of adrenal incidentalomas in patients with a history of malignancy, can be false positive which should be taken into account when deciding surgical and oncological treatment.

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Background. Paraganglioma (PGL) are rare extradrenal pheochromocytomas arising from thoraco-abdominal sympathetic ganglia. This paper was aimed to perform an analysis of a single-centre series including 13 PGL.

Patients/Methods. Among 111 patients with thoracoabdominal sympathetic-derived tumors, PGL occurred in 11.7% of cases (11 males and 2 females; median age 34yrs, range 10-72).

Results. Genetic analysis was available in 9 patients: a putative germ-line mutation was found in 4 cases (VHL, SDHB, SDHC, MAX gene); among these patients, a positive familial history was evident only in 1 case. Sex ratio and median age were not statistically different between genetic and sporadic PGL (40.5 vs 37yrs). An association with Pheochromocytoma occurred in 5 patients (75% of Inherited variants versus 20% of sporadic forms). An evident malignant behavior was found only in 2 patients, with germline SDH and SDHC mutations.

Conclusion: PGL is a rare disease accounting for 11.7% of all Pheochromocytomas. A genetic background may be found in 45% of patients; in these cases familial history is usually negative in 75% of cases. PGL may be associated to Pheochromocytoma, especially in case of inherited variants. A malignant behavior is present in 15.4% of cases, usually related to SDH germ-line mutations.

Unilateral Adrenal Hyperplasia causing primary Hyperaldosteronism: does it exists?

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Background. Primary Hyperaldosteronism is caused by APA (aldosterone-producing adenoma, correctable by unilateral adrenalectomy) or IAH (idiopathic adrenal hyperplasia, a bilateral disease without any indication to surgery). This study was aimed to assess the rate of unilateral IAH and the results of surgery.

Patients/Methods. 35 patients underwent surgery because of primary hyperaldosteronism after lateralization by adrenal venous sampling (AVS). Demographics, biochemical evaluation and blood pressure (BP) were assessed pre and postoperatively. Pathology was categorized as APA (isolated adenoma), diffuse (gland thickening without nodules) and nodular Hyperplasia (multiple micro-macronodules).

Results. Pathology revealed 9 APA, 23 nodular and 3 diffuse Hyperplasia. APA and Hyperplasia patients were statistically similar concerning demographics, preoperative BP levels; bilateral adrenal involvement was evident at imaging in 10 patients (11% in APA vs 35% in Hyperplasia patients, p=NS). After surgery, biochemical cure of the disease was achieved in all patients; BP levels normalized or ameliorated in 88.8% in APA vs 84.6% in Hyperplasia patients (p=NS). At a long-term follow-up, only 1 patient with nodular Hyperplasia experienced a biochemical disease recurrence.

Conclusions. Unilateral adrenal Hyperplasia is not rare, sharing the same features of APA. When disease lateralization is confirmed by AVS, unilateral adrenalectomy achieves excellent long-term results; recurrences are rare.
Surgical adrenal pathology: Our experience.

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OBJECTIVE: To present our experience in surgical adrenal pathology.

MATERIAL AND METHODS: 82 adrenalectomies performed between 1999 and 2011. 43 females, 36 males. Mean age 56.28.

RESULTS: Left side 44, right side 32 and 3 bilateral. Although the study was completed, 37 "incidentalomas", 15 were functionally active. In the remainder: surgical indication because of size.

Symptoms: 42, almost all hormonally active. Three patients with non-endocrine symptoms (anaemia and pain) because of two spontaneous hematomas and one metastasis.

Functioning tumours: surgical indication regardless of size. By laparoscopy: 61 (77.21%). Five conversions (6.32%) for haemorrhage, infiltration of the cavum and technical difficulty, Laparotomies: 13. Six because of size, 4 for malignancy, 2 for retroperitoneal hematoma and 1 for other procedure.

