



**Annual Meeting
November 19th & 20th 2009**

**St Thomas' Hospital
London**

Abstracts For Presentation

Free Papers Session 1

Friday 20th November 9.00am to 11.30am

Chairs

Ms Abigail Evans

Mr Ashu Gandhi

Time Allocated per paper: 10mins

Unilateral adrenalectomy in ACTH-Independent Macronodular Adrenal Hyperplasia (AIMAH)

Maurizio Iacobone, Francesco Ciarleglio, Giovanni Viel, Marilisa Citton, Marzia Bottussi, Saveria Tropea, Sasha Seculovic, Gennaro Favia

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Background. ACTH-independent macronodular adrenal hyperplasia (AIMAH) is a rare cause of Cushing's syndrome. Bilateral adrenalectomy is considered the treatment of choice, with subsequent lifetime steroid replacement, but unilateral adrenalectomy has been recently proposed to reduce the secreting tissue. This prospective study was aimed to evaluate the long-term results of unilateral adrenalectomy in AIMAH concerning the main laboratory and clinical abnormalities and the patient's quality of life.

Methods. Ten consecutive patients with confirmed AIMAH underwent unilateral adrenalectomy of the largest gland. ACTH and cortisol levels, arterial blood pressure (BP), glycometabolic parameters and patient's subjective perception of health-related quality of life (by the SF-36 questionnaire) were measured pre and post-operatively.

Results. No surgery-related morbidity occurred. In 2 patients a persistent hypercortisolism occurred; cure was achieved in the remaining 8 patients, since serum and urinary free cortisol levels significantly decreased and regained the normal range at a median follow up of 66 months, range 8-98. Both systolic and diastolic BP levels significantly reduced; 50% of patients definitively became normotensive while the remaining patients reduced the need for antihypertensive treatment; 62.5% of patients suffering from preoperative diabetes or glucose intolerance was cured while the remaining reduced the need for hypoglycemic drug. SF-36 evaluation of health-related quality of life confirmed a significant amelioration.

Conclusions. Unilateral adrenalectomy of the largest gland can be an effective and safe treatment for AIMAH in case of asymmetric involvement; it may achieve long-term remission of Cushing's syndrome, improve BP values, glycemic control and patient's quality of life.

Is Thymectomy Worthwhile in Central Lymph node dissection for Differentiated Thyroid Cancer?

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Introduction: Clinical guidelines published in 2006 by the American Thyroid Association (ATA) and the European Thyroid Association (ETA) recommend routine level VI neck dissection for the surgical treatment of differentiated thyroid cancer. This central dissection increases the incidence of postoperative hypocalcemia, related to the bilateral thymectomy because of resection or devascularization of the inferior parathyroids. Unilateral thymectomy, could minimize this complication. Our aim was to study the benefit/risk (incidence of thymic lymph node metastases and postoperative hypocalcaemia) of thymectomy.

Materials & Methods: We retrospectively reviewed 138 patients who underwent total thyroidectomy with central neck lymph node dissection for differentiated thyroid cancer between 2004 and 2007. Bilateral thymectomy was performed in 45 patients (group I) of whom 15 were male and 30 were female, and unilateral in 93 patients (group II), (27 males and 66 females). The presence of thymic metastases was reviewed, as well as the postoperative hypocalcaemia.

Results: 2 cases of papillary thymic metastases were found in group I. These were lymph node micrometastases localized to the ipsilateral side of the primary tumor in both cases. Transient hypocalcemia was significantly more frequent ($p < 0.001$) in group I than in group II: 16 patients (35.5%) versus 10 (10.7%) in group I and II respectively. There was no permanent hypocalcemia in either group.

Conclusion: The risk of hypocalcaemia with bilateral thymectomy outweighs any likely carcinologic benefit. We do not recommend routine bilateral thymectomy during central neck dissection for differentiated thyroid cancer.

Are Brown Tumours a Forgotten Disease in Developed Countries?

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BACKGROUND. Brown tumours (BT), a focal expression of osteitis fibrosa cystica, can develop at multiples sites. Radiographic and histological findings occasionally can be mistaken for malignancy. Since in developed Countries diagnosis of primary hyperparathyroidism (pHPT) is usually done at an early stage, a correct diagnosis of BT can be challenging. In this study we reviewed our experience with BT.

METHODS. The medical records of all the patients with BT among 358 patients who underwent parathyroidectomy for pHPT between May 1998 and October 2008 were reviewed

RESULTS. Three patients (0.8%) with BT were treated. Mean preoperative PTH level was 1707 pg/ml and mean serum calcium level was 11.9 mg/dl. The first patient, a 57 years old man, admitted to the Ophthalmology Division for a suspected lachrymal gland neoplasm with suspected multiple secondary bone lesions, underwent surgical removal of the mass that revealed to be a BT of the orbit. Subsequently, once established the diagnosis of HPT, he underwent inferior left parathyroidectomy for a 2.5 cm adenoma, 3.4 g in weight. The second patient, a 67 years old female, had underwent a right leg amputation for a suspected bone malignancy that revealed to be a BT. Subsequently, she underwent surgical removal of a 2 g right superior parathyroid gland with histological characteristics of parathyroid carcinoma. The third patient, a 59 years old man, admitted to the Orthopaedic Division, underwent segmental femur resection for a pathologic fracture, with histological findings of BT. Subsequently, he underwent a superior right parathyroidectomy for a 2.2 cm adenoma, 2.5 g in weight.

