

ENDOCRINE SURGERY

ES01
THE IMPACT OF SYNOPTIC CYTOLOGY REPORTING ON THYROIDECTOMY RATE IN A SINGLE INSTITUTION

C. J. L. TSAN AND J. W. SERPELL

Frankston Hospital, Victoria, Australia

Background Fine needle aspiration cytology (FNAC) is integral to diagnosis and management of patients with thyroid nodules. We introduced synoptic cytology reporting for thyroid nodules in 2004. The aim of the study was to examine the impact of synoptic cytology reporting.

Methods A comparative study of two 2-year periods (1/8/2002–1/8/2004 and 2/8/2004–2/8/2006) prior and post introduction of synoptic reporting was conducted from a prospectively collected database of patients presented with thyroid nodules. All data were analysed using Microsoft excel and statistics calculated with likelihood ratio and chi square tests.

Results There were a total of 660 patients. Of these 376 were operated and 284 non-operated. The female to male ratio was 1 : 7. Comparing the 2 periods, the overall FNAC sensitivities were 60% vs 79.1%, specificities were 83.7% vs 79.4%, accuracy 76% vs 79.3%, false positive 16.3% vs 20.6% and false negative of 40% vs 20.9%. The non diagnostic rates were 7.4% vs 3.15%. FNAC prompted surgery in 66.7% vs 100% in carcinoma and 56.4% vs 73.6% in adenoma. A benign FNAC prompted surgery in 15% vs 19.8% of cases. The total rate of surgery has decreased by 2.7%.

Conclusions Synoptic cytology reporting has resulted in an overall improvement in all measures of the tests. The rate of surgery has decreased by 2.7%. Synoptic cytology reporting is therefore recommended for all endocrine surgical units.

ES02
SIGNIFICANCE OF LYMPH NODE MICROMETASTASES IN PAPILLARY THYROID CARCINOMA

I. M. CRANSHAW, T. JANY, L. ARNALSTEEN, F. PATTOU AND B. CARNAILLE

Service de Chirurgie General et Endocrinienne, Lille, France

Purpose Management of nodal disease in papillary thyroid cancer (PTC) varies. The significance of micrometastases and their relationship to locoregional recurrence has not been well described. We set out to compare patients with micrometastatic nodal disease to those with macrometastases and those with no metastases. Our service follows a policy of routine central/recurrent nerve dissection and ipsilateral jugulocarotid node sampling for cases of PTC.

Methodology One hundred and seventy patients who had surgery for PTC between January 1995 and December 2000 were included and split into three groups. Micrometastases (only micrometastatic disease), Macrometastases (any macrometastatic nodal involvement) and No metastases (absence of any nodal involvement). These three groups were compared for rates of locoregional disease recurrence and distant metastases.

Results Contingency analysis showed that the Macrometastases group had a significantly higher rate of locoregional recurrence compared with both No metastases (Odds ratio 7.67, $p < 0.0001$) and Micrometastases groups (Odds ratio 9.212, $p 0.0154$). There was no difference between the No metastases and micrometastases groups ($p 1.000$), the p value suggesting the two groups were likely to be equivalent. Analysis revealed that distant disease was significantly more common in the Macrometastases group when compared to the No metastases group, (Odds ratio 25.09, $p 0.0032$)

Conclusions Micrometastatic nodal disease associated with PTC does not lead to higher rates of locoregional recurrence or distant disease. These patients do not need completion neck dissection and have a low risk of locoregional recurrence.

ES03
THE DELPHIC LYMPH NODE AND THYROID CANCER

J. D. ISAACS, C. IHRE-LUNDGREN, S. SIDHU, M. SYWAK, P. EDHOUSE AND L. DELBRIDGE

Endocrine Surgical Unit Royal North Shore Hospital, New South Wales, Australia

Background Named after the oracle of Delphi, the Delphic (or prelaryngeal) lymph node has long been regarded as a predictor of malignancy in thyroid cancer. It also has a notorious reputation for being a marker of advanced nodal disease. There is no current medical literature to support or refute these claims. The aim of this study was to determine the true significance of Delphic lymph node involvement in thyroid cancer.

Methods 1,000 consecutive patients undergoing total thyroidectomy formed the study population. All information was obtained from a prospectively maintained database as well as from review of the histopathology records.