Early complications: 6 wall hematomas, 2 wound infections and 1 effusion. Late complications: 2 eventrations of laparoscopic port and 1 pancreatic pseudocyst.

Histopathology:
Non-functioning: 8 adenomas, 6 myelolipomas, 2 ganglioneuromas, 1 lymphangioma, 1 lipoma, 2 metastasis.
Functioning: 28 Cushing, 15 pheochromocytomas, 9 hyperaldosteronisms, 2 mixed.

CONCLUSIONS:
1. Nearly half of the patients (46.83%) were "incidentalomas", although the study was completed, 40.54% resulted functionally active.
2. The laparoscopy is, at present, the technique of choice in our Department.

Unusual cases of laparoscopic adrenalectomy

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Aim: To identify and analyze the unusual cases of laparoscopic adrenalectomy performed in our department. Methods: Prospective study of all laparoscopic adrenalectomies between 2005 and 2011. Results: Ninety-two laparoscopic adrenalectomies were performed in 90 patients (mean age: 52.4±5.6 years, female: 57.8%). The most common diagnoses were non-functional adenoma (n=23, 25.6%), ACTH-independent Cushing's syndrome (n=18, 20%), Conn's syndrome (n=16, 17.8%), pheochromocytoma (n=12, 13.3%), and solitary metastasis (n=8, 8.9%). The remaining 13 (14.4%) cases presented less frequent clinical or histological entities and composed our study group. Two patients (2.2%) underwent laparoscopic bilateral adrenalectomy due to refractory ectopic ACTH-dependent Cushing's syndrome: one from an inoperable thymic adenocarcinoma and one of unknown primary origin. In addition, 11 patients (12.5%) had less common final diagnoses including one virilizing tumor, a schwannoma, an oncocytoma, a ganglioneuroma, an angiomyolipoma, a cavernous hemangioma, a cyst, two myelolipomas and two adrenal lipomas. Conclusion: Such rather unusual clinical and histological cases should also be included in the differential diagnosis of patients with adrenal diseases.
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LARGE ADRENAL TUMORS: INCIDENCE, NATURE AND MANAGEMENT. CONTEMPORARY EXPERIENCE IN A TERTIARY REFERRAL CENTER

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Background. Large adrenal tumors (LAT, ≥6 cm) are uncommon. They are usually associated with 25% risks of malignancy. Surgical management remains debatable. Aim: to evaluate contemporary incidence, nature and management of LAT.

Results. Eighty-one/750 referred patients (11%) presented LAT. 72 underwent surgery (48 LA, 24 open adrenalectomies OA). Nine patients had no surgical indication. Demographics and preop workup. Radiological characteristics of invasive malignancy were contraindications for laparoscopic adrenalectomy (LA). Outcomes assessed by review of medical records and phone survey.

Results. Four patients underwent CA, 4 LA and 9 Sim-PRA. The three groups had similar postoperative outcome. Sim-PRA showed a significant shorter operative time.

Conclusions. LAT are rare and more often malignant than usually reported. Some are benign and do not need any surgery. Regarding malignant tumors, LA seems to have better survival, but populations were not comparable. LAT represent a wide range of pathologies. Surgical indication and approach should be tailored for each patient.
P194
HAND-ASSISTED LAPAROSCOPIC ADRENALECTOMIES. OUR EXPERIENCE.

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BACKGROUND: Laparoscopic adrenalectomy has become the gold standard for the surgical treatment of the adrenal gland. However, some doubts are still remaining concerning the feasibility of laparoscopic adrenalectomy in case of big adrenal tumours. In our department there is no size laparoscopic contraindication because we perform hand-assisted laparoscopic surgery in big adrenal tumours (>10 cm.).

PATIENTS/METHODS: We retrospectively reviewed 69 consecutive lateral transperitoneal laparoscopic adrenalectomies performed by two surgeons between 1998 and 2010.

