

## ASSA SAGES Congress

### ASSA Poster Presentations

#### A REVIEW OF PRESENTATIONS TO THE SURGICAL RESEARCH SOCIETY OF SOUTHERN AFRICA AND THE ASSOCIATION OF SURGEONS OF SOUTH AFRICA FROM 2010 TO 2016

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This paper looks at research done in South Africa from 2010 to 2016. We reviewed a total of 679 abstracts, posters and oral presentations submitted to the SAJS and the ASSA congresses during this time. During this time 21945 patients were investigated with an average of 577,5 patients per study. Each paper had on average 3,5 authors. The most popular topics are trauma (23%), gastrointestinal surgery (18%) and breast (11%). 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 (27%), WITS (22%) and UCT (21%). There has been a marked decrease in animal studies. 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.

#### AN ANALYSIS OF THE INEQUALITIES BETWEEN THE PUBLIC AND PRIVATE SECTOR IN SOUTH AFRICA

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##### Background

The full extent of the global burden of surgical disease is largely unknown, however, the scope of the problem is thought to be large. Despite the substantial burden of surgical disease, surgical services are inaccessible to many of those who need them most. There are disparities between public and private sectors in South Africa, which compounds inequitable access to surgical care.

##### Methods

This study involved a descriptive analysis of surgical resources

and included the total number of hospitals, of hospital beds, the number of surgical beds, the number of general surgeons (specialist and non-specialist), and the number of functional operating theatres in South Africa. A comparison was performed between the public and private sectors. Hospitals were contacted during the period from the 1st October 2014 until the 31st of December 2014.

##### Results

Surgical resources were concentrated in metropolitan areas of urban provinces. There were striking differences between the public and private sectors, where private resources were comparable to those available in high income countries (HICs).

##### Conclusion

Improving access to surgical services in lower middle income countries (LMICs) requires addressing gaps between the public and private sector regarding infrastructure, personnel, as well as equipment. South Africa is unique in that although it is classified as an upper middle income country (UMIC), it comprises of two sectors; a public sector which has resources similar to other LMICs, and a private sector which has resources similar to HICs. These data identified disparities between geographic regions which may be contributing to ongoing inequity in South Africa, and by doing so allows for evidence-based planning towards improving surgical infrastructure and workforce.

#### CHOLECYSTECTOMY TRENDS IN SOUTH AFRICA. SHOULD WE BE WORRIED?

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Gallbladder disease is a common and costly pathology worldwide. The development of gallstone disease varies among population groups around the world. Epidemiological studies from African countries, including South Africa, Nigeria, Kenya and Uganda suggest that the rate of gallbladder disease is low in the African population. Very little has been published in the last 20 years about the status of gallbladder disease in South Africa.

##### Aim

To assess the change in the number of cholecystectomies performed in South Africa over the last 15 years.

## Methods

34294 cholecystectomy specimens were obtained from the NHLS (2003-2015) database. Two periods were analysed, period 1 (2003-2009) and period 2 (2009-2015).

## Results

In South Africa, the number of cholecystectomies have increased by 37% in period 2. Seven of the eight analysed provinces recorded an increase in the number of cholecystectomies performed. Of these seven, four were a statistically significant increase. The other three provinces also demonstrated an increasing trend but this did not reach statistical significance. The Northern Cape was the only province to record a decline in the number of cholecystectomies.

## Conclusion

The increasing trend in cholecystectomies is certainly worrying from a cost and burden of gallbladder disease standpoint. This is particularly worrisome as our population has generally been regarded as being at low risk for the development of gallbladder disease. The results suggest a possible change in the disease pattern in South Africa.

## COHORT STUDY ON EMERGENCY GENERAL SURGERY PATIENTS AND AN OBSERVATION UNIT

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## Background

Medium-sized, non-trauma hospitals experience many of the same difficulties as tertiary centres do when it comes to managing emergency general surgery patients. However, acute surgical units are not a financially viable option in these hospitals. To improve the care of emergency general surgery patients at one such hospital, a Rapid Assessment Medical Surgical (RAMS) unit was developed to decrease the time to review and increase the efficiency in caring for these patients.

