Intraperitoneal local anaesthetic improves recovery after colon resection - a double-blinded randomised controlled trial

Kahokehr A, Sammour T, Zargar-Shoshtari K, Taylor M2, Hill A.G

Introduction:
Two wounds are created after colectomy. The insult to the intraperitoneal cavity has not been emphasised as a target for interventions. The aim was to investigate the effects of intra-operative instillation and post operative infusion of intraperitoneal local anesthetic (IPLA) on recovery within optimised enhanced recovery after surgery (ERAS) or ‘fast-track’ care.

Methods: Randomised double blinded design. Ethical approval gained and data-safety monitoring board established. The intervention group (IPLA) received instillation of intraperitoneal ropivacaine (75mg) prior to dissection and postoperative infusion of 0.2% solution at 4ml/hr for 68 hours continuously. The placebo group (NS) received 0.9% saline. All patients were cared for within an established ERAS program. Epidural thoracic infusion was stopped on day two in all patients. Patients were discharged from day 3 onwards.

Primary outcomes was the surgical recovery score (SRS), a validated comprehensive measure of post surgical functional recovery. Systemic cytokines response, neuroendocrine parameters of stress, pain measures, opioid use, complications and length of stay also recorded. Patients were followed up for 60 days.

Results: Sixty two patients were recruited and randomised. Groups were equivalent at baseline. There were no adverse events. The complication rate was equivalent between groups. IPLA group had better SRS scores for the first 3 days postoperatively. Pain and opioid use were significantly reduced in the IPLA group. Postoperative systemic cytokine and cortisol response was consistently lower in the IPLA group.

Conclusions: IPLA after colectomy improves early surgical recovery, blunts post surgical systemic inflammation, reduces pain and opioid use over and above the effect of an epidural infusion.

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Neovascularisation in Muscle Flaps: Implications for the Reconstruction of Lower Limb Trauma

Wagels M, Rowe D, Senewiratne S and Theile DR

Introduction:
The ability of a muscle flap to neovascularise with surrounding tissues has never been investigated. It is important in lower limb trauma because up to 70% of reconstructed cases require re-operation, which threatens flap viability. We aim to demonstrate and characterise vascular connections between muscle flap and

Methods:
We used a rodent muscle flap model. The vascular pedicle of the muscle was ligated after a variable period determined by randomisation. Perfusion was assessed clinically and by LASER Doppler Flowmetry (LDF) measuring Perfusion Units (PU). Flaps were injected with contrast and radiographed.

Results:
All flaps survived when the pedicle was ligated 21 days or more after inset. Prior to this, flap survival is significantly lower (p=0.017, Fisher’s Exact Test). Clinical signs do not necessarily predict flap survival. The number of new vessels is greatest distally in the flap (p<0.01, ANOVA). The total number does not change with time (p=0.82, ANOVA). New vessels anastomose exclusively with skin. The fall in PU after pedicle ligation is significant for all groups except day 35 (p=0.53).

Conclusions:
Muscle flaps do neovascularise and this process is driven by gradient ischaemia. Neo vessels from early but may not adequately perfuse the flap. The skin inset is important to the vascularity of the flap and should be protected. Muscle flap survival after pedicle injury may be predicted by its change in perfusion. These findings have implications for the way muscle flaps are raised, inset and re-operated upon, particularly in lower limb trauma.

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Diannexin, an Annexin-V-homodimer, reduces Cardiac Ischemia Reperfusion Injury in rats

C. O’Meara¹, N. Teoh², C. Parish³, A. Allison⁴, G. Chong¹, L. Arnolda⁵

Introduction:
Cardiac Ischemia Reperfusion Injury (IRI) may be elicited when myocardial infarction is treated by restoring blood flow. In animal models reperfusion injury occurs within the microvascular circulation (defined as areas of ‘no-reflow’). Diannexin has been shown to bind to phosphatidylserine (PS) and inhibit its detrimental role in microvascular thrombosis and inflammatory response in other organ systems. We aimed to determine whether Diannexin similarly reduces cardiac IRI.

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 and 30-minutes. Animals were allocated to SHAM (S), Control (C) or Diannexin (D) (300µg/kg administered intravenously 5-minutes prior to ischemia) Thioflavin-S and Uniperse Blue Microspheres were used to determine regions of ‘no-reflow’ and ischemia. Tetrazolium chloride to identify areas of myocardial necrosis. Planimetry was utilized to measure tissue areas and results are expressed as µ±SEM (p<0.05).