Results 227 of 1,000 (22.7%) had a final diagnosis of thyroid cancer. In 63 of 227 (27.8%), the final diagnosis of cancer was unsuspected. The Delphic lymph node was removed in 112 of 227 patients, with 22 of 112 cancerous. Thus, 19.6% of patients had involvement of the Delphic lymph node when it was removed. Delphic node involvement was associated with significantly greater nodal disease (10.1 vs 1.4 nodes; $p < 0.05$). No patient in either group had Delphic node involvement diagnosed on clinical grounds preoperatively.

Conclusion Despite its reputation, the Delphic lymph node is not itself an independent predictor of the presence of thyroid cancer. It is however a useful marker of extensive local nodal disease. Identifying intra-operatively whether the Delphic node is involved may assist in planning the extent of neck dissection during total thyroidectomy.

ES04
TOTAL THYROIDECTOMY – DOES UNDERLYING PATHOLOGY EFFECT PARATHYROID AUTOTRANSPLANTATION AND RELATED COMPLICATIONS?

H. EBRAHIMI, C. I. LUNDGREN, S. B. SIDHU, M. S. SYWAK, P. EDHOUSE AND L. W. DELBRIDGE

University of Sydney Endocrine Surgical Unit, New South Wales, Australia

Background Total thyroidectomy (TT) is increasingly being accepted as the preferred surgical option for the treatment of a majority of benign and malignant thyroid conditions. Parathyroid autotransplantation is an accepted technique for retaining parathyroid function following TT. The present study aims to determine whether the underlying thyroid pathology has any effect on the number of parathyroid glands autotransplanted and subsequent complications.

Methods A retrospective study of all TT cases performed by this unit in 2004–2005 was performed. The underlying pathology, number of parathyroid glands autotransplanted and incidence of temporary hypocalcaemia and permanent hypoparathyroidism were recorded.

Results A total of 681 TT were analysed. Of these, 80 (11.7%) were for Graves' disease and 601 (88.3%) were for other pathologies. For the Graves' disease cases, 49 (61.3%) required 1 or less parathyroid glands to be autotransplanted and 31 (38.8%) required 2 or more. This is compared to 443 (73.7%) and 156 (26.0%) for non-Graves' disease cases ($p = 0.023$). There was also a significant difference ($p = 0.025$) in the incidence of temporary hypocalcaemia between Graves', 10 (12.5%) and non-Graves' cases, 33 (5.5%). The incidence of permanent hypoparathyroidism was 1 (1.3%) and 5 (0.8%) for Graves' and non-Graves' cases respectively ($p = 0.529$).

Conclusion Total thyroidectomy for Graves' disease does require the autotransplantation of significantly more parathyroid glands and increases the incidence of temporary hypocalcaemia post TT. It does not however significantly increase the incidence of permanent hypoparathyroidism.

ES05 ROUTINE PARAFIBROMIN IMMUNOHISTOCHEMISTRY OF LARGE PARATHYROID ADENOMAS IS NOT AN EFFECTIVE SCREENING STRATEGY FOR CARCINOMA

G. Y. MEYER-ROCHOW, A. J. GILL, L. W. DELBRIDGE, S. B. SIDHU AND
M. S. SYWAK

Royal North Shore Hospital, New South Wales, Australia

Purpose Parathyroid carcinoma (PC) is rare and accounts for less than 1% of all cases of primary hyperparathyroidism (PHPT). The definitive histopathologic diagnosis of PC requires unequivocal invasion or metastasis which may be absent at first presentation. As a result, many cases of PC can only be diagnosed retrospectively. Parafibromin is the protein encoded by HRPT2 which is mutated and not expressed in many parathyroid carcinomas. Given that PCs generally weigh more than parathyroid adenomas (PAs), we hypothesized that amongst large PAs there may be a high incidence of occult PC which could be identified by negative staining for parafibromin.

Methodology 57 parathyroid glands weighing greater than 2 grams excised from 1998–2006 were identified from the University of Sydney Endocrine Surgical Database. Two specimens with a histopathologic diagnosis of PC were excluded. Immunohistochemical staining for parafibromin was performed on the remaining 55 PAs.

Results Of the 55 specimens stained for parafibromin only one definite negative stain was detected. This case was originally classified as an "atypical adenoma" because it showed nuclear and architectural atypia without unequivocal evidence of invasive growth. In view of the negative staining for parafibromin it therefore probably represents occult carcinoma. There has been no evidence of recurrence or metastasis after 6.5 years.

Conclusions Complete loss of staining for parafibromin is very rare in giant parathyroid adenomas suggesting that occult carcinoma is equally rare. As a result routine immunohistochemical staining for parafibromin does not appear to be an effective screening test for carcinoma in large PA without histopathologic features of PC.