## Methods

To assess the Unit's effect, a prospective analysis was completed of the patients who came through the RAMS unit over a six-month period and compared with a retrospective analysis of patients presenting in the same six-month period the year prior to the Unit's instigation.

## Results

The RAMS unit was effective in providing an avenue for faster review by the surgical team. This resulted in patients leaving the emergency department faster, decreased the number of patients that breached Emergency Department time-targets and increased the number of patients discharged after a period of observation or basic treatments.

## Conclusion

General surgery patients were managed more efficiently with the RAMS unit in place. However, a full cost analysis is required to determine if such units are cost-effective.

## DUODENECTOMY: MANAGING THE FISTULA

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## Introduction

Duodenectomy is rarely indicated, however, in certain circumstances may have be performed. Enterocutaneous fistula (ECF) is the main cause of serious adverse outcomes. Its management remains challenging.

## Methods

Two cases of emergency duodenectomy are presented. The management of ECF is described and discussed.

## Results

*Case 1:* A 22-year-old male presented in septic shock with perforated duodenal ulcer, suffered two cardiac arrests before index surgery. During re-laparotomy for leak, mobilisation resulted in an extensive injury of the duodenum extending to the ampula. A drainage procedure with complete duodenectomy and gastrojejunostomy was performed. The bile and pancreatic ducts were cannulated with infant feeding catheters and were separately pumped in the gastrostomy with a feeding pump. In one week, the patient had oral intake in addition to infused feeds. He remained in hospital for six months, suffered six episodes of gram-negative sepsis requiring antibiotics. Three episodes resulted from blocked catheters and cholangitis. Other were central line sepsis. A reconstruction with separate limbs of jejunum to the bile and pancreatic ducts was performed. He was well at 18 months post final surgery.

*Case 2:* A 63-year-old male presented with a perforated hepatic flexure colonic carcinoma. Intraoperatively, the tumour invaded and partly obstructed the duodenum which was injured during mobilisation. A duodenectomy with the right hemicolectomy was performed. The jejunum was anastomosed to the ampulla. Leaking effluent from a drain was pumped into the gastrostomy. He was discharged in three weeks and continued to transfer the effluent himself with a 60 ml syringe until the leak ceased. Three months post-surgery, he developed metastasis to the drain tract and died in two months.

## Conclusion

Duodenectomy is feasible but complications are difficult to manage. ECF is common and should be managed by pumping the effluent in the gastrostomy until definitive surgery or spontaneous closure of the fistula.

## HAEMOPERITONEUM SECONDARY TO SNAKE BITE

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### Background

Literature supports that very rarely the venom of “Hemotoxic Snake” (Russell's Vipers) affect haemostasis by secreting thrombin-like enzyme which promotes formation of unstable clots. Such clots could lead to fibrin deposition in micro circulation that in turn consume platelets and coagulation factors (consumption coagulopathy). Clinical presentation is mainly spontaneous bleeding and coagulopathy. In this case the significant effects of altered coagulation were observed in retroperitoneum and the patient presented in casualty as acute abdomen.

### Case Description

A 17-years-old boy presented to a tertiary care hospital, complaining of abdominal pain for 5 days and fatigue. He gave a history of snake bite 10 days prior. In order to seek immediate medical care, he went to the community hospital where antivenom was given. Upon examination he was vitally stable. Abdomen was found distended and severely tender. On workup after admission he was found to be anaemic (Hb: 6 g/dl), and damaged clothing profile (PT: 19.5 and INR: 1.7). CT scan showed collection of 7x6.6 cm in right paracolic and right lumbar region, just anterior to the psoas muscle. Active intra-abdominal bleeding and few organised hematomas were also appreciated. Prior to the specific management, patient was optimised with PCVS and FFPS. After 28 hours he was explored under G/A. Perioperatively about 1100 ml of blood was evacuated from the peritoneal cavity. Multiple hematomas were drained from retroperitoneum (Zone II), on right side. No active bleeding was noticed from IVC and aorta. Packing done and drains placed. Re-exploration was done after 72 hours. Packs removed and further hemostasis was augmented with fibrillar & gelatin sponge.