Results:
31 rats were used (3 died). The ischemic zone was 41.97±0.51% (no difference between groups). Diannexin reduced area of ‘no-reflow’ and cardiac necrosis: (C 31.21±2.15% n=5: D 17.21±3.39%, n=5]) & (C 37.27±4.27% n=5. D 16.13±3.49% n=5), respectively. Troponin-I was also significantly reduced by Diannexin at 30mins of reperfusion (C [R 2mins, n=5: 2.59±0.65 ug/mL], [R 30mins, n=5: 50±0 ug/mL], D [R 2mins, n=5: 1.519±0.20], [R 30mins, n=5: 16.195±5.166]).

Conclusions:
Diannexin reduces cardiac necrosis and increases reperfusion to ischemic myocardium when delivered prior to ischemia.

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Bullriding injuries in rodeo riders: frequency, severity and sequelae

Livingston R, Koval L

Introduction:
The main objectives of this study was to document the frequency, type, severity, anatomic location and sequelae of injury to bull riders participating in regional rodeo competitions in Central Queensland and to suggest strategies to minimize their occurrence.

Methods:
A five-year retrospective study including a total of 35 riders with a median age 21.7 (range 12-58) who required admission to the hospital after injury at the rodeo. The data concerning the injury management and length of hospital stay was extracted from the hospital records and from the EDIS (Emergency Department Information System). Injuries were classified according to their type and anatomical site.

Results:
Fractures were the most common injury, constituting 51.4% of total injuries, with tibia and fibula being the most common fracture site (33.3%). Lacerations constituted 17% of all injuries; head injuries accounted for 11%, two of which necessitated ICU admission. The rest was due to dislocation, ligament tear, pneumothorax, spleen rupture and paraphimosis. Mean duration of hospital stay was 1.9 days. Only 2 participants were recorded to wear protective equipment at the time of injury. Two riders were re-admitted with rodeo-related injuries.

Conclusions:
Musculoskeletal and head injuries are the most common types of rodeo injuries. It is impossible to completely eliminate them due to the unpredictable behaviour of the animal during rodeo, but it is possible to minimize their frequency and severity by wearing appropriate protective equipment and by improving general fitness by adopting the program focusing on balance and isometric conditioning.

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Clinical trial: the impact of cyclooxygenase inhibitors on gastrointestinal recovery after major surgery - a randomized double blind controlled trial of celecoxib or diclofenac vs. placebo

Wattchow DA, De Fontgalland D, Bampton PA, Leach PL, McLaughlin K, Costa M

Introduction:
Ileus occurs after abdominal surgery and may be severe. Inhibition of prostaglandin release reduces post-operative ileus in a rat model.

Aim:
To determine whether prostaglandin inhibition by cyclooxygenase inhibitors, celecoxib or diclofenac, could enhance gastrointestinal recovery and reduce post-operative ileus in humans.

Methods:
Two hundred and ten patients undergoing elective major abdominal surgery were randomized to receive twice daily placebo (n = 67), celecoxib (100 mg, n = 74) or diclofenac (50 mg, n = 69), preoperatively and continuing for up to 7 days. Primary outcomes were hallmarks of gut recovery. Secondary outcomes were paralytic ileus, pain and complications.

RESULTS:
There was no clinically significant difference between the groups for restoration of bowel function. There was a significant reduction in paralytic ileus in the celecoxib-treated group (n = 1, 1%) compared with diclofenac (n = 7, 10%) and placebo (n = 9, 13%); P = 0.025, RR 0.20, CI 0.01-0.77. Pain scores, analgesia, transfusion requirements and adverse event rates were similar between study groups.

Conclusions:
Perioperative low dose celecoxib, but not diclofenac, markedly reduced the development of paralytic ileus following major abdominal surgery, but did not accelerate early recovery of bowel function. This was independent of narcotic use and had no increase in post-operative complications.
The unperceived rise of Bladder Carcinoma-in-situ in Australia

Dr. Ranasinghe, WKB\(^1\), Prof. Attia, J.\(^2\), McElduff, P., Dr. Robertson, J.\(^2\), Oldmeadow, C.\(^2\), Dr. Lawrentschuk, N\(^1\), Prof. Bolton, D\(^1\), Mr. Persad, R\(^3\).

Introduction:
Carcinoma in situ (CIS) of the urinary bladder is not a notifiable disease in Australia and therefore the incidence is not known. CIS of the bladder is poorly understood and due to its high tendency to progress to invasive malignancy, should be treated aggressively with early intervention.

