

**D.S. ROSENGARTEN
SURGICAL TRAINEE RESEARCH PRIZE 2017**

SATURDAY 2ND DECEMBER, 2017

PRESENTED BY MRS CANDICE ROSENGARTEN

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ABSTRACT BOOKLET



THE D.S. ROSENGARTEN SURGICAL

TRAINEE RESEARCH PRIZE



Mr Sam Rosengarten

The D.S. Rosengarten Surgical Trainee Research is named in honour of David Rosengarten. David learnt his surgery at the Alfred Hospital before undertaking research and Post-Fellowship training in Vascular Surgery at the Royal Postgraduate Medical School, Hammersmith. He returned to the Alfred and held appointments in the Department of Surgery and the Vascular Unit. David was appointed Head of the Vascular Surgery Unit at the Alfred in 1987, the position he held until his sudden death in 1994. David was recognised for his encouragement of research, for an enduring interest in surgical audit and his involvement in registrar training. This prize is his enduring memorial.



TheAlfred

D. S. ROSENGARTEN SURGICAL TRAINEE RESEARCH PRIZE 2017

A SYMPOSIUM WILL BE HELD TO DETERMINE THIS PRIZE

ON SATURDAY 2ND DECEMBER 2017 IN THE
AMREP SEMINAR ROOM

Ground Floor,
Alfred Hospital

Commercial Road, MELBOURNE VIC 3004

You are cordially invited to attend and support this most important event

8.00 am	Breakfast	
8.25 am	Introduction and Welcome by Chairman	<i>Mr. James Lee (Acting Chairman)</i>
8.30 am	The importance of indirect calorimetry in the management of nutrition in major burns: a retrospective study	James Leung
8:45 am	A nomogram to guide the management of thyroid nodules	Daniel Breen
9.00 am	Dorsal Bridge Plating versus Transarticular Screws for Lisfranc Fracture Dislocations: Retrospective Study Comparing Functional and Radiological Outcomes	Nathan Kirzner
9.15 am	Modic changes on MRI, and smoking predict vascular adherence during anterior lumbar exposure	Nick Johnson
9.30 am	Lipidomic analysis of nonalcoholic fatty liver disease in morbid obesity: Pathologic alterations in liver lipid profile and parallel serum changes with progressive disease	Geraldine Ooi
09:45am	MORNING TEA (10mins)	
09:55 am	Routine Pre-thyroidectomy Laryngoscopy is not necessary in the Era of Intraoperative Neuromonitoring	Edward Forrest

10.10 am	Epidemiology, management and outcomes of orbital fractures at a major trauma centre	Enis Kocak
10.25 am	The forgiving parathyroid glands	Jacob Jewson
10:40 am	Analysis of factors in patients with Sleeve Gastrectomy Leaks	Amos Au
10:55 am	Adjudicators Meeting	
11:20 am	Presentation of Prize	<i>Mrs C. Rosengarten</i>

The importance of indirect calorimetry in the management of nutrition in major burns: a retrospective study

Leung J¹, King S², Paul E³, Ihle J⁴, Ridley E², Cleland H^{1,5}

¹Victorian Adult Burns Service, The Alfred Hospital; ²Department of Nutrition, The Alfred Hospital; ³Department of Epidemiology and Preventative Medicine, Monash University;

⁴Department of Intensive Care, The Alfred Hospital; ⁵Department of Surgery Central Clinical School, Monash University.

Background and aims: Early and appropriate nutrition is a key component in managing burns-induced hypermetabolism. The current gold standard to measure energy expenditure is indirect calorimetry(IC). However, predictive energy equations are still commonly used despite recognised limitations. The aims were to compare measured energy expenditure(mEE) via IC with predicted energy requirements(pER) via four prediction energy equations, and to assess the relationship between clinical parameters and hypermetabolism.

Methods: 29 intensive care burns patients were retrospectively studied between 2013-2015. IC was performed on 1-4 occasions (n=46 measurements). pER were calculated using modified Schofield, modified Harris-Benedict, Ireton-Jones and Curreri equations. Bland-Altman Analyses were performed to assess level of agreement. Spearman's correlation coefficients were calculated to assess the relationship between clinical parameters and hypermetabolism.

Results: Mean mEE was 9752±2089kJ/day. Bland-Altman Analyses displayed substantial variability between mEE and pER. Mean bias were 54±2373kJ/day for modified Schofield; -1728±2784kJ/day for modified Harris-Benedict; -1276±2092kJ/day for Ireton-Jones; and -4476±3402kJ/day for Curreri. Spearman's correlation analysis demonstrated a significant correlation between hypermetabolism and day post-burn (r=0.35, p=0.016), and number of surgeries prior to IC (r=0.34, p=0.02).