RESULTS: In four patients the initial approach was hand assisted because of size criteria (> 10 cm.). The mean operative time in this group was 127 minutes (similar to the 4-8 cm laparoscopic group which was 121 minutes meanwhile the mean operative time in the 8-10 cm group was 210 minutes). Four patients were converted to hand-assisted laparoscopic surgery because of dissection difficulties (2), bleeding (1) and associated splenectomy (1). There were three conversions to open surgery (all of them because of bleeding).

CONCLUSIONS: Hand-assisted laparoscopic surgery is a feasible rescue procedure in big adrenal masses and in complicated laparoscopic adrenalectomies (difficult dissection, bleeding...). Conversion to hand-assisted laparoscopic surgery maintains the laparoscopic benefits and should be consider prior to converting to open surgery.

P195
R0 resection of metastases to the adrenal gland improves the long-term survival: a retrospective analysis of a 21-year single center experience

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Background: Adrenal metastases occur in different underlying primary tumors, thereby presenting a challenge to define the indications and extent for surgical resection. This is a retrospective, descriptive analysis of an Endocrine Surgery center experience.

Methods: A consecutive series of 44 patients (28 males, 16 females), median age 61y (range 42-77y) with adrenal metastases undergoing surgery (1990-2011) was studied. Due to the naturally limited number of cases, some ordinal/linear variables were categorized into groups. 1-, 5-, 10-year survival rates as well as prognostic factors were calculated.

Results: Primary tumor types: liver n=12 (HCC 9, CCC 2, sarcoma 1), GI tract n=8 (esophagus 2, stomach 3, colon 3), lung n=7, kidney n=5, neuroendocrine tumors n=3, others n=9; adrenalectomies n=28 (partially with regional lymphadenectomy), additional extraadrenal resection n=16; median time diagnosis primary to adrenal metastasis: 518d (range 0-5776d; synchronous n=16, metachronous n=28). The 1-, 5-,10-year survival rates in the R0 group were 75%, 43%, 37% vs. 42%, 21%, 0% in patients with remaining tumor tissue. Favorable outcome was associated with curative adrenalectomy (R0 vs. R1/R2/further metastasis, p=0.02).

Conclusions: Surgery of adrenal metastases, regardless of the primary tumor, should aim at R0 resection, since patients do benefit of complete resection in absence of further extraadrenal metastases.
A neuroendocrine breast carcinoma with adrenal metastases in a MEN 1 patient

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Background
In Multiple Endocrine Neoplasia type 1 (MEN1) pituitary, parathyroid and pancreatic/duodenal endocrine cells are typically involved. Other neoplasms also occur. We present a case of a MEN1 syndrome with mixed neuroendocrine breast cancer with adrenal metastases.

Patients/Methods
A 56-year-old MEN 1 female patient with Zollinger-Ellison syndrome, who had already been treated with a subtotal paratiroidectomy and excision of one abdominal lymph node metastasis of gastrinoma, developed a 4.5 cm right adrenal mass. A 111-Indium-Octreoscan showed a focal uptake in the right breast. The patient underwent enucleation of the mammary lesion, right adrenalectomy and excision of a small (2.0 mm size) duodenal lesion.

Results
Histology revealed a mixed neuroendocrine breast carcinoma with adrenal metastasis and a duodenal gastrinoma. A right Patey mastectomy with axillary lymph node dissection was then performed and the patient underwent tamoxifen therapy. One year later, a left adrenal lesion occurred and a left adrenalectomy was performed, showing again a metastatic lesion from the neuroendocrine breast carcinoma. The patient is still alive and well without recurrence of disease 11 years after mastectomy.

Conclusions
MEN 1 syndrome with a breast carcinoma with neuroendocrine differentiation has never been described in the literature.

RETROPERITONEOSCOPY AS THE PREFERRED ROUTE TO REMOVE ADRENAL METASTASIS: FEASIBILITY AND LONG-TERM RESULTS.