Methods:
We analysed the yearly hospitalisation data in the Australian Institute of Health and Welfare (AIHW) website hospital admissions datasets, using the ICD coding from 1993 to 2006.

We further by examined patient level data available through Center for Health record linkage (CHEReL) linked datasets to determine whether the observed increases in rates of CIS in the AIHW data represent a true increase.

Results:
The rates of CIS rates rapidly increased from 2001 onwards in both men and women.

The CHEREL linked data of 13790 males and 5902 females, from 2001 to 2008 showed the average incidence of CIS to be 21.58 per 100,000 and 5.99 per 100,000 respectively, higher than AIHW malignant bladder cancer rates (17.47 and 5.89). There was a 12.8\% (p=0.01) and 19.6\% (p=0.003) annual increase in incidence of CIS in men and women and these rates increased with age. 108 out of 1517 patients with CIS proceeded to have a cystectomy with a median time of 258.5 days from diagnosis.

Conclusions:
The rates of CIS of the bladder are rapidly but silently increasing in Australia in both males and females. While closer surveillance and awareness of these high rates is suggested, CIS needs to be considered as a notifiable disease in Australia.

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**Bimodal Electric Tissue Ablation (BETA) – Comparison of Temperature and Ablation Size in Porcine Liver Model**

Tiong LU, Maddern G (Supervisor)

**Introduction:**
BETA combines the cathode of electrolysis to the radiofrequency ablation (RFA) electrode which increases the size of tissue ablation by up to 50% compared to RFA alone\(^1,\)\(^2\). This study investigated the effect of electrolysis on the temperature profile of the RFA process. In addition, the effect of reversing the polarity of the electrolytic circuit was also examined.

**Methods:**
10 porcine liver models were used with ethics approval to test 3 different modalities: RFA, BETA-C (cathode), and BETA-A (anode). 9 volts of electrolytic energy was applied for 10 minutes, after which both the electrolysis and RFA was run concurrently until the tissue impedance exceeded 700 Ohms (roll-off). Baseline tissue temperature before and after the 10 minutes of electrolysis was recorded. The highest temperature achieved during ablation, and the end temperature during “roll-off” was also recorded. The liver was then harvested for measurement of ablation size.

**Results:**
There were no significant differences in the tissue temperature before or after the 10 min of electrolysis in all test groups. The ablation process continued for a significantly longer period of time in BETA-C compared to RFA or BETA-A group (213 vs. 148 vs. 48 seconds, \(p=0.005\)). The size of ablation produced was also significantly larger in BETA-C compared to RFA or BETA-A group (20 vs. 15 vs. 11 mm, \(p<0.001\)).

**Discussion:**
BETA-C maintained a similar temperature profile compared to RFA, while allowing the ablation process to continue for a longer period of time to produce the largest ablations. On the other hand, when the polarity of electrolysis was reversed, the ablation process “rolled-off” in the shortest amount of time to produce the smallest ablations.

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Lymphocytes from tumour draining lymph nodes for treatment of disseminated cancer

Thorn, M

Introduction:
Lymph nodes directly draining solid primary tumours or metastases contain T cells with immunologic activity which under certain conditions can eliminate metastases. Surgeons may have a major role in the future to locate and resect draining lymph nodes together with tumours or metastases. This material can be used for immunologic characterization and isolation of appropriately activated T cell clones, which after expansion are re-infused into the patient as treatment.

Methods:
The tumour or chosen metastasis is surgically dissected for adequate exposure and patent blue dye or radioactive tracer is injected around the lesion to identify the draining lymph nodes. After resection of tumour and lymph node(s) an antigen preparation is made from the tumour and the lymph node(s) are disintegrated. Lymphocytes are analysed by flow cytometry and activated lymphocytes are expanded to high numbers (ideally 400 millions) and eventually re-infused back into the patient.

Results:
In total 97 patients have tried the treatment without occurrence of any major side effects. In a pilot study 25% of patients had total regression of metastases as measured with RECIST criteria. If less than 70 million cells was reached in the expansion a complete response was seldom achieved. In cases where the treatment has not been successful different immunosuppressive or tumour evasive mechanisms may have taken place.

Conclusions:
This method is feasible and safe in humans and can be further improved when immune escape mechanisms have been identified and solved.