CONCLUSION. Clinicians, who in the current clinical practice rarely observe BT, might be misled by this unusual presentation of pHPT. A complete evaluation of the medical history, biochemical and instrumental findings should guide the approach, allowing to avoid unnecessary bone resections

IS A SURGICAL MISTAKE TO TREAT ADRENOCORTICAL CARCINOMA WITH INFERIOR VENA CAVA INVASION?

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Background: Adrenocortical carcinoma (ACC) is a tumor of which complete surgical resection is the treatment of choice. Involvement of the inferior vena cava (IVC) is a controversial pitfall for surgical treatment of ACC. We analyze surgical outcome of Pts with IVC invasion.

Methods: 530 Adrenalectomy were performed in Endocrine Surgical Unit of Padua University from 1985 to May 2009. 47 pts (8.9%) had a postoperative ACC diagnosis. 6 cases (12.8%) had evidence of IVC invasion. The operative technique was thrombectomy (n = 4), partial resection with direct closure (n=1) and total resection with replacement of the IVC (n = 1). Venous control was achieved by caval clamping alone in 5 cases and hepatic vascular exclusion (n = 1). Combined resection of the liver and inferior vena cava was performed in two patients. No circulatory arrest were performed. Morbidity, mortality, recurrence and survival were analyzed.

Results: According to McFarlane staging 4 pts were stage III and 2 stage IV. The perioperative mortality was 0% and the morbidity incidence was 83% (50% pulmonary thromboembolism; 16.6% bleeding; 16.6% ARDS). Four patients died of metastatic complications. Mean survival time was 11.6 months. DFS was 5.9 months. 2 patients were still alive after 60 and 5 months respectively of follow-up, one of whom was reoperated at 37 months for a liver recurrence. No evidence of recurrent intravenous involvement was found during follow-up in any patient in whom complete resection was achieved.

Conclusions: Resection for advanced ACC with IVC invasion can be prolongs survival in selected patients

Is there a role for video-assisted parathyroidectomy in regions with high prevalence of goitre?

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BACKGROUND. Minimally invasive procedures for parathyroidectomy have revolutioned the surgical treatment of primary hyperparathyroidism (pHPT). Coexistence of multinodular goitre is a major contraindication for these approaches. In selected cases, the video-assisted approach by the central access (video-assisted parathyroidectomy = VAP) allows to perform uni- or bilateral thyroid resections (video-assisted thyroidectomy = VAT). We evaluated the role of VAP in a region with a high prevalence of goitre.

METHODS. The medical records of all the patients who underwent parathyroidectomy for pHPT and a concomitant thyroid lobectomy (TL) or total thyroidectomy (TT) between May 1998 and October 2008 were reviewed. Patients who underwent VAP and concomitant VAT were included in this study. Well localized single adenoma ≤ 3 cm were eligible for VAP. Selection criteria for VAT were: thyroid volume ≤ 30 ml, nodule size ≤ 3 cm. Contraindication for both VAT and VAP were large goitre, previous neck surgery, suspicion of invasive or metastatic malignancy. Demographic, clinical, operative, pathologic and follow up characteristics of these patients were evaluated.

RESULTS. Among 358 patients who underwent parathyroidectomy for primary HPT, 111 patients (31%) underwent concomitant thyroidectomy. Among 136 patients selected for VAP, 21 (15.4%) underwent concomitant VAT: LT in 7 cases, TT in 14. Conversion rate was 0%. Mean operative time was 66.6 ± 43.6 min. Transient hypocalcemia was observed in 9 cases. No other complication occurred. Final histology showed parathyroid adenoma in all the cases, with benign goitre in 19 cases and papillary carcinoma in 2. At a mean follow up of 32.7 months, no persistent or recurrent disease was observed.

CONCLUSION. In regions with a high prevalence of goitre, large thyroid volumes limit the application of VAP. Nonetheless the video-assisted approach permits to offer a safe minimally invasive procedure to a significant percentage of patients affected by pHPT and concomitant small volume goitre.

Long-term Results of Minimally Invasive Parathyroidectomy without use of Intra-operative Parathyroid Hormone monitoring

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The long-term results of minimally invasive parathyroidectomy (MIP) for primary hyperparathyroidism (pHPT) are not well established. In this study patients at the Royal Adelaide Hospital who had completed Pasieka Illness Questionnaires (PIQ) prior and post parathyroidectomy for pHPT between 1999 and 2008 were contacted and serum was taken for calcium, ionised calcium and parathyroid hormone (PTH). The impact of intra-operative parathyroid hormone (ioPTH) on the incidence of persistent or recurrent disease was estimated from the fall in PTH observed on the morning following surgery. 246 patients underwent parathyroid surgery, 142 responded to our correspondence, of which 64 underwent MIP and 78 BNE. Follow-up after BNE was longer than MIP (61 versus 41 months $p < 0.0001$ t-test). Only seven of the thirteen symptoms scores comprising the PIQ fell significantly after MIP whereas twelve fell significantly following BNE ($p < 0.05$). There was a trend towards a higher incidence of persistent or recurrent pHPT in the MIP group at long-term follow-up (6/58 versus 3/71 $p = 0.29$ Fisher's Exact). We estimate that ioPTH would have reduced the incidence of persistent or recurrent pHPT in the MIP group by half. The advantages of MIP such as improved cosmesis, shorter operating time and hospital stay justify its use provided that it doesn't compromise the safety of re-operative surgery, as the incidence of persistent or recurrent pHPT following MIP observed in this study is higher than BNE.