ES06 ADRENALECTOMY IN THE LAPAROSCOPIC ERA

J. BOLDERY AND I. GOUGH

Royal Brisbane and Women's Hospital, Queensland, Australia

Background Laparoscopic adrenalectomy is now the accepted standard of care in surgical treatment of most forms of adrenal pathology. This study aims to review our experience with both the laparoscopic and open techniques over a 12 year period.

Methods A retrospective review of patients who underwent adrenalectomy by the same surgeon between January 1995 and December 2006 was performed. Laparoscopic and open adrenalectomy were compared in terms of operating time, length of stay and peri-operative morbidity. Patient demographics and tumour characteristics were also studied.

Results There were 82 adrenalectomies performed over the 12 year period. Sixty-one were completed laparoscopically, 17 were performed open and four were converted from a laparoscopic to an open procedure. The indications for surgery included 30 pheochromocytomas, 20 non-functioning cortical adenomas, 9 aldosteronomas, 6 cortisol-producing adenomas, 3 adrenocortical carcinomas, 3 pseudocysts, 3 cortical hyperplasias, 2 cortical cysts, and one each of haemangioma, angioliopoma, myeloliopoma, haematoma, lymphoma and adrenal metastasis. The average operating time for laparoscopic adrenalectomy was 114 minutes vs 159 minutes for open procedures. Laparoscopic adrenalectomy was associated with significantly shorter length of stay (2.6 vs 7.4 days) and decreased post-operative morbidity (6.4% vs 42%). There was no peri-operative mortality.

Conclusion Our results concur with other retrospective reviews comparing laparoscopic and open adrenalectomy, demonstrating unequivocal advantages in terms of reduced operating time, length of stay and post-operative morbidity.

ES07 MICROARRAY GENE EXPRESSION ANALYSIS OF HUMAN ADRENOCORTICAL TUMOURS

P. S. H. SOON, S. B. SIDHU, D. E. BENN, A. GILL, B. G. ROBINSON AND
K. L. McDONALD

Cancer Genetics, Kolling Institute, University of Sydney, New South Wales, Australia

Introduction Adrenal tumours are common, occurring in 7% of patients over the age of 50. Adrenocortical carcinomas, however, are rare, with an incidence of two per million population per year. The management of adrenocortical tumours is complex, compounded by the difficulty in discriminating benign from malignant tumours using conventional histology. A molecular marker which could reliably distinguish between the two groups would be valuable in patient management.

Objectives The aim of this study was to identify molecular markers which will discriminate between adrenocortical carcinomas and adenomas using microarray gene expression analysis.

Methods This study used RNA from 6 normal adrenal cortices, 16 adrenocortical adenomas and 12 carcinomas. Only samples with an RNA integrity number of 7.5 or greater were used. The samples were hybridised to Affymetrix HGU133plus2.0 genechips. Data analysis was performed with Partek and affyImgui softwares.

Results Using a cutoff of $B > 2$ and $M > 2$ or < -2 , 217 genes were found to be significantly differentially expressed between adrenocortical adenomas and carcinomas. Of these genes, 120 were unregulated while 97 were down-regulated. Seven of these genes have been selected for validation studies with real time reverse transcription polymerase chain reaction.

Conclusion In this study, we found 217 genes which were significantly differentially expressed between adrenocortical adenomas and carcinomas. With validation and further studies, these genes will provide further insight into the pathogenesis of adrenocortical tumours as well as possibly proving to be reliable discriminators between adrenocortical adenomas and carcinomas.

ES08 DIAGNOSTIC AND THERAPEUTIC STRATEGIES OF ADRENOCORTICAL CARCINOMA-A 3-INSTITUTION EXPERIENCE

A. H. IMISAIRI, A.N. HISHAM, T.W.J. LENNARD, R.D. BLISS, B.J. HARRISON
AND M. PERINI

Putrajaya Hospital, Putrajaya Federal Territory, Malaysia

Objective This paper reviews the diagnostic, therapeutic strategies and outcomes of ADCC in 3 Institutions between Newcastle and Sheffield in United Kingdom and Putrajaya, Malaysia.

Patients and Methods A 10-year retrospective analysis of proven cases of ADCC was collected from January 1997 to December 2006. The patients' demographic data, clinical manifestation, site and size of the tumour were analysed. The record of metastasis, and therapeutic modality and outcomes were evaluated.