References:


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Hemostatic Techniques in the Sheep Model of Endoscopic Carotid Artery Injury

Rowan Valentine, MBBS; Sam Boase, MBBS; Josh Jervis-Bardy, MBBS; Stephen Moratti PhD; Simon Robinson FRACS, Peter-John Wormald MD

Introduction:
The most dramatic complication in endonasal surgery is inadvertent injury to the internal carotid artery (ICA) with massive bleeding. Nasal packing is the favored technique for control, however this often causes complete carotid occlusion or carotid stenosis contributing to the morbidity and mortality of the patient. The aim of this study is to compare the efficacy of endoscopically applied hemostatic techniques that maintain vascular flow in an animal model of carotid artery injury.

Methods:
Twenty sheep underwent ICA dissection/isolation followed by the placement of the artery within a modified SIMONT model. A standardized 4 mm carotid artery injury was created endoscopically. Randomization of sheep to receive 1 of 5 hemostatic techniques was performed (Floseal, oxidised regenerated cellulose, Chitosan gel, Muscle patch, or the U-Clip anastomotic device). Specific outcome measures were time to hemostasis, duration of time MAP >55 mmHg, blood loss and survival time.

Results:
Muscle patch hemostasis and the U-Clip anastomotic device were significantly more effective at achieving primary hemostasis rapidly, reducing total blood loss, survival time and time MAP >55 mmHg than Floseal, oxidised regenerated cellulose and Chitosan gel, p<0.05. Additionally, all muscle patch and U-Clip device treated sheep achieved primary hemostasis and reached the endpoint of observation, whilst maintaining vascular patency. Floseal and oxidised regenerated cellulose failed to achieve hemostasis in any animal with all animals exsanguinating prematurely.

Conclusions:
In the sheep model of endoscopic ICA injury, the muscle patch and U-Clip anastomotic device significantly improved survival, reduced blood loss, and achieved primary hemostasis whilst maintaining vascular patency.

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Optimising Skin & Tissue Integration of Biomaterials by Covalent Bonding of Collagen

Stynes, G., Kiroff, G.K., Morrison, W.A., McLean, K.M., Kirkland, M.A.

Introduction:
The biocompatibility of implanted materials is increased by the attachment of proteins but attached proteins are known to deteriorate rapidly in vivo. With a view to enhancing the interface between biomaterials and tissues, a novel method of attaching collagen to biomaterials has been optimised & the growth & attachment of cells (keratinocytes) assessed.

Methods:
A polyurethane-based biomaterial was functionalised with aldehyde groups using vacuum plasma. Collagen & laminin were subsequently covalently bound to the functionalised biomaterial, creating a neo-basement membrane. Keratinocyte attachment & proliferation subsequently was assessed light microscopy.

Results:
Vacuum plasma functionalisation with aldehydes enabled covalent bonding of collagen to biomaterials. Collagen type 4 bound more avidly than collagen type 1. Keratinocytes proliferation & attachment were significantly greater on biomaterials with attached proteins.

Conclusions:
Vacuum plasma functionalisation with aldehydes significantly increases the strength & stability of collagen binding to biomaterials. The binding of collagen type 4 is greater than collagen type 1. Keratinocyte attachment and proliferation is enhanced on biomaterials with attached proteins; this will enable progression to animal studies to assess the biocompatibility of these enhanced biomaterials. It is thought that this research will improve the longevity and integration of a diverse range of biomaterials including joint replacements, hernia mesh, catheters, stents, and vascular access devices and will pave the way for the permanent implantation of devices that interface externally with skin.

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A Possible New Method for Detecting and Measuring Portosystemic Shunts

Matthews T.¹, Trochsler M.¹, Li P², Robertson T.², Roberts M.², Maddern G.¹

Introduction:
Portosystemic shunts (PSS) are vessels that allow blood to bypass the liver without being filtered. Congenital and naturally acquired PSS are rare, but have been incidentally found in several cases. It is postulated that these shunts may allow metastases to bypass the liver, causing secondary peripheral tumours. There is no current clinical test to detect and measure PSS.

Methods:
A proposed method is to intravenously inject a range of compounds with a short half life (<2hours) and a high first pass clearance into the portal venous system, and measure the blood concentration once these drugs have passed through the liver. Theoretically, a normal functioning liver will only allow a minute concentration (drug dependent) of the drug to pass through.

Another approach may be by using the LiMON® system (PULSION®, Germany), which measures indocyanine green plasma disappearance rate (ICG-PDR). Normally, ICG-PDR will peak once a 15 minute interval, however, if a shunt is present, ICG will peak early and again later. The early peak may indicate a PSS, while the secondary peak is the ICG that has passed through the liver.