The Management of Retrosternal Goitres - Indications for sternotomy.

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Introduction. Retrosternal goitres (RG) may lead to significant upper aero-digestive tract compressive symptoms. Surgery for RG may be associated with a high morbidity and it is essential to identify high risk patients which require sternotomy. The aim of this paper is to analyze the presentation, evaluation, indications for sternotomy and surgical management of patients with RG.

Methods. Retrospective review of 710 patients who underwent thyroidectomy in our unit between January 2000 and May 2009. 127 patients had goitres with either retrosternal or intrathoracic extension. All patients were evaluated with ultrasound-guided fine needle aspiration and multiplanar CT scanning.

Results. Of the 127 patients, 110 were women and 17 were men. 116 patients underwent surgery via a cervical approach. 11 required a transthoracic approach via a sternotomy. Patients required sternotomy due to: Giant intrathoracic extension (1), complex anatomical extension (2), retroesophageic extension (2), retrotracheal extension (3) and revision surgery (3). In all cases the transverse diameter of the retrosternal component was significantly larger than the thoracic inlet. Complications included one patient with vocal cord paresis. 2 pneumothorax and 2 patients had temporary hypocalcaemia that recovered after 3 months.

Conclusions. The optimal management of retrosternal goiters requires careful evaluation and planning. Although the large majority of RG can be approached and successfully excised by a transcervical approach a significant minority will require sternotomy. Multiplanar CT scanning is essential to determine the anatomy of the goitres and allow adequate surgical planning. A multidisciplinary team approach is essential

HYPOXIA-DEPENDENT PROLINE-HYDROXYLASES' EXPRESSION IN HUMAN PHAEOCHROMOCYTOMAS AND PARAGANGLIOMAS

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Background. Pheochromocytomas (PHAEOs) and extraadrenal paragangliomas (PGGLs) can occur in association with mutations in the VHL gene (von Hippel Lindau syndrome) or SDH-B/-D gene (succinyl dehydrogenase subunit B or D). As products of these genes interact with the hypoxia-sensing mechanism, we aimed to characterise the expression of oxygen-dependent proline-hydroxylases (PHD1-3) in sporadic and familial tumours.

Methods. Tissue microarray (TMA) was constructed using anonymised tumours (68 PHAEOs, 35 PGGL) from patients with mutations in VHL (von Hippel Lindau, n=23) or SDH-B/D (succinyl dehydrogenase, n=45) genes and sporadic tumours (n=35). Immunohistochemistry was performed using primary antibodies against hypoxia-dependent proline-hydroxylases (PHD1-3), glucose transporter Glut1 and PNMT (phenyl-ethanol-methyl-transferase).

Results. Tumours were positive for PHD-1 (n=51) and PHD-2 (n=54) with simultaneous expression in 100% of cells in 29 tumours. PHD-3 was expressed in only 23 tumours. All 29 tumours with intense PHD1,-2 expression were VHL- or SDH-B-positive tumours. Glut-1 was expressed in nine tumours. PNMT- the enzyme converting noradrenaline (NorA) into adrenaline (Adr) was abundant in all areas of normal adrenal medulla but was identified in only eight tumours, with groups/areas of positive cells spread throughout the tumours without any consistent pattern.

Despite this lack of correlation between abundant expression of hypoxia-associated markers and scarce PNMT expression, the 24-h urinary excretion of Adr was significantly higher in patients whose tumours included areas of necrosis/haemorrhage. This biochemical data did not correlate with the pattern of expression of hypoxic markers.

Conclusion. Proline-hydroxylases PHD-1 and -2 are expressed predominantly in PHAEOs/PGGL in patients with VHL or SDHB mutations. The impact of this "hypoxic signature" on tumour secretion remains undefined. The generation of a human-derived cell line would provide a better model to address these ongoing questions.

Hypocalcaemia post thyroidectomy is influenced by surgical experience and predicted by early serum calcium slope.

Amit J Shah, Stuart R Walsh, Balendra Kumar, Eamonn C Coveney. Bury St Edmunds.

Introduction: The reported incidence of hypocalcaemia following thyroid surgery varies from 5 - 83%. Our aim was to assess how surgical experience affects rates of postoperative hypocalcaemia and to determine if the early postoperative rate of change of serum calcium (calcium slope) is a useful predictor of postoperative hypocalcaemia.