Conclusion: This study has shown significant discrepancies between mEE and pER, and emphasises the increasing importance of IC as standard practice in major burns patients.

Abstract

Title: A nomogram to guide the management of thyroid nodules

Author: Daniel Breen

Background

Thyroid nodules are common, and may be associated with diagnostic uncertainty. The aim of the study is to develop a nomogram to predict the risk of malignancy in a nodule.

Methods

A retrospective review of prospectively collected data from a unit database of a major tertiary referral endocrine surgery center.

The inclusion criteria were: 1. Patients undergoing hemi- or total thyroidectomy between 1st January 2010 to 31st December 2014; 2. Available for review: imaging, fine needle aspiration cytology, histology. Patients having completion hemithyroidectomy for malignancy were excluded.

Uni- and multi-variate logistic regression analyses were performed to identify relevant variables for the construction of the nomogram. The nomogram was constructed and internally validated.

Results

363 patients were identified who met inclusion criteria. Most of the excluded patients were due to absence of imaging.

Palpable lymph nodes (LN)(odds ratio OR 61.0), ultrasonographically abnormal LN (OR 29.1), microcalcifications in the nodule (OR 5.8) and solitary nodule (OR 3.56) were most associated with malignancy. Multinodular goitre (OR 0.33), suppressed TSH (OR 0.36), mixed solid-cystic (OR 0.63) and nodule size (OR 0.98) were factors associated with non-malignancy.

Results of the multivariate analysis were used to construct a nomogram for predicting malignant nodules. This performed well, with sensitivity of 72%, specificity of 70% and AUC 0.72 on internal validation.

Conclusion

Thyroid nomogram can be applied to risk-stratification of nodules, which may help guide management. External validation is needed.

Abstract

Title: Dorsal Bridge Plating versus Transarticular Screws for Lisfranc Fracture Dislocations:

Retrospective Study Comparing Functional and Radiological Outcomes

Author: Nathan Kirzner

Aims: The aim of this retrospective study was to compare the functional and radiological outcomes of bridge plating, screw fixation, or a combination of both methods for the treatment of Lisfranc fracture dislocations.

Patients and Methods: A total of 108 patients were treated for Lisfranc fracture dislocations over a 9-year period. 38 patients underwent transarticular screw fixation, 45 using dorsal bridge plating, and 25 using a combination technique. Injuries were preoperatively assessed according to the Myerson classification system. The outcome measures included the American Orthopaedic Foot and Ankle Society score, the validated Manchester Oxford Foot Questionnaire functional tool, and radiological Wilppula classification of anatomic reduction.

Results: In terms of primary outcomes, significantly better functional outcomes were seen in the bridge plate group with a mean American Orthopaedic Foot and Ankle Society score of 82.5 points, compared to 71.0 in the screw group, and 63.3 in the combination group ($p<0.001$). Similarly, the mean Manchester Oxford Foot Questionnaire score was 25.6 points in the bridge plating group, 38.1 in the screw group, and 45.5 in the combination group ($p<0.001$). In terms of secondary outcomes, the analysis revealed that functional outcome was dependent on the quality of reduction ($p<0.001$). A trend was noted indicating plate fixation is associated with improved anatomical reduction ($p=0.06$). Myerson types A and C2 significantly predicted poorer functional outcomes, suggesting total incongruity in either a homolateral or divergent pattern leads to worse outcomes. A greater number of columns fixed was found to independently result in significantly poorer outcomes ($p<0.001$).

Conclusions: Patients treated with dorsal bridge plating had better functional and radiological outcomes than with transarticular screws or a combination technique.

Title: Modic changes on MRI, and smoking predict vascular adherence during anterior lumbar exposure.

Authors: Nick. Johnson, Mr. Matthew Claydon, Dr Mr. Greg Malham and Dr. Rhiannon Parker.

Abstract

Introduction: We aimed to identify predictive factors for vascular adherence in patients undergoing an anterior approach for lumbar disk surgery to allow pre-operative planning and technique modification.

Methods: Retrospective analysis was performed on a prospectively collected database of consecutive patients undergoing anterior retroperitoneal exposure for lumbar disc surgery. The data collected included demographic factors, smoking status, MRI findings including modic changes at the operative level, operative parameters including level(s) exposed, and difficulty of dissection due to vascular adherence.

Results: We analyzed 246 patients (mean age 42.5 years (21-81), male 50%). A multivariate regression analysis of the risks for a difficult dissection demonstrated that patients with modic 2 changes on MRI were 2.1 times more likely to have a difficult dissection (13% v 28%, $p = 0.009$). Analysis also illustrated that current and ex smokers were 2.2 times more likely to have a difficult dissection (non-smokers: 10%, ex smokers 23%, current smokers 24%, $p=0.01$)

Conclusion: Modic 2 changes on MRI or a history of smoking predicted adherence of the large vessels to the anterior annulus of the lumbar intervertebral disc leading to a more difficult dissection to expose the target disc.