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Background
We present our experience with the retroperitoneoscopic adrenalectomy for the treatment of adrenal metastasis.

Materials and Methods
Between March 1996 and October 2011, 76 patients (51 males, 25 females; mean age: 66±8 years) with adrenal metastasis underwent retroperitoneoscopic adrenalectomy. There were 40 patients with lung cancer, 8 with colorectal carcinoma, 13 with renal cell carcinoma and 15 with other malignancies. Eighty-one adrenalectomies were performed. Perioperative and follow-up data were prospectively collected. For the survival analysis patients were divided in a potentially curative (n=33; C-Group) and a palliative group (n=43; P-Group).

Results
There was no perioperative mortality; major complications included one myocardial infarction and one case of third degree AV block. Mean operating time was 85 ± 57 minutes. The mean hospital stay was 3.6 ± 2 days. After a median follow-up time of 16 months, 43 patients (57%) are alive; 16 are cancer-free. Seven patients (9%) developed a local recurrence, none peritoneal carcinomatosis. The estimated 1- and 3-years overall survivals are 89% and 66% (C-Group) vs. 61% and 32% (P-Group), respectively.

Conclusion
Retroperitoneoscopic adrenalectomy for metastases can be safely performed. It offers potential cure but means palliation in most cases.
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CAESAREAN SECTION AND OPEN ADRENALECTOMY FOR PHEOCHROMOCYTOMA PRESENTING IN LATE PREGNANCY “AN INSTITUTIONAL EXPERIENCE
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Background: Pheochromocytoma presenting during pregnancy constitutes a special management problem. We have reviewed our institutional experience.

Patients/methods: Data extraction from patient files and a prospectively held database on patients treated for pheochromocytoma at Sahlgrenska University Hospital.

Results: From 1967 to 2011 four patients (age 22-30, parity 0 (n=2), 1 (n=2)) presenting with pheochromocytoma during pregnancy have been treated at our unit. At presentation (in gestational week 26 to 39) all had typical symptoms (hypertension (n=4), sweating (n=4), headache (n=3), palpitations (n=3)). Tumour location was in the right adrenal in three cases, and left adrenal in one. The secretory profile was epinephrine in three cases, and norepinephrine in one. All patients were pre-treated with phenoxybenzamine followed by elective caesarean section and open adrenalectomy in gestational week 31 to term. In all cases the baby was healthy and the postoperative course was uneventful.

Conclusion: Pheochromocytoma presenting during pregnancy is rare. In these patients elective caesarean section followed by adrenalectomy after pre-treatment with phenoxybenzamine can safely be performed in late pregnancy.

P199
Difficulties in preoperative identification the origin of large tumors in the region of the upper pole of kidney - own experience.
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Background
There is always a certain level of uncertainty regarding an origin of large tumor located in region of the upper pole of kidney. Such knowledge prior to surgery enable appropriate surgical approach. The aim of this study was to indicate the new option in resolving such problem.

Methods
Three patients admitted to our department in 2011, each with large tumor detected in region of the right upper pole of kidney underwent the CT scanning with 3D angio reconstruction. Evaluation of the tumor vessels pattern was carried out to determine place of tumor origin and to plan surgical access.

Results
Maximal dimension of tumors varied from 13 to 19 cm. Preoperative vascular evaluation revealed 2 kidney tumors and one adrenal tumor. What was confirmed by postoperative pathology. On this basis the appropriate surgical access was determined individually for each patient. No postoperative complications were noted.

Conclusions
1. Precise preoperative vascular evaluation of a tumor and close cooperation with radiologist are essential for determining the most convenient and safe surgical approach what enables avoiding severe complications.
2. AngioCT may be employed in difficult cases as a valuable option in diagnosing tumors located in the upper pole of kidney

P200
Do giant adrenal myelolipomas behave differently?
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Background: Giant adrenal myelolipomas may present with abdominal distension/pain, rupture, haemorrhage or other complications. Indications for surgery are still debatable.