Methods: Patients undergoing elective total/completion thyroidectomies from 2001-2008 under two endocrine surgeons appointed in 2001 were identified from a prospectively maintained database. Hypocalcaemia was defined as serum calcium level of <2.15 mmol/dl. Patients were divided into four biennial cohorts to evaluate impact of years of experience. Data was compared using the student t-test.

Results: Postoperative hypocalcaemia developed in 35 out of the 134 patients (26.1%) at 24hrs. Younger patients and patients with Graves disease were significantly more likely to become hypocalcaemic ($p = 0.04$ and $p = 0.01$ respectively). There was no significant difference with patient sex, type of thyroid surgery, and preoperative calcium level. Patients who developed hypocalcaemia had a twofold greater rate of decline of serum calcium in the first six hours postoperatively (0.011 mmol/dl/hr versus 0.005 mmol/dl/hr, $p = 0.0006$). Postoperative hypocalcaemia rates decreased significantly from 47.4% (8/19) in 2001 - 2002, to 15.6% (7/45) in 2007- 2008 ($p = 0.02$), with no significant difference in age or incidence of Graves disease between the two biennial cohorts.

Conclusion: Increasing thyroid surgical experience may be a significant factor in lowering the incidence of postoperative hypocalcaemia and early serum calcium slope can be used to identify those patients at risk.

Early experience of SPECT-CT in the surgical management of primary hyperparathyroidism

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Introduction

Solitary adenomas account for approximately 80% cases primary hyperparathyroidism. There has been a shift away from the traditional 4-gland neck exploration towards a 'focused' parathyroidectomy. Accurate pre-operative imaging and localisation of parathyroid adenomas is increasingly important. We explored the role of SPECT-CT in pre-operative parathyroid imaging and whether ultrasound scanning provides additional information.

Method

Prospective analysis of all patients undergoing imaging and surgery for primary hyperparathyroidism since the introduction of SPECT-CT in our hospital.

Results

54 patients with primary hyperparathyroidism had SPECT-CT scans over 24 months. In 45 patients SPECT-CT localised a parathyroid adenoma. Ultrasound correlated the presence and position of a parathyroid adenoma in 30/45 patients (67%). 13 patients had a negative ultrasound and in 2 it was not performed. In 9 patients neither SPECT-CT nor ultrasound demonstrated an adenoma.

Of the 45 patients with image detected adenomas 38 operations began as a focused parathyroidectomy. 32 operations (84% of attempted) were successfully completed with the adenoma corresponding to the site seen on SPECT-CT. 6 focused incisions were extended and 7 operations were planned collar incisions.

All patients with a positive SPECT-CT had histological evidence of an adenoma. A further 4 patients with negative scans had histological proven adenomas. 44/45 patients with pre-operative adenomas on SPECT-CT were cured after surgery, evident by the reduction of PTH and calcium levels.

Conclusion

SPECT-CT correctly demonstrated the presence and location of an adenoma in 91% patients. We found SPECT-CT helpful in planning surgery. Ultrasound is not needed if SPECT-CT is positive.

Stabilisation of wild-type p53 in a transgenic mouse thyroid of human PTTG Binding Factor (PBF) over-expression

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PTTG Binding Factor (PBF) is a poorly characterised transforming gene that is over-expressed in well-differentiated thyroid tumours. Preliminary experiments by our group using GST pull-down assays have demonstrated specific binding in vitro between PBF and the tumour suppressor protein, p53.

Methods

We generated a murine transgenic model of targeted over-expression of PBF in the thyroid. Transgenic mice were generated by pronuclear injection of a HA-tagged PBF transgene driven by the bovine thyroglobulin promoter, and founders identified by PCR. Thyroids were harvested from sex-matched wild-type and PBF transgenic mice at 4 weeks of age.

Results

Western blot analysis confirmed elevated levels of PBF in transgenic thyroids compared to wild-type FVB/Nmice, with no significant expression in other tissues. p53 protein expression was significantly increased in transgenic thyroids compared to wild-type (3.7 ± 0.9 fold; $p=0.005$; $n=4$; scanning densitometry corrected for β -actin expression). Further, there was a significant accumulation of the 53kDa splice variant of mdm2, a critical negative regulator of p53, in transgenic thyroids compared to wild-type (1.53 ± 0.14 fold; $p=0.02$; $n=8$). Real-time PCR did not reveal any significant change in p53 ($p=0.21$; $n=8$) or mdm2 ($p=0.13$; $n=8$) mRNA expression levels in transgenic mice thyroids compared to wild-type. Ionizing radiation (15Gy) of wild-type murine primary thyroid culture resulted in increased expression of PBF after 24 hours (1.88 ± 0.09 fold; $p=0.02$; $n=3$).

Conclusion

Overall, these results suggest that the functions of PBF and p53 are intimately related. Further work needs to be carried out to determine the precise functional effects of PBF on p53 stabilization in thyroid cells.

THYROID NODULE PREVALENCE STUDY - A Study To Determine the Prevalence of Thyroid Nodules on Patients Undergoing CT Scans of the Neck for Investigation of Non Thyroid Disease.