### Conclusion

He had steady recovery, with 14 days of hospital stay. One of the concerns in postoperative phase was bradycardia that compelled us to manage it with atropine.

## HEMOSUCCUS PANCREATICUS FROM RUPTURED SPLENIC VEIN PSEUDOANEURYSM SECONDARY TO NECROTIZING PANCREATITIS: A CASE REPORT

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Hemosuccus pancreaticus is a rare cause of gastrointestinal bleeding in which haemorrhage occurs from the ampulla of vater via the pancreatic duct, mostly from ruptured

pseudoaneurysms. Our patient is a 25-year-old Filipino male who presented with intermittent epigastric pain associated with melena and decreasing haemoglobin despite multiple blood transfusions. EGD showed erythematous gastric and duodenal mucosa with no evidence of active bleeding. Whole abdominal CT scan with IV contrast showed diffusely prominent pancreas with areas of non-enhancement suggestive necrosis. CT scan of the aorta revealed attenuated splenic vein with irregular margin and probable small pseudoaneurysm. Embolisation, which is the primary mode of treatment in a hemodynamically stable patient, was contemplated. However, the patient's relatives opted to pursue surgery which eventually lead to mortality due to complications of the procedure.

## HOLDING THE TORCH UP HIGH - A MEDICAL HISTORICAL EVALUATION OF SURGICAL ADVANCES DURING THE GREAT WAR 1914-1918, IN MEMORY OF THOSE THAT SERVED AND FELL

Dr George Scharf

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“How wide and varied is the experience of the battlefield and how fertile the blood of warriors in raising good surgeons” Sir Clifford Allbutt (1898).

With these sentiments of the medical lessons learned in war and conflict, with the background of the poem of “In Flanders Field”, written by a doctor who had South African War connections, reasons (the Somme and third Ypres battles) will be given that this was indeed a “GREAT WAR” as the world history, weapons, strategy, tactics and wounding patterns had changed dramatically. These changes are still affecting all at present, as eventually the Second World War came from it, as well as the Cold “Third World” War.

In this war most casualties were caused by bomb fragments and the figures were enormous. It was the war of massive troop movements (railroads), the Schlieffen plan, trench warfare, artillery, the machine guns, end of cavalry and the initiation of tanks, air warfare/reconnaissance and gas/chemical warfare.

The surgical experiences of previous wars were obsolete. Urgent rethinking of surgical principles and protocols had to be devised, with the death rates of dying due to wounds, sepsis and tetanus exceeding 60 percent of all casualties. Abdominal wounds were treated conservatively, but soon there came advances in resuscitation, anaesthetics, aggressive wound and exploratory surgery, orthopaedics, plastic and reconstructive surgery, physiology, wound pathology and microbiology.

All sides concentrated on ambulance stations, field hospitals and then rapid transfer to bigger referral and base hospitals. It seems that lessons learned were indeed exchanged (?) by the Red Cross to all combatant medical personal. Even to the present day, frameworks of this are still used effectively (Vietnam War, Falklands War and our recent border wars). The lessons are well learned and the Torch is ours to hold up high!

## NEONATAL SURGERY, A STUDY OF TWO YEARS AT NELSON MANDELA ACADEMIC HOSPITAL, MTHATHA, EASTERN CAPE

Prof Arturo Delgado, Dr Alexis Cejas, Dr Dumo Bangasa

### Introduction

Advances in diagnostic techniques and perioperative care have greatly improved the outcome of neonatal surgery. Despite this, disparity still exists in the outcome of neonatal surgery between developed and developing countries.