Aim- To analyze clinical profile and outcomes in giant adrenal myelolipomas (size > 10cm) and myelolipomas <10cm.

Methodology- Retrospective data analysis done on 24 patients operated for adrenal myelolipoma during 1996 to Jan, 2011. Data divided in 2 groups- group 1(n=13) with tumors<10cm and group 2(n=11) tumors >10cm and analyzed by Independent Sample T test (SPSS v.17)Results- Of 316 adrenal lesions, 24 (7.6%) were myelolipomas. None were functional. After biochemical workup, adrenal myelolipoma was diagnosed on contrast enhanced computerized tomography abdomen.

Comparing groups 1 and 2 – clinical presentation as abdominal pain/distension in 43(38%) vs 9(90%)(p=0.03) and incidental in 5(41.7%) vs 1(10%) (p=0.09); surgical approach- open (anterior in 4 vs 6, lateral 3 vs 1, posterior retroperitoneal in 4 vs 0), en bloc resection in 3, and laparoscopic in 4 vs 1 (p=0.03), mean (+SEM, range) tumor size 6.82cm (+0.64, 2.3-9) vs 16.45cm (+1.65, 11-27) and mean (+SEM, range)weight 162.8 grams (+67.42, 18-750) vs 976 grams (+ 414.03, 200-4500), internal haemorrhage and necrosis 6 vs 10 (p=0.04), calcification in 2 vs 4(p=0.44).

Conclusion- ‘Giant’ (>10cm) adrenal myelolipomas present more often with symptoms/internat haemorrhage with necrosis on histopathology; make laparoscopic approach difficult; may require renal excision en bloc.
P201
Expression of Cocaine- and Amphetamine-Regulated Transcript is Associated with Worse Survival in Small Bowel Carcinoid Tumors
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Background: We recently demonstrated that cocaine- and amphetamine-regulated transcript (CART) is expressed in several types of neuroendocrine tumors. Main objective of the present study was to examine whether CART expression is associated with survival in small bowel carcinoid patients. Secondary aims were to assess if CART is associated with other tumor characteristics or clinical symptoms.
Patients/methods: Specimens from 97 patients were examined for CART expression using immunohistochemistry, and a three-tier CART score was introduced. On inclusion, specimens were examined by routine histopathological methods and detailed clinical patient data were retrieved. The effect of CART on cell viability was assessed in vitro using an enteroendocrine tumor cell line.
Results: CART score was associated with worse disease-specific survival (P = 0.033). Adjusting for patient age, disease stage and tumor grade in multivariable analysis, CART expression was still associated with worse survival (Low CART hazard ratio (HR) 5.47, 95% confidence interval 0.71-42.46; and High CART HR 9.44, 1.14-78.14). No association was found between CART score and age, disease stage, tumor grade or any symptom. Supporting our clinical data, we found that CART promoted tumor cell viability in vitro.
Conclusions: Expression of CART in small bowel carcinoid tumors is associated with worse survival.

P202
Diagnosis MEN determination using chromogranin
A case report
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Pancreas is the most frequent localisation of gastrointestinal neuroendocrine tumors (NET). We can diagnose large-scale of NET, hormonally active or inactive. It is necessary think of NET in diagnose pancretic focal lesion. Chromogranin A (CgA) is the most important non-specific biochemical marker of neuroendocrine tumors. Dynamic of CgA-level is good indicator in treatment efficiency.

