

## ASSA ABSTRACTS

### THE ROLE OF TREATMENT DELAYS IN SURGICAL SITE INFECTION AFTER APPENDICECTOMY IN A MIDDLE-INCOME COUNTRY

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**Background:** The magnitude of the delays to surgical management of acute appendicitis experienced in low-middle income countries (LMICs) leads to severe morbidity. The aim of this study is to delineate the role of time to surgery in the development of complicated appendicitis and surgical site infection.

**Methods:** Prospective cohort study of the association between delay to surgery and SSI in acute appendicitis patients at a rural regional hospital, Western Cape Province, South Africa during 2017. Inpatient interview and data collection were followed by a 30-day postsurgical follow-up.

**Results:** 188 patients were operated for acute appendicitis, Median age 19 years (Range 3–73) and 62.2% male. Median time from symptoms to surgery was 60 hours (IQR 41.75–85.5) and from hospital admission to surgery 8 hours (IQR 4–16). 67% were referred from a district hospital due to a lack of surgical expertise, contributing to an additional median time delay of 12 hours. 41% were managed laparoscopically. 62% had complicated appendicitis and the overall incidence of SSI was 24.5%. Time from symptoms to surgery > 72 hours was associated with increased risk of complicated appendicitis (OR 4.32; 95%CI: 1.36–13.75;  $p = 0.013$ ). Patients with SSI demonstrated an increased median delay of 15 hours ( $p = 0.05$ ) compared to those without SSI. Multivariable logistic regression analysis showed the risk for SSI increased with complicated appendicitis (OR 8.96; 95%CI: 2.73–29.41;  $p < 0.001$ ) and decreased with laparoscopic surgery (OR 0.21; 95%CI: 0.07–0.59;  $p = 0.003$ ). No conclusive association was observed between any time delay parameter and SSI in adjusted analysis.

**Conclusion:** The extended delays to surgery contributed significantly to the high prevalence of complicated appendicitis observed in this study, an important risk factor for SSI. Access to facilities with surgical capabilities and the use of laparoscopic surgery are modifiable risk factors for SSI identified by this study.

### IMPACT OF HIV CO-INFECTION IN PATIENTS PRESENT WITH HEPATIC HYDATID DISEASE

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**Background:** HIV and echinococcus granulosus (EG) co-infection, whilst rare globally, still affects communities in Southern Africa and appears to be increasing. In this, the first comparative study between patients with hepatic hydatid disease (HHD) with and without HIV co-infection in the same population, the hypothesis from case studies that co-infection-associated immune modulation may lead to a more severe clinical presentation of HHD was assessed.

**Methods:** Patients presenting at the Surgical Gastroenterology unit, Groote Schuur Hospital, South Africa with HHD between 2012 and 2018, and for whom the HIV status was known, were included. Demographic characteristics, clinical parameters and serological and laboratory tests were compared in patients, with and without HIV co-infection.

**Results:** HIV prevalence in the study population ( $n = 38$ ) was 50%. Females predominated in both groups (16/19 HIV+ and 14/19 HIV-). HIV+ patients tended to be younger (median age 32 vs. 39;  $p = 0.181$ ) with a lower BMI (median 23.6 vs. 25.4;  $p = 0.126$ ). No significant clinical differences were found. Abdominal pain was the most common symptom (15/19 in both groups) and abdominal tenderness the most common clinical finding (9/19 HIV+ and 10/19 HIV- patients). EG serology was positive in only 10/19 HIV+ patients, compared to 16/19 HIV- patients ( $p < 0.060$ ). Laboratory findings were similar, however conjugated bilirubin was more often raised in HIV+ patients ( $p < 0.064$ ).

**Conclusion:** Whilst supporting previous reports of an impaired EG antibody response in HIV+ patients, this study refutes the hypothesis of a more severe clinical presentation. The HIV co-infection rate was higher than the prevalence in the general South African population of 12.6%, indicating that HIV is an important factor in HHD infection. Most patients were controlled on anti-retrovirals, suggesting disease severity might be contained by HIV suppression. Urgent surgery should be dictated by disease severity rather than the presence of HIV co-infection.

### LOSS OF PATENCY AFTER SURGICAL REPAIR OF MAJOR LAPAROSCOPIC CHOLECYSTECTOMY BILE DUCT INJURIES: CONTRIBUTING FACTORS AND LONG-TERM OUTCOMES

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**Introduction:** The small number of patients requiring revision surgery after index repair of laparoscopic cholecystectomy bile duct injuries (BDIs) has limited our ability to investigate the factors contributing to loss of patency of the initial repair and long-term outcomes after revision surgery. We aimed to determine such factors and report post-repair outcomes using a recently proposed standardised method in the largest cohort of patients undergoing revision surgery after BDI reported to date.

**Methods:** A retrospective review of a prospectively maintained database was performed, and comparison was made between patients requiring revision and those not requiring revision. Multivariate analysis was performed to determine independent predictors of loss of patency requiring revision.