Lipidomic analysis of nonalcoholic fatty liver disease in morbid obesity: Pathologic alterations in liver lipid profile and parallel serum changes with progressive disease
Geraldine Ooi¹, Paul Burton¹, Arthe Raajendiran², Peter Meikle³, Matthew Watt², Wendy Brown¹

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INTRODUCTION: Obesity drives ectopic lipid accumulation in the liver, resulting in nonalcoholic fatty liver disease (NAFLD). This disrupts normal lipid homeostasis, altering the lipid profile. Mounting evidence links certain lipid subtypes to progressive liver disease.

AIMS: To characterise pathological alterations in the lipidome of NAFLD, and investigate the utility of serum lipids as NAFLD biomarkers in the setting of obesity.

METHODS: We collected serum, liver, and adipose tissue from 181 bariatric patients. Liver histology was used to diagnose NAFLD. Lipidomic analysis of liver, serum and adipose tissue was performed by mass spectrometry, and correlated to liver histology.

RESULTS: Liver steatosis was associated with unique changes in hepatic lipidome. Substantial increase in sphingolipid species were observed, with significant increases in dihydroceramides (β 6.115, $p < 0.001$), and ceramides (β 4.687, $p < 0.001$). This was paralleled by increased serum dihydroceramides (β 3.091, $p < 0.001$). Similarly, liver inflammation was associated with increased sphingolipid species, with corresponding increases in serum. Adipose lipid levels were unrelated to liver or serum changes.

CONCLUSIONS: Substantial alterations in liver lipidome occur with worsening NAFLD. Significantly increased liver dihydroceramides are seen in NAFLD, and paralleled in serum. These changes are unique to liver and serum, but not seen in adipose tissue in obesity.

Intralaryngeal Causes of Recurrent Laryngeal Nerve Palsy During Thyroidectomy

Edward Forrest, Alayne Moreira, James C. Lee, Meei Yeung, Simon Grodski, Jonathan W. Serpell
Monash University Endocrine Surgery Unit, Alfred Hospital, Melbourne, Victoria, Australia

Background

There are many clinical associations and potential mechanisms of injury resulting in recurrent laryngeal nerve palsy (RLNP) after thyroidectomy. In 90% of cases of RLNP there is no identifiable injury at time of surgery, with the nerve being anatomically intact. One possible cause of RLNP is intralaryngeal compression, which may be associated with the endotracheal tube (ETT). We examined RLNP rates to identify potential associated intralaryngeal, clinicopathological and operative factors.

Methods

We analysed 865 patients undergoing thyroidectomy at the Alfred from 2010 – 2016, who had anatomically intact RLNs at conclusion of surgery. All underwent pre- and postoperative nasoendoscopy to assess vocal cord function. The main outcome was RLNP. We analysed potential associated factors including: sex, operation time, surgical indication, pathology, ASA and Mallampati scores, BMI, intubation grade, ETT size, and specimen weight. Univariate and multivariate analysis was undertaken by Student's t-test, Chi-squared, Fisher's exact and linear regression. Significance was set at $p < 0.05$.

Results

Overall, RLNP occurred in 72 patients (8.3%). Temporary RLNP occurred in 71 (8.2%), and permanent RLNP in 1 (0.1%). On univariate analysis, RLNP associations were: male sex ($p=0.01$), operation length ($p=0.01$), malignancy ($p=0.026$) and Graves' disease ($p=0.05$). On multivariate analysis, only two remained significant: male sex ($p= 0.03$) and Graves' disease ($p=0.02$). Further, factors postulated to cause intralaryngeal compression of the RLN, including ETT size, BMI, intubation grade and Mallampati score, were not statistically associated with RLNP.

Conclusions

This study shows RLNP to be associated with male sex and Graves' disease, but potential intralaryngeal factors have not been identified. The study provides a base for further investigation of intralaryngeal factors that may be associated with RLNP.

Epidemiology, management and outcomes of orbital fractures at a major trauma centre

Enis D Kocak¹, Julian W Quigley¹, Anthony J Hall^{1,2}

¹Department of Ophthalmology, The Alfred; ²Department of Surgery, Monash University

Orbital fractures are a common ophthalmological referral and are frequently associated with intraocular and other non-ocular injury.

Aims

To study the presentation, epidemiology, management and outcomes of orbital fractures at a high-volume trauma centre.

Methods

Retrospective chart review of consecutive orbital fractures presenting to a major trauma centre between 1 July 2012 and 30 June 2015.