P203
LAPAROSCOPIC SURGERY FOR PANCREATIC ENDOCRINE TUMORS: EXPERIENCE OF A REFERRAL CENTER
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Background
Laparoscopic pancreatic surgery is not common practice in Italy and is carried out in few centers. The reasons for this are manifold, such as the current patient selection and both skills in laparoscopic and pancreatic surgery are necessary to perform this operation safely.
We report the experience of a referral center for laparoscopic surgery comparing outcomes of laparoscopic and open procedures for endocrine pancreatic neoplasms.
Patients/methods
From 2001 to 2010 30 patients, 10 males and 20 females aged 56.9 +/- 14 years, were submitted to surgery for neuroendocrine pancreatic tumors
Apart of 7 patients undergone duodenopancreatectomy, 13 patients received laparoscopic and 10 open surgery
Results and conclusion
Conversion rate was 7.7%
Mean overall operating time and postoperative hospital staying were 268 +/- 97.2 minutes and 26 +/- 27.9 days respectively.
Mortality was nil, overall morbidity was 56.5%.
When comparing laparoscopy and open procedures, operating time, postoperative hospital staying, and even morbidity rate were similar (p>0.05)
Laparoscopic pancreatic surgery for endocrine tumors is safe and boasts a complication rate similar to that of open surgery.
However since it is a demanding procedure it should be performed only in selected centers with a consolidated experience in laparoscopic and pancreatic surgery
Synchronous lesions. Carcinoids and should be considered in case of pancreatic metastasis of the jejunum carcinoid. The patient is still alive with secondary lesion. The pancreatic lesion resulted to be a well-differentiated (Ki-67 < 2%) neuroendocrine tumor with lymph node metastases and one peritoneal lesion. The pancreatic lesion was confirmed by MRI and resulted in the resection of a jejunum carcinoid.

Results

11 of 19 patients were operated. No correlation between size and grading was documented.

Conclusion

In contrast to earlier recommendations, size seems not helpful in treatment selection. We recommend preoperative grading by transgastric endoscopic ultrasound guided biopsy before decision making, especially in young patients with multiple tumors whose treatment would be total pancreatectomy.

P205

Carcinoid tumor metastatic to the pancreas. A case report.

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Background

Metastatic lesions to the pancreas are rare. We present a case of a jejunal carcinoid tumor with a synchronous pancreatic metastasis.

Patients/Methods

A 68-year-old male patient was admitted to our Clinic in 2008 for diarrhea and flushing. Urinary serotonin (2x), 5HIAA (5x) and Chromogranin A (2.5 x) were increased. An Octreoscan showed a focal uptake in the pancreatic head and a slight uptake in the lower abdomen. An abdominal CT scan showed a dishomogeneous pancreatic head and a hypervascular jejunal lesion. The pancreatic lesion was confirmed by MRI and resulted slightly hypermetabolic with 18-FDG-PET (SUV of 2.15).

Results

The patient underwent a duodenum-preserving pancreatic head resection, a cholecystectomy and a jejunal resection. Histology revealed multiple well differentiated (Ki-67 < 2%) jejunal carcinoid tumors with lymph node metastases and one peritoneal lesion. The pancreatic lesion resulted to be a metastasis of the jejunal carcinoid. The patient is still alive with diarrhea and biochemical evidence of disease, but undetectable site of relapse/residual disease 36 months after surgery.

Conclusions

Pancreas is an uncommon site of metastatic spread in midgut carcinoids and should be considered in case of pancreatic synchronous lesions.
Metastatic midgut carcinoid tumors: 20-years experience in a single centre.

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Background
The prognosis of metastatic midgut carcinoids has improved during the last decade, due to the increasing number of therapeutic options.

Patients/Methods
Fifteen patients (9M/6F, averaging 56.4 years) with metastatic (liver or peritoneal) midgut carcinoids were observed in our Department from 1992 to 2011. Twelve patients presented with carcinoid syndrome, 2 with subocclusive symptoms and one was an incidental finding. Ten patients had hepatic metastases at diagnosis (group A), 3 patients peritoneal metastases (group B) and 2 patients hepatic and peritoneal involvement (group C).

Hepatic metastases were bilobar in 9/12 cases.