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Objective: To determine the prevalence of thyroid nodules on patients having CT scans of the neck for investigation of non thyroid disease.

Methodology: 100 contrast enhanced head & neck CT scans were reviewed. Thyroid nodules were categorised in terms of size and bilateral prevalence. Where nodules were identified, further review of patients' radiological records was undertaken to assess for any change in size or appearance. Patients with nodules > 1cm had their laboratory records reviewed to see if they had undergone biopsy of the nodule.

Results:

Size	Number	Mean age	Age Range
0-5mm	10	61.63 years	18-88 years
5.1mm-1cm	12	67.27 years	42-89 years
> 1cm	11	73.15 years	50-89 years
Bilateral	4	70.43 years	69-71 years

26% incidence of thyroid nodules (33 nodules) identified on CT scan. Average age was 62.11 years with a gender incidence greater in female (73%) than males (27%). Bilateral disease was only demonstrated in the female cohort (n=4). 4 female subjects with nodules had subsequent scans with 3 demonstrating an increase in size between 2mm - 5mm. 1 male subject had an increase of 2mm in size. 4 patients with nodules > 1cm had undergone FNA of the nodule. The biopsies individually demonstrated one each of the following: an increase in thyroid peroxidase antibody, AC3/Thy3 Hurthle tumour, poorly differentiated carcinoma and a recurrence of a papillary carcinoma of the thyroid following resection.

Conclusion: The data suggests that CT scanning is sensitive at picking up sub clinical occult thyroid nodules ('incidentalomas'). The prevalence of 11 nodules > 1cm nodules is a recognised cut off criteria for further investigation in the USA. This group of patients presents a clinical management dilemma as to whether or not the nodules should be reported and thereafter trigger a referral and follow up cascade with an associated resource implication.

Parathyroidectomy (PTX) for unselected patients with primary hyperparathyroidism (1HPT); the pursuit of normocalcaemia.

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Aim

Our aim was to audit the impact of pre- and intra-operative interventions on surgical outcomes for patients undergoing PTX for 1HPT.

Method

A prospective study of first-time surgery for 1HPT. After localisation, surgery occurred in a 24h:59min unit measuring intra-operative qPTH (Future Diagnostics). Unilateral neck exploration (UNE) was done when an abnormal gland was localised. Bilateral exploration (BNE) was undertaken when surgical examination and gland localisation failed to detect an adenoma or if qPTH had not fallen to 50% of highest pre-operative level 10min after removal of a suspect gland. Outcome measures included localisation, UNE/BNE, qPTH results, length-of-stay, morbidity and normocalcaemia rate.

Results

Between January 2004 - May 2008, 211 consecutive patients (164 women, median age 64y, [20-89]) underwent surgery. Localisation involved 99mTcMIBI-only (n=206) and ultrasound (USS) (n=207). USS and MIBI concordance was 48%. The sensitivities of MIBI, USS and concordant scans were 97%, 86% and 96%. Localisation was poor at detecting multiple gland disease (5%). The sensitivity qPTH was 99.4% and specificity 95%. Overall 142 (67%) underwent UNE resulting in reduced operative time compared with BNE (45min; 25-120 vs. 60; 35-90). Histopathology revealed adenoma (87%); hyperplasia (8%); double adenoma (1%); normal (1%) and no gland was removed twice. Most patients (96%) were hospitalised <24h. Mortality was zero and morbidity 4%. At three-month follow-up 99% of patients were normocalcaemic. One patient had persistent and one recurrent 1HPT.

Conclusion

Normocalcaemia is the most important endpoint. A combination of localisation, experienced surgeon and qPTH enables a high success rate.

Primary hyperparathyroidism in the elderly and changes in post-operative calcium

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Introduction

In patients with primary hyperparathyroidism anecdotal evidence had brought us to the conclusion that the elderly recovered less quickly. Does serum calcium and PTH remained elevated for longer post operatively in the elderly. We compared their results to a control group.

Method

Over 6 years 1127 consecutive cases of primary HPT were found and stratified into percentiles according to age, Two groups were formed: Group 1 was the control group (age 15-40, n=56) and group 2 the elderly group (percentile >95, age 80-91, n=56). Exclusion criteria were failure of the first procedure or a familial HPT syndrome. Intra-operative PTH, serial post-operative calcium, creatinine clearance and regular medication were recorded.

Results

Median stay was 2 days vs 3 days ($p < 0.001$). Older patients had a higher pre-operative calcium (118 mg/l vs 115 mg/l,) and PTH (201 pg/ml vs 148 pg/ml) $p = \text{NS}$. There was no difference in the change in day 0-2 calcium post operatively ($p = 0.346$), nor in intra-operative PTH ($p = 0.418$) on repeated measure Anova analysis. No difference between groups was found, including vitamin D ($p = 0.351$), renal function and effect of medication showed no difference ($p = 0.541$).

Conclusion

Old age does increase post-operative stay but this is not due to an independent effect on calcium metabolism. In the elderly, hyperparathyroidism had probably been present for longer. The starting calcium and PTH levels were higher and so appeared to fall more slowly. Elevated serum calcium <24 hours after surgery doesn't mean the patient is not cured.

