

Dysphagia risk index: predicting dysphagia after fundoplication using a computational algorithm of impedance/manometry

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Introduction

Currently it is not possible to identify patients at risk of dysphagia after fundoplication. Patterns of bolus pressure and movement may be important in dysphagia.

Methods

Viscous swallows were evaluated with impedance/manometry in 19 patients with reflux disease before and after surgery. A validated dysphagia questionnaire was utilised. A new automated analysis method calculated pressure & bolus movement variables. An iterative analysis determined if variables were altered in relation to surgery or dysphagia.

Results

At 5 months post-op, 15 patients had dysphagia, including 7 with new-onset dysphagia. Oesophago-gastric junction (OGJ) pressures were significantly increased post-operatively, but did not correlate with dysphagia. In contrast, three pressure-flow variables for pre-operative oesophageal function varied significantly in relation to post-operative dysphagia. These were: shorter time from nadir oesophageal impedance to peak oesophageal pressure (TNadImp-PeakP), elevated intra-bolus pressure (IBP, mmHg) and faster rate of bolus pressure rise (IBP slope, mmHg/s). These variables were combined to form a dysphagia risk index (DRI) whereby $DRI = IBP * IBP_slope / TNadImp-PeakP$. DRI values derived from pre-operative measurements were significantly elevated in those with post-operative dysphagia (DRI 58, IQR 21-408 vs no dysphagia DRI 9, IQR -2-19, $p < 0.02$).

Conclusions

New-onset post-fundoplication dysphagia is related to pre-existing sub-clinical impairment of oesophageal propulsive function. This leads to post-operative dysphagia secondary to increased OGJ resistance and this can be recognised by pre-operative evaluation of viscous boluses with impedance/manometry analysis. Impedance/manometry and the dysphagia risk index have potential for patient screening to predict the risk of dysphagia after fundoplication.

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Identification of the Sentinel Node in the SNAC-1 Trial

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Introduction

Sentinel lymph node biopsy is the recommended procedure for the evaluation of lymph node status in women with early breast cancer and a clinically negative axilla. Accurate identification of the SN has been shown to be optimal using a combination of scintigraphy and a lymphotropic dye such as patent blue. Recent reports of severe allergic reactions to patent blue have questioned its safety and validity for clinical use. The aim of this study was to evaluate the techniques and the effect of clinical factors on the identification of the SN in patients randomised in the SNAC trial, and the contribution of patent blue in particular.

Methods

1088 women were randomised to SNB followed by either immediate axillary clearance (AC) or AC only when the SN was positive. Lymphatic mapping was performed using preoperative lymphoscintigraphy (LSG) and the intraoperative gamma probe combined with patent blue (971 patients) or blue dye alone (106 patients). Sentinel nodes were identified in 1024 women (94%). The SN was visualised on lymphoscintigraphy in 779 (79%), the gamma probe in 879 (92%). Patent blue was injected peritumourally in 1073 women and blue SN were identified in 890 (82%). Blue dye detected SN in 141 of 178 women with a negative LSG and in 44 of 79 where no SN was located using the gamma probe. Multivariate analysis showed that age and BMI were significantly related to the identification of the SN in the case of all techniques, whereas tumour presentation (screen detected vs symptomatic) and comorbidities were also significant in relation to the use of the gamma probe. For patent blue, the primary tumour location was additionally, significantly (and surprisingly) related to the identification rate. **One SN was removed in 45%, two in 34% and three or more in 21%.** 87% of all metastatic SN were blue nodes, 86% were "hot" and 75% were seen on LSG.

Conclusions

The use of combined techniques resulted in a high identification rate. Patent blue contributed to the identification of the sentinel node in that subset of patients where LSG and the gamma probe failed to identify the sentinel node. Our results indicate that special attention is needed in particular groups of patients (e.g. BMI, tumour presentation etc).

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Diannexin reduces tissue factor positive microparticles, microvascular obstruction and endothelial and myocyte necrosis, in cardiac ischemia reperfusion injury

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Introduction:

Cardiac Ischemia Reperfusion Injury (IRI) may be elicited when myocardial infarction is treated by restoring blood flow and is associated with progressive small vessel blockage known as microvascular obstruction (MVO). We hypothesise that this phenomenon is mediated by endothelial cell injury and dysfunctional coagulation promoted by endothelial microparticles (EMP) expressing phosphatidylserine (PS) and tissue factor (TF). Diannexin (Dx) has been shown to bind and inhibit PS. We aimed to determine whether Dx reduces cardiac IRI and explore its effect on circulating MPs and tissue factor positive MPs (TF⁺MP).

Methods:

The left coronary artery (LCA) of male Wistar rats (250-350g) was mechanically occluded for 30-minutes (ischemia), prior to reperfusion (R) periods of 2, 30 and 120-minutes. Animals were allocated to SHAM (S), Control (C) or Dx (300µg/kg administered intravenously 5-minutes prior to ischemia). Thioflavin-S and Uniparse Blue Microspheres were used to determine regions of MVO and ischemia. Tetrazolium chloride (TTC) was used to identify areas of myocardial necrosis. MPs were isolated from serum and tested for TF and VE-Cadherin expression. In-vitro Human Microvascular Endothelial Cells (HuMECs) were exposed to Hypoxia (5-hours), Reoxygenation (4-hours) to explore the effect of Dx on endothelial injury and generation of TF⁺MPs.

Results:

69 rats were used (13 died, 2 excluded). The mean ischemic zone was 41.99±0.44. Dx significantly reduced area of MVO and cardiac necrosis at 120 minutes: (Dx: 27.32±1.27 vs. C: 42.45±3.73, $p<0.05$ and Dx: 36.75±1.67 vs. 51.67±2.42, $p<0.05$, respectively). Dx significantly reduced circulating MPs and TF⁺MPs. Dx significantly reduced HuMEC Lactate Dehydrogenase (LDH) and TF⁺MP production in H/R.

Conclusions:

Dx delivered prior to ischemia/reperfusion reduces MPs, TF⁺MPs, EMPs and MVO; ultimately resulting in decreased cardiac necrosis.

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Multiple markers for predicting prostate cancer

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Introduction

In detecting prostate cancer, PSA lacks appropriate sensitivity and specificity, while other markers have failed in guiding appropriate treatment and resolving the debate for early surgery or radiation therapy versus active surveillance. Thus, we hypothesise that targeting different levels of synthesis with non-invasive sampling will derive multiple markers to better detect prostate cancer and improve patient outcomes.

Methods

Discriminating mRNA markers in prostatic tissues were identified, and quantified using standard assays, to complement the non-coding gene *PCA3*. Complementary metabolomic analysis of ejaculate and post-ejaculate urine was performed using 500 MHz ¹H-NMR spectroscopy.

Results

RT-PCR for *PCA3* and *Hepsin* from ejaculate together with serum PSA provided a sensitivity of 80% with a specificity of 58% in detecting prostate cancer in 100 patients. Further mRNA markers marginally improved these results.

Initial metabolomic analysis of ejaculate was confounded by varying concentrations of exogenous compounds (including glucose, ethanol, drug metabolites). Exclusion of these compounds and extension of analysis to include post-ejaculate urines collected immediately following ejaculation improved results, showing an inverse relationship between citrate and choline.

When findings from metabolomic profiling were combined with those from *qRT-PCR* for *PCA3* and *Hepsin* together with serum total PSA, a sensitivity of >90% was achieved.

Conclusions

Our results confirm established pathophysiology and the use of our samples as appropriate media for analysis. Current methods of detection are improved by combining clinical, genetic and metabolic markers from excreted biofluids, bringing us one step closer to developing an accurate, non-invasive screening test for prostate cancer.