Results A total of 22 cases of ADCC were documented in United Kingdom with 11 cases in each respective center. 16 cases were reviewed from Putrajaya. There was no gender preponderance and age significance. Cushing's Syndrome was the most common clinical manifestation (36.4%) in United Kingdom and (37.5%) in Putrajaya. The mean size of the ADCC was 9.3 cm (5–15 cm) in Newcastle and 9.8 cm (6–15 cm) in Sheffield as compared to 15.7 cm (5–25 cm) in Putrajaya. There were 12(75%) of patients in Putrajaya were diagnosed with Stage IV disease upon presentation whilst only 3(27.3%) and 5(45.4%) patients had metastasis noted in Newcastle and Sheffield respectively. Of note, 7(63.3%) patients in Sheffield were offered radical adrenalectomy. Our data revealed that the 2 years survival of patients who had radical approach in Sheffield has the highest rate of survival of 8(72.7%) as compared to 5(45.4%) in Newcastle and 2(12.5%) in Putrajaya.

Conclusions Surgical removal remains the only form of curative therapy and hope of prolonged survival. The poorer prognosis of patients in Putrajaya may be attributed to the advanced stage of the disease.

ES09
THE UNIVERSITY OF SYDNEY ENDOCRINE SURGERY
DATABASE: 50 YEARS OF CONTINUOUS DATA ACCRUAL

T. S. REEVE, C. LUNDGREN, A. G. POOLE, C. BAMBACH, B. BARRACLOUGH
 AND L. DELBRIDGE

Sydney University/Royal North Shore Hospital, New South Wales, Australia

Databases have recently become de rigeur. Our Unit database has for 50 years comprehensively documented all 17 401 endocrine surgeries by its active surgeons, commencing when surgical records were hand recorded and now evolved to a PC based program. Since 1957 the database has been integral to writing 136 research publications in referred journals relating to endocrine surgery. The most common form of database related research publication has been the development and evaluation of new endocrine techniques, to which this unit has made extensive contributions. Notable examples are introducing total thyroidectomy for benign multimodular goitre, one of the first publications ever worldwide on the topic coming from the unit in 1987. Data acquisition has also allowed documentation of the safety and efficacy of new minimally invasive endocrine procedures. The next most common form of original research relates to patterns of either thyroid or parathyroid disease in the community. For example this Unit was one of the first to report, over a decade ago, increasing incidence of differentiated thyroid cancer. The database has provided clinical information to support laboratory or molecular genetics research. It has also proven useful comparing outcomes in groups of patients separated in time. Surgical databases such as this have proved a powerful tool in improving societal health care. Prospective acquisition of clinical data, without necessarily having a research objective defined prior to commencement of data accrual provides an unequalled resource to answer questions that may not have been thought of when the data was commenced.

ES10
SURGICAL MANAGEMENT OF WELL-DIFFERENTIATED
THYROID CANCERS; RISK GROUP STRATIFICATION AND
PREDICTORS OF OUTCOME

B. SARINAH AND A. N. HISHAM

Putrajaya Hospital, Putrajaya, Federal Territory, Malaysia

Objective The aim of this study was to evaluate the predictive ability of outcomes in the management of well-differentiated thyroid cancers (WDTC).

Method & Materials A total of 115 patients operated for primary WDTC from 2002 to 2006 were included in this study. The patient's demographic data, clinical manifestation, tumour characteristics and outcomes were reviewed. Risk group stratifications were applied using pTNM, AMES and MACIS prognostic systems.

Results There were 81(70%) women and 34(30%) men with the median age of 44 years (ranged 6 to 78 years). Our results showed that at the median follow up period of 19 months, 93(80.1%) patients are still alive without recurrence disease, 5(4.3%) patients succumbed to the disease and 3(2.6%) are still alive with persisting disease. Local and nodal recurrence occurred in 14(12.2%) patients after primary surgery, of which 12(10.4%) patients already had nodal metastasis at presentation. All 5 patients who succumbed to the disease were proven to be advanced stage with nodal metastasis, coupled with incomplete surgical resection. In addition 3(2.6%) of them also had distant metastasis at presentation. All patients who died were in the high-risk groups of AMES scoring system, either staged 3 or 4 of pTNM classification and/or scored more than 8 in MACIS prognostic scoring.

Conclusions Our study emphasized the important of risk group stratification, which may indicate the need for a more aggressive surgical treatment. Poorer survival and outcome is expected if WDTC are locally advanced with nodal and distant metastasis coupled with inability to achieve complete resection.