### Method

We performed a prospective study of neonates admitted and treated due to surgical congenital diseases and other conditions in our hospital from April 2015 to April 2017.

### Objective

Our aim was to evaluate the behaviour of neonatal surgery in our centre. Sixty six neonates were studied and different data such as sex, type of anomalies, age of presentation and mortality were analysed.

### Results

There were 19 (28,7%) females and 47 (70,3%) males in this group. It was found that 41 neonates had 7 days after birth or less by a 62% and 25 with more than 7 days by 38%. The Anorectal malformations (ARM) were the most frequent congenital anomaly in 21 patients (47%), followed by Gastroquises with 7 neonates (10,6%), Omphalocele with 8 (12%), and Oesophagus Atresia in 5 neonates (7,5%). Intestinal Malrotation with midgut volvulus, Pyloric Stenoses and Duodenal Atresia in 4 neonates (6,2 % each). Others alterations such as, Ileal Atresia, Strangulated Inguinal Hernia, Limb Gangrene, Necrotizing Enterocolitis, Sacro Coxigeal Theratoma, Megacolon Aganglionic, Colon perforation, Gastric perforation and Hydromethrocolpus accounted in 13 neonates by 19,7% from the total of patients. Ten babies died (15%).

### Conclusion

We conclude that Anorectal Malformations, Gastroquises and Omphalocele were the most frequent malformations. Considering the mortality is above the average of developed countries this could be improved by increasing the knowledge about the neonatal surgery characteristics among medical doctors and improving the necessary facilities and back up.

## RAPUNZEL SYNDROME - AFRICAN VARIATIONS ON A EUROPEAN FAIRYTALE

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### Background

Trichobezoars are intraluminal accretions of ingested hair. Rapunzel syndrome is a rare and extreme presentation with extension down through into the small intestine. Most frequently reported in children and psychiatric patients, we report on an African series of five patients.

### Methods

Five patients presenting with trichobezoars were retrospectively reviewed and analysed with regard to patient background, demographics, clinical presentation, diagnosis, surgical management and complications.

### Results

Five female patients with a median age of 19 years (range 12–27 years) presented with a clinical spectrum including early satiety, intermittent vomiting with gastric outlet obstruction, abdominal pain and weight loss. Three patients were of Indian ethnicity and two of African ethnicity. Four highly functional individuals (three high school graduates/students, one university student) and a 12 year old cerebral palsy child known with trichotillomania were diagnosed with trichobezoars following either endoscopy, abdominal CT scan, barium meal or plain abdominal radiography.

Two patients presented with sealed/contained gastric perforations, and one with a small bowel perforation. All five bezoars extended into the jejunum, the longest of which measured 1.4 m, and two of which consisted entirely of artificial hair extensions. Various options for removal are described including chemical dissolution, endoscopy, laparoscopy and laparotomy. All five bezoars were removed by laparotomy. All recovered well and four were referred for psychiatric evaluation.

### Conclusion

While trichobezoars are a rare entity, they may present with significant complications in the form of obstructions and perforations. In view of the risk for infection, and the considerable size of many of these bezoars, an open removal is probably safer than any minimally invasive attempt.

## SURGICAL BURDEN OF DISEASE AT A REGIONAL HOSPITAL IN SOUTH AFRICA

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### Introduction

There is limited published data describing the nature of surgical admissions at a regional level in the South African context. Worcester Hospital General Surgery has introduced an electronic online database to manage its surgical services. This study uses that database to evaluate the surgical burden of disease for the Cape Winelands East and Overberg districts of the Western Cape.

## Methods

Admissions data were prospectively captured from February 2012 to January 2016, then retrospectively reviewed and classified into 5 types: (1) elective surgery/investigations (ESI); (2) trauma; (3) burns; (4) non-traumatic surgical emergencies (NTSE); (5) unplanned