ROLE OF DIAGNOSTIC LAPAROSCOPY IN ASSESSING RESECTABILITY OF PANCREATIC AND PERIAMPUlar CANCER

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Background: Surgical resection is the only curative treatment for pancreatic and periampullary cancer. A significant proportion of patients undergo unnecessary laparotomy because of understaging of these tumours. There has been no systematic review or meta-analysis assessing the role of diagnostic laparoscopy in assessing resectability (with curative intent) of pancreatic and periampullary cancer.

Methods: A systematic review of studies was performed. Medline, Embase, Cochrane trials register, and Science Citation Index were searched until November 2009. Two reviewers independently identified studies and extracted data. The gold standard was histological confirmation of metastases. Quality of studies was assessed by the QUADAS tool. Meta-analysis was performed using hierarchical summary operating characteristics curve method of combining studies of diagnostic accuracy.

Results: 23 studies including a total of 2973 patients were included in the meta-analysis. Most of the patients included in the studies had undergone a staging computerized tomogram (CT scan). Most of the studies performed histological confirmation of metastases before declaring that diagnostic laparoscopy was positive. Most of the studies had low risk of bias in the important aspects of methodological quality. The summary sensitivity and specificity obtained by meta-analysis were 0.726 and 0.999, corresponding to a post-test probability of 1.00 for a positive diagnostic laparoscopy and 0.14 for a negative diagnostic laparoscopy compared to a baseline probability of 0.36. Thus diagnostic laparoscopy can decrease the probability of unresectable cancer found on laparotomy from 36% to 14%.

Conclusions: Routine diagnostic laparoscopy prior to laparotomy can decrease unnecessary laparotomies.

PATHOGENESIS OF CYSTIC MEDIAL DEGENERATION IN IDIOPATHIC DILATION OF THE ASCENDING AORTA

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Introduction: Although there have been advances in the surgical management for idiopathic dilation of the ascending aorta, the pathogenesis is still poorly understood. We investigated the histopathological features of cystic medial necrosis or degeneration (CMD).

Methods: Tissue samples from sixty patients who underwent surgery for idiopathic dilation of the ascending aorta were fixed and stained so that histopathological features of CMN could be studied using a Leica DMLB microscope. We measured quantitatively loss of medial vascular smooth muscle cells and graded the fragmentation of elastic fibres, accumulation of mucopolysaccharides and elastocalcinosi of the media. Dividing the media into inner and outer segments, we considered regional differences in the aortic wall.

Results: • H&E staining showed there was loss of smooth muscle cells in the aortic media. • The aortic media had degenerative changes: increased mucopolysaccharide pooling, elastic fragmentation and increased elastocalcinosis. • The grading of morphological changes showed that these were more severe in the outer media. • Abnormal thickening of the adventitial vessels in the aortic wall was present in almost 90% of aortic tissue samples.

Conclusions: In our study, morphological changes in the ascending aortic wall, including the loss of smooth muscle cells, which is associated with apoptosis, were in keeping with CMD. This supports the hypothesis that smooth muscle cell apoptosis may be a factor in pathogenesis of CMD in the ascending aorta. Furthermore the outer aortic wall had more pronounced degenerative changes and the thickening of adventitial vessels suggests a possible related ischaemic vascular pathological phenomenon.

MUSCLE-DERIVED STROMAL CELLS PROMOTE FRACTURE REPAIR BY MIGRATING TO THE SITE OF INJURY

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Introduction: Fracture repair is initiated by the early inflammatory response, which mediates the recruitment and differentiation of local osteoprogenitors. It has been suggested that muscle-derived stromal cells (MDSCs), as well as the widely studied mesenchymal stem cell (MSC), contribute to the osteoblast population, but the factors governing their recruitment are yet to be elucidated. We hypothesise that MDSC populations will migrate towards an in vitro inflammatory stimulus similar to that of the fracture environment, and aim to indentify the key factors responsible for mediating their migration.

Methods: MSC and MDSC migration assays were performed through 8µm-transwells towards fracture supernatant, inflammatory macrophages, exogenous chemokines, and fracture supernatant in the presence of antibody to selected chemokines. MSC and MDSC receptor expression was ascertained using RT-PCR.

Results: Both MSCs and MDSCs demonstrated significant migration towards fracture supernatant (p < 0.005), as well as towards GM-CSF and M-CSF differentiated macrophages, suggesting macrophage-derived factors to be the mediators of chemotaxis. Both MSCs and MDSCs express a wide range of chemokine receptors, and both cell types demonstrated significant migration towards CXCL12 and PDGF. Migration assays towards fracture supernatant in the presence of neutralising antibodies confirmed the activity of these chemokines, as well as highlighting CCL4 and CXCL5 as having chemoattractant potential.

Conclusion: Our data demonstrate that both MSCs and MDSCs migrate towards an in vitro inflammatory stimulus, with specific identification of the activity of CCL4, CXCL5, CXCL12 and PDGF. These represent the first demonstration of MDSC migration towards the fracture environment, implicating their potential for novel therapeutic strategies.

ESTABLISHING CONSTRUCT VALIDITY IN AN ANIMAL TISSUE MODEL FOR LAPAROSCOPIC RIGHT HEMICOLECTOMY: A FEASIBILITY STUDY

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Aims: Surgical simulation is of increasing importance with the advent of working time directives and may eventually fill the gaps in surgical education that have been created. We assessed the feasibility of establishing construct validity in a novel animal tissue model for laparoscopic right hemicolectomy.

Materials and Methods: Participants performed two defined sections of a laparoscopic right hemicolectomy using the model developed. The procedures were marked independently by video using the L-CAT Objective Structured Assessment of Technical Skills (OSATS). Participants scores in all domains were compared to the number of real-world laparoscopic operator procedures they had performed.