ES11
INCREASING INCIDENCE OF THYROID CANCER IN
RETROSTERNAL GOITRE

S. GRODSKI, T. BROWN, A. GILL, M. SYWAK, S. SIDHU AND L. DELBRIDGE

University of Sydney, Endocrine Surgical Unit, New South Wales, Australia

There has been a documented worldwide increase in the incidence of thyroid cancer attributed to increased surveillance. The aim of this study is to determine whether thyroid cancer incidence is also increasing in the group of patients with retrosternal goitre, who are not typically the subject of ultrasound surveillance.

This is a retrospective clinical review of all patients undergoing thyroidectomy for retrosternal goitre over a 40 year period. Histology of all recorded thyroid cancers were reviewed by a single pathologist and reclassified according to current WHO criteria. Statistical analysis was performed using the chi-square test.

Between 1966 and 2005, 2026 patients were operated on for retrosternal goitre on a background of 13,793 thyroid procedures. While absolute numbers of retrosternal procedures remained stable, the rate as a percentage of all thyroid surgery dropped from 21% to 12% ($p < 0.05$). At the same time the percentage of retrosternal goitres with carcinoma increased from 3.6% to 8% ($p < 0.05$). However, if microcarcinomas (<10 mm) are excluded then the increase is only 2.9% to 4.3% ($p = NS$).

Routine ultrasound surveillance is not relevant for patients with retrosternal goitre and hence the changes in thyroid cancer incidence in this study can not be attributed to this change in practice. This study has once again demonstrated an increasing incidence of thyroid cancer, however, there is no increase in the incidence of clinically significant cancers.

This study removes surveillance as a confounding factor and has shown that the increasing incidence of thyroid cancer is due to increased reporting of microcarcinomas and that there is no increase in clinically significant cancers.

ES12
CAN GIANT PARATHYROID ADENOMAS BE SAFELY REMOVED
BY MINIMALLY INVASIVE PARATHYROIDECTOMY?

G. Y. MEYER-ROCHOW, S. B. SIDHU, L. W. DELBRIDGE, S. GRODSKI AND
 M. S. SYWAK

Royal North Shore Hospital, New South Wales, Australia

Purpose Minimally invasive parathyroidectomy (MIP) has become the procedure of choice for the surgical management of a parathyroid adenoma (PA) which localizes on preoperative imaging. The removal of giant PA (weighing greater than two grams) by the minimally invasive technique has not previously been described. Our aim was to determine the safety and efficacy of the removal of giant parathyroid adenomas at MIP.

Methodology This is a retrospective case control study. The study group comprise all patients undergoing MIP where the gland weight was >2.0 gm in the period 1998 to 2006. The control group comprised all other patients undergoing MIP (gland weight <2.0 gm over the same period.) MIP was performed using the lateral mini-incision technique.

Results There were 52 giant PA (M : F - 16 : 36, mean age 61.9) comprising 3% of all cases, and 785 control patients (M : F - 160 : 625, mean age 58.9). The mean weight of the giant PA was 3.64 gm (range 2.0 to 10.8 gm). The giant PA were successfully removed in 49/52 cases with 3 conversions (5.7%), whereas there were 40/785 conversions (5.0%) in the control group ($p = 0.83$). There was 1/52 (1.9%) permanent recurrent laryngeal nerve injury in the study group and 2/785 (0.3%) nerve palsies in the control group ($p = 0.51$). One patient (1.9%) in the giant PA group had persistent hyperparathyroidism, whereas there were 21 (2.7%) patients in the small adenoma group requiring re-exploration for persistent hyperparathyroidism. There were 2/52 (3.8%) carcinomas in the giant PA group compared to 2/785 (0.25%) in the control group.

Conclusion Excision of giant PA using a minimally invasive technique can be performed with the same safety, efficacy and outcomes as for smaller adenomas.

ES13 PHEOCHROMOCYTOMA – AN ANALYSIS OF 123 PATIENTS

C. K. SELVAN, A. NAIR, M. J. PAUL, D. T. ABRAHAM, N. THOMAS AND M. S. SESHADRI

Christian Medical College, Vellore, India

Background Pheochromocytomas are diagnosed in <1% of patient evaluated for hypertension.

Methodology A retrospective analysis of case records of those patients with histopathologically confirmed pheochromocytoma in our hospital from 1976–2006 [30 YEARS] was conducted.