Early report of ultrasound vocal cord assessment for patients undergoing cervicotomy

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Introduction

The majority of dedicated endocrine surgery centres in the UK and abroad routinely perform pre-operative vocal cord checks prior to cervicotomy. Ultrasound scanning is routinely used in the work up of patients being assessed with thyroid and parathyroid disease. This is an early report on the use of USS as a method of performing pre-operative vocal cord checks.

Method

We report the results of 32 patients undergoing USS as an assessment of thyroid status, USS guided FNAC and USS assessment of lymph node status prior to thyroidectomy. At the time of ultrasound all patients had vocal cord function assessed by ultrasound. Whilst in the supine position the vocal folds were assessed during quiet respiration and phonation. All patients underwent naso-endoscopy to validate the USS vocal cord findings prior to surgery.

Results

32 patients (26 female 6 male) underwent thyroid surgery. None had thyroid cancer. 30 patients vocal folds were seen on USS to move normally; this corresponded with normal vocal cord movement on naso-endoscopy in all of them. Two patients had calcified thyroid cartilage making USS interpretation too difficult to be reliable.

Conclusion

USS assessment of vocal cord function is possible. Greater numbers are needed to confirm the accuracy of USS, particularly in abnormal vocal cord movement, and the proportion of patients in whom USS vocal cord assessment is successful. However, these findings would suggest it is a useful means of assessing vocal cord function prior to cervicotomy in most patients.

Free Papers Session 2

Friday 20th November 2.00pm to 4.00pm

Chairs

Ms Alison Waghorn

Mr Greg Sadler

Time Allocated per paper: 15mins

Papers to be Judged On:

**Presentation
Scientific/Clinical Content
Impact
Ability to Answer Questions**

Adrenalectomy in England: Most are done by surgeons who do less than 5 a year

Yesar El-Dhuwaib, Mark Lansdown

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Aim: To describe surgical approach, consultant caseload and outcomes of adrenal surgery in England

Methods: All patients in English NHS hospitals undergoing adrenalectomy in the financial year 2005/2006 were identified using OPCS 4 operative and ICD10 diagnostic codes. Cases were analyzed by diagnosis and surgical approach (open or laparoscopic), consultant caseload, length of stay and mortality.

Results: 642 patients underwent adrenalectomy. In 148 the operation was part of another procedure (nephrectomy, hepatectomy and pancreatectomy). These patients were excluded from further study. 494 patients had 528 adrenalectomies. 242 operations were performed by 159 surgeons with case loads of less than 5/year. The male: female ratio was 1:1.34. The mean age was 52 (range = 1-86 years). In 182 patients (37.8%) surgery was performed for hypersecretion of the medulla or cortex. The remainder (312 patients) underwent surgery for benign (155) or malignant (157). Median hospital stay was 6 days (3-9). Laparoscopic surgery (237 patients - 47.9%) was associated with a significantly lower stay than open surgery (median 5 days Vs 7 P< 0.01).

High volume surgeons were more likely to perform laparoscopic surgery (70% laparoscopic if n = 7-18 per year Vs 28% if n = 1/year, P=<0.01), and their patients had shorter hospital stays (median 5 day Vs 7 p=0.014).

The in-hospital mortality rate was 1% (5 patients), all were in the open surgery group and the consultants had a caseload of 5 operations or less per year.

Conclusion: Sharing adrenalectomy between so many surgeons is probably not the best model of care.

Initial UK Experience of Retroperitoneoscopic Adrenalectomy

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form_abstract: Posterior retroperitoneoscopic adrenalectomy is an increasingly utilised technique in Europe¹ and America². Surgeons in the UK seem reluctant to adopt this technique. We review our initial experience (August 2007 to May 2009) using the posterior approach for patients with adrenal tumours ≤ 5 cms.

Approach	Retroperitoneoscopic	Transperitoneal	Open
Completed Operations	26*	30	2
Conversions	3	2	
Phaeochromocytoma	10	7	1
Cushings Syndrome	6	8	1
Sub-Clinical Cushings	4	5	
Cushings Disease	2	7	
Incidentaloma	2	2	
Conn's	4	1	
Metastases	2*		
Adrenal Cysts		2	
Mean Tumour Size (Range) cms	3.5 (1.5 - 5.3)	4.8 (0.7-8)	4.75 (3-6.5)

*1 abandoned procedure

Conversion to transperitoneal laparoscopic approach was performed in 3 patients - incorrect port placement, inability to ventilate the patient in prone position, intra-abdominal bleed (then converted to open procedure). In a further case inability to progress with dissection (metastasis) resulted in the procedure being abandoned. A transperitoneal laparoscopic procedure was converted to open due to large vascular tumour.

BMI and post-operative length of stay were equivalent in both groups. Specific morbidity from the retroperitoneal approach includes subcostal nerve injury (n=1), splenectomy (n=1) in a converted patient, surgical emphysema is frequently observed. The availability of this technique was of particular benefit in two patients (recurrent retrocaudal phaeochromocytoma, and massive hepatosplenomegaly in a patient with Cushings disease). The learning curve for the surgeon, theatre staff and anaesthetist is steep.