Results: Six participants completed a total of 16 procedures. Laparoscopic experience showed a statistically significant positive correlation with performance during the exposure (p<0.005) and vascular pedicle (p=0.05) sections, and the total time taken to complete the task (p<0.001). Laparoscopic experience also correlated significantly and positively with technical skill (p=0.02) and less errors (p=0.04). A strong positive correlation was seen in all other measures.

Conclusions: This study was able to distinguish surgeons based on their real-world laparoscopic experience using a novel animal tissue right hemicolectomy model as assessed by OSATS. Thus, the construct validity of the platform is established in this feasibility study. Animal tissue models
are widely used in surgical training centres, and should be subject to the same validation processes that computer based simulators have been.

VALVE REPLACEMENT IN HAEMODIALYSIS: BLEEDING RISK IN MECHANICAL VS BIOPROSTHETIC VALVES

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Background: There is a higher incidence of valvular heart disease in patients with chronic renal failure undergoing haemodialysis than in the general population. Whether mechanical or bioprosthetic valve replacement is associated with a better outcome in patients on chronic dialysis is an ongoing debate. A major complication is bleeding, thought to be due to platelet disorder and uraemia.

Aim: To assess the incidence of bleeding complications in patients who have had mechanical versus bioprosthetic valve replacements.

Methods: We undertook a retrospective review of 13 patients with end-stage kidney disease on long-term haemodialysis who underwent aortic (n=7) or mitral (n=6) valve replacement. The mean age was 64.77 years. Mean length of time on dialysis was 57.15 months. Patients had similar cardiovascular co-morbidities.

Results: Incidence of valvular heart disease requiring replacement in our population of patients on haemodialysis was 13 out of 671 (0.22%). Of these, 6 had bioprosthetic and 7 had mechanical prostheses. Patients with mechanical prostheses were anticoagulated; 6 on warfarin and 1 on phenindione. Bleeding complications occurred in 5 out of 13 (38%); 4 (80%) of which were on warfarin, and 1 (20%) who was not anticoagulated.

Conclusion: Our results show an increased risk of bleeding when these patients are put on warfarin. Patients starting haemodialysis have an average life expectancy of 8.8 years (Kao et al, 2010). Our results suggest that a preference for bioprosthetic valve replacement should be given in patients over 60 years of age undergoing chronic haemodialysis, to reduce the risk of developing bleeding complications.


A NOVEL CORRECTION OF CONGENITAL EAR DEFORMITIES IN WALES

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Background: Congenital ear deformities can have a significant impact on both a child’s appearance and psychosocial well-being, often requiring otoplasty. Evidence from the literature suggests that the use of auricular splints before the age of 6 months is effective at improving auricular appearance thus preventing the need for surgery. Success rates are highest if splinting is started within the first 10 days of life. Presented are the results of the first Welsh patients treated with auricular splinting.

Methods: All 13 patients treated with auricular splinting in the Plastic Surgery Outpatient Department were reviewed. Questionnaires were sent to parents asking them to rate the change in appearance of their child’s ear/s. Change in appearance could be rated as Excellent, Improved, Recurred, Not Improved, Gave Up: a classification for results used by several authors. Ears judged as Excellent or Improved would not require corrective otoplasty. Patient records were reviewed to determine referral times and patterns.

Results: 78.95% of ears (n=19) treated were judged as excellent or improved and would not require future surgery. The mean age at which splinting was started was 94 days (range 19-151). The mean splinting duration was 9.3 weeks (range 5-18). Mean age at referral was 60.2 days (range 5-150).

Conclusions: Auricular splinting was shown to be effective at improving cosmetic appearance of congenital ear deformities and preventing the need for surgery. Improved results could be obtained by reducing mean age at referral. Splinting should be offered to all neonates/infants with congenital ear deformities.

THE EFFECT OF PSYCHOLOGICAL STATUS ON PAIN AND SURGICAL OUTCOME IN PATIENTS REQUIRING ARTHROSCOPIC SUBACROMIAL DECOMPRESSION

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Introduction: Preoperative depression and anxiety have been linked to poorer postoperative outcomes; increased pain and longer recovery. Few studies have investigated this relationship in patients requiring upper limb orthopaedic surgery. This study explored the relationship between preoperative depression and anxiety and postoperative shoulder pain and function in patients requiring arthroscopic subacromial decompression (ASAD) for impingement syndrome.

Methods: A consecutive series of patients undergoing ASAD in 2009/10 were investigated. Mental state, shoulder function and shoulder pain were assessed using the Hospital Anxiety and Depression Scale, the Oxford Shoulder Score and the Pain Visual Analogue Scale. Questionnaires were completed 2 weeks preoperatively and 3 and 6 weeks postoperatively. The local research ethics committee approved the study.

Results: 21 patients (7 male; mean 55 years) participated. Preoperatively, 5 (24%) patients were anxious, 5 were depressed and 2 were both. Spearman’s rank order correlation demonstrated no significant correlation between preoperative depression and anxiety and postoperative shoulder function or pain. Preoperative anxiety correlated significantly with preoperative shoulder pain (p<0.05) but only moderately with pain postoperatively. Preoperative depression predicted postoperative anxiety. Wilcoxon signed rank tests demonstrated significant improvements in patient shoulder function, pain and mental state at 6 weeks postoperatively (p<0.05).

Conclusion: Weak associations were found between anxiety and shoulder function, and between depression and shoulder pain and function. These associations would remain insignificant even if the sample size was trebled. However the correlations between anxiety and pain do warrant further investigation. Mental state significantly improved by 6 weeks postoperatively highlighting the psychological benefit of ASAD.