Result A total of 123 patients were diagnosed during this period. The median age at presentation was 31 years (range 9–71) with a male to female sex distribution of 75% and 36%. 80% were hypertensive at the time of diagnosis. Headache(84%), palpitations(64%) and sweating(60%) are the most common presenting complaints. Tachycardia [>100 per minute] were seen in 31%. Hypertensive changes in eyes were seen in 87%. In ECG, QTc prolongation in 26%, left ventricular hypertrophy in 30%. Diabetes mellitus/IGT was seen in 35%. Elevated urinary VMA (24 hrs) was seen in 93% when done on 3 consecutive days.

MIBG was positive in 85%. Malignant pheochromocytoma was diagnosed by tumour invasion/metastasis seen 10.44%. Extra adrenal pheochromocytoma 18%, followed by bilateral pheochromocytoma in 11%. Hereditary pheochromocytoma in 13% which include 5 with Von Hippel Lindau and 6 with MEN.

A median follow-up was 12 months (range 1–204) in which persistent hypertension was seen in 16%. Cholelithiasis in 7%.

Conclusion In our case series the mean age (31 yrs) of presentation seems to be younger compared to other case series. 16% of our patients were asymptomatic at the time of presentation. Urinary VMA was elevated in 93% of patients when done in 3 consecutive samples. Extra adrenal phaeo was common in our patients (18%). MIBG was false negative in 15% of those patients with pheochromocytoma.

ES14P THYROID CANCERS IN CHILDHOOD – A PROSPECTIVE REVIEW OF THE MALAYSIAN POPULATION

K. HARJIT AND A. N. HISHAM

Putrajaya Hospital, Putrajaya, Malaysia

Objective The aim of this study was to review the incidence and pattern of childhood thyroid cancers at our center. We also evaluate the possible risk factors and the outcome of treatment.

Methodology Prospective review of all childhood thyroid cancers operated at Putrajaya Hospital from Jan 2002 to Dec 2006. All data was prospectively reviewed and analyzed.

Results A total number of 20 patients (58.8% of the total number of paediatric goiters) were accrued in this study. The Male : Female ratio was 1 : 4. The mean age was 16.1 (ranged 6–21 years). All patients were euthyroid on presentation. 13 presented with a solitary nodule, 6 with a multinodular disease, 1 thyroglossal cyst and 6 with associated palpable lymph nodes. All were differentiated thyroid cancers; 18 were papillary thyroid cancer (14.1% of total adult population, 18/127) and 2 were follicular (10.5%, 2/17). Total thyroidectomy was done in 12 patients, completion surgery in 8. 9 patients required additional modified radical neck dissection. There was no history of previous irradiation to neck. All patients received radioiodine ablation (RAI) postoperatively. Average weight of gland was 3.2 g and the average size was 3.5 cm. 2(10%) patients developed nodal recurrence. There was no morbidity or mortality in this series. 1 patient had recurrent laryngeal nerve paresis preoperatively. All 20 patients are still alive on a mean follow up of 22 months.

Conclusions Our study showed that the incidence of malignancy in childhood goiters is significantly high and best option of treatment is total thyroidectomy with or without neck dissection.

ES15P ATYPICAL FOLLICULAR' FNAC – RELATIONSHIP WITH FINAL HISTOPATHOLOGY

T. PANG, S. SIDHU, M. SYWAK, T. REEVE, L. DELBRIDGE AND C. IHRE-LUNDGREN

University of Sydney Endocrine Surgical Unit, New South Wales, Australia

Background Fine needle aspiration cytology (FNAC) is a useful technique for the investigation of thyroid lesions. However, about 15% of FNAC results are classified as 'atypical follicular' – a dilemma for the surgeon.

Purpose To investigate the relationship between 'atypical follicular' FNAC results and final histopathological diagnosis.

Methodology Retrospective review of patients who underwent thyroid FNAC at the University of Sydney endocrine surgical unit.

Results Study period – 1985 to 2005; Study population – 424 patients with an atypical FNAC and a malignancy on final histopathology. This accounted for 21% of all atypical FNAC results (n = 1956). Demographics – 342 females, 82 males with a mean age of 47.2 (SD 16.7). The most common presentation in this group was a single thyroid nodule n = 252, followed by multinodular goiter n = 155. Overall, 269 (63.4%) had papillary/mixed (papillary and follicular) carcinoma, 106 (25%) had follicular carcinoma and 49 (11.6%) other malignant pathology. Of the subjects with papillary cancers, 34% had papillary microcarcinoma. Demographics were not predictors of pathology. Over the study period of 20 years, no changes in the pattern of histopathology findings were noted.