Results
All patients underwent resection of the primary tumor and therapy with somatostatin analogues. Three patients had a surgical re-operation after primary excision (1-3 times) for disease relapse. After surgery, 9 patients underwent (chemo-)embolization of the hepatic lesions, one had chemo and radiometabolic therapy, one had radiofrequency ablation. One/15 patients died (3 months after surgery for progression). Mean follow-up was 78.5 months (range 1-160). Mean time to progression was: 36.4 (group A), 14.0 (group B) and 21.0 months (group C).

Conclusions
A long survival in metastatic midgut carcinoids can be achieved also in case of peritoneal involvement. In some patients repeated surgery may improve the prognosis.

Pancreatic Neuroendocrine tumors associated with mesenchimal neoplasms of GI tract.

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Background
Neuroendocrine pancreatic tumors (NPT) are occasionally associated with mesenchimal tumors in Neurofibromatosis type 1 but rarely in sporadic cases. We report five cases of NPT associated with other rare mesenchimal neoplasms of GI tract, observed in our Department from 2003 to 2011.

Patients/Methods
All five patients (3M/2F, averaging 67 years) had preoperative diagnosis of NPT. They all underwent surgical resection: 1 middle pancreatectomy, 2 left pancreatectomy and 2 pancreaticoduodenectomy. The following associations were observed: 1 benign insulinoma with a jejeunal leiomyoma, 2 non-functioning NPT with a gastric GIST and two duodenal GISTs respectively, 1 non-functioning metastatic NPT with a cecal GIST, 1 malignant metastatic gastrinoma with one jejunal and two duodenal GISTs. In all cases the mesenchimal lesions were low-risk neoplasms.

Results
Mean follow-up was 48.7 months. Two patients are still alive without disease 26 and 57 months after surgery. One patient died postoperatively for sepsis due to a C grade pancreatic fistula, two patients died for progression of metastatic disease 18 and 94 months after surgery.

Conclusions
All mesenchimal tumors of the GI tract were incidental findings, small size and low-risk neoplasms. In no case they recurred after excision or influenced the prognosis of the NPT.
PROGNOSTIC VALUE OF THE PRESENTATION FORM (SPORADIC AND FAMILIAL) OF PANCREATIC NEUROENDOCRINE TUMORS

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INTRODUCTION: Pancreatic neuroendocrine tumors can be sporadic or familial. They can be classified as “functional” or “non-functional”. The prognostic is very variable depending on many factors: histological type, function, size, form of presentation...Few studies compare differences between familial or sporadic type.

OBJECTIVE: To determine differences between sporadic and familial PNET.

PATIENTS AND METHOD: 73 patients with PNET. Variables: age, sex, form (sporadic/familial), type of tumor, localization, diagnostic tests, surgery, tumor size, multifocality, histopathological characteristics, cure and recurrence rate. We compare results de sporadic a familial cases and the functional and non-functional tumours.

RESULTS: The mean age was 48.1 years (14-76). 52 (71.2%) were sporadic and 21 (28.8%) familial (MEN1). Function: 42 non-functional, 16 insulinomas, 10 gastrinomas, 4 hypergastrinemias and 1 glucagonoma. Nine cases were considered to be unresectable (all sporadic). Corporocaudal pancreatectomy was performed in 49.3%, cephalic duodenopancreatectomy in 14.9%, enucleation in 14.9% and enucleation with corporocaudal resection in 14.9%, and total pancreatectomy in 4.5%.

The cure and recurrence rate was 66.7 % and 25%, respectively. The factors related to the cure and recurrence rates of the PNET were non-functonality (p<0.009) and being sporadic (p<0.004).

CONCLUSION: We found prognostic differences between familial and sporadic pancreatic neuroendocrine tumours.

Outcome after resection of pancreatic neuroendocrine tumors (PNETs)

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Surgery is the primary therapy for pancreatic neuroendocrine tumors (PNETs) with localized disease. Although the mortality rate after pancreatic surgery has decreased over the past years, morbidity remains high.