The third plausible method is $^{13}$C-methacetin liver function breath test. $^{13}$C- metabolises into paracetamol and $^{13}$CO$_2$, which is measured in the breath. In a normal liver, $^{13}$C-methacetin will decay steadily over 1 hour, if a shunt is present, the decay rate may be significantly slower.

Conclusions:
This pilot study aims to develop a technique that can determine and measure the presence of a PSS.

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Analysis of two contrasting animal models of transplant tolerance

Ilie VG (Victor), WangC, Yan Y, Cunningham E, Bishop GA

Introduction:
Rejection remains the main complication of organ transplantation. Leukocytes of donor origin within the graft are the main stimulators of rejection and animal models show that removal of these cells by donor irradiation prevents rejection [1]. Paradoxically, in some models, injection of large numbers of donor spleen leukocytes can also prevent rejection [2]. The aim of the study is to compare the two outcomes.

Methods:
PVG strain donors and completely mismatched DA strain recipients (PVG→DA) were used for kidney transplantation. Survival after the following treatments was examined: syngeneic DA→DA; untreated PVG→DA; PVG→DA with 1x10^8 donor spleen leukocytes (DL) infusion; PVG→DA with 10Gy donor whole body irradiation. In separate experiments, animals given the above treatments were euthanased on days 1, 3, 7, 21 after transplantation for analysis of the rejection response in the transplanted organ. Analysis is by immunohistochemistry for immunoglobulin deposition (IgG, IgM, IgG2a) and cell infiltrate: T cells (R73), myeloid cells (OX-42) and B cells (IgD, OX-22). Pro-inflammatory (IL-2, IFN-γ) and immunmodulatory (IL-4, IL-10) cytokines are assessed by quantitative real-time PCR.

Results:
Survival is shown in the following table. Ongoing survival is denoted “>”. The pattern of infiltration and cytotoxic expression will be reported.

<table>
<thead>
<tr>
<th>Group</th>
<th>Strain combination</th>
<th>Treatment</th>
<th>No. animals</th>
<th>Survival (days)</th>
<th>MST</th>
<th>P vs group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DA→DA</td>
<td>Syngeneic</td>
<td>5</td>
<td>&gt;54, &gt;63, &gt;68, &gt;100, &gt;100</td>
<td>&gt;68</td>
<td>0.003</td>
</tr>
<tr>
<td>2</td>
<td>PVG→DA</td>
<td>Untreated</td>
<td>6</td>
<td>6, 7, 7, 8, 8, 8</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PVG→DA</td>
<td>10^8 DL</td>
<td>6</td>
<td>&gt;7, &gt;13, &gt;14, &gt;15, &gt;40, &gt;46</td>
<td>&gt;15</td>
<td>0.002</td>
</tr>
<tr>
<td>4</td>
<td>PVG→DA</td>
<td>10Gy irradiation</td>
<td>4</td>
<td>&gt;101, &gt;101, &gt;104, &gt;104</td>
<td>&gt;102</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Discussion:
Both donor irradiation and donor leukocyte infusion significantly prolong transplant survival and survival experiments are ongoing. Analysis of the immune mechanism of prolongation of survival will be reported.

References

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Non-technical core competencies for surgeons in disaster response – need for a training program!

Willems A, Bacon A, Kitto S and Waxman BP

Introduction:
Current training programs do not equip surgeons for the non-technical skills in disaster response.

The aims of this study were: (1) to identify the non-technical core competencies (NTCCs) required of Australian surgeons in disaster response, (2) to explore the barriers and facilitators of interprofessional practice in disaster surgical teams, (3) to identify how NTCCs for Australian surgeons in disaster response could be best taught and assessed.

A qualitative exploratory design, incorporating matrix analysis, explored of surgeons’ non-technical skills and interprofessionalism in the disaster environment, and identified methods of training.

Methods:
20 health professionals with prior experience in natural disaster response or education participated in semi-structured in-depth interviews.

Results:
NTCCs for surgeons in disaster response identified in this study include skills for austere environments, cognitive strategies and interpersonal skills. Skills for austere environments are physical self-care including survival skills, psychological self-care, flexibility, adaptability, innovation and improvisation. Cognitive strategies identified in this study were ‘big picture’ thinking, situational awareness, critical thinking, problem solving and creativity. Interpersonal attributes include communication, team-player, sense of humour, cultural competency, and conflict resolution skills. Interprofessionalism in disaster teams incorporates elements of effective teamwork, good leadership, role adjustment and conflict resolution. Participants believe that surgeons needed training in non-technical skills.