Conclusion Although the 'atypical follicular' FNAC has traditionally been considered to be either follicular adenoma or carcinoma, a great proportion of subjects actually have a papillary carcinoma demonstrated on histopathology. A significant proportion of this was accounted for by the presence of incidental papillary microcarcinoma.

ES16P HYPOTHYROIDISM FOLLOWING HEMITHYROIDECTOMY

S. Y. SU AND J. SERPELL

Frankston Hospital, Victoria, Australia

Background The incidence and risk factors for hypothyroidism in patients undergoing partial thyroid surgery remain unclear. Hypothyroidism is an under-appreciated sequel of hemithyroidectomy. The early recognition of post-operative hypothyroidism will alleviate symptoms and may prevent recurrent thyroid disease.

Aim To investigate the incidence, time to onset and risk factors for the development of hypothyroidism following hemithyroidectomy.

Methods Patients undergoing hemithyroidectomy from August 1992 to June 2006 by a single surgeon were identified from an existing, prospectively collected thyroid database. Records were reviewed retrospectively. Patients were analysed for age, sex, family history of thyroid disease, thyroid antibody levels, pre and post-operative TSH, histological diagnosis, the presence of concurrent thyroiditis, and the lag time to diagnosis of hypothyroidism. Chi-squared or Fisher's exact test were performed.

Results Hypothyroidism was diagnosed in 36 (12%) of 300 patients. The mean time to diagnosis was 7.54 months. The mean thyroxine dose was 77.38. Patients with post-operative hypothyroidism had a higher incidence of elevated pre-operative TSH levels (8.3% versus 0; $P < 0.01$), thyroiditis on histology (50% versus 12.2%; $P < 0.01$) and elevated thyroid antibodies levels (48.1% versus 11.3%; $P < 0.01$). Age, gender, family history of thyroid disease, and thyroid pathology were not significant risk factors for hypothyroidism.

Conclusion Given an incidence of 12%, all patients should have post-operative thyroid function assessment. Elevated preoperative TSH and thyroid antibody levels, and the presence of thyroiditis on histology are indications for close monitoring.

ES17P IPTH FACILITATES DAY 1 DISCHARGE AFTER TOTAL THYROIDECTOMY: THE FIRST 50 CASES

S. GRODSKI, C. LUNDGREN, M. SYWAK, S. SIDHU AND L. DELBRIDGE

University of Sydney, Endocrine Surgical Unit, New South Wales, Australia

In recent years there has been much published about the use of iPTH to predict hypocalcemia with a view to achieving earlier safe discharge after total thyroidectomy. After recent publication of Australian data on this practice we developed a new protocol for post-operative calcium management with the aim of achieving a greater number of patients being safely discharged on the first post-operative day. We present our experience with the first 50 patients being treated under the new protocol.

The first 50 patients admitted for total or completion thyroidectomy since May 2006 were studied and compared to 50 consecutive patients from 2002–2003, before the iPTH assay was used for thyroid surgery. iPTH was measured at 4-hours post-operatively and patients with iPTH in the normal range were discharged on the first post-operative day. Statistical analysis was performed using the Mann-Whitney U test.

Fifty patients in each group were analyzed. Mean age in the study group was 56 years (51 years in the control group) and sex distribution were similar in both groups (M : F, 1 : 3). Mean lowest post-operative corrected calcium levels in the study group were 2.19 mmol/L (2.15 mmol/L in the control group). Length of stay was significantly shorter in the study group, mean 1.71 days vs. 2.20 days ($P < 0.05$).

The use of iPTH accurately predicts hypocalcemia after total thyroidectomy and can be used to facilitate safe early discharge for patients. This study demonstrates a significant reduction in the length of stay for patients undergoing total thyroidectomy when managed with a protocol based on a 4-hour iPTH level.

ES18P ROLE OF EXTERNAL RADIOTHERAPY IN PARATHYROID CARCINOMA

A. NAIR, D. T. ABRAHAM, M. J. PAUL, M. S. SESHADRI, T. NIHAL AND
C. K. SELVAN

Christian Medical College, Vellore, India

Introduction Parathyroid carcinoma is a challenging problem to a surgeon and adjuvant radiotherapy is important to reduce the recurrence.

Methods A retrospective review was conducted of all cases of parathyroid carcinoma from 1990–2006. 6 patients were identified.