1-Posterior Approach Retroperitoneoscopic Adrenalectomy. Walz M et al Surgery 2006;140; 943-948

2-Posterior Retroperitoneoscopic Adrenalectomy. Perrier N et al Annals of Surgery 2008; 248, 666-74

Prophylactic Thyroidectomy in Children with Multiple Endocrine Neoplasia Type 2

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BACKGROUND The most common cause of death in patients with Multiple Endocrine Neoplasia type 2 is medullary thyroid carcinoma. All patients with MEN2 develop this cancer and Prophylactic Thyroidectomy (PT) is recommended to prevent malignant transformation.

METHODS This study reviews our experience of treating children identified as carriers of a RET mutation diagnostic of MEN-2A. Data was collected by reviewing patient notes and hospital electronic databases.

RESULTS Between 1998 and 2009 15 children (8 boys; 7 girls) were identified by genetic analysis as having MEN 2. The commonest codon with RET mutation was 634Y (n=8), 2 siblings were positive for 891A, 2 further siblings were 790F positive and 1 child had codon 620G mutation. Of these, 13 underwent PT and 3 central lymphadenectomy (2 are awaiting surgery). Median patient age of those undergoing surgery was 7.5 yrs (range 3.5 - 15 yrs) and median hospital stay was 4 days. 10 children had transient hypocalcaemia following surgery and required oral calcium (10) and alfacalcidol (3). There were no other post-op complications. Histology showed medullary carcinoma in 4 specimens (completely excised) C-cell hyperplasia in 8 cases, and 1 case showed non-specific thyroiditis only. There were no lymph node metastasis and all children but one have undetectable calcitonin levels.

DISCUSSION This is the first UK case series of children with MEN2 undergoing prophylactic thyroidectomy. We have shown PT to be a rare but safe procedure. We propose to conduct a UK audit of prophylactic thyroidectomy in children with MEN2

Outcomes of parathyroidectomy with and with out Intra-operative PTH assay Sampling

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Introduction

This study is unique in reporting on two groups assigned to either intra-operative PTH assay (IOPTH) or no assay depending upon geographical location. We report our observations on the impact that IOPTH had on the surgical management of primary HPT.

Method

This is a prospective study. Surgery was performed on 2 sites, one site having IOPTH available and one not. Patients were operated on by one of two experienced endocrine surgeons visiting both sites. The pre-operative protocol (MIBI scintigraphy and neck ultrasound) and criteria for surgery were the same at both sites. Of 337 patients, 39 had recurrent HPT and 30 secondary HPT patients and were excluded leaving 268 patients for analysis.

Results

There was no difference in persistence of disease ($p=0.21$). Cure rate with IOPTH was 98% and without it 95% in all patients and 98.6% and 95.4% when only focussed approach was considered. No patients with concordant imaging and IOPTH had persistence whereas 4 in the no IOPTH group did ($p=0.083$). In both groups 11 patients underwent conversion from a focussed approach to bilateral exploration ($p=0.063$), with no difference in outcome.

Conclusions

Our results are in concordance with others. Intra-operative PTH increased the success rate from 95.4% to 98.6% in patients with concordant imaging. IOPTH did not change the conversion rate to a bilateral exploration, nor did it improve success rates in patients with discordant imaging or increase their chances of having a successful focussed approach when one of the imaging modalities failed to find the adenoma.

Positive HPA binding is a marker of malignancy in follicular thyroid tumours.

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Introduction: Binding of the lectin *Helix pomatia* agglutinin (HPA), has been used as a marker of altered glycosylation in cancer. Association between HPA binding and poor prognosis has been shown in many human cancers, but not in thyroid cancer.

Materials and methods: 81 archival paraffin wax-embedded specimens of benign and malignant follicular tumours from patients treated for thyroid tumours between the years of 1983-1993 were studied. This allowed for a maximum of 24 years follow up.

Results: Lectin histochemistry showed that HPA binding was significant in malignant follicular tumours ($p < 0.0009$). 10 patients with follicular cancers patients died over a median 6 years (range 0-14 years) from the disease. Kaplan-Meir survival analysis revealed that patients with HPA-negative tumours enjoyed a significantly longer survival than those with HPA-positive tumours ($p = 0.0142$), in patients who died of their disease. The 10 year survival rate for HPA -negative tumours was 98% in comparison to 78% for HPA positive tumours.

Conclusion: Positive HPA binding is a marker of malignancy in follicular neoplasms and is associated with poor prognosis and patient survival

Pre-operative vitamin D deficiency predicts post-operative hypocalcaemia after total thyroidectomy

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Introduction

Transient post thyroidectomy hypocalcaemia occurs in up to 30% of patients. We evaluated the effect of Vitamin D deficiency on post-thyroidectomy hypocalcaemia.

Materials and Methods

Data was collected prospectively between January 2006 and March 2009. 166 consecutive total thyroidectomies were analysed for relationship between pre-op vitamin D levels and post-operative corrected calcium levels. Patients were divided into three groups dependant upon pre-op vitamin D levels: group 1 less than 25nmol/L, group 2, 25-50nmol/L and group 3 greater than 50nmol/L. Hypocalcaemia was defined as a post-operative calcium < 2.00mmol/l. Vitamin D groups were compared using Chi squared analysis.