Conclusions:
Surgeons considering becoming involved in disaster management should be trained in NTCCs for disaster response. This would ideally be conducted in a multidisciplinary program with an emphasis on interprofessional practice.

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Is postoperative ICU admission a prerequisite for elective craniotomies?

Bui J, Mendis R, van Gelder J, Sheridan M, Jaeger M

Introduction:
Routine postoperative admission to intensive care unit (ICU) is often considered a prerequisite after elective craniotomy, but may strain already limited resources and is of unproven benefit. This study investigated whether routine postoperative admission to a regular stepdown ward is a safe alternative.

Methods:
We retrospectively analysed 394 consecutive patients undergoing elective craniotomy over 54 months at a single institution. Indications for craniotomy included neoplasm (n=277), vascular (n=20), developmental (n=12), ventriculostomy (n=22) and cranial nerve decompression (n=10). Recorded data included length of stay, age, operation, reason for ICU admission, Medical Emergency Team (MET) calls and in-hospital mortality.

Results:
343 patients after elective craniotomy were admitted to normal ward postoperatively, 43 were planned and 8 unplanned ICU admissions. Causes for unplanned ICU admissions were unexpected slow neurological recovery or intraoperative blood loss. Out of 343 ward admissions, 10 (2.9%) required MET calls, of which only 3 occurred within the first 48 postoperative hours and did not lead to ICU admission. The most common reasons for planned ICU admission were anticipated lengthy operation (18%) and anaesthetic risk (28%). Overall mortality in the investigated cohort was 1%, with no fatalities in patients admitted to normal ward postoperatively.

Conclusions:
Routine ward admission of patients undergoing elective craniotomies appears safe, however, approximately 2% of patients might require unplanned ICU admission. Patients with anticipated long OT times, high blood loss and high anaesthetic risk should be selected for postoperative ICU admission, but further study is needed to determine preoperative factors aiding in identifying and managing these groups of patients.

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Lower Limb Ischaemia Reperfusion Injury Induces Endothelial Activation and Increased Permeability in the Small Bowel

Cowled, P.A. 1, Grosser, D. 1,2, Li, Y.H. 1,2, Fitridge, R.A. 1

Introduction:
Ischaemia reperfusion injury (IRI) to the lower limbs results not only in local tissue damage but also causes a systemic inflammatory response leading to multiple organ dysfunction. This study aimed to determine if lower limb IRI induced significant damage to the gastrointestinal tract.

Methods:
Rats (n=5) were subjected to 4h bilateral hind-limb ischaemia using tourniquets, followed by 24h reperfusion. Rats were gavaged with 600 mg/kg fluorescein isothiocyanate (FITC)-Dextran 1h before blood and tissue collection. Gastrointestinal permeability was assessed by measuring serum FITC-Dextran levels (ng/ml). RNA was isolated from samples of proximal small bowel and differential patterns of gene expression in IRI and sham-operated rats were analysed using an 84-gene endothelial cell gene array (SABiosciences®).

Results:
Lower limb IRI induced a significant increase in serum FITC-Dextran concentration after 24h reperfusion (40.7 ± 10.6 ng/ml, p < 0.05), when compared to matched sham-operated animals (14.3 ± 1.9 ng/ml). Expression of twelve genes was significantly induced in the small bowel after hind limb IRI (Table).

Conclusions:
Bilateral hind-limb skeletal muscle IRI caused defects in gut barrier function. Expression of pro-inflammatory genes was induced, indicating the presence of endothelial activation remote to the site of ischaemia and providing evidence of molecular pathways involved in tissue degradation.

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Accuracy of sentinel lymph node biopsy in oesophageal cancer with conservative lymphadenectomy

Thompson SK¹, Bartholomeusz D², Devitt PG¹, Lamb PJ¹, Ruszkiewicz AR³, Jamieson GG¹

Introduction:
Lymphoscintigraphy and sentinel node mapping is established in breast cancer but not in oesophageal cancer even though many centres have shown that occult tumour deposits in lymph nodes have prognostic value. We report our experience with lymphoscintigraphy and sentinel lymph node biopsy in patients undergoing resection for oesophageal cancer.