We present a cohort of patients who underwent surgery for PNETs and describe their characteristics and surgical outcome.

A consecutive series of 92 pancreatic resections for PNETs was analyzed; 30 pancreatoduodenectomies (PD), 28 distal pancreatectomies, 22 enucleations, 9 corpus resections and 3 total pancreatectomies were performed. Outcome was defined as length of hospital stay, complications and mortality. Outcome of PNETs was compared between hormonally-active tumors (n=33) and non-functional tumors (n=59), type of resection and in relation to pancreatic resections for other indications (n=700).

Median length of hospital stay was 12 days (range 3-137). Complication rate was 38%; 44.1% in non-functional tumors vs 27.3% in hormonally-active tumors (P=0.112). Pancreatic fistula were seen in 18.5%; 22.7% after enucleation vs 17.1% following resection (P=0.543). Complications were seen in 50.0% in the PNET group compared to 51.1% in our overall group (P=0.902).

Pancreatic resection for neuroendocrine tumours is associated with significant morbidity rate comparable to previous reports. No differences were found between types of resections, type of PNET and compared to pancreatic surgery for other indications.
Ileal GEP-NEN in mother and son - opening for hereditary disease?

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Background
Familial cases of ileal GEP-NEN have been described at some few occasions in the literature. Speculations of familial disease with or without a relationship to MEN-1 or other inherited endocrine neoplasias have been made.

Patients/Methods
We report an 86 year old woman operated for acute bowel obstruction with findings of a carcinoid primary tumour in the distal ileum, distal mesenteric lymph node metastases but no liver metastases. A wedge resection was performed and the recovery was uneventful. Four weeks later her 68 year-old son sought for abdominal pain and was found to have multiple liver metastases on ultrasound examination and a CT-scan showed a typical ileal GEP-NEN with mesenteric lymph node metastases and multiple small liver metastases.

Results
The son underwent an uncomplicated, extended right hemicolectomy and extensive mesenteric lymph node dissection and was postoperatively put on biotherapy with somatostatin-analogue and is now considered for complementary treatment due to slight progression of disease two years after surgery. Histopathology in both patients showed typically low proliferative GEP-NEN, Ki67 <1%. A grandson living abroad is considered for screening.

Conclusion
Familial ileal GEP-NEN is not common in literature. We present a mother and son operated on short interval for ileal GEP-NEN.

GMX1778 cytotoxicity on ileal carcinoid GOT1 in vitro support proposed mechanism of action: NAMPT and NAD+ synthesis inhibition

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Background
Several tumour types, including the ileal carcinoid GOT1, are sensitive to the novel antitumour agent GMX1778 (formerly CHS828). It has been suggested that GMX1778 is an inhibitor of NAMPT, a NAD+ biosynthesis enzyme in the NAD+ salvage pathway. In normal cells NAD+ levels can also be synthesized de novo from niacin via NAPRT1. Cancer cells have a very high rate of NAD+ turnover which presumably makes them more sensitive to NAD+ synthesis inhibition.

Methods
The NAMPT substrate nicotinamide (10mM) or niacin (1 or 10mM) was added to cultured GOT1 cells to test if high amounts could negate the cytotoxic effect of GMX1778 (10nM), presumably by competing directly with GMX1778 for binding to NAMPT or by repleting NAD+ levels via de novo synthesis, respectively.

Results
The 70% reduction in GOT1 cell viability over 5 days with GMX1778 was prevented (only 22% reduction) by addition of nicotinamide. Niacin failed to rescue cells from GMX1778 cytotoxicity.

Conclusion
These results support the proposed mechanism of action for GMX1778 and indicates that ileal carcinoid cells are NAPRT1 deficient. Coadministration with niacin could thus be used to protect normal tissue against GMX1778 cytotoxicity in an in vivo setting.
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