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Hypoxia inducible factor 1 α (HIF1 α) causes poor response to chemotherapy in Androgen Independent Prostate Cancers (AIPC) .

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Introduction

Cancers of the prostate (CaP) are dependent on androgens for growth and thus androgen deprivation therapy is vital for treating patients unsuitable for surgery or recurrence post prostatectomy. However, failure of this therapy leads to the development of androgen independent prostate cancer (AIPC), a lethal form of CaP which is refractory to most chemotherapeutic agents.

Hypoxia-inducible factor 1 α (HIF1 α) is a key transcription factor in cell-mediated adaptive response to changes in tissue oxygenation and is overexpressed in many cancers. However its role in CaP is uncertain.

Methods and Results

Western-blot analysis was used to demonstrate that HIF1 α is overexpressed in AIPC cells (PC3, Du145) as compared to androgen-dependent cells (LnCaP). Cell proliferation assays revealed that the PC3 cells were resistant to destruction by cytotoxic agents including H₂O₂ (oxidative stress), staurosporine(inducer of apoptosis) and 5-fluorouracil(chemotherapeutic agent) as compared to LnCaP cells.

Reduction of HIF1 α expression in PC3 cells using RNA interference reversed the resistance towards cytotoxic agents and also reduced cell migration (tumour metastasis). Conversely, the hypoxia mimetic cobalt chloride or oxygen deprivation itself (1% O₂) induced overexpression of HIF1 α in the androgen-dependent cells, increased the resistance to cytotoxic agents.

In contrast to the traditional belief that HIF1 α concentrations are controlled by post-translational modification and degradation, our data suggest that the increased HIF1 α expression in AIPCs is regulated by a 'GC-rich' region in the 5' untranslated region of HIF1 α mRNA.

Conclusions

The overexpression of HIF1 α may contribute to the refractory nature of AIPCs to most chemotherapy. Targeted HIF1 α therapy could increase responsiveness to chemotherapy and patient survival.

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Plasma profile of inflammatory cytokines and growth factors in response to Integra dermal regeneration template use for reconstructive procedures

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Introduction

The use of Integra in reconstructive procedures among patients with post-burn scarring or with giant nevi is increasing. Early phases of wound healing play important role in the final outcome. To date, there has been limited analysis of molecules involved in early phase of wound healing with Integra.

Methods

Integra was used for reconstructive surgery in a group of 15 children. The peripheral blood was analysed in all patients at four time points: Day 0 and Day 1, Day 7, Day 25 after the surgery. The concentration of serum IL-4, IL-8, IFN-alpha TGF-beta1,EGF and FGF-2 were analysed. Patients were assessed according to infection occurrence and divided into two groups.

Results

The mean surface of implanted Integra was $457\pm 251\text{cm}^2$ while local infection occurred in four patients resulting in partial Integra loss and delayed epidermal grafting. There were significant ($p<0,05$) increase in concentration of IL-4 and FGF-2 among patients with complications 2 on day 7. Higher concentration of TGF-beta1 at all time points after the surgery was observed in patients with local infection, while the serum IL-8 levels were undetectable in most of patients.

Conclusions

Our data shows that there is a dependency of concentration of IL-4, FGF-2 and TGF-beta1 in peripheral blood with Integra healing impairment. This may be an essential aspect of early wound healing process in order to improve the final outcome. Our results may have important implications not only for early diagnosis of impaired wound healing with implanted Integra but also for early treatment of this condition.

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Clinical analysis of liver function: Can portosystemic shunts be measured?

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Abstract

Portosystemic shunts (PSS) are vessels that allow blood to bypass the liver without being filtered. Although commonly seen in cirrhotic livers, congenital and naturally acquired PSS are rare, but have been found incidentally in several cases. PSS can complicate patient treatment by not allowing medication to metabolise at its normal rate. This would explain why certain drugs are more effective in some patients, while being less effective in others. It is also thought that PSS have the potential to further spread cancer cells beyond the liver.

As there are currently no clinical tests to detect and quantify PSS, this study aims to develop a new technique which can measure and quantify PSS. A proposed technique is to inject a range of compounds, including Indocyanine green dye, ¹³C-methacetin, ³H-taurocholate, Evans Blue dye, sorbitol and fructose, directly into the portal venous system using a pig model. These compounds have a short half life of less than 2 hours and a high first pass clearance (except for Indocyanine green). After the compounds are administered, the concentration of each compound is measured once they have passed through the liver.

To test this technique, an artificial PSS has been created in a pig with selected compounds injected into the portal vein. Pilot study results have indicated that Evans Blue dye, Indocyanine green dye, ¹³C-methacetin, and ¹³C-methacetin's metabolite, ¹³CO₂, can demonstrate a PSS. Further study is required to validate if the other compounds, including ³H-taurocholate and sorbitol, are a useful PSS indicator

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Hepatic mitochondrial dysfunction during cold ischaemia

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Introduction:

Prolonged cold ischaemia is associated with an increased risk of graft dysfunction post-transplant. The decline of hepatic mitochondrial function during cold ischaemia is a possible cause for this dysfunction.

Aim:

To determine the impact of cold ischaemia on hepatic mitochondrial function in University of Wisconsin (UW) solution in the setting of hepatic steatosis.

Methods:

Livers were harvested from 10-week old genetically obese (ob/ob, n = 9) or lean C57 control mice (n = 9); and preserved in ice-cold UW solution. Mitochondrial function analysis was performed on permeabilised liver samples using a substrate and inhibitor titration protocol in conjunction with a high resolution respirometer (OROBOROS® Oxygraph 2K) at multiple time-points over 24hrs during cold ischemia (CI).

Results:

Ob/ob mice livers and control mice livers showed either severe (> 60%) or no macrovesicular steatosis respectively. Mitochondria from ob/ob mice livers demonstrated a faster and greater decrease in the percentage of respiration contributing to oxidative phosphorylation over 24 hours of cold storage compared to control mice. After 12 hours of CI, there was also an increased dependence on Complex II respiration relative to Complex I in ob/ob mice livers suggestive of Complex I damage and potential loss of key ATP synthesis efficiency.

Conclusion:

There was a time-dependant damage of hepatic mitochondrial function during CI. Steatotic livers demonstrated greater mitochondrial dysfunction during CI compared to lean livers. These data confirm the increased susceptibility of steatotic livers to cold preservation and provide a rationale for shorter cold storage duration for steatotic donor livers.

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Medial thinning phenomena in human mesenteric arteries and evaluation with established morphometric parameters.

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Introduction:

Gut artery atherosclerosis is linked to mesenteric vascular diseases and mesenteric ischaemia especially in the elderly. Currently there are no valid prognostic indicators which can be applied to the mesenteric vasculature. Such indicators or measures could potentially be quite useful in modelling the atherosclerosis causing vascular ischaemia and stenosis in this region.

Methods:

This pilot study investigated age, height and gender related differences in the superior and inferior mesenteric arteries. In 28 cadavers, both mesenteric trunks were dissected and lengths from their origin to the first major branching event were measured. Histology was performed on samples were taken at the origin of the arteries proximal to aorta and distally at 1st branching. Computational morphometric analysis was performed on photomicrographs. The parameters calculated included Intima Media ratios (IMR), Intimal Thickness Index (ITI) and the novel Medial Thickness Index (MTI) parameter, to describe the phenomenon of medial thinning. Location specific changes and possible associations between parameters and prevalent and incident cardiovascular disease (CVD) were also investigated.

Results:

Males have significantly larger scores than females in most indexes measured possibly due to underlying physiological and hormonal gender differences. It was shown that the media in males deteriorated increasingly rapidly with ageing than in females. However, evidence of low levels of medial adaptation in males with history of CVD, accompanying intimal thickening, was shown.

Conclusions:

These mesenteric artery morphometric parameters may provide predictive and risk assessment models for mesenteric vascular diseases as well guidance into CABG conduit research. We presented the first quantitative data on muscular artery medial thinning.

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Validating and comparing Barwon Health risk stratification model with POSSUM, P-POSSUM, Cr-POSSUM and AFC model

Cherng Huei Kong^{1,2}, Glenn Guest^{1,3} and Professor David Watters^{1,3}

Introduction:

In 2007, Barwon Health (BH) developed a risk stratification model using exclusively preoperative variables to predict patient's mortality and major morbidity in major colorectal surgeryⁱ. This will be useful as a guide for informed consent and to identify high risk patients for multidisciplinary attention. Although, there are other well-known models, such as Physiological and Operative Severity Score for the enUmeration of Mortality and Morbidity (POSSUM), P-POSSUM and Cr-POSSUM, their main usage is to perform risk adjusted surgical audit. To our knowledge, the only preoperative model published to date is Association Française de Chirurgie (AFC) scoreⁱⁱ.

The aim of this study is to validate the BH model and compare this with other models.

Methods:

This is a prospective observational study and electronic data was collected from 2008 to 2010. Model validation was performed using discrimination, measured as area under receiver operator characteristic (AU ROC), and calibration measured by Hosmer-Lemeshow chi-square test.

Results:

There were 496 consecutive elective (n=411) and emergency (n=85) major colorectal surgeries, with an overall mortality of 4.8% and major morbidity of 23.6%. For discrimination of mortality, P-POSSUM has the highest AU ROC of 0.838, followed by POSSUM (AU ROC=0.83), BH model (AU ROC=0.759), Cr-POSSUM (AU ROC=0.754) and AFC (AU ROC=0.714). Only P-POSSUM (p-value=0.78) and Cr-POSSUM (p-value=0.07) have good model calibration, but not BH model (p-value<0.001), AFC (p-value=0.01) or POSSUM (p-value<0.001). Hence BH model required recalibration ($\chi^2=1.38$, p=0.71) to be an accurate model for predicting mortality

Conclusions:

The BH model required re-calibration to be an effective model to predict mortality. It is still possible to provide a risk score for major colorectal surgery using exclusively preoperative variables and this is comparable to various POSSUM models.

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References

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Impact of region of residence on simultaneous pancreas kidney transplantation outcome: The Westmead experience

Gurung B, Thwaites S, Yao J, Kable K, Jenkins L, Chen C, Robertson P, Ryan B, Pleass H, Allen R, Lam V

Introduction

Simultaneous pancreas kidney (SPK) transplantation is an effective treatment for patients with type 1 diabetes mellitus and renal failure. However intensive post-operative follow-up is required. The Transplant Unit at Westmead Hospital provides a nationwide service for SPK transplantation. This study aimed to determine if outcomes of SPK transplantation differed between patients from metropolitan and rural or remote (that is, non-metropolitan) regions in Australia.

Methods

Using a prospective computerized database and chart review, patient and graft survival were analysed.

Results

Between 2000 and 2010, 165 SPK transplants were performed at Westmead Hospital. Median recipient age was 39 years (range 16.9 – 53.2) and 53% were male. There was no significant difference in the baseline demographics of 126 recipients from metropolitan (M) and 39 recipients from non-metropolitan (NM) regions. Mean pancreatic allograft cold ischaemia times were also similar between groups ($p = 0.42$).

At 1 and 5 years, overall patient survival was 98% and 94%, respectively, and was similar for M and NM recipients (log rank, $p = 0.9$). Actuarial five-year pancreatic allograft survival was 75.1% in M, and 82% in NM recipients, while five-year kidney allograft survival was 87.8% and 92.3% for M and NM groups, respectively.

In addition, distance between Westmead Hospital and recipient residence (exclusive of M or NM categorisation) had no impact on patient ($p = 0.98$) or allograft ($p = 0.72$) survival

Conclusions

SPK transplantation can be performed successfully with equivalent outcomes in recipients from metropolitan and non-metropolitan regions of Australia.

Copy number in oesophageal adenocarcinoma – towards biomarkers for staging and prognosis

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Introduction

The incidence of oesophageal adenocarcinoma (OAC) has been increasing rapidly for the past three decades in Western (Caucasian) populations. The majority of patients present with advanced disease and five-year survival is dismal (approximately 20%). Copy number aberrations (CNAs) are a common feature of all cancers, and reflect genomic instability. There are few published genome-wide CNA profiles of OAC, yet similar studies have yielded important insights in other malignancies.

Methods

We performed a genome-wide examination of CNAs in 54 samples of OAC from patients who underwent surgery alone, using single-nucleotide polymorphism (SNP) arrays. Our aims were to describe regions of common change, and to define CNAs in stage III patients that correlated with patient survival.

Results

Each tumour had a median of 1928Mb of CNAs (~60% of the genome; range 23-2633 Mb). Common regions of amplification included oncogenes such as MDM1, MDM2, EGFR and HER-2, while common regions of deletion included tumour suppressor genes such as p16, FHIT and SMAD4. We have identified 126 genes that, when altered, correlate with a statistically significant decrease in survival. Statistical modelling to select the best combination of a small number of these as a biomarker panel is in an advanced phase.

Conclusions

We have completed the largest SNP array study of OAC to date. Our data will contribute significantly to the knowledge of fundamental genomic changes that occur in OAC. Our investigation is the first to define CNAs that stratify stage III OAC patients according to their survival.

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Raising awareness of Venous Thromboembolism risk amongst surgeons – does it improve compliance with guidelines?

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Introduction:

Acquired venous thromboembolism is a large cause of mortality in Britain. January 2010 saw the introduction of new NICE (National Institute for health and Clinical Excellence) guidelines for reducing the risk of venous thromboembolism in hospital patients¹.

The aim of our study was to assess a single unit's adherence to these guidelines for adult elective patients before and after a hospital wide campaign into VTE awareness and introduction of a risk assessment pathway.

Methods

A prospective study of 56 patients from the Ear, Nose and Throat department in a university teaching hospital was performed over a two week period in 2009 and again in 2010. The risk factors, pre and post operative information/advice (verbal & written), low molecular weight heparin (LMWH) prescription and mechanical thromboprophylaxis were recorded.

Results

	2009	2010
Risk factors correctly identified	81%	62%
Pre operative verbal information	41%	66%
Pre operative written information	11%	79%
LMWH appropriately prescribed	18%	54%
Mechanical prophylaxis	93%	100%
Post operative verbal information	7%	48%
Post operative written information	7%	34%

Conclusions

Most standards showed improved compliance after introduction of the pathway booklets and campaign. Particularly the increase in verbal pre operative advice and prescription of LMWH. This is encouraging to see and suggests that using risk stratification paperwork pre operative can reduce the risk of VTE in hospitals by prompting doctors to assess risk and prescribe prophylaxis in advance. However there appears to be a discrepancy between the surgeon's assessment of those that need LMWH and that which the guidance suggests as shown by the difference in risk factors (62%) to appropriate prescription of LMWH (54%).

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References

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Toward a new therapy for liver disease: Tissue engineering using liver stem cell aggregates in a mouse vascularised chamber

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Introduction:

Tissue engineering offers an exciting alternative to organ transplantation for treating liver failure. We present a novel liver tissue engineering model based on the use of adult liver stem/progenitor cells (LPCs), cultured as three-dimensional spheroids (aggregates), and subsequently implanted in an *in vivo* mouse vascularised chamber.

In vitro experiments characterised LPC spheroids. *In vivo* chamber implantations compared seeding LPC spheroids against a traditional model of seeding dissociated cells as control to evaluate whether the spheroid cell-delivery approach promoted cell survival/differentiation.

Methods and Results

In vitro: In methylcellulose media 20,000 cells uniformly produced one spheroid/well. Histology over 10 days indicated that day 2 spheroids were optimal for implantation, with the highest ratio of proliferation(Ki67 immunostaining) to apoptosis(caspase), and containing 22,500 cells/spheroid.

In vivo: Bilateral chambers were established on SCID mouse epigastric pedicles in the inguinal subcutaneous space. Suspended in Matrigel, in one chamber 200,000 dissociated cells were implanted and 9 spheroids in the opposite chamber. Fourteen and 45 day chambers were evaluated by immunohistochemistry and morphometry to determine LPC survival/differentiation. LPCs(panCK+) increased over time in both spheroid and control chambers, but hepatocytes(CK18+) increased only in spheroid chambers. Significantly increased LPCs($p < 0.05$) and hepatocytes($p < 0.0005$) were found at both time points in spheroid chambers compared to control chambers. CK18+ cells formed hepatic acini indicating tissue (glandular) organisation.

Conclusions

Spheroid cell-delivery significantly increases cell survival/differentiation, compared to dissociated cells. By considerably increasing spheroid numbers being seeded, this spheroid/chamber technology offers promise in generating a therapeutically significant mass of liver tissue for treating liver failure

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Surgical management of low-volume sentinel node positive axilla - is a tailored approach appropriate?

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Introduction

Whilst standard surgical management for breast cancer patients with sentinel lymph node (SLN) metastases is completion axillary lymph node dissection (cALND), the effect on survival remains controversial. This study aims to determine the extent and distribution of non-sentinel lymph node (NSLN) involvement for low-volume SLN metastases.

Methods

From 2000-2010, 624 patients with SLN metastases were identified from the Westmead Breast Cancer Institute database. Pathology details were collected for 187 patients and categorised by AJCC criteria: isolated tumour cells (ITCs) ($\leq 0.2\text{mm}$), micrometastases (0.2-2mm), considered together as low volume disease; or macrometastases ($> 2\text{mm}$).

Results

Of SLN metastases, 45% were macrometastases, 37% micrometastases and 18% ITCs. Ninety-four per cent were located in axillary level I (131/139), with additional involvement on cALND in 38% (71/187). NSLN involvement was 20% for ITCs, 19% for micrometastases and 53% for macrometastases. Information about levels for cALND was available for 52 of the 71 patients with NSLN involvement – 94% of those had metastases in level I, 28% in level II and 23% in level III. 20% (3/15) of patients with low-volume SLN deposits had NSLN metastases in level II or III. NSLN involvement correlated with size and number of lymph node deposits and total primary tumour size.

Conclusions

Most SLN metastases are low-volume and in axillary level I. The probability of NSLN involvement for low-volume disease is 20%, and of these most, but not all, involve Level I. Subject to the final pathology review, these data suggest that a tailored approach to the axilla may be feasible.

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Acute perforated appendicitis: An analysis of risk factors to guide surgical decision making

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Introduction

Acute perforated appendicitis is associated with increased post-operative morbidity and mortality. Avoiding delays in surgery in these patients may play a role in reducing observed morbidity.

Objective

To analyse the clinico-pathological profile and outcomes in a cohort of patients undergoing emergency appendicectomies for suspected acute appendicitis, and to determine factors influencing the risk of perforated appendicitis in order to aid better identification of such patients and develop protocols for improved management of this subset of patients.

Methods

A retrospective analysis of patients undergoing emergency appendicectomies following presentation with acute appendicitis to the Modbury hospital, South Australia from March 2007 to April 2011 was conducted. Statistical analyses were performed in SAS 9.2.

Results

506 patients underwent emergency appendicectomy for acute appendicitis which included equal number of male and female patients with a median age of 25 years. Perforated appendicitis was found in 102 (20%) patients. Post-operative morbidity was significantly higher in patients with perforated appendicitis (28.4% vs. 4.7%; $p < 0.0001$). Male sex, patients older than 60 years, along with raised neutrophil counts and C-reactive protein levels were found to be significantly associated with the risk of perforation ($p < 0.05$).

Conclusions

Acute perforated appendicitis is associated with high morbidity. The increased risk of perforation in males and elderly patients appears unrelated to delays in presentation, diagnosis, or surgery. Patients with clinically diagnosed acute appendicitis and an elevation in neutrophil count and CRP level must be considered candidates for early surgery as they are likely to have an appendicular perforation.

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Diagnostic value of an initial CRP level in acute surgical patients

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Introduction

C-reactive protein levels are used in surgical patients as a marker of inflammation and infection, however the diagnostic and prognostic value of a single CRP measurement in the acute presentation has not been well established. This study was performed to investigate the usefulness of measuring CRP in such a setting.

Methods

CRP levels were measured retrospectively in 473 surgical patients who presented to the Royal Adelaide Hospital Emergency Department. This was correlated with patient outcomes, defined by the need for imaging tests and/or surgical intervention, the length of hospital stay, and 30-day mortality. Spearman's rank correlation and one-way analysis of variance were used for statistical analysis.

Results

No correlation was evident between an initial CRP level and length of hospital stay ($r = 0.06$). Approximately 80% of the total group required imaging for diagnosis and 40% required surgery, regardless of the initial CRP level. One-way analysis of variance revealed no variation in levels between patients who required imaging or had surgery compared to those who did not, with P-values of 0.76 and 0.85, respectively.

Conclusions

CRP has poor diagnostic and prognostic capabilities as a single initial measurement in acute surgical patients. The statistical analyses imply that CRP levels are unable to accurately predict outcomes of such patients. Therefore, we suggest that CRP should not be used as a routine screening tool.

Table 1

Percentages of patients from each category who had imaging tests and/or surgery

Patient category	Had imaging tests (%)	Had surgical intervention (%)
All patients (<i>n</i> = 473)	81	40
CRP measured (<i>n</i> = 203)	81	38
CRP not measured (<i>n</i> = 270)	80	41
CRP elevated (<i>n</i> = 144)	81	38
CRP normal (<i>n</i> = 59)	83	39
CRP above 50 mg/L (<i>n</i> = 64)	84	39

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Re-evaluating the Biological Significance of Seminal Vesicle Invasion in Locally Advanced Prostate Cancer

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Introduction

The clinical association of seminal vesicle invasion (SVI) with the development of metastatic disease suggests that either the seminal vesicles represent a privileged staging site for systemic tumour cell dissemination, or that their invasion is a surrogate marker for an aggressive large volume poorly differentiated cancer. To differentiate between these two possibilities we conducted a detailed study of patients with locally advanced (pT3) disease to examine the impact of SVI on clinical outcome.

Materials and Methods

Patients with EPE and/or SVI were identified from a prospectively recorded and maintained prostate cancer database. Patients were categorized according to the presence of SVI as determined by routine pathological assessment. Tumour volumes were measured routinely by computed planimetry at the time of histological assessment. The impact of SVI on biochemical recurrence (BCR) with a definition of PSA \geq 0.2, as well as a clinically significant recurrence defined as failure with a PSA doubling time of <6 months, was determined by univariable and multivariable Cox regression analysis.

Results

Of 249 patients with pT3 disease, 46 (18%) exhibited SVI, 40 (87%) by direct extension and 6 (13%) metastatic. Tumours with SVI had significantly greater tumour burden as determined by total tumour volume (7.2 vs. 3.7 cc, $p<0.001$), index tumour volume (6.8 vs. 3.4 cc, $p<0.001$) and percentage tumour volume (21.8 vs. 12.4 %, $p=0.001$). After controlling for tumour volume and Gleason score, the presence of SVI did not significantly predict for the development of a significant PSA recurrence.

Conclusions

Our results suggest that SVI is a surrogate marker of larger and more aggressive tumours with higher Gleason scores rather than a privileged site of tumour cell dissemination.

Acknowledgements

NS is a Urology trainee and a PhD student at the University of Melbourne. He is the recipient of the Australian Postgraduate Award Scholarship

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Complications and risk factors in breast prosthesis reconstruction

Roy J M, Dean NR, Marshall NJ, Griffin PA

Introduction

Breast reconstruction patients are at high risk of developing breast prosthesis infection at between 7.7 and 28% (Nahabedian 2003, Van Geel 2003). This study examined prosthesis complication and infection rates in breast reconstruction patients and evaluated the effect of a Breast reconstruction with prosthesis peri-operative protocol on the rate of prosthesis infection.

Methods

A retrospective analysis was performed of 69 breast reconstruction patients who had 177 prostheses inserted from 2006 to 2009. The Breast reconstruction with prosthesis protocol was implemented in June 2008, two years into the study which standardized procedures relating to prosthesis handling, skin preparation and prophylactic antibiotics.

Results

Nine of 177 prostheses developed infection (5.1%, 95% CI 2.4 to 9.4%) and in seven of 69 patients (10.1%, 95% CI 4.2 to 19.8%). Eight infections occurred prior to the protocol (7.5%) which was significantly higher than one (1.4%) after the protocol ($P=0.054$). There was a significant decrease in complications from 35 (33%) to 12 (16.9%) after the protocol was implemented ($P=0.008$).

Conclusions

The rate of infection in breast prostheses in our reconstruction patients was similar to those that reported by other centres. Following the implementation of a protocol for prosthesis reconstruction infections and complications were reduced. Although no one aspect of infection control was identified as an infection risk, overall, implementing a standardised infection control protocol for breast prosthesis surgery was able to reduce the number of infections and complications.

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Molecular differences are seen between benign portions of prostate glands harbouring high and low grade prostate cancer

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Introduction:

Many prostate cancer patients have indolent disease amenable to active surveillance, but sampling error on biopsy means that up to a third may actually harbour higher grade disease. Efforts have focussed on the molecular ability of adjacent benign prostate tissue to indicate the presence of malignancy, but the more pressing issue is if non-malignant tissue can indicate high grade or high volume disease that will require early radical therapy. This study aimed to determine if benign cores of prostate glands known to harbour high or low grade disease were distinguishable on a molecular level.

Methods:

Prospectively stored fresh frozen benign prostate tissues from 20 patients who underwent radical prostatectomy were obtained. Two separate comparison groups were examined: those with Gleason 9 disease compared with Gleason 6; and those with Gleason 8 disease compared with Gleason 6. Small cores of tissue were homogenised and RNA extracted using the Allprep DNA/RNA kit (Qiagen). RNA samples were hybridised to the Illumina HumanHT-12 v4 BeadChip for whole genome transcriptomics and the data analysed statistically.

Results:

Early results suggest detectable differences in the transcriptomic profiles of the benign tissue of prostate glands between low and high grade disease. Specifically, miR-21 appeared upregulated whilst TGF β , PDGF and EGF signalling pathways appeared to over-represented in the aggressive prostate cancer cohorts.

Conclusions:

Our results suggest that molecular markers of high grade prostate cancer in benign tissue may exist that can aid in the more accurate selection of patients for radical prostatectomy or active surveillance.

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Impact of acute care surgery: A systematic review

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Introduction:

Acute care surgery (ACS) is a new model of emergency general surgical practice. Unlike traditional “on-call” models, ACS involves creation of consultant-led teams solely dedicated to emergencies with no elective commitments. This review assessed the evidence on effectiveness of ACS teams.

Methods:

Pubmed, Medline and EMBASE databases were searched for articles between 1990 and 2011. Eligible studies involved operation of a consultant-led team solely dedicated to emergency general surgery. Only studies showing sufficient outcomes data pre- and post-implementation of ACS were included.

Results:

Sixteen articles from 13 institutions consisting of prospective and retrospective cohort studies and one retrospective case-control study were analysed. Five studies found a mean of 4.8% (range -4.2% to 10.2%) and 8.7% (range 7.7%-9.7%) reduction in post-op complications in acute cholecystitis and acute appendicitis respectively. Six studies reported a mean of 3.7 hours (range 0-8.8 hours) reduction in Emergency Department admission to theatre time and 7 studies found a mean of 0.7 days (range -1 to 2 days) reduction in length of hospital stay. Six studies reported a mean of 12.4% (range 8.1%-14.6%) reduction in out-of-hour emergency operations. Two studies report up to 38% increase in consultant presence during emergency operations and two studies noted increased operative volume for surgical trainees.

Conclusions:

Limited evidence suggests ACS results in equal or reduced post-op complications in acute appendicitis and acute cholecystitis, improved patient flow, reduced after-hour emergency operations, improved consultant supervision and operative volume for trainees.

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The epidemiology of head injury from a major paediatric trauma centre in New South Wales, Australia

Amaranath J¹, Ramanan M², Saekang E³, Prasad N⁴, Soundappan S⁵

Introduction

Traumatic Brain Injury (TBI) is common and one of the leading causes of presentations to hospital emergency departments. Understanding the epidemiology of TBI can aid in improving overall management and identifying opportunities for prevention. Currently, there is a paucity of data on paediatric TBI in NSW. The purpose of this study was to determine the incidence, demographics, causes, treatment and outcome of TBI at the Childrens Hospital Westmead, a large tertiary referral paediatric hospital.

Methods

A retrospective chart review was conducted of all patients who attended CHW from 2006 to 2011 with a TBI. Patients who presented to the emergency department and had a history of TBI with either symptoms of concussion and/or positive Computerised Tomography (CT) findings of head injury were selected. Information regarding demographics, injury pattern, CT findings, treatment and outcome were retrieved.

Results

The median age for TBI was 3.8 and 69% of patients were male. The most common injury pattern was fall at home. 87% were classified as mild head injuries and only 12% of all head injuries required operative neurosurgical intervention. 91% of patients had a Glasgow Outcome Score of 5.

Conclusions

The majority of TBI are mild in nature with younger males at greatest risk. There is a low rate of operative intervention and a high rate of good outcomes. Many injuries may be preventable with the adaptation of better public health education programmes, such as those related to sport and falls at home.

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Gut on the floor: Vaginal evisceration

Dr Asiri Arachchi, Dr Adee-Jonathan Davidson , Dr Abhinav Vasudevan, Dr Hein Maung, Mr Cham Sanasuriya

A 77-year-old female presented to the emergency department after noticing a mass protruding from her vagina. She was straining whilst defecating when she felt a ripping sensation and then noticed loops of bowel sitting in the bowl. Her past surgical history included a hysterectomy for menorrhagia fifteen years earlier and subsequent incontinence surgery six years later with the insertion of a transvaginal tape (TVT). She also suffered from multiple myeloma and chronic back pain for which she took oral morphine causing her to have chronic constipation.

On examination there was vaginal evisceration of multiple loops of small bowel. The patient underwent an emergency midline laparotomy. At operation a small piece of semi degraded tape from the TVT was found at the site of a perforation of the vaginal vault, suggesting the tape had eroded in to the posterior fornix of the vagina leading to the evisceration. The small bowel loops were reduced bi-manually without the need for a resection. The vaginal defect was closed with vicryl and an inlay layer of Surgisis (biological mesh) mesh was used to support the pelvic floor. Post operatively the patient was opening her bowels and tolerating diet; however her post-operative recovery was complicated by pneumonia and a myocardial infarction. She passed away four weeks after the surgery.

Vaginal evisceration of the small bowel is rare³. Its incidence is recorded at approximately 0.2-0.3 percent in the literature². Recorded cases in the literature. Presentations include pelvic pain, vaginal bleeding and a protruding mass⁴. It is more common in postmenopausal women and most commonly occurs in patients who have had previous vaginal surgery but may occur spontaneously⁴. It represents a surgical emergency.

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Endoscopic transsphenoidal pituitary surgery: A single surgeon experience and the learning curve

Bokhari, AR^a, Davies, MA^b

Introduction

Endoscopic transsphenoidal surgery for pituitary adenomas has been introduced as an alternative to transsphenoidal microsurgery. This is the first Australian study to evaluate a single surgeon's experience by comparing our results with other series and attempting to identify a learning curve.

Methods

Retrospective analysis was carried out on 79 consecutively treated patients by fully endoscopic transsphenoidal surgery by a single neurosurgeon over a period spanning from July 1998 to September 2010 at St George Public and Private Hospitals.

Results

The mean age at time of surgery was 56.7 years (SD \pm 16.3, range 26-85) and the mean follow up period was 38.2 months (SD \pm 33, range 1-136). Gross total resection (GTR) was noted in 63% of patients, endocrinological cure was achieved in 53% and visual field improvements were noted in 86% of patients. Intraoperative CSF leaks occurred in 19% of procedures, while the rate of postoperative CSF rhinorrhea was 3% and postoperative diabetes insipidus was 13%. There was 1 postoperative death (1%). Compared to microsurgery, intraoperative CSF leaks and meningitis seem less frequent with an endoscopic approach. With increasing experience, we found a non-statistically significant trend towards higher rates of GTR, and improved visual fields. Endocrinological cure rates were clearly better with experience ($p < 0.01$). There may be a learning curve that can be overcome in 25-35 cases.

Conclusions

Endoscopic transsphenoidal surgery provides similar outcomes and comparable patient mortality and morbidity to transsphenoidal microsurgery. In this single surgeon's experience, there was a trend to indicate improved performance with more case experience.

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Development and utility of an iPhone/iPad App for reduction mammoplasty

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Introduction

Predicting cup size after reduction mammoplasty is a challenge well recognised by plastic surgeons. This study presents a method whereby the weight of tissue to be excised can be predicted on the basis of the initial and desired cup size.

Methods

Breast density was calculated from resection specimens. Cup volumes of a specific range of bra style were then measured by filling the cups with Play-Doh on a mannequin and the volume measured via water displacement. These data were then able to be correlated to breast tissue volume and weight.

Results

The average breast tissue density calculated was 0.98g/ml (SD=0.05). Bra cup volume measurements showed a steady progression according to both cup and band sizes. A table was constructed to predict the weight of tissue required for excision to achieve the desired change in cup size. This was then developed into an Apple (© 2011 Apple Inc.) iPhone and iPad application for ease of use in a clinical setting.

Conclusions

These results can assist plastic surgeons in predicting the amount of breast tissue to excise to achieve a given cup size, and could help illustrate to patients (using a similar mannequin) the expected result of a given excision.

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Transcranial magnetic stimulation as a mapping tool to measure differences in the central nervous system in response to burn injury

Tessa Garside¹, Sarah Stearne², Catherine Elliott³, Dylan Edwards⁴, Siobhán Reid², Fiona Wood³

Introduction:

The outcomes of burn injury are often long lasting and can leave the patient with serious sensory and motor functional deficits. Many studies focus on the local aspects of wound healing in order to improve aesthetic and functional outcomes after a burn injury(1-3), however a burn injury does not just lead to local damage. Many effects of the local injury lead to a systemic response thus it is important to consider how a burn affects the patient from a holistic perspective including the patient's goals. It has been well documented that the brain's functional anatomy has the ability to reorganise itself in response to environmental changes or injury (4), though this is yet to be investigated in response to a burn injury.

Aims:

1. To use transcranial magnetic stimulation (TMS) to map the sensorimotor cortex in a patient with a chronic upper limb burn injury and compare to a non-injured control.
2. To collect and examine holistic data for a patient with a chronic upper limb burn, including sensory and motor function, mapping of the sensorimotor cortex and the patient's own goals and perceptions of their functional ability.
3. To examine the relationship between sensory and motor functioning data and TMS data in a patient with a chronic upper limb burn.

Methods and Procedures:

This investigation will be presented as a case matched control study of a 20 year old male who sustained a 15% total body surface burn to the upper limb 8 years ago. The case control was matched for age and sex. Sensory testing included light touch threshold using Semmes-Weinstein monofilaments, and two point discrimination testing. The 3D motion analysis was conducted using 12 specialised infra-red cameras to track discrete differences in movement during a proprioceptive and a kinematic task. The properties of the corticomotor pathway to the muscles of the hand were investigated using TMS. The TMS mapped representations of the first dorsal interossei (FDI) muscles in each hand was quantified using a technique as described by Wilson (5) using a 50 mm diameter figure eight coil. The Canadian Occupational Performance Measure (6) was used to identify occupational performance problems from the perspective of the patient.

Results:

The results show that the injured side had reduced sensibility when compared to the uninjured side, as well as the uninjured control. Light touch and 2 point discrimination thresholds were higher, and the patient was less able to discriminate sharp from dull stimuli when compared to the uninjured side and the uninjured control. This is consistent with previous investigations of burn scar function.(7-9)

The TMS data shows greater interhemispheric differences in the burn patient compared to the uninjured control. Whereas the optimal site is close to symmetrical between the hemispheres of the uninjured control, the burns patient shows a marked anterior shift in the optimal site of the map of the left FDI muscle (right hemisphere). The patient has burns covering the shoulders, trunk, left upper arm and left forearm, whilst the left hand and right upper limb have been spared.

Summary:

This is the first study to investigate the role of the central nervous system in the response to a burn injury in humans. It is also the first study to match 3D movement and sensory outcomes to TMS results. This allows a more specific understanding of functional outcomes post burn, and may lead to improved outcomes following therapy and interventions. This study may also lead to studies that investigate the effectiveness of modulators of such brain plasticity in improving functional outcomes after burn injury

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Management and recurrence of keratocystic odontogenic tumour – a systematic review

Authors: Johnson NR, Batstone MD, Savage NW

Introduction:

Keratocystic odontogenic tumour is a unique cyst because of its locally aggressive behaviour, high recurrence rate and characteristic histological appearance. No randomised controlled trials have been undertaken to establish which treatment modality provides the lowest recurrence rate. The purpose of this systematic review was to evaluate the most up to date treatment modalities and respective recurrence rates for keratocystic odontogenic tumour (KCOT).

Methods:

A systematic review of the literature from 1999 – 2010 was undertaken examining treatment and recurrence rates for KCOT. Four inclusion criteria were defined for papers to then be analysed against eight standards. For papers to be included they needed histopathology to be reported, had to have consecutive cases, adequate follow-up and a described treatment protocol.

Results:

Of the 2736 published papers, eight met the inclusion criteria. When merging the data, enucleation and enucleation with adjunctive measures (other than Carnoy's solution) had recurrence rates of 25.6% and 30.3% respectively. Marsupialisation with adjunctive measures produced a recurrence rate of 15.8%, whereas enucleation with Carnoy's solution presented a recurrence rate of 7.9%. Only one resection case had recurrence (6.3%).

Conclusions:

The enucleation technique by itself provides a much higher recurrence rate for KCOT than any other treatment modality and surgeons may consider a range of appropriate adjunctive measures to minimise this risk.

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The utility of routine sentinel lymph node biopsy with prophylactic mastectomy

Hsu, J and Khanijaun, SS

Introduction

Prophylactic mastectomy (PM) is an option for patients with a strong family history, contra-lateral breast cancer or BRCA 1 or 2 genetic mutation. Sentinel lymph node biopsy (SLNB) is a well accepted practice standard in axillary staging of breast cancer, however its role in PM is controversial. The aim of this study is to analyse the utility of SLNB in PM.

Methods

Patients who underwent PM (unilateral or bilateral) between 2004 and 2009 with Westmead Breast Cancer Institute were identified from the Familial Cancer Database. Patients either had confirmed BRCA 1 or 2 gene mutation or a high-risk family history. The decision regarding SLNB was up to the treating surgeon. A 2ml peri-areolar injection of Patent Blue dye was administered for those undergoing SLNB. No lymphoscintigraphy was performed. The node(s) were examined with haematoxylin and eosin stains and cytokeratin immunohistochemical stains. Pathological results for all breast and node specimens were recorded and compared.

Results

Forty patients underwent PM, with a total of 49 breast specimens. Fifteen patients (37.5%) had a confirmed BRCA 1 gene mutation and 4 (10%) of the 40 patients had BRCA 2 gene mutation. Eighty-seven percent of women who had unilateral mastectomy had ductal carcinoma in their contra-lateral breast. SLNB was performed in 50% of cases. Forty eight mastectomy specimens demonstrated no evidence of malignancy on pathological examination. The remaining specimen revealed incidental ductal carcinoma in-situ (DCIS). This patient underwent SLNB, which was negative. Only 1 patient developed a seroma post-operatively.

Conclusions:

The incidence of occult malignancy in PM is low (2%). Therefore approximately 50 SLNB would have to be performed to potentially prevent 1 axillary clearance. Although not associated with additional morbidity, there are significant cost implications for SLNB in PM. Our data does not support the use of routine SLNB in the setting of PM.

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Morphological integrity of the peritoneal mesothelium – How does surgery really affect it? A systematic review.

Marshall, J.K., Tait, N., Georgiou, C.

Introduction:

During abdominal surgery the peritoneal cavity, normally only a potential space, is converted to an actual space. The ensuing morphological changes to the peritoneum have been suggested to increase the risk of post-operative adhesion formation, tumour dissemination and infection. This systematic review investigates the effect of abdominal surgery on morphological changes to the mesothelial layer of the peritoneum.

Methods:

An electronic database search was conducted (SciVerse Scopus) to identify all investigations of morphological changes to the peritoneum following midline laparotomy incision or laparoscopy. There was no restriction on language or trial design.

Results:

Four human and 14 animal investigations were included. All had a laparoscopy group. The majority of human and animal investigations found that pneumoperitoneum disrupts the morphological integrity of the mesothelial layer. The degree of disruption appears to increase with pneumoperitoneum duration and pressure, and with low relative humidity of the insufflation gas. Three human and three animal investigations also included an open surgical group, with conflicting results. One of the human and one of the animal investigations found significant disruption to the mesothelium. The inconsistent results may be explained by the degree of exposure of the peritoneal surface and also the location and timing of peritoneal biopsy.

Conclusions:

Both animal and human investigations have shown that laparoscopic surgery disrupts the morphological integrity of the mesothelial layer of the peritoneum. However, the effect of open abdominal surgery is unclear. Further research is required to determine the degree of disruption, the clinical significance of this, and possible therapeutic interventions.

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Management of carotid body tumours: Review of a ten year experience

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Introduction

Carotid body tumours (CBT) are rare and highly vascular lesions originating from paraganglionic tissues located at carotid artery bifurcation. The aim of this study is to review our 10 year experience of patients with CBT, focussing on their management and outcomes.

Methods

Patients with CBT treated at Westmead Hospital, Sydney between 2000 and 2011 were identified from a search of histopathological records. Data on patient demographics, tumour and treatment details and patient follow-up were extracted from patient medical records.

Results

Ten patients with 11 carotid body tumours were identified; 7 (70%) were female, one of whom had bilateral CBT, and 3 (30%) were male. The age of the patients ranged from 15 - 60 years (mean 39.45 years). One patient underwent preoperative embolisation, and all patients underwent surgical resection of the tumours with curative intent. One patient underwent adjuvant radiotherapy for treatment of malignant CBT with nodal metastases. Out of 11 cases, 3 (27%) patients had transient hypoglossal nerve palsy, 1(9%) had vocal cord palsy, 1(9%) had Horner's syndrome and 1(9%) had Baroreflex failure syndrome. No complication of stroke or perioperative mortality was noted. There has been no tumour recurrence in any patient so far in their follow up.

Conclusions

From our experience, surgery with complete resection of CBT is successful in management of the tumour. It is seen that the surgical procedure resulted in some complications but no perioperative mortality and tumour recurrence in follow up period.

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Go-karting injuries in children: A single centre experience over 13 years

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Introduction

Our experience of children with go-kart injuries in the local setting over thirteen years is presented to compare the types of paediatric go-karting injuries reported in medical literature and to propose methods to reduce these preventable injuries.

Methods

A retrospective study on all children admitted with go-kart injuries between March 1998 and March 2011 at Children's Hospital at Westmead is presented. Data was collected from the hospital patient database Powerchart version 2009.06.1.6 (by Cerner) and compared with recent studies.

Results

Sixteen children presented with go-karting injuries (average of 1.2/year), with males predominating (81%). The peak age was thirteen to fourteen years. Majority of the injuries were of the head, face and neck (35%), along with bony fractures (25%). There was no fatality. Six children (38%) wore a helmet, while the remainder wore a combination of helmet, seatbelt or harness and neck brace. Three children were racing at Australian Karting Association (AKA) licensed venues. Around half of the children crashed their go-kart into another and five (31%) crashed into a stationary object. Four (25%) drove at less than 40kph and ten (63%) at speeds faster than 40kph. Four children (25%) also had another presentation involving other sports related injuries.

Conclusions

Although our sample size represented a subset of paediatric go-kart injuries nationwide, the characteristics and demographics were similar to those reported in medical literature. Perhaps all go-karting venues need to be registered by the AKA to ensure uniform safe karting regulations on a national scale to prevent recurring injuries.

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Surgical ethics, law and mandatory reporting

Dr. Smith, JW

Introduction

On July 1, 2010 a uniform legal framework for the registration and regulation of health practitioners was implemented in all Australian states and territories in the form of the *Health Practitioner Regulation National Law Act* (e.g. *Health Practitioner Regulation National Law Act 2009 (Queensland)*; *Health Practitioner Regulation National Law (Victoria) Act 2009*). One of the controversial aspects of this legislation has been making mandatory reporting requirements for 10 types of health professionals: chiropractors, dentists, medical practitioners, nurses and midwives, optometrists, osteopaths, pharmacists, physiotherapists, podiatrists and psychologist, as well as their employers and education providers.

It is the aim of this paper to begin a critical discussion about the ethical, evidential and philosophical issues associated with mandatory reporting law, with reference to surgical practice. In particular, there is a need to assess whether the new mandatory reporting laws are appropriate and adapted to the purpose of protecting the public and improving the standard of health care. There is at present a very limited literature about this important topic and this paper will outline many of the principal issues which should have been publicly discussed before these laws were passed by the state and territory parliaments.

Methods

The methodology to be employed in exploring the logical, legal and medical soundness of mandatory reporting law involves examining the at present limited case law as well as the construction of “hypotheticals” and thought experiments to test the scope and limits of the law.

Results

A preliminary article has been accepted for publication in *ANZ Journal of Surgery*, entitled, “Surgery, Law and Mandatory Reporting.” This proposed work is undertaken for the Foundation for Surgery Scholarship in Surgical Ethics.

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Melanoma of the gallbladder presenting as acute cholecystitis

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Introduction:

A previously well 50 year-old female presented to Emergency with acute cholecystitis. Abdominal ultrasound showed a mildly thickened gallbladder wall associated with biliary sludge.

Methods

She underwent a routine laparoscopic cholecystectomy the next day and the gallbladder specimen was sent for histological analysis.

Results

Histopathology showed a polypoid tumour protruding into the lumen of the gallbladder. Microscopy and immunohistochemistry confirmed the tumour to be a malignant melanoma. Further medical history revealed she had a melanoma excised behind her left ear 28 years ago, with no further local recurrence.

She was referred to a melanoma specialist and CT/ PET scans showed no other sites of metastatic disease. The consensus was that the gallbladder tumour was most likely a metastasis from her original primary. After discussion at a multi-disciplinary meeting, the plan was close observation. She was booked for a repeat PET scan after 6 months.

A literature review showed that metastatic melanoma to the gallbladder is very rare and the majority of patients present with disseminated disease, with a median survival of 8.5 months. Only a very small percentage present with metastatic deposit limited to the gallbladder, as in the above case. Surgical intervention, in the form of laparoscopic cholecystectomy, is recommended in localised disease. In those cases, the prognosis tends to be better¹.

Conclusions

Metastatic melanoma to the gallbladder is a rare entity, with poor prognosis. When the metastatic deposit is limited to the gallbladder and the patient has a long disease-free interval, the prognosis might be more favourable.

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Incidental appendiceal carcinoids - Is surgery affecting their incidence?

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Introduction

There is lack of consensus on the incidence of appendiceal carcinoids. The influence of number of appendicectomies performed has been postulated to play a role in this. The aim of our study was to determine the incidence and clinico-pathological profile of appendiceal carcinoids in a cohort of patients undergoing emergency appendicectomies for clinically suspected acute appendicitis, and examine the influence of the trend (if any) of the number of appendicectomies performed on the overall incidence of appendiceal carcinoids.

Methods

A retrospective analysis of patients diagnosed with appendiceal carcinoids following presentation with acute appendicitis to the Modbury hospital, South Australia from March 2007 to April 2011. The patient cohort was divided into Group 1 (March 2007-March 2009) and group 2 (April 2009-April 2011) to study the influence of time trends on incidence of appendiceal carcinoids. Statistical analyses were performed using the Statistical Product and Service Solutions, SPSS 14.0 for Windows

Results

Of 506 patients who underwent emergency appendicectomy for acute appendicitis, 8 patients (1.6%) were found to have appendiceal carcinoids. The median age was 23 years with 7 patients being female. There was no difference in the incidence of appendiceal carcinoids over the two time periods ($p < 0.12$).

Conclusions

Appendiceal carcinoids were found in 1.6% of patients undergoing emergency appendicectomy for acute appendicitis. These tumours are found more commonly in young females with a predilection for the tip of the appendix. The perceived increased incidence appendiceal carcinoids appear to be unrelated to the increase in the number of appendicectomies being performed.

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Drug-induced acute pancreatitis in a cohort of 328 patients – A single-centre experience from Australia

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Introduction

Acute pancreatitis (AP) is associated with risk of morbidity and mortality. Routine prescription drugs have been linked to the causation of AP. The aim of the study was to determine the incidence, presentation, course and outcome of drug-induced AP amongst patients admitted to a public hospital.

Methods

A retrospective analysis of patients presenting with AP to the Modbury hospital, South Australia from January 2006 to April 2011. Each admission was reviewed within the electronic database for patient details as well as to determine the aetiological factor. In patients with drug-induced AP, the WHO Probability Scale was used to evaluate causality relationship.

Results

328 patients were treated for AP during the study period. Biliary and alcohol-induced AP accounted for 80% of cases. 11 patients (2 male and 9 female patients; median age: 59 years) were diagnosed with drug-induced AP. These included 5 cases of codeine-, 2 cases of azathioprine-, and 1 case each of chlorthiazide-, valproic acid-, oestradiol- and simvastatin-induced AP. 9 patients had a mild disease while 2 patients had severe AP with a median hospital stay of 4 days. Withdrawal of the drug resulted in cessation of the attacks in all patients over a median follow-up of 24 months.

Conclusions

Routine prescription drugs, as an aetiological factor, accounted for 3.3% of cases of AP. The disease appeared to be more common in middle-aged women. It is likely that the overall incidence of this entity is under-reported owing to the stringent criteria needed to conclusively determine a causal relationship

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Superior Mesenteric Artery Syndrome, a Diagnostic Dilemma

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Introduction:

Superior mesenteric artery syndrome is a rare cause of proximal intestinal obstruction. It is also known as Cast syndrome, Wilkie syndrome, arteriomesenteric duodenal obstruction, and chronic duodenal ileus. The syndrome is characterized by compression of the third portion of the duodenum due to narrowing of the space between the superior mesenteric artery and the aorta and is mainly attributed to the loss of the intervening mesenteric fat pad. This is mainly due to rapid weight loss. Other known factors predisposing people to the syndrome are application of a body cast after spinal surgery, presence of abdominal aortic aneurysms and abnormal position of the ligament of Treitz.

A case report:

A 22 year old male was presented with gradual onset of sharp, intermittent, abdominal pain, which was initially central, but later became generalized and associated with bilious vomiting. He had post prandial discomfort and importantly had a weight loss of seven kilograms in the last six months. On examination, the patient was found to have generalized abdominal tenderness, and more markedly, central abdominal distension. The abdomen was soft with no peritonism, but had hyperactive bowel sounds. CT scans of the abdomen and pelvis with angiogram showed a reduced aorto-mesenteric angle and dilatation of first and second part of the duodenum and abrupt narrowing of the third part, which confirmed the diagnosis. The patient recovered with conservative management of nutritional supplementation.

Conclusions:

Conclusion: Superior mesenteric syndrome is a life threatening condition for which conservative management is the treatment of choice, failing which will require surgical management such as duodenojejunostomy.

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INCREASED PROSTHETIC INFECTION IN HIP ARTHROPLASTY FOR FAILURE OF INTERNAL FIXATION OF PROXIMAL FEMUR FRACTURES

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Aim

To outline the complication rates of hip arthroplasties performed for failed internal fixation of femoral neck fractures and to look at prosthesis survival rates in this population

Hypothesis

Our hypothesis is that this subgroup of hip arthroplasties forms a challenging group of patients with difficult surgery and high complication rates, particularly with respect to deep infection.

Method

Cross-referencing of records was used to find all patients with failed internal fixation who went on to have hip arthroplasty between 2000 and 2011. Most of the index fixation procedures were performed at our centre (Frankston Hospital) with subsequent arthroplasties being performed at our centre or at two local private hospitals on the Mornington Peninsula in Victoria. A retrospective study was performed looking at short and longer-term complications and survival rates of the prostheses.

Results

Approximately 60 patients were identified, records were studied and outcomes documented. Our population sample had a major complication rate of 20% (12 out of 60 patients.) Of these 12 patients, 8 had a deep prosthetic infection requiring re-operation i.e. washout, excisional arthroplasty or revision arthroplasty. One patient died as a result of sepsis from their infected salvage arthroplasty. Other major complication rates with respect to loosening (n=2), dislocation (n=1) and peri-prosthetic fracture (n=1) were similar to the literature in this subgroup of hip arthroplasties.

Discussion & Conclusions

The major abnormal finding was a high rate of deep infection in the conversion arthroplasty compared to primary hip arthroplasty at our centre and in the Australian National Joint Replacement Registry. We would recommend salvage hip arthroplasty be conducted as a staged procedure with initial removal of metalware and subsequent implantation of hip prosthesis once intra-operative swabs are clear. Furthermore, we would suggest caution in converting a failed internal fixation device to a hip arthroplasty and recommend rigorous pre-operative screening for infection of failed internal fixation devices and close monitoring of conversion arthroplasties post-operatively.

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