Methods:
Twenty-five of 26 consecutive patients underwent resection for invasive oesophageal cancer along with sentinel lymph node retrieval (resection rate, 96%). Peritumoural injection of ⁹⁹ᵐTc nanocolloid was performed by upper endoscopy prior to the operation. A 2-surgeon synchronous approach via a right thoracotomy and laparotomy was performed with a conservative lymphadenectomy. Sentinel lymph nodes were identified with a gamma probe both in and ex vivo. Sentinel lymph nodes were sent off separately for serial sections and immunohistochemistry.

Results:
The median patient age was 64.0 years (range, 46-76 years). Twenty-four were male, and twenty-one had an adenocarcinoma. At least one sentinel lymph node (average, 3) was identified in 23 of 25 patients (success rate, 92%). Sentinel nodes were present in more than 1 nodal station in 11 patients (44%). Sentinel lymph node accuracy was 96% (22 of 23), sensitivity 89% (8 of 9), and false negative rate 11% (1 of 9). The sentinel node was the only site of metastasis in 44% (4 of 9).

Conclusions:
Sentinel lymph node biopsy is feasible and accurate in predicting overall nodal status in oesophageal resections with conservative lymphadenectomy. Further study is needed to assess the impact on patient management and prognosis.

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Bullriding injuries in rodeo riders: frequency, severity and sequelae

Livingston R, Koval L

Introduction:
The main objectives of this study was to document the frequency, type, severity, anatomic location and sequelae of injury to bull riders participating in regional rodeo competitions in Central Queensland and to suggest strategies to minimize their occurrence.

Methods:
A five-year retrospective study including a total of 35 riders with a median age 21.7 (range 12-58) who required admission to the hospital after injury at the rodeo. The data concerning the injury management and length of hospital stay was extracted from the hospital records and from the EDIS (Emergency Department Information System). Injuries were classified according to their type and anatomical site.

Results:
Fractures were the most common injury, constituting 51.4% of total injuries, with tibia and fibula being the most common fracture site (33.3%). Lacerations constituted 17% of all injuries; head injuries accounted for 11%, two of which necessitated ICU admission. The rest was due to dislocation, ligament tear, pneumothorax, spleen rupture and paraphimosis. Mean duration of hospital stay was 1.9 days. Only 2 participants were recorded to wear protective equipment at the time of injury. Two riders were re-admitted with rodeo-related injuries.

Conclusions:
Musculoskeletal and head injuries are the most common types of rodeo injuries. It is impossible to completely eliminate them due to the unpredictable behaviour of the animal during rodeo, but it is possible to minimize their frequency and severity by wearing appropriate protective equipment and by improving general fitness by adopting the program focusing on balance and isometric conditioning.

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Introduction:
Oesophageal myotomy is increasingly performed to palliate the symptoms of achalasia. The aim of this study was to assess long-term patient reported outcomes following laparoscopic oesophageal myotomy with anterior fundoplication.

Methods:
All patients with manometrically proven achalasia who underwent surgery between September 2001 - August 2007 in a single specialist centre: The Upper Gastrointestinal Unit, Princess Alexandra Hospital, Brisbane, Australia, were included in this retrospective analysis. Post-operative outcomes were evaluated using a patient completed questionnaire; incorporating symptom indices, patient satisfaction and post-operative side-effects.

Results:
A total of 115 consecutive patients with a median age of 46 years (range 17-86) underwent laparoscopic myotomy during the study period. Prior to presentation, 14% of the patients had undergone Botox treatment and 70% had undergone oesophageal dilatations. The median follow up was 5.5 years (range 1-10). There were no intraoperative complications or conversions to open surgery. The median dysphagia score fell significantly one year following surgery (p<0.001) with 83 of 90 patients (92%) reporting an improvement in swallowing. This effect was maintained at all follow up assessments. The median heartburn score also fell significantly by the one year assessment (p<0.001) but by the 5 year assessment was no longer significantly different to the pre-operative value (p=0.10). The satisfaction rate was 95%. Most commonly reported sequelae were early satiety (52%), increased wind (26%), and bloating (19%) and difficulty belching (15%).

Discussion:
Oesophageal myotomy with anterior fundoplication is effective and safe procedure with a low incidence of troublesome side effects and high degree of patient satisfaction.

References:

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Orthopaedic surgeons’ views of practice and training: A comparison on the basis of gender and level of experience

Bramwell, D., McCamley, C.

Introduction:
This study examined orthopaedic surgeons’ influences on career choice and experiences of training and practice. Greater clarity on practitioners’ views could ensure that the experiences and perceptions of students and junior doctors match the reality of the practice of orthopaedic surgery.

Methods:
Invitations to participate in an online survey were sent to all female orthopaedic surgeons and trainees, and an equal number of males, whose contact details were held by the AOA. The researchers were blinded to the names of participants.

The questions sought views on practice and on what attracted surgeons to orthopaedics. The survey included open questions and Likert-type scales for issues shown by published research to be relevant to specialty choice.

The paper will present results comparing the views of trainees and consultants, and of male and female surgeons.

Results:
The data indicate that trainee and consultant surgeons find their work to be challenging and rewarding. Respondents confirm the strong influence of role models, internship experience and interactions with trainees and patients on career choice.

Factors nominated in previous research as impacting negatively on career choice, such as incompatibility of practice and training with a partner’s job, irregular working hours, and lack of part time options were also confirmed by respondents.

Conclusions:
Our results show that we might promote a realistic perception of the profession, especially among those who hold stereotypical views of the specialty, by exposing students and junior doctors to the views and practice of orthopaedic consultants and trainees.

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Perioperative immunonutrition in liver transplantation: Results of a double-blind randomized controlled trial

Plank LD, Mathur S, Gane EJ, Gillanders L, McIlroy K, McCall JL.

Introduction:
Preliminary work suggested that perioperative immunonutrition (IMN) enriched in n-3 fatty acids, arginine and nucleotides (IMPACT®, Nestle) may improve preoperative nutritional status, enhance postoperative recovery and reduce postoperative infectious complications in patients undergoing liver transplantation (LT). The current study examined these outcomes in a double-blind, randomized, controlled trial.

Methods:
A total of 120 patients wait-listed for LT were randomized to either supplemental (0.6L/d) oral IMN (n=61) or an isonitrogenous, isocaloric control (CON; n=59). Enteral IMN or CON was commenced usually within 12 hours of surgery and continued for at least 5 d. Total body protein (TBP) was measured by neutron activation at study entry, immediately prior to and 10, 30, 90, 180 and 360 d after LT. Infectious complications were recorded for the first 30 postoperative days.

Results:
Nineteen patients died or were delisted prior to LT. Fifty-two IMN and 49 CON patients received supplemental nutrition for a median (range) 56 (0-480) and 65 (0-348) d, respectively. Preoperative changes in TBP were not significant (IMN: 0.06±0.15[SEM]; CON: 0.12±0.10 kg). Compared to baseline, a 0.7±0.2 kg loss of TBP was seen in both groups at 30 d after LT (P<0.0001) and, at 360 d, TBP had not increased significantly (IMN: 0.08±0.19 kg; CON: 0.26±0.23 kg). Infectious complications occurred in 31 (60%) IMN and 28 (57%) CON patients (P=0.84). The median hospital stay was 10 d for both groups (P=0.68).

Conclusions:
In patients undergoing LT, perioperative IMN did not provide significant benefits in terms of preoperative nutritional status or postoperative outcome.

References


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A porcine model of peritoneal adhesion formation and modulation

Lauder C, Maddern G

Introduction:
Intra abdominal adhesions are a major cause of morbidity and a significant drain on healthcare resources. Numerous anti-adhesion products have reached clinical use but none has been wholly satisfactory. This study examines the application of a modified Chitosan-Dextran (CD) gel to the intraperitoneal cavity to reduce adhesion formation. This is a unique synthetic gel, its active ingredients being succinyl chitosan and dextran aldehyde.

Methods:
Twenty female domestic pigs were randomised to undergo surgery alone or to receive CD gel at the time of surgery. The initial surgical procedure involved a laparotomy and right hemicolecction. At postoperative day 21 a laparoscopy was performed and adhesions graded using a predetermined adhesion measurement score. Laparoscopic adhesiolysis was then performed and CD gel applied. A further 21 days later the animals were euthanised and adhesion reformation assessed by the same scoring criteria.

Results:
Adhesion formation was reduced following open surgery when CD gel was applied. Laparoscopic adhesiolysis was associated with post operative abscess formation which precipitated further adhesion formation despite application of the CD gel. Wound infections were commonly associated with underlying peritoneal adhesions.

Conclusions:
CD gel appears to reduce the formation of primary intra abdominal adhesions without adversely affecting wound or anastomotic healing. Septic complications following surgery provided a potent stimulus for adhesion formation that was difficult to overcome.

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