Results There was a male preponderance. Mean age of presentation was 49 years. The clinical presentation was similar to benign primary hyperparathyroidism except for the presence of palpable nodule in 80% of patients with carcinoma compared to 11% among patients with benign primary hyperparathyroidism. One patient had chronic pancreatitis probably secondary to hyperparathyroidism. All patients had hypercalcaemia with elevated serum PTH levels and no significant difference compared to benign hyperparathyroidism. Surgery was done in all. Local metastasis to the cervical lymph nodes was seen in 33% of patients. The tumors showed a high predilection to the inferior parathyroid glands. All subjects underwent radiotherapy with cobalt at mean dose of 50 cGy. The mean duration of recurrence was about 2 years. 50% had local recurrence, 2 had recurrent tumor excision including one from vocal cord. Bony metastasis was found in one as evidenced by hot spots in sestamibi scan. 2 of the 6 died, both of them had unrelated disease as cause of death. 1 lost to follow up.

Conclusion Parathyroid carcinoma constitutes around 2–3% of patients. In the presence of a palpable nodule, chance of being malignant should be kept in mind. Recurrence rate can be reduced by post operative external radiotherapy.

ES19P LAPAROSCOPIC ADRENALECTOMY FOR PHEOCHROMOCYTOMA IS SAFE AND EFFECTIVE

G. Y. MEYER-ROCHOW, S. B. SIDHU, P. S. SOON, M. S. SYWAK AND
C. P. BAMBACH

Royal North Shore Hospital, New South Wales, Australia

Purpose The management of pheochromocytomas (PC) can present a significant medical and technical operative challenge, however, few studies have assessed whether the outcome of LA of PC differs from other adrenal tumour types. The aim of this study was to determine whether there is any demonstrable difference in outcome for patients undergoing laparoscopic adrenalectomy (LA) for PC compared to other functioning or non-functioning adrenal tumours.

Methodology A retrospective review of all patients undergoing transperitoneal LA at our institution from 1995–2006 was performed. Outcome of laparoscopic PC resections was compared to the remaining LA resections.

Results A total of 176 LA operations (106 left, 68 right, 2 bilateral) were identified of which 36 were performed for PC (18 left, 16 right and one bilateral). Median tumour size was greater in the PC group (35 mm, range 17–80 mm vs 25 mm, range 7–100 mm). 7 PC were considered to be of uncertain malignant potential and 29 to be histologically benign. There were 6 malignant tumours in the remaining cohort. There were 7 conversions to an open procedure of which one was a PC resection. There was one local recurrence of PC after LA in a patient with VHL disease during a median follow up of 6 years. Median operating time (173 vs 145 mins) and length of hospital stay (5 vs 3 days) for the PC patients were significantly longer compared to the remaining patients ($p < 0.05$). There were no increased complications in the PC group.

Conclusions Our results demonstrate that LA for PC is safe and effective. There is no increased morbidity when LA is performed for PC compared to other functional and non functional adrenal tumours.

ES20P THE SURGICAL APPROACH TO THE ADRENAL GLAND – THE CHANGING PRACTICE

A. ROHANA AND A. N. HISHAM

Putrajaya Hospital, Putrajaya, Malaysia

Introduction Adrenal surgery in our institution has evolved from open surgery to laparoscopic approach. The aim of this paper was to evaluate the feasibility and changes in the practice of adrenal surgery.

Methods A total of 129 consecutive patients who had adrenal surgery from October 1998 to 2006 were included in this study. The patient's demographic data, clinical manifestation, tumour characteristics and duration of hospitalization were reviewed. The main outcome measures were operation time and perioperative complications.

Results There were 77(59.7%) women and 52(40.3%) men with the mean age of 41.5 years (ranged 13 to 88 years old). All our patients were closely evaluated and monitored by endocrinologist. CT scan or MRI was routinely used to localize the adrenal lesions. 67(51.9%) patients had open transabdominal adrenalectomy (Group 1), 22(17.1%) patients had open posterior approach (Group 2) and 40(31.0%) patients had laparoscopic adrenalectomy (Group 3). The mean weight of the tumour in Group 1 was 312 grams (ranged 10 to 1800 grams), Group 2 was 20 grams (ranged 5 to 200 grams) and Group 3 was 20 grams (ranged 10 to 70 grams). The average hospitalization for Group 1 was 6.5 days (ranged 3 to 14 days), Group 2 was 4.5 days (ranged 4 to 6 days) and Group 3 was 3.3 days (ranged 2 to 8 days).

Conclusions Laparoscopic adrenalectomy is today the treatment of choice for most small benign adrenal tumour. Nonetheless in larger adrenal lesions and in adrenal malignancy open transabdominal adrenalectomy inevitably may still be the desired approach.