Results

There was no difference in patient demographics, pre-operative hyperthyroidism or pathology between groups. There was a difference in post-operative hypocalcaemia between the three vitamin D groups (group 1: 32% vs group 2: 24% vs group 3: 13%, respectively). Hypocalcaemia in group 1 (vit D <25nmol/l) was significantly more likely than in group 3 (vit D >50nmol/l) Chi square analysis, $p=0.027$. Vitamin D deficiency was also associated with a longer hospital stay (Wilcoxin rank test; median stay 2 days vs 1 day, $p< 0.001$).

Conclusion

There is a significant difference in post operative hypocalcaemia rates between those with vitamin D levels greater than 50nmol/l and those with a level of less than 25nmol/l. Vitamin D deficiency leads to a delay in discharge due to a higher likelihood of hypocalcaemia. Further work is needed to demonstrate whether correction of vitamin D deficiency can reduce postoperative morbidity preventing delays in discharge.

Outcome of Systematic Central Lymph Node Dissection in Patients Undergoing Selective Neck Dissection for Locally Advanced Thyroid Cancer

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Background. Selective neck dissection (SND) is important for local control in thyroid cancer with lateral compartment lymph node (LN) involvement. This study characterises the impact of systematic central lymph node dissection (SCLND) upon follow-up indices in patients undergoing SND.

Methods. Prospective data were collected on patients reviewed in a tertiary referral centre *Thyroid Cancer Clinic*, SND was performed by two endocrine surgeons.

Results. From Jun 1997 to May 2009, 65 patients (22M:43F, median age 44 years (16-83yrs) had SND for locally advanced thyroid cancer with concurrent thyroidectomy (n=42), or a median of 51(1-554) months after thyroidectomy if local recurrence was diagnosed (n=23). Lymph node yields from SND were comparable with published series (Table).

	n=65	PTC n=43	MTC n=18	Other n=4	P
	M/F	13/30	9/9	0/4	ns
Median age (range) years		42 (15-83)	55 (36-71)	57 (45-64)	ns
Median LN yield (range)		16 (3-39)	17 (5-52)	17 (15-22)	ns
Median no. of involved		4 (0-22)	5 (0-50)	4 (0-7)	ns

PTC - papillary thyroid cancer; MTC - medullary; Other - follicular and poorly-differentiated thyroid cancer

Before 2007 BTA guidelines on thyroid cancer management, central compartment LNs were dissected if macroscopically involved (n=42). Since Nov 2007 SCLND has been performed (PTC/poorly-differentiated=14, MTC=5). In those with PTC this yielded a median 6(1-11) LNs; 5(1-7) nodal metastases were identified in 8/10 patients. Median postoperative central compartment I¹³¹-uptake in patients undergoing SCLND was similar to that observed in pre-Nov 2007 controls (1.6% (0.2-4.7%) vs. 0.8% (0-3.7%) p=ns). Six-months postoperatively, serum thyroglobulin was undetectable in a similar proportion of patients from both groups (5/10 vs. 14/28). Patients with PTC who had SCLND were less likely to require >1 ablative dose of I¹³¹ (2/10 vs. 12/28, p=ns).

Conclusion. This study confirms that central compartment LN metastases are seen in the majority of patients with lateral neck LN involvement. SCLND may improve the ability to obtain complete and timely local control of disease.

A Worrying Trend in Thyroid Cancer?

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Introduction

The incidence of thyroid cancer is rising, attributable to increasing intrathyroidal disease. We suspected a local trend towards more extensive disease: this study aims to determine whether this is accurate.

Methods

A prospective database of patients managed in one centre, serving a population of ~500000, was analysed using SPSS 17.0 (Chi-square test for categorical analyses). Stratification included risk, TNM stage and diagnosis before or after 2000.

Results

374 thyroid cancers were diagnosed between January 1977 and March 2009, 314 of follicular cell origin: 184(58.6%) papillary, 119(37.9%) follicular and 11(3.5%) anaplastic. There were 81(25.8%) male:233(74.2%) female, 180 (57.3%) over 45 years at diagnosis. At latest follow up, 246(78.3%) patients were alive. 27 of the 68 deaths were due to thyroid cancer.

234 patients were diagnosed pre-2000 and 80 post-2000. There was no significant difference in sex distribution nor proportions of histological type, but there were significantly more patients aged >45 post 2000 (50% v 78%, $p < .001$). There were more AMES high risk patients (23% v 36% $p = .021$) and stage III/IV disease (21% v 45%, $p < .0001$). Since 2000 diagnostic central compartment dissection has been routine, but there has been a significant increase in multiple node level dissections for macroscopic disease (13% v 24% $p = .018$). Despite the increase in more advanced disease, cancer specific survival has not changed significantly, and for stage III disease, has actually improved.

Conclusion

The increase in the proportion of patients requiring more radical surgery secondary to more advanced disease at presentation is confirmed. The reasons are a matter of speculation.