Results

500 orbits of 413 patients had at least one fracture. Males were over-represented (74%). Falls were the most common mechanism (34%), followed by motor vehicle accidents (20%). Associated neurological injury was present in 39%. Significant intraocular injuries were noted in 76 cases (15%), including 15 globe ruptures (3%). 31% of orbits underwent surgical reconstruction. At initial review, significant diplopia was noted in 14% and a visual acuity (VA) of <6/60 was noted in 5%. At final review, 6% had significant diplopia and 5% had a VA of <6/60.

Conclusion

Orbital fractures were associated with significant ocular and neurological injury in this series. The rate of injury from falls is higher in our setting than reported in the literature. Despite the significant rate of associated ocular injury, visual prognosis is reasonable with low rates of significant diplopia and severe visual loss at final follow-up.

The forgiving parathyroid glands

Simon Chang-Hao Tsao, Jacob Jewson, James Lee, Jonathan Serpell

Abstract

Background: Permanent and temporary hypoparathyroidism are potential complications following thyroidectomy (total and completion). Threshold for parathyroid glands (PTG) autotransplantation varies between different surgeons based on subjective assessment of PTG viability. This range from surgeons endeavouring to preserve all PTGs *in situ* to having low threshold in autotransplantation. However, the common denominator is that all surgeons actively attempt to identify and assess all PTGs.

Aim: To evaluate the risk of permanent and temporary hypoparathyroidism among different PTG autotransplantation approaches.

Methods: All thyroidectomies at The Alfred over the last 10 years from the endocrine surgery database were analysed. The primary end points were serum calcium and PTH levels post-operatively and during follow up. The secondary end points were individual surgeons' autotransplantation rates.

Results: Of 940 patients, 787 (84%) had total thyroidectomy and 153 (16%) completion thyroidectomy. There were 80 patients (8.5%) who had temporary hypoparathyroidism immediately post-op. Temporary hypoparathyroidism was associated with multiple PTGs being identified ($p=0.002$) and transplanted ($p=0.046$). Hypoparathyroidism was also more likely to occur in those who had thyroiditis ($p=0.01$), but had no association with central lymph node dissection. Only 1 patient (0.11%) developed permanent hypoparathyroidism. The autotransplantation rate among surgeons ranged from 15% to 73%. All surgeons had a similar temporary hypoparathyroidism rates of between 5% to 11%.

Conclusion: The patients most at risk of developing temporary hypoparathyroidism are requiring multiple PTG autotransplantations. However, regardless of the approach to autotransplantation, we had an negligible permanent hypoparathyroidism rate. The only common denominator among all surgeons is vigilant identification of PTGs.

Title: Analysis of factors in patients with Sleeve Gastrectomy Leaks

Authors. A. Au, P. Burton. G. Ooi

Introduction:

The incidence of obesity of Australia is ever increasing, with the Australian Institute of Health and Welfare estimating that nearly 2 in every 3 adults and 1 in 4 children in Australia is overweight or obese¹. There were 11,000 Laparoscopic Sleeve Gastrectomies performed in 2014 -2015², with a reported leak rate of 1 – 3 %.

Aims:

The aim of this case series was to establish if there were any predictive factors that would assist in identifying patients with gastric sleeve leaks and indicate which patient factors would advocate for early surgical intervention. Furthermore, the study aims to identify and factors that would correlate with each other in prognosticating which risk factors would predict poorer outcomes such as longer hospital admissions.

Methods:

Patients who had a previous sleeve gastrectomy that was proven to have had a leak and subsequently managed at the Alfred Hospital were included. Patients were selected retrospectively, ethics already gained via the Bariatric Database. These were analysed based on whether they were primary sleeve gastrectomies and when they first presented to the Alfred.

Results:

Independent Samples Test analysis between patients who were conservatively managed and those that were not showed a significant difference in total hospital days (<0.004), however there was no difference in total days taken for leak to heal. ANOVA analysis showed that there was a significant difference in the CRP on presentation for patients that presented within 8 – 21 days and those that presented later (>22 days) compared to patients that presented earlier (<0.03).

Conclusion:

Whilst there were significant statistical differences identified in different patient factors such as CRP on presentation and hospital stay and whether a patient required reoperation. We were unable to identify any predictive factors that would aid in early surgical intervention in sleeve leaks, leaving further room for further research.

References:

1. Australian Institute of Health and Welfare 2017. Impact of overweight and obesity as a risk factor for chronic conditions: Australian Burden of Disease Study. Australian Burden of Disease Study series no.11. Cat. no. BOD 12. BOD. Canberra: AIHW.
2. Australian Institute of Health and Welfare 2017. Weight loss surgery in Australia 2014–15: Australian hospital statistics. Cat. no. HSE 186. Canberra: AIHW.