**Results:** There were 131 patients included in the study; 103 underwent index surgical repair only and 28 required surgical revision. There were no differences in patient characteristics, injury level, type of repair or presence of concomitant vascular injury between the two groups. Days to referral and repair were significantly different ( $p < 0.001$ ,  $p = 0.001$ ). Patients with complete biliary imaging were less likely to require a revision hepaticojejunostomy ( $p < 0.001$ ). In multivariate analysis, the only statistically significant independent predictor of loss of patency was inadequate imaging of the biliary tree prior to initial repair ( $p = 0.034$ , OR 10.200, 95% CI 1.195-97.089). Primary patency was achieved in 86.5% of patients and secondary patency was obtained in 90% at 10 years. There were no statistically significant differences in short- or long-term outcome between the two groups.

**Conclusion:** Incomplete diagnosis of BDI prior to initial repair was independently associated with loss of patency requiring revision surgery. Patients referred to a specialised centre for revision surgery have similar outcomes as patients undergoing index repair at the same centre.

## SHIFTING THE PARADIGM IN ADRENAL SURGERY: A CASE SERIES OF POSTERIOR RETROPERITONEOSCOPIC ADRENALECTOMIES AT TYGERBERG ACADEMIC HOSPITAL

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**Introduction:** Globally, laparoscopic adrenalectomy (LA) is considered the gold standard for removal of benign adrenal tumours and has expanded further with the introduction of the posterior retroperitoneoscopic adrenalectomy (PRA) technique. The posterior technique has been regarded a paradigm shift in adrenal surgery considering the prospect of direct access to the gland. Direct access has been linked to favourable outcomes and improved risk-benefit ratios internationally. Local evidence has not been documented, likely due to infrequent utilization of the PRA technique in South African surgical centres. This study aims to present the outcome of the first 14 PRA cases performed at Tygerberg Academic Hospital (TBH).

**Methods:** The records of patients who underwent a PRA procedure from Sep 2016 to Feb 2019 were reviewed. Participants were eligible to undergo a PRA if tumors were less than 7-8 cm in diameter, adrenocortical cancer was excluded on radiological and clinical grounds, and body mass index (BMI) was acceptable (i.e.  $<45\text{kg/m}^2$ ).

**Results:** 14 PRA's were performed over the 2,5 years and four were incidentalomas by definition. Of the adenomas removed by PRA, the median tumor diameter was 15 mm (7-55mm). Most adrenal adenomas ( $n = 8$ ; 57%) were located on the right. Over two-thirds were hormonally active lesions ( $n = 10$ ; 71%) and four (29%) were non-functional (3 adrenocortical adenomas, 1 cyst). The functional lesions comprised equal numbers of cortisol producing adenomas ( $n = 4$ ; 29%) and aldosterone producing adenomas ( $n = 4$ ; 29%) and two pheochromocytoma's. No major adverse events occurred. Average duration of surgery was 95 minutes (SD 45.2) with no conversion to an open procedure required. Post-operative pneumaturia with urinary retention ( $n = 1$ ) and a minor intra-operative bleed ( $n = 1$ ) were the only reported complications.

**Conclusion:** PRA is a feasible alternative to the LA approach in patients with clinically benign functional and non-functional adrenal tumours  $<7\text{cm}$ . Minor challenges were easily overcome in this series.

## REVIEW OF UNPLANNED 30-DAY READMISSIONS OF GENERAL SURGERY PATIENTS AT WORCESTER HOSPITAL, WESTERN CAPE

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**Introduction:** Unplanned readmission within 30 days is currently being used in North America and Europe as a measure for quality of surgical care. Readmission rates vary in published hospital data with surgical site sepsis (SSI) and pain the most common causes. The correlation between readmission rates with mortality, increased patient volumes and complexity of surgery remain controversial.

**Methods:** Retrospective review of prospectively collected data of unplanned 30 day readmissions from January 2014 – December 2017 from the Department of General Surgery at Worcester Hospital; a regional hospital in the Western Cape, South Africa (Stellenbosch University HREC #N17/08/075).

**Results:** A total amount of 10766 patients were admitted to General Surgery of whom 2.87% (270) was unplanned readmissions within 30 days. The mean age of this cohort was 44 years with 61% being male. Surgical site infection 60.37% (163), gastro-intestinal complications 24.44% (66) and blood transfusion required 7.03% (19) were the most common causes for readmission. Median initial length of stay (LOS) was 4 days and 5 on readmission. Readmissions were responsible for 1914 added patient days costing R1.7 million in general surgical ward bed occupancy alone.

**Discussion:** Worcester Hospital General Surgery had an unplanned readmission rate of 2.87% over a four-year period that correlates well with published studies. SSI was the most common reason. Using unplanned 30-day readmission rates as a quality of surgical care measure in the South African context needs further exploration.

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### A REVIEW OF PRESENTATIONS TO THE SURGICAL RESEARCH SOCIETY OF SOUTHERN AFRICA AND THE ASSOCIATION OF SURGEONS OF SOUTH AFRICA FROM 2010 TO 2017

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This paper looks at research done in South Africa from 2010 to 2017. We reviewed a total of 799 abstracts, posters and oral presentations submitted to the SRS and the ASSA congresses during this time. 81,6% of submissions were to the SRS conference. On average over the years, 35% of submissions are published.

During this time almost 50000 patients were investigated with an average of 646 patients per study (this number has been skewed by the large collaborative studies done over the last 2 years, max = 11400).

Each paper had on average 3 authors. The most popular topics are trauma (23%), gastrointestinal surgery (12%) and breast (11%). The deviation in topics has shown to be consistent over the years, with a marked decrease in topics related to burns and the gastrointestinal tract over the last two years.

Upcoming topics include: reducing sepsis, global surgery, procedural discussion, infectious diseases (HIV/TB), post-operative healing, ENT, neuro, plastic surgery, cardiothoracic and paediatric surgery.

The most active centres are the University of KwaZulu-Natal (24%), WITS (23%)

and UCT (21%). It is also interesting to see submissions from many international authors and universities. UCT has the most international collaborations.

There has been an increase in work done by surgical registrars, medical officers and students and the number of collaborations between centres and internationally are increasing. Multicentre, collaborative "global surgical" papers have become increasingly popular over the last 4 years.

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### VIDEO-ASSISTED THORACOSCOPIC SURGERY VERSUS TUBE THORACOSTOMY RE-INSERTION FOR THE PERSISTENT/RETAINED TRAUMATIC HAEMOTHORAX: UPDATED RESULTS OF A RANDOMISED PROSPECTIVE STUDY

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**Introduction:** Retained haemothorax (RH) after trauma varies between 4%-20%. Empyema and fibrothorax are the most severe complications. Traditionally a RH was managed by reinsertion of a thoracostomy tube (TT). Recent literature suggests better outcomes with video-assisted thoracoscopic surgery (VATS).

**Material and Methods:** A prospective randomised-controlled study of VATS versus TT reinsertion for retained traumatic haemothoraces was established at the Trauma Centre at Groote Schuur Hospital (UCT HREC 119/2013). Randomisation was computer generated. Inclusion and exclusion criteria were clearly defined. All patients with suspected retained haemothorax on x-ray had a CT-chest performed. Demographics, mechanism of injury, type of procedure, length of hospital stay (LOS), complications, additional procedures, antibiotic usage and positive microbial cultures as well as follow-up, were recorded. Outcomes were LOS and complications.

**Results:** 49 patients were analysed: (n = 24) in the VATS arm and (n = 25) in the TT reinsertion arm.

- **Length of hospital stay for VATS (days):** pre-procedure: 7 ( $\pm$ 3), post-procedure: 5 ( $\pm$ 2), Total: 12 ( $\pm$ 4).
- **LOS for TT reinsertion:** pre-procedure: 6 ( $\pm$ 2), post-procedure: 6 ( $\pm$ 6), Total: 14 ( $\pm$ 7). No statistical difference.
- **Complications:** VATS: 2, TT reinsertion: 10 (p = 0.01)

**Conclusions:** No statistically significant difference in LOS between the 2 groups, at this point. Obvious difference in complications favouring VATS as the treatment modality for RH.

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### FOLEY CATHETER BALLOON TAMPONADE FOR PENETRATING NECK INJURIES AT GROOTE SCHUUR HOSPITAL – AN UPDATE

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**Introduction:** Foley catheter balloon tamponade (FCBT) for bleeding penetrating neck injuries (PNIs) is an effective, readily available and easy-to-use technique. This study aims to audit the technique and highlight current investigative and management strategies.

**Methods:** All adult patients with PNIs requiring FCBT presenting to Groote Schuur Hospital (GSH) within a 22-month study period were included. Data was captured from an approved electronic registry and analysed. Analysed parameters included demographics, major injuries, imaging, management and outcomes.

**Results:** Over the 22-month study a total of 628 patients with PNI were seen at GSH, of which 95 patients (15.2%) required FCBT. The average age was 27.9 years and 98% were male. Most injuries were caused by stab wounds (90.5%). The majority of catheters (81.1%) were inserted by the referral institution (1.1% prehospital, 45.3% at clinic level and 34.7% at district/level II hospital level). A total of 34 arterial injuries (19 major and 15 minor) were identified in 29 patients, of which only three had ongoing bleeding after

FCBT. Computerised tomography (CT) angiography was used in 92.6% of patients, while 8 patients (8.4%) required formal angiography. Of these, 2 were purely diagnostic and 6 were performed for definitive endovascular management. A further 13 patients were managed with open neck surgery. Seventy-two patients (75.8%) were taken to theatre at 48-72 hours post injury for removal of the catheter, of which 2 had bleeding on catheter removal. The average length of hospital stay was 6.3 days and 15 patients required ICU admission. A total of 37 separate morbidities were documented in 29 patients (30.5%) and 4 patients died (4.2% mortality rate).

**Conclusion:** This large series shows the current use of FCBT for PNI. It highlights ease of use, high rates of success at haemorrhage control (97%) and good outcomes with the technique.