HPB & UPPER GI

HP01
METALS IN GALLBLADDER CARCINOGENESIS

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Carcinoma gallbladder is the commonest malignancy in the Northern part of India. The heavy metals are known carcinogens while trace metals have protective effect.
Aim The aim of the study is to estimate the heavy and trace metal (Lead, Zinc, Copper, Cadmium, Chromium, Manganese and Selenium) concentration in serum, bile, tissue and gallstone in patients with gallbladder diseases.
Method This is a pilot study conducted in 45 cases (Group – I: 15 cases of carcinoma gallbladder, Group II: 15 patients of cholecystitis with cholelithiasis and Group – III: 15 patients of healthy control), to detect the relationship between the heavy and trace metal concentration and gall bladder carcinoma. Analysis of metal was done using Perkins-Elmer model 2380 atomic absorption spectrophotometer.
Results The serum concentration of copper and nickel was significantly high in carcinoma gallbladder patients as compared to patients with cholecystitis while zinc and selenium is low in carcinoma gallbladder patients. Bile concentration of zinc, selenium and manganese was significantly low in carcinoma gallbladder patients ($p < 0.05$) as compared to patients of cholelithiasis while cadmium and nickel was high. Tissue concentration of manganese was significantly low in carcinoma gallbladder patients as compared to patients of cholelithiasis while chromium was high. Gallstone concentration of copper, manganese and lead was significantly low in carcinoma gallbladder patients as compared to patients of cholelithiasis.
Conclusion The heavy metals are in higher concentration in carcinoma gallbladder while trace metals are in lower concentration indicating possible role of heavy metal in gallbladder carcinogenesis.

HP02
A MULTICENTRE CONTROLLED STUDY OF INLINE RADIO-FREQUENCY ABLATION DEVICE FOR LIVER TRANSECTION

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Purpose Intraoperative blood loss during liver resection remains a major concern due to association with higher postoperative complications. The InLine RFA device (ILRFA) (Resect Medical Inc® Fremont CA) has achieved promising results in liver surgery with minimal blood loss and no increase of postoperative complications. In this multicentre controlled study, 108 patients undergoing liver resection were investigated.
Methodology 108 liver resections were performed in 4 medical centres, consisting of 54 ILRFA and 54 ultrasonic Surgical Aspirator (USA) transection as the control group. Pringle manoeuvre was applied only when required. Blood loss was measured from sponge weights and suction bottle contents.
Results The type of liver resection was very similar in both groups. Median number of RFA deployments was 3 (1–12) with a median coagulation time of 9 (3–36) minutes. Median operation blood loss was 165 ± 20 ml (5–675 ml) in the ILRFA and 654 +/–83 ml (80–3600 ml) in the control, a 74.8% reduction ($P < 0.001$). The median transection blood loss per unit resection area was 3.29 ± 0.40 (0.14–12.33) ml/cm2 in the ILRFA patients compared with 6.41 ± 0.71 (0.92–36) ml/cm2 in controls, the reduction was 48.7% ($P < 0.001$). The transection time in ILRFA was slightly faster than that in controls, but not significantly different.
Conclusion ILRFA precoagulation is a safe, effective technique for liver resections which significantly reduces blood loss.

HP03
A NOVEL AND SAFE DEVICE FOR HEPATIC PARENCHYMAL TRANSECTION DURING LIVER RESECTION: THE GYRUS PLASMAKINETIC PULSED BIPOLAR COAGULATION FORCEPS

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Introduction The Gyrus PlasmaKinetic bipolar coagulation device has been described for use in most types of abdominal surgery. However, its use in liver resection has, to date, not been described. This study has been conducted to evaluate the safety and efficacy of the Gyrus PlasmaKinetic bipolar coagulation device during the parenchymal transection phase of both open and laparoscopic liver resections.
Materials and Methods A retrospective review was undertaken of 30 consecutive liver resections using the Gyrus Plasmakinetic pulsed bipolar coagulation device. The study period was from July 20, 2005 to November 1, 2006. Post-operative morbidity, mortality, and need for blood transfusion were measured.
Results There were 18 males and 12 females. The average age was 54.8 +/– 13.8 yrs, with a range of 29 to 87 yrs. There were 27 open procedures and 3 laparoscopic procedures. Of these, there were 13 major resections (greater or equal to 3 segments) and 17 minor resections (<3 segments). Six patients had histopathological confirmation of cirrhosis in the adjacent liver. Average operation time was 263.1 +/–117.2 min. Length of stay had a median of 9 days. 16 patients (53.3%) did not require any blood transfusion. There was no difference in the proportion of patients receiving a blood transfusion between the cirrhotic and non-cirrhotic groups ($p = 0.46$). There were no post-operative deaths. 6 patients (20 %) had significant post-operative complications.
Conclusion The Gyrus PlasmaKinetic system is safe and efficacious for use in hepatic parenchymal transection when used together with Argon beam coagulation and other more traditional haemostatic strategies in both cirrhotic and non-cirrhotic livers.

HP04
LIVER RESECTION: A REGIONAL HOSPITAL EXPERIENCE

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Purpose Liver resection is a significant operation usually limited to large metropolitan hospitals. We first started performing liver resections at the Launceston General Hospital (LGH) which is a regional centre (bed capacity 280), in 2000. This is a summary of our experience.
Methodology Data of liver resections performed between May 2000 and January 2007 at the LGH, was collected prospectively and reviewed with particular attention to patient survival, post-operative complications and disease recurrence.
Results There were 79 consecutive liver resections during the study period. All of these were done using intra-operative ultrasound to determine resection margins and an ultrasonic dissector, together with portal inflow control. Metastatic colorectal adenocarcinoma was the most frequent pathology ($n = 49$). Six patients had metastases from primaries other than colorectal cancer. There were 13 resections for primary liver/ biliary malignancy; 1 for contiguous invasion by gastric cancer and 10 were for benign conditions. Minor bile leak was the most common procedure-related complication (21 patients; 27%). No patients had reactionary/secondary haemorrhage. There were four deaths in-hospital: 2 liver failure, 1 septicaemia, 1 PE (surgical mortality 5%). At the time of this audit, 41 cancer patients are disease free; 9 are alive with disease and 16 have died (14 from recurrent disease).
Conclusion Resection provides the best hope of cure for patients with primary or secondary hepatic malignancy. With adequate expertise liver resections can be performed safely in a regional hospital.

HP05
BETA IS BETTER THAN RADIOFREQUENCY ABLATION

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Purpose Radiofrequency ablation (RFA) is a popular method of treating unresectable liver tumours by the use of a high-frequency, alternating electrical current that heats and destroys tumour cells. The size of the ablation produced is limited by localised charring of adjacent tissue that prevents further conduction of the radiofrequency current. To overcome this problem, a Bi-modal Electric Tissue Ablation (BETA) circuit has been created that adds a direct electrical current to a radiofrequency current. Direct currents attract water to the cathode in biological tissues and this phenomenon is utilised in an effort to prevent tissue charring. The BETA circuit was tested in a pig model.
Methods 2 studies have been performed with this new circuit, one to compare sizes of the ablation produced between standard RFA and the BETA circuit. This was followed by a long-term study to assess associated changes to liver function and pathological changes within the liver.
Results Ablations with significantly larger diameters are created with the BETA circuit (49.6 mm +/− SE 3.46 vs 27.78 mm +/− SE 3.37, $p < 0.001$). Ablations produced by the BETA circuit induced coagulative necrosis within the treated hepatocytes that healed by fibrosis. Significant rises in serum liver enzymes are seen within 24 hours of treatment but these return to normal within 7 days. Treatment with the BETA circuit otherwise appears safe.
Conclusions The BETA circuit produces significantly larger ablations than standard RFA. Although larger, the injuries produced behave in a similar manner to standard RFA and it is anticipated that with further refinements, the BETA circuit will become a useful treatment modality for unresectable liver tumours.

HP06
PANCREATIC ABSCESS: RESULTS OF A SURGEON'S PROTOCOL

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A standardized management has been adopted for management of pancreatic abscess, where TPN was used to maintain nutritional status and ICU for maintenance of homeostasis until the junction between the abscess and viable tissue demarcated. Surgical intervention was undertaken if resolution was unlikely after 2 weeks and the patient was deteriorating. This involved a complete sequestrectomy with careful drainage. Flagyl was preferred for prophylaxis when cholangitis was not a factor and gut rest with TPN was used to maintain nutritional status. A review of the results over the last 7 years is presented.

31 (16 male and 15 female) patients required surgical intervention. Their ages ranged from 18 to 88 years with a mean (sd) of 58 (18) years. The aetiology was biliary in 17, alcohol in 11 postoperative in 3 and 2 had other causes. The Apache II scores on admission was 13.8 (5.0) and 14.5 (5.2) preoperatively.

There were 5 deaths (13%) which occurred in patients aged 34, 58, 83, 76, and 78 years. They presented with ApacheII scores of 20, 18, 15, 24, 16 respectively and 3 had significant co-morbidities. The median hospital stay was 47 (7–132) days. Only 3 patients required a re-operation for incomplete sequestrectomy. They required TPN for from 7 to 64 days (median 20 IQR 11–32 days).

Conclusion: Delaying surgery until there is good demarcation between the sequestrum and the normal tissue allows for a more aggressive surgical approach even in patients with severe pancreatitis and high ApacheII scores. Age is an important determinant of death but some elderly patients survive this serious illness.

HP07
PROTEOMIC IDENTIFICATION OF SERUM MARKERS OF PANCREATIC ADENOCARCINOMA USING SELDI-TOF MS

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More accurate biomarkers for pancreatic cancer (PC) would improve early detection and monitoring progress.
Aim To develop a biomarker panel for PC, using SELDI-TOF technology and a bioinformatic approach and compare these markers to Ca19.9.
Method Serum samples from patients from the University of Sydney (UoS) were used to derive a diagnostic panel of proteins which was tested blindly on samples from the University of Verona (UoV). From UoS there were 38 PC, 54 disease controls (pancreatico-biliary) (DC) and 68 healthy volunteers (HV) samples. From UoV there were 40 PC, 21 DC and 19 HV patients. The PC patients from UoV underwent a resection and were therefore in a relatively early stage. The biomarker panel was developed using a logistic regression/10 fold cross validation approach1. Ca 19.9 was also measured. Discriminatory power was assessed by ROC curve analysis.
Results The protein panel that best discriminated DC from PC included 7 protein peaks and HV from PC included 4 protein peaks. The discriminatory effect of the protein panel was similar to that of Ca19.9 but the combination of these panels and Ca19.9 was significantly improved $P < 0.05$, from 0.90 to 0.97 for comparison of PC with DC and from 0.90 to 0.99 for comparison of PC to HV. Results for samples from UoV were similar to those for UoS.
Conclusion A panel of serum proteins from PC patients in combination with Ca19.9, significantly improved the ability to identify PC from DC and HV samples. These results were confirmed when tested blindly on blood samples from Verona.

1. Scarlett *et al* Gastroenterology. 130: 1670–1678, 2006

HP08
DOES NEO-ADJUVANT CHEMOTHERAPY AFFECT THE ACCURACY OF FDG-PET FOR PRE-OPERATIVE PLANNING IN HEPATIC COLORECTAL METASTASES?

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Purpose Pre-op scanning for hepatic colorectal metastases surgery remains a challenge, especially in the age of neo-adjuvant chemotherapy, which has marked biochemical and physical effects on the liver. FDG-PET has clear applications for detecting extrahepatic disease. We investigated FDG-PET as a pre-op planning tool for detecting lesions in patients with and without neo-adjuvant chemotherapy.
Methodology All patients who had resection of hepatic colorectal metastases between Jan 2004 and June 2006 were included. Patients were divided into those who received neo-adjuvant chemotherapy and those who did not. The number of malignant hepatic lesions found on each scan was compared with those found on histopathology, intra-operative examination and/or intra-operative ultrasound. Accurate scans (scan lesions = true lesions), over-estimations (scan lesions > true lesions) and under-estimations (scan lesions < true lesions) were recorded.
Results 21 patients had pre-op FDG-PET scans with neo-adjuvant chemotherapy and 53 without. Accurate tests on a per-patient basis were 6 (29%) for the chemotherapy group vs. 28 (53%) for the non-chemotherapy group, $p = 0.06$. Notably, there were 11 (52%) under-estimations in the chemotherapy group vs. 18 (34%) in the non-chemotherapy group. There were 4 (19%) over-estimations in the chemotherapy group vs. 7 (13%) in the non-chemotherapy group.
Conclusion Pre-op assessment with FDG-PET is not useful for hepatic colorectal metastases, particularly when neo-adjuvant chemotherapy is used. FDG-PET is still useful however, for the assessment of extra-hepatic disease.

HP09
REFLUX AFTER OESOPHAGECTOMY: CAN A FUNDOPLICATION PREVENT IT?

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Introduction Oesophagectomy for oesophageal carcinoma is a major undertaking with a definite morbidity and mortality. Long term survival rates are low and post operative quality of life becomes increasingly important. When the anastomosis is in the thorax, gastro-oesophageal reflux, particularly volume reflux symptoms are common and may significantly affect quality of life. It is proposed that a fundoplication at the anastomosis may help prevent reflux symptoms.
Aims The aim of this study was to compare reflux after a fundoplication type anastomosis with a standard anastomosis in patients undergoing Ivor – Lewis Oesophagectomy.
Study Design Prospective randomised trial utilising standardised symptom questionnaires applied in blinded fashion.
Results The fundoplication anastomosis was associated with a significant reduction in the incidence of reflux (30% vs 70%) as well as reducing the incidence of severe reflux (7% vs 25%). A total fundoplication was more effective than a partial fundoplication in preventing severe reflux. Disturbance of sleep due to reflux was significantly reduced in the fundoplication group (18% vs 47%) as was the incidence of respiratory symptoms. The fundoplication anastomosis was not associated with an increase in dysphagia.
Conclusion The fundoplication anastomosis protects patients from the symptoms of reflux after oesophagectomy and improves quality of life particularly with regard sleep disturbance.

HP10
LAPAROSCOPIC RESECTION OF SUBMUCOSAL GASTRIC LESIONS – THE WHANGAREI EXPERIENCE

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Purpose To evaluate safety of laparoscopic resection of submucosal gastric lesions performed in Whangarei Based Hospital.
Methodology From November 2002 to December 2006, 8 consecutive patients underwent the above mention surgery. (M : F = 5 : 3; Average age 63 [range, 43–83]). All patients underwent pre-operative gastroscopy. Wedge resections were performed for anterior wall lesions. (n = 3). Posterior wall lesions were resected via transgastric approach. (n = 4). Retroperitoneal resection was performed for the foregut duplication cyst. (n = 1). All except one lesion were resected using endoscopic GIA stapler. The medical records of the patients were reviewed retrospectively.
Results All patients were successfully treated laparoscopically. No conversion to open surgery. Pathology included: Gastrointestinal-stromal tumor (GIST) (n = 5), Malignant leiomyosarcoma (n = 1), Ectopic pancreas (n = 1), and Foregut duplication cysts (n = 1). All achieved adequate negative surgical margin. Average operation time was 106.14 minutes. [Range, 75–150]. Average length of hospital stay was 3.42 days [range, 1–5]. Complication included one wound infection, and one pyloric stenosis. Average length of follow up was 10.96 months [range, 0.46–31.73]. No recurrence detected and all are still alive till date.
Conclusion Laparoscopic resection of submucosal gastric lesions is a safe and appropriate alternative to open surgery. Its main advantage over open technique includes shorter length of hospital stay, lower recurrence rate and lower mortality rates. Surgical technique depends very much on tumor size and location. Outcome of the patients described from our centre is comparable to the others published till date.

HP11
LYMPH NODE METASTASES AND MICRO-METASTASES IN SURGERY FOR OESOPHAGEAL CANCER

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The incidence of lymph node metastases in both squamous cell cancer and adenocarcinoma of the oesophagus increases from about 25% for T1 tumours to 100% for T4 tumours.

The absolute number of nodes involved also greatly influences the chance of survival. If no nodes are involved, then cure with oesophagectomy approaches 100%, whilst if more than 10 nodes are involved, cure is close to zero.

The introduction of immunohistochemical staining techniques has shown that malignant cells in lymph nodes occur more frequently than previously thought. For instance, figures from seven studies of oesophagectomy and lymphadenectomy for squamous cancer showed that 349 patients were classified histologically as NO, and yet 30% of the patients were shown to have micro-metastases by immunohistochemical staining. For adenocarcinoma, the figures are eight studies, 353 classified NO and 25% shown to have micro-metastases in lymph nodes.

However, there are difficulties. First, there is no consensus on how many sections to cut for each node, and different studies which have looked at 1 section, 3 sections and 5 sections respectively, have produced quite different results. Second, there is no agreement on what constitutes a micro-metastasis. It appears that some malignant cells in nodes are actually "in transit" at the time of their removal and may not be metastases at all.

Since lymph node status is assuming an ever greater role in the treatment of oesophageal cancer, the necessity for these problems to be resolved is important.

HP12
THE ANATOMICAL BASIS OF THE SURGICAL TREATMENT OF GASTRO-OESOPHAGEAL REFLUX: LESSONS FROM HISTORY AND SIMULATION

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Purpose To review the anatomical basis for anti-reflux operations and describe a project designed to develop a 3D micro-anatomical model of the gastro-oesophageal junction with integrated physiological events.
Methodology and Results A realistic 3D anatomically based computer model of the gastro-oesophageal junction (GOJ) was constructed using cross-sectional digital images from the Visible Human Project. A finite element mesh was constructed and an iterative fitting process provided smooth surfaces. For accurate simulation of physiologic function it is necessary to augment this geometric model with detailed micro-structural information. A custom-built, semi-automated, extended-volume imaging system was used to obtain images of the GOJ. The device consists of a three-axis translation stage where a tissue sample embedded in wax can be sequentially imaged and milled. At each step the top surface was stained for fiber type and connective tissue and the image captured using a high resolution digital camera. Proof of principle was demonstrated with an en-bloc harvested sheep GOJ and then repeated with a fresh autopsy human GOJ. The 3D microstructural model was constructed using the images with a total volume of 35.1×106 voxels. Clinical manometric measurements were used to inform mathematical modeling to simulate physiological events, such as swallowing.
Conclusions This model may provide opportunities to examine the relationship of anatomy and physiology in health and disease of the GOJ, enhance patient education, enable theoretical drug trials and determine the relative importance of anatomical elements of anti-reflux surgery.

HP13
COMPLICATIONS OF DUODENAL DIVERTICULAE: A REPORT OF FIVE CASES

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Purpose To review the incidence, acute presentations and management of duodenal diverticulae presenting to North Shore Hopsital, Auckland, New Zealand.
Methodology We present five cases of complicated duodenal diverticulae presenting over the period of 2005 to 2006. We reviewed 1622 consecutive ERCP reports at our institution to determine the endoscopic incidence.
Results The endoscopic incidence of reported duodenal diverticulae was approximately 13%. Five cases of severe complicated duodenal diverticulae presented over a 12 month period. There were 3 men and 2 women aged 48 to 83. These included 3 cases of free perforation, 1 of contained perforation and 1 of recurrent severe pancreatitis. The free perforations were treated with emergent surgery including a pancreaticoduodenectomy and 2 excisions and primary closure. The contained perforation was managed conservatively. The patient with severe pancreatitis required a pancreaticoduodenectomy. There were significant complications but all patients survived and have resumed normal diets.
Conclusion Complications of duodenal diverticulae are diverse and may be severe. Timely surgical intervention results in good outcomes.

HP14
DETERMINING THE MANOMETRIC AND ANATOMIC FEATURES WHICH INFLUENCE DISTAL OESOPHAGEAL RAMP PRESSURE

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Purpose Distal oesophageal ramp pressure upon swallowing results from resistance from the oesophago-gastric junction below and pressure from above (peristaltic wave) with pressure build-up in the distal oesophagus. Ramps are observed during manometry, but the factors which influence the magnitude of ramp pressure have not been elucidated. This study aims to establish the normal range for ramp pressures and ascertain manometric and anatomic features which affect ramp pressure, in order to study ramp pressures and dysphagia following antireflux surgery.
Methodology A standard 8 channel motility catheter with a sleeve was used with a water perfused manometry system, to record the ramps at 3 cm above the lower oesophageal sphincter (LOS) associated with ten 5 mL water swallows.
Results 614 water swallows (5 mL) have been analysed in 68 subjects: 20 controls, 25 reflux patients and 23 patients after a partial (12) or total (11) fundoplication. Control patients had LOS of 17 ± 0.4 mmHg, relaxation pressure of 1.4 ± 0.2 mmHg and a ramp of 8 ± 0.3 mmHg (mean $\pm$ std error). Reflux patients had significantly lower pressures than controls for all parameters studied. As expected after anti-reflux surgery, all pressures were significantly higher with total fundoplication producing the highest pressures. The ramp pressure after total fundoplication was 22 ± 0.6 mmHg and after partial fundoplication was 15 ± 0.5 mmHg.
Conclusions Ramp pressure integrates the distal peristaltic amplitude with lower oesophageal resistance to outflow. It is possible that lower rates of dysphagia after partial fundoplication are associated with lower ramp pressures. However the relationship between ramp pressure and dysphagia remains to be elucidated.

HP15
SURGERY FOR CHRONIC PANCREATITIS: EXPERIENCE AND TRENDS IN AUCKLAND

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Purpose There has been uncertainty, if not skepticism, about the role of surgery for chronic pancreatitis (CP) in New Zealand. The aim of the study was to review the indications, operations and outcomes for this type of surgery.
Methodology All patients with CP managed by the HBP/Upper GI Unit (Auckland City Hospital) and by HBP/Upper GI Surgeons Ltd (Mercy Integrated Hospital) between 1999 and 2006 were identified by audit systems and the clinical records were reviewed. Outcome was determined by a separate telephone survey using a derivative of validated questionnaires.
Results From the 1499 admissions of 1092 patients, there were 81 (7%) patients (median age 44 years, range 11–76, male : female 1.7 : 1) who had surgery. The Japan Pancreas Society criteria determined that 64 patients had definite CP (9 with cancer), 10 with probable CP, and 7 without evidence of CP (2 with cancer). ERCP was performed in 41 (50%) patients (20 diagnostic and 21 therapeutic procedures, 11 had pancreatic stenting as a therapeutic trial). There were 42 resections (right side 24, left side 18) and 32 decompressions (Frey 29, Partington-Rochelle 3) and 7 cysto-enterostomies. There was no 30 day mortality, a major complication rate of 5% and an overall median hospital stay of 12 days (range 2–82). The results for long-term clinical outcome demonstrated sustained benefit in the majority of patients.
Conclusions Surgery for CP can be performed safely and with sustained clinical benefit in a carefully selected and small subgroup of patients.

HP16
NEGATIVE PRESSURE WOUND THERAPY [NPWT] IN POSTOPERATIVE PANCREATIC FISTULA: A NOVEL APPROACH

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Incidence of postoperative pancreatic fistula can be as high as up to 25%, especially when operating on a soft pancreas with non-dilated pancreatic duct.[1] Pancreatic fistula is usually managed expectantly. NPWT is a new dressing method for wound care. NPWT has been used for enterocutaneous fistulas.[2] Use of NPWT in managing pancreatic leak is a novel approach and as yet unreported.
Aim We propose the use of NPWT in selected cases of postoperative low output external pancreatic fistulas.
Case Report 47-year-old male was diagnosed with mucinous cystic neoplasm of pancreas. He had three surgeries in past for choledochal cyst and developed an incisional hernia. He underwent Whipple's procedure. He developed a polymicrobio-fungal wound infection. On post-operative day 7 he developed a low output pancreatic leak with wound fluid amylase of >15,000 units. He was managed with NPWT at 50 mmHg pressure. The dressing was changed by wound care nurse every 48 hours.
Result The pancreatic leak settled in 5 days after the use of NPWT. There was no skin excoriation and wound discomfort. NPWT was continued in view of wound infection. Wound granulated well.
Conclusion NPWT can be used successfully in postoperative low output external pancreatic fistulas. Use of NPWT has to be explored further before recommending it routinely and for use in high output pancreatic fistulas.

References

1. Bassi C, Butturini G, Molinari E, et al. Pancreatic fistula rate after pancreatic resection. The importance of definitions. Dig Surg 2004; 21:54.
2. Woodfield J, Parry B, Bissett I, et al. Experience with the use of vacuum dressings in the management of acute enterocutaneous fistulas. ANZ J Surg 2006; 76: 1085–7.

HP17
COMMON BILE DUCT STONES: A REVIEW OF MANAGEMENT OPTIONS

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Purpose Two recent meta-analyses support operative CBD exploration (laparoscopic or open) as at least equal to ERCP for the management of choledocholithiasis with the gall bladder in situ. The literature regarding laparoscopic exploration is largely from enthusiasts and may not be transferable across institutions. In our institution both hepatobiliary and general surgeons perform cholecystectomy with variable comfort levels with laparoscopic CBD exploration. ERCP and laparoscopic antegrade transampullary biliary stents are available. We review the management of choledocholithiasis in this setting.

Methods A retrospective review of all patients who underwent cholecystectomy during 2004 and 2005 at two Newcastle hospitals was conducted.
Results The incidence of choledocholithiasis was 10.3% (70 patients). This was diagnosed pre-operatively in 36 patients; 22 underwent pre-operative ERCP (62.5% clearance) and 14 operative CBD exploration (100% clearance). An additional 22 patients with presumed choledocholithiasis had a normal cholangiogram at pre-operative ERCP. Operative cholangiogram first confirmed choledocholithiasis in 31 patients; CBD exploration was successful in 58.8% (10 of 17). Intra-operative biliary stents were inserted in 15 patients due to a small calibre CBD, failed exploration or lack of equipment and time for exploration. Hepatobiliary surgeons more frequently performed operative CBD exploration and stent placement.
Conclusion The management of choledocholithiasis varies with the clinical scenario and local expertise. This series defines a role for intra-operative stent placement, suggests pre-operative ERCP is over-utilised, and that operative CBD exploration is successful with low morbidity.

HP18
THE GOOD, THE FAT AND THE UGLY: METABOLIC HORMONES AND THE HEART

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Obesity related cardiovascular disease has assumed epidemic proportions and it is important that we properly understand how hormones of metabolism influence cardiac function. Over the last 15 years a multitude of factors have been discovered that appear to play significant roles in energy balance and metabolism, markedly changing our view of fat and GI cells and their dynamic control and regulation of metabolism. This presentation will focus on how three recently discovered hormones Ghrelin, Leptin and Resistin may directly influence cardiac function. Ghrelin is predominately produced and secreted from the X/A cells of the stomach and studies suggest it can act as a cardioprotective agent. However, Ghrelin also acts to constrict the coronary arteries, which places potential limitations upon its therapeutic use. Leptin is produced by adipose tissue in proportion to fat deposition and appears to drive satiety signals in the body. In contrast, Leptin appears to antagonise cardiac function and it may drive the development of hypertension by impairing renal pressure natriuresis and down regulating endothelium derived vasorelaxant factors. The third factor, Resistin, was originally described from rat adipose tissue and was shown to impair insulin action and glucose control. In humans however, Resistin is primarily produced in inflammatory cells such as monocytes and macrophages. Resistin worsens the recovery of the heart from a period of experimental ischemia and promotes the release of inflammatory agents such as tumour necrosis factor-alpha. Such actions may be partially responsible for the observed insulin resistance after cardiac surgery.

HP19
RE-OPERATION FOR DYSPHAGIA AFTER CARDIOMYOTOMY FOR ACHALASIA

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Purpose Although laparoscopic cardiomyotomy is considered to be the treatment of choice for achalasia, there is no consensus about how persistent or recurrent dysphagia after myotomy should be treated. In this study we evaluated our experience with re-operation following previous cardiomyotomy.
Methodology From a prospective database, all patients were identified who underwent a re-cardiomyotomy for persistent or recurrent dysphagia between 1992 and 2006.
Results 19 patients (6 female, 13 male) underwent a re-operation: 7 for persistent and 12 for recurrent dysphagia. The mean time interval between both cardiomyotomies was 81 months. Different operative approaches for reoperations were used, depending on surgeon's preference and the technique used for the first operation. In 12 patients, the alternative body cavity to that used for the first operation (thoracic versus abdominal) was used for access in the revision operation. This was associated with a shorter operation time (90 vs.128 minutes). An incomplete myotomy or scar tissue were the most common causes of failure identified. Mean hospital stay was 4 days. Mean follow-up after the revision operation was 3.6 years. 89% of patients had an improvement in symptoms, and the mean satisfaction score (0–10) was 7.
Conclusion Re-operation for persistent or recurrent achalasia achieves a satisfactory outcome in most patients. Using the alternative body cavity to that used in the original procedure facilitates minimal access techniques, and gives easier access to the operative field.

HP20
OESOPHAGECTOMY FOR TUMOURS AND DYSPLASIA OF THE OESOPHAGUS AND GASTRO-OESOPHAGEAL JUNCTION: EXPERIENCE OF A SINGLE SURGEON

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Purpose Neoadjuvant therapy, radical lymphadenectomy and treatment in high volume centres have been proposed to improve outcomes for resectable oesophageal tumours. The aim of our study was to review the outcomes of oesophagectomy performed by a single surgeon with a moderate caseload where surgery was the principal treatment and a conservative lymphadenectomy was performed and compare them with current literature.
Methodology The study comprises 125 consecutive cases of attempted oesophagectomy performed by a single surgeon (RC) from 1993–2006. Data has been recorded in a prospective database maintained and updated by the surgeon.
Results Endoscopic ultrasound was used in staging 69% of patients. Only 23% patients received neoadjuvant therapy. Resection rate was 97%. There were 121 oesophagectomies performed with a complete R0 resection in 82%. In-hospital mortality was 0.8%. Clinical anastomotic leak occurred in 1.7%. Median length of stay was 14 days. Overall median and 5 year survival were 46 months and 47%. Stage specific 5 year survival was stage 0 100%, stage I 71%, stage II 41% and stage III 21%. Isolated local recurrence occurred in 8%. Dilatation was required in 15 patients and 3 stents were placed.
Conclusion A moderate volume surgeon with specialist training can achieve a low mortality and anastomotic leak rate with good survival outcomes. Surgery remains the principal treatment for resectable oesophageal tumours. The role for neoadjuvant therapy and radical lymphadenectomy is controversial and remains to be clearly defined. Accurate preoperative staging with endoscopic ultrasound is important for selection of patients, determining therapy and comparison of results.

HP21
ACUTE PRESENTATION OF GASTRIC CANCER IS ASSOCIATED WITH A WORSE PROGNOSIS

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Purpose Some patients with gastric cancers develop acute complications and present acutely. It has been proposed that this group of patients have a worse prognosis. This paper describes the management of acute and elective gastric cancer patients at South Auckland Health.
Methods Patients were identified by electronic searching patient records from 2000 to 2006, and obtaining data pertaining to patient demographics, mode of presentation, management and outcome.
Results Two-hundred and thirty eight patients were identified, of which 120 (50%) had an acute presentation. Patient demographics were similar in both groups, except for acute patients were older (77 years compared to 64 years; $p < 0.001$). Gastrointestinal bleeding and vomiting were more common in patients that presented acutely, 46% and 39% respectively, compared to 19% and 14% respectively in the elective group ($p < 0.001$). Fifty-six percent of all patients underwent an operation; 36% had a curative resection, 11% palliative resection and 9% had an operation for the purpose of staging. Curative resection was undertaken more commonly in patients that presented electively (47%) than those that presented acutely (24%; $p < 0.001$). After curative resections, the median survival for acute patients was 30.3 months, with a 3 year overall survival rate of 41.6%, compared to 72% for elective patients ($p < 0.0001$).
Conclusions We have shown that 50% of patients with gastric cancer develop complications leading to an acute presentation. Only a minority of these patients are able to undergo resection with a curative intent, and consequently these patients have a poorer survival.

HP22
FIVE YEAR RESULTS OF A PROSPECTIVE RANDOMISED CONTROLLED TRIAL OF ARGON PLASMA COAGULATION VS ENDOSCOPIC SURVEILLANCE OF PATIENTS WITH BARRETT'S OESOPHAGUS AFTER ANTIREFLUX SURGERY

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Background Argon plasma coagulation (APC) has been used to ablate Barrett's oesophagus, although the long-term efficacy is unknown. This study reports the 5 year results of APC ablation vs surveillance of Barrett's in post-fundoplication patients.
Methods 43 post-fundoplication patients with Barrett's oesophagus were randomised to either APC ablation of Barrett's or surveillance. 40 have been followed up with endoscopic surveillance for a mean of 68 months to assess treatment efficacy, safety and the durability of the neosquamous re-epithelialisation.
Results A median of 2.5 (range 1–6) APC treatment sessions was required to reach >95% ablation of Barrett's. Both groups had a significant ($p < 0.0001$) reduction in Barrett's length over the duration of follow-up, with APC patients having significantly greater length reduction of Barrett's at last endoscopy compared to the surveillance group ($p = 0.0277$). At 68 months, 14 of 20 APC patients (70%) continued to have >95% ablation of their Barrett's, with 8 of 14 (57%) having no macroscopic or histologic evidence of Barrett's. 4 of 20 surveillance patients (20%) had complete reversal of their Barrett's, with 3 of 4 (75%) having no macroscopic or histologic evidence for Barrett's. 2 patients in the APC group developed strictures requiring dilation. 2 patients in the surveillance group developed HGD during follow-up, while none did in the APC group.
Conclusions 40% of post-fundoplication patients with APC ablation of Barrett's retain this reversal beyond 5 years. 20% of Barrett's patients post-fundoplication regress to normal squamous mucosa. Post-fundoplication Barrett's surveillance patients continue to develop HGD, this has not been seen in the APC group.

HP23
USE OF ANTI-REFLUX MEDICATION AFTER ANTI-REFLUX SURGERY

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Purpose It is thought that a substantial number of patients who undergo anti-reflux surgery use anti-reflux medication post operatively, despite no objective evidence of reflux. This study aims to determine the prevalence and underlying reasons for anti-reflux medication usage in patients after anti-reflux surgery.
Methodology A questionnaire (13 questions) on the usage of anti-reflux medication was sent to 1016 patients from a prospective database of anti-reflux surgery patients.
Results 852 patients (84%), (437 males & 415 females with a mean age 58 yrs) returned the questionnaire. Mean follow up was 5.9 yrs after surgery. A single or combination of medications was being taken by 319 patients (37%): 82% proton pump inhibitors, 9% H2-blockers and 34% antacids. 54 patients (18%) had never stopped taking medication, whereas 261 patients (82%) re-started medication at a mean of 2.4 yrs after surgery. Persistent or return of the same or different symptoms was the reason for taking medication by the vast majority (85%), whereas 15% were asymptomatic or had other reasons for medication use. A response of symptoms to the medication occurred for 30% of the patients, whereas 64% noticed some improvement. Postoperative 24-hour pH studies (while off medication) were abnormal in 17/62 patients (27%) on medication and in 5/73 patients (6%) not taking medication.
Conclusions Anti-reflux medication is frequently taken by patients for symptoms after surgery, despite normal pH profiles in the majority. Strategies need to be employed to lower the inappropriate use of medications after surgery and to further evaluate the mechanisms underlying postoperative symptoms, which are non-responsive to anti-reflux medication.

HP24
MICRORNA EXPRESSION PROFILES IN BARRETT'S OESOPHAGUS

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Purpose The genetic changes that drive the metaplastic change from squamous oesophagus (NO) towards Barrett's oesophagus (BO) and cancer are unclear. microRNAs (miRNAs) are short, non-coding RNAs that regulate gene expression and contribute to cellular differentiation and identity. We sought to determine the role of miRNAs in BO.
Methodology Biopsies of NO, BO and cardia were taken from 7 patients and RNA was extracted. miRNA expression profiles of 300 miRNAs were determined by microarray. Guided by the array results, real-time Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) for 8 selected miRNAs enabled their expression to be studied in tissues from another 15 patients.
Results Array data revealed that 39 miRNAs were significantly differentially expressed between NO, BO and cardia. A tissue-specific expression profile was confirmed by RT-PCR, with miR-21, 143, 145, 194 and 215 significantly up regulated in BO and cardia (columnar) vs. NO (squamous). A trend towards increased miR-21 expression from NO to BO and adenocarcinoma was observed ($p = 0.1$). Interestingly, high expression of miR-143, 194 and 215 was seen in BO vs. NO ($p < 0.0001$), but with subsequent downregulation in cancers ($p = 0.1$). In contrast, miR-203 and 205 were highly expressed in NO and low in BO and cardia. A database search revealed that these miRNAs potentially target (proto-)oncogenes and tumour suppressor genes.
Conclusions Differences in miRNA expression are present between NO, BO, cardia and cancer. Deregulation of certain miRNAs, and their predicted effect on the expression of target genes, might contribute to the metaplastic and neoplastic process in the oesophagus and could serve as novel biomarkers to classify diseased tissues.

HP25
LAPAROSCOPIC SLEEVE GASTRECTOMY FOR MORBIDLY OBESE PATIENTS

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Background Obesity surgery is been endorsed as the only effective method of weight reduction in morbidly obese patients. Laparoscopic Roux-en-Y gastric bypass (LRYGBP) is been used as the most effective procedures in our centre. However LRYGBP also conveys high risk of peri- and post-operative complications on obese patients. Laparoscopic sleeve gastrectomy (LSG) is been employed first-stage procedure as a risk reduction strategy. The aim of this study was to report the short-term outcomes of LSG, its effect on risk reduction and resolution in co-morbidities.
Methods We prospectively investigated 92 patients who underwent LSG between July 2004 and February 2006 and completed our data collection through 3- to 6-monthly follow up and/or patient questionnaire. Data collected included demographics, degree of weight reduction, postoperative complications, and changes in co-morbidities.
Results Median BMI was 52.03 kg/m^2 (33–82). 56% patients had a BMI >50 kg/m^2. The median postoperative excess weight loss (EWL) was 45% with 35.49% at 6 months, 49.07% at 12 months, and 55.75% at 18 months. 39% of patients had resolutions in Diabetes Mellitus type 2, 56% had resolutions in dyslipidaemia, 28% in hypertension, 66% in obstructive sleep apnoea. Complication rate of 7.5% and three patients necessitated surgical intervention. There was zero mortality.
Conclusion LSG minimizes postoperative complication rates significantly on high risk patients and achieves effective short-term weight loss with resolutions in co-morbidities. Additional studies are required to evaluate LSG as a stand-lone procedure.

HP26
PSEUDO-ACHALASIA FOLLOWING A SLIPPED LAPAROSCOPICALLY PLACED ADJUSTABLE GASTRIC BAND: A CASE REPORT

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Purpose To demonstrate that laparoscopic adjustable gastric banding may promote oesophageal dilatation or interfere with oesophageal motility.
Methodology We report a case of a 67 year old female with a complex medical history who developed secondary achalasia from a slipped laparoscopic adjustable gastric band for weight loss. This led to recurring episodes of aspiration pneumonia requiring multiple admissions at North Shore Hospital, Auckland, New Zealand.
Results A decision was made to remove the gastric band, five years after its initial insertion. At one month follow up, she was swallowing normally and oesophageal manometry had returned to normal.
Conclusion Oesophageal dysmotility is sometimes seen in patients who have bands that are adjusted too tightly or in whom the band has slipped. This can lead to serious complications if unrecognized and incorrectly treated. Oesophageal symptoms in patients with adjustable bands must be considered secondary to the band until proven otherwise ie removal of the band or complete deflation.

HP27
MORTALITY, MORBIDITY AND 2 YEAR SURVIVAL FOLLOWING OESOPHAGECTOMY – DUNEDIN EXPERIENCE

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Purpose Oesophagectomy is associated with considerable morbidity, mortality and poor survival of patients who have undergone oesophagectomy for oesophageal carcinoma. Numerous studies have examined the impact of hospital volume on early mortality, most demonstrating a strong inverse relationship between operative mortality and hospital case volume. This study looks at the morbidity, mortality and 2-year survival of patients following oesophagectomy at Dunedin hospital, a low volume centre, and comparing it to high volume centres.
Methods A retrospective analysis of all patients who had elective oesophagectomy between 1995 and 2004. Otago Surgical Audit database, patient management system database (OraCare) as well as operating theatre database were used.
Results 40 patients were identified, which had either transhiatal or Ivor-Lewis procedure. 50% had pre-op chemotherapy and 33% pre-op radiotherapy. 65% had adenocarcinoma, 10% squamous cell carcinoma and 15% had Barrett's with severe dysplasia. The mortality at Dunedin was 5%. Complications were: respiratory 37.5%, leak 10%, wound 22.5%, oesophageal stricture 2.5% and chylothorax 2.5%. Median length of stay was 15 days (11–94). Median survival of patients with oesophageal carcinoma was 26 months. Median survival of node negative patients was 34.5 months and node positive patients 14 months.
Conclusion Prognosis for patients with node-positive disease continues to be poor despite oesophagectomy. The complication rates and in-hospital mortality at Dunedin are similar to high volume centres. This study shows that patients undergoing oesophagectomy at low volume hospital do not have increased risk of operative mortality.

HP28P
METANALYSIS OF RECURRENCE AFTER LAPAROSCOPIC REPAIR OF PARAESOPHAGEAL HERNIA

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Introduction Recurrence & reflux are two most important remote complications of lap-PEH repair (concluded by us at a previous USG meeting UK). However the extent of recurrence remains unknown.
Aim To determine the true incidence of recurrence of recurrence after lap-PEH repair.
Material & methods A metanalysis was performed. PubMed, Embase, hand search and personal communication were used to access and appraise studies. Inclusion criteria were full-text papers from 1991 to date describing lap-PEH repair on >25 pts, at least 6 m follow up and addressing recurrence. 'Wrap migration' papers were excluded. Papers were appraised and data was isolated on summary sheets. MS Office Excel 2005 was used to plot results and represented in graphs. Statistics involved calculating odds, 95 ci and alternative scenario.
Results 15 studies were eligible (all retrospective). A total of 1132 pts with 100 recurrences were noted. Overall rec rate (in all pts) was 8.8% and was 10.4% if only followed-up patients (n = 748/1132) were considered. When patients with objective evidence (follow-up Ba esophagogram) were used (301/1132), 'true' rec rate was 25.5% (i.e. 1 in 4 repairs recurred). Learning curve did not appear to be an issue. The studies revealed broad 95 ci and touching the line-of-no-effect thereby increasing the 'chance factor'. When alternative model was applied, esophageal lengthening (by Collis-Nissen gastroplasty) revealed a significant protective influence.
Conclusion The true incidence of lap-PEH recurrence is 25.5%. Mandatory (protocol) follow-up esophagograms at 1 y are essential. Subconsciously, two emphasis points in the repair have emerged – hiatoplasty and (superadded) esophageal lengthening.

HP29P
RECURRENT HEARTBURN AFTER FUNDOPLICATION WITH A NEGATIVE 24-HR PH ASSESSMENT: RECURRENT REFLUX OR "IRRITABLE OESOPHAGUS"?

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Purpose A small cohort of patients present after antireflux surgery complaining of recurrent heartburn. Over two thirds will have a negative 24-hr pH study. Our objective is to determine whether these patients have a functional disorder. We are therefore first confirming that there is no recurrent reflux and then investigating whether they have altered cytokine levels and symptomatic relief from an herbal medicine, Iberogast ®. Patient recruitment is ongoing and this report documents the reproducibility of 24-hr pH testing in this group of patients.
Methodology A prospective analysis has been carried out on a cohort of patients (identified from the Royal Adelaide Hospital Oesophageal Function database) who have undergone a fundoplication and pH testing for recurrent heartburn. Group A: patients with recurrent heartburn and a negative 24-hr pH study. Group B (control group): patients with recurrent heartburn and a positive pH study (treated with medication/surgery; asymptomatic). As part of the study, Group A patients were asked to complete a 2nd post-operative 24-hr pH test.
Results 159 patients were identified from our database, and 138 patients met our inclusion criteria. 91/138 (66%) patients have agreed to participate. 36/38 Group A patients (95%), who have thus far completed a repeat 24-hr pH study, had a negative result. Symptom-reflux correlation was highly significant ($P < 0.001$).
Conclusions Reproducibility of 24-hr pH testing in patients with recurrent heartburn and a negative 24-hr pH study is excellent (95%) and seems better than the 70–80%, which is the usually quoted figure for this test. Therefore, a 2nd pH test to confirm initial results will be unnecessary in most patients.

HP30P
A COMPARISON OF 4 DIFFERENT PROPRIETARY GASTRIC BANDS

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LapBand surgery is fast becoming a favorite procedure for the surgical treatment of morbid obesity. That gastric restriction by banding is efficient in weight and co-morbidity reduction is well established. Certain short and medium term morbidities have also been identified.

There are several popular brands of bands available on the market. They can be low volume high pressure; or high volume low pressure. Each of these brands has their own champions.

Alexandra Hospital in Singapore has the largest single institution experience in gastric banding procedure in South East Asia. Information relating to

Asian patients undergoing gastric banding using different proprietary bands is so far not available.

We carried out a small prospective study of 4 different proprietary bands. The average follow up is 12 months. Weight reduction, short-term complications, and other surgical issues are address with respect to these different bands.

The result is presented.

HP31P
USE OF BIB INTRA-GASTRIC BALLOON IN ASIAN PATIENTS

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The BIB intra gastric balloon is a popular form of non-surgical intervention in the management of morbid obesity. This is either used in isolation or as part of a staged bariatric procedure. Large series of BIB intervention has been reported in the literature. Report on use in Asian patients is uncommon.

Alexandra Hospital in Singapore has the largest single institution experience in Bariatric intervention. Gastric banding is the most commonly carried out procedure in Singapore.

We report a small series of BIB intervention in Singapore patients.

Results including efficacy of weight and co-morbidity reduction, short-term morbidities, potential for weight regain after removal of the balloon, is reported.

HP32P
OESOPHAGEAL PH PROFILE FOLLOWING PARTIAL AND TOTAL LAPAROSCOPIC FUNDOPLICATION

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Purpose In Barrett's oesophagus, it may be that total abolition of reflux will give maximal protection against the development of malignancy. It is not known whether a laparoscopic partial fundoplication gives the same degree of acid reflux control as a Nissen fundoplication. This study was undertaken to answer that question.
Methodology A retrospective analysis of a prospectively followed cohort of patients who had undergone laparoscopic fundoplication as a part of clinical trials that required patients to return for routine oesophageal pH testing within 6 months of surgery. Parameters studied were percentage time pH < 4 and total number of reflux episodes compared against wrap types.
Results A total of 167 patients had routine post-operative oesophageal pH testing, of which 123 had had laparoscopic Nissen fundoplication and the remaining 44 had partial wraps. The total number of reflux episodes was significantly different between the full and partial wrap types ($p = 0.026$), with a median of 4 refluxes for full wrap and 6 for partial wraps. However, there was no significant difference in the percentage time pH < 4 between wrap types ($p = 0.08$). In patients with two post-operative pH studies done at least 5 years apart, there was no significant difference in the parameters both within and between wrap types over time.
Conclusion Although there was a significant difference in the number of reflux episodes between a full wrap and a partial wrap, it is hard to see this as biologically or clinically significant. Furthermore none of the other parameters showed a statistically significant difference. This study does not support the view that a total fundoplication gives more effective reflux control than a partial fundoplication.

HP33P
LAPAROSCOPIC ANTI-REFLUX SURGERY IN THE ELDERLY

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Purpose Elderly patients can experience refractory symptoms of gastroesophageal reflux disease (GORD) with or without a large para-oesophageal hernia (POH). The aim of this study was to analyse the outcome of laparoscopic anti-reflux surgery in patients older than 70 years.
Methodology Patients were identified from a prospective database, which documents patients who underwent anti-reflux surgery between 1992 and 2006. Pre-operative symptoms and investigations, operative details and post-operative outcome were analyzed.
Results 226 patients (mean age 76 yrs; 77 males,149 females) were included. In 92 patients GORD and in 134 patients a large POH was the primary indication for surgery. Nissen fundoplication was performed in 90 (40%), 90 anterior in 70 (31%), Dor in 59 (26%), Toupet in 1 (0.4%) and no fundoplication was performed in 6 patients (3%). Conversion rate was 10%. There were more intra-operative complications in the large POH group than in the GORD group (8% vs. 1%; $p = 0.03$), operation time was longer (109 vs. 78 minutes; $p < 0.001$), and mortality post-operatively was higher (1.5% vs. 0%; $p = 0.24$). Overall short-term re-operation rate was 6% and did not differ between both groups. Mean follow-up was 3.7 years. The symptom scores for heartburn and dysphagia improved significantly in both groups with subjective outcome in the POH group being slightly better. Overall mean satisfaction score (0–10) was 8.2. The GORD patients used significantly more reflux-medications post-operatively (40% vs. 21%; $p = 0.007$).
Conclusion Anti-reflux surgery in patients of 70 yrs and older is safe. Patients with a large POH encounter more complications but this does not compromise symptomatic outcome.

HP34P
EXTRANODAL MARGINAL ZONE B-CELL LYMPHOMA OF MUCOSA ASSOCIATED LYMPHOID TISSUE (MALT) TYPE OF THE GALLBLADDER

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Purpose Extranodal marginal zone B-cell lymphoma of mucosa associated lymphoid tissue (MALT) type of the gallbladder is rare. We described a case of MALT lymphoma of the gallbladder with splenic and pulmonary dissemination, followed by a review of similar cases reported in English literature.
Background A 60 year old woman presented to our surgical unit with abnormal liver function tests and gallbladder thickening on ultrasonography. Cholecystectomy revealed a chronically inflamed gallbladder with multiple gallstones. Histology showed abnormal sheets of small B lymphoid cells which were CD 20 positive, consistent with a diagnosis of MALT lymphoma. Staging CT showed bilateral pulmonary nodules and mild splenomegaly. PET scan demonstrated increase uptake in lung fields and normal uptake in spleen, bone marrow and lymph node. Bone marrow examination was negative. Final diagnosis is Stage 4 extranodal MALT. She remained in remission on three-month review. No additional chemotherapy or radiotherapy was administered.
Discussion Extranodal MALT lymphoma of the gallbladder has similar epidemiological features with other extranodal MALT lymphomas. Most patients present with symptoms consistent with cholecystitis. As the gallbladder does not normally contain lymphocytes, persistent lymphoid proliferation due to chronic inflammation may represent a critical step in the development and progression of MALT lymphoma (1). Cholecystectomy without adjuvant therapy is appropriate first line treatment if there is no other symptomatic disease (2). Long term surveillance for relapse and second lymphoma should be considered.

References

1. Suarez F. et al, Blood 2006, 107:3034–44
2. Zucca E. et al, Blood 2003, 101:2489–95

HP35P
THE NATURAL HISTORY OF GALL STONE VS ALCOHOL INDUCED-SEVERE PANCREATITIS IN WESTERN SYDNEY

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Gall stones (GS) and alcohol (EtOH), are the two commonest causes of pancreatitis, potentially leading to different outcomes. A retrospective review was undertaken of patients admitted with pancreatitis attributed to these two causes, hypothesising that GS pancreatitis carries a worse prognosis. Patients admitted to Westmead Hospital between 2000 to 2005, were audited using PiMS database, entering key words pancreatitis, and greater than 14 days stay. Data obtained from Westmead Hospital's pathology database, CERNER, and

medical records, were recorded regarding demographics, diagnosis, severity of pancreatitis, radiological indices, length of stay (including ICU/HDU), surgical interventions, complications and mortality. A Glasgow score (1) was assigned to each case. Initially of 57 cases reviewed, there was an equal incidence of pancreatitis between genders (28 M;29 F). There was a higher proportion of GS pancreatitis in females (75%), and a higher incidence of EtOH pancreatitis in males (n = 7) compared to females (n = 2). On average, GS pancreatitis scored a higher Glasgow score (2.28). Complications occurred more often in males and the GS pancreatitis population. The data from this pilot project suggested GS pancreatitis leads to a worse outcome compared to EtOH pancreatitis. Case note review has been ongoing and the combined data will be presented. The study provides a foundation for expanding this database to include other factors, such as ethnicity and weight, in comparing the outcome of GS and EtOH pancreatitis. As well a prospective study has been designed that may help predict the outcome of these two types of pancreatitis.

1. Blamey SL, et al: Prognostic factors in acute pancreatitis. Gut. 1984; 25: 1340–1346.

HP36P
DOES NEO-ADJUVANT CHEMOTHERAPY AFFECT THE ACCURACY OF HELICAL CT AND CT PORTOGRAPHY FOR PRE-OPERATIVE PLANNING IN HEPATIC COLORECTAL METASTASES?

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Purpose Pre-operative scanning for hepatic colorectal metastases surgery remains a challenge, especially in the age of neo-adjuvant chemo, which has marked biochemical & physical effects on the liver. We investigated helical CT and CT portography as pre-op planning tools.
Methodology All patients who had resection of hepatic colorectal metastases between Jan 2004 and June 2006 were included. Patients were divided into those who received neo-adjuvant chemo and those who did not. The number of malignant hepatic lesions found on each scan was compared with those found on histopathology & intra-op ultrasound/examination. Accurate scans (scan lesions = true lesions), over-estimations (scan lesions > true lesions) and under-estimations (scan lesions < true lesions) were recorded.
Results 25 patients had pre-op CT portography with neo-adjuvant chemo and 63 without. Accurate scans on a per-patient basis were 2 (8%) for the chemo group vs. 27 (43%) for the non-chemo group, $p < 0.002$. Notably, there were 17 (68%) over-estimates in the chemo group vs. 25 (40%) in the non-chemo group. There were 6 (24%) vs. 11 (17%) under-estimates respectively. 23 patients had pre-op helical CT with neo-adjuvant chemo and 64 without. Accurate scans on a per-patient basis were 7 (30%) for the chemo group vs. 26 (41%) in the non-chemo group, $p = 0.388$. There were 8 (35%) over-estimates in the chemo group vs. 12 (19%) in the non-chemo group. There were 8 (35%) vs. 26 (41%) under-estimates respectively.
Conclusion While CT portography is useful for detecting occult hepatic metastases, there is evidence that over-estimation of disease is a problem, particularly when neo-adjuvant chemo was used. Helical CT also shows this trend although to a lesser extent.

HP37
PROGNOSTIC FACTORS IN OESOPHAGEAL CANCER: NUMBER OF LYMPH NODES AND EXTRACAPSULAR LYMPH NODE INVASION – AN INTERIM ANALYSIS

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Purpose Controversy exists over the 2nd edition of the TNM staging system introduced by the American Joint Committee in Cancer in 1988, and revised in 2002. Prognostic pathological factors such as the number of positive lymph nodes and any extracapsular lymph node invasion may refine this current staging system and optimize patient treatment.
Methodology All patients who underwent surgical resection for oesophageal cancer were identified in a prospectively-maintained database. Patients without invasive adenocarcinoma or squamous cell cancer were excluded. Pathology slides were reviewed by a single pathologist. Survival data was calculated using Kaplan-Meier curves, and prognostic factors were examined using the log rank test.
Results 235 surgical specimens met inclusion criteria, and 95 specimens have been reviewed so far. The 5-yr overall survival rate was 43% (median 31.4 months). Subdividing pN-stage into 1–2 positive nodes and >2 positive nodes showed significant differences in 5-yr survival between both groups: 41% vs. 6.0%, respectively ($P = 0.0003$). Similarly, including absence and presence of extracapsular lymph node invasion into our pathology review showed significant differences in 5-yr survival: 40% vs. 7.8%, respectively ($P < 0.01$). A negative circumferential margin, and the absence of both vascular and perineural invasion were also found to significantly improve survival rates.
Conclusions The number and characteristics of metastatic invasion of lymph nodes should be included in current oesophageal cancer staging systems. Clinicians will then have more accurate prognostic information, and treatment can be better tailored to patients' needs.

HP38P
MANAGEMENT OF TRAUMATIC PANCREATIC INJURY

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Background Trauma to the pancreas is a challenging area both in initial diagnosis and longer-term management. The retroperitoneal location makes clinical diagnosis of injury difficult and delayed diagnosis has morbid complications.
Methods A review of patients with a diagnosis of traumatic pancreatic injury was performed, over a period of five years, from 2002 to 2006. We assessed the type of injury that occurred in the pancreas after both blunt and penetrating trauma; the diagnosis and timing of pancreatic injury; the need for operative/radiological intervention; and the complications of these injuries. Specifically patients with complex injuries were evaluated and these cases were critically reviewed.
Results We identified 45 of cases of pancreatic trauma, aged 16–85, with a mean ISS of 27.8. Minor injury to the pancreas was found in 29 patients, and 16 patients had severe trauma to the pancreas, either major laceration or transection. Four particularly complex cases were identified, two of which required a Whipple's procedure following gunshot wounds involving the pancreatic head. Two patients with abdominal crush injuries required multiple interventions.
Conclusions Patients with pancreatic trauma often have other significant injuries and one should have a high degree of suspicion of pancreatic injury in multiply injured patients. Penetrating injury to the pancreas can result in catastrophic injury requiring radical surgery. Blunt injury should be assessed by magnetic resonance cholangio-pancreatography or at laparotomy. The management of pancreatic trauma is complex and these patients should be managed in a tertiary hospital with involvement by both specialised pancreatic and trauma surgeons.

HP39P
USE OF THE SUPERFICIAL FEMORAL VEIN AS A CONDUIT FOR PORTAL VEIN RECONSTRUCTION DURING PANCREATICODUODENECTOMY

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One of the challenging and controversial aspects of pancreatic surgery is the management of tumours adherent to the superior mesenteric and portal veins (SMPV). Options include venous resection with patch or primary closure and reconstruction of the portal vein with autogenous or synthetic conduits. The internal jugular vein has been popular.

The use of the superficial femoral vein (SFV) has been reported recently. It is well established as a conduit in various other scenarios, mainly in the reconstruction of a neoaortoiliac system for infected prosthetic aortic grafts. Its large calibre, good handling properties, high patency rate, and resistance to infection are characteristics that make it excellent for both venous and arterial substitutes. Experience has shown that it can be harvested with minimal venous morbidity in the donor limb.

We present a case of complete encasement of the SMPV by a slow-growing pancreatic tumour. Significant dilatation of the common bile duct and pancreatic duct along with chronic pancreatitis in the tail facilitated resection. Mesenteric venous return was collateralized to haemorrhoidal portosystemic shunts via ileocaecal and pericolic veins and a very large inferior mesenteric vein (IMV).

Venous excision included portal vein to 5 mm below the bifurcation, 10 mm of splenic vein and 15 mm of superior mesenteric vein. As the splenic vein was well drained to the IMV, only the superior mesenteric vein was reconstructed with an end to end bypass to the portal vein using SFV.

The superior handling properties, similar calibre to the portal vein, and low morbidity of SFV harvest of this length make it an attractive option as a conduit for portal vein reconstruction during pancreaticoduodenectomy.

HP40P
A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE RANDOMISED CONTROLLED TRIALS ON ADJUVANT INTRAPERITONEAL CHEMOTHERAPY FOR ADVANCED GASTRIC CANCER

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Purpose The purpose of this systematic review and meta-analysis was to determine the effectiveness and safety of adjuvant intraperitoneal chemotherapy for patients with advanced gastric cancer.

Methodology Studies eligible for this systematic review included those in which patients with gastric cancer were randomly assigned to receive surgery combined with intraperitoneal chemotherapy versus surgery without intraperitoneal chemotherapy. The end-points of the meta-analysis were overall survival, incidence of recurrence, morbidity and mortality.

Results Thirteen reports of RCTs were included for appraisal and data extraction. Ten reports were judged fair-quality and subjected to the meta-analysis. A significant improvement in survival was associated with hyperthermic intraoperative intraperitoneal chemotherapy (HIIC) alone (HR = 0.60; 95% CI = 0.43 to 0.83; p = 0.002) or combined with early postoperative intraperitoneal chemotherapy (EPIC) (HR = 0.45; 95% CI = 0.29 to 0.68; p = 0.0002). Survival improvement was marginally significant (p = 0.06) with normothermic intraoperative intraperitoneal chemotherapy, but not significant with EPIC alone or delayed postoperative intraperitoneal chemotherapy. Intraperitoneal chemotherapy was also found to be associated with higher risks for intra-abdominal abscess (RR = 2.37; 95% CI = 1.32 to 4.26; p = 0.003) and neutropenia (RR = 4.33; 95% CI = 1.49 to 12.61; p = 0.007).

Conclusions The present meta-analysis indicates that HIIC with or without EPIC after resection of advanced gastric primary cancer is associated with an improved overall survival. However, increased risks of intra-abdominal abscess and neutropenia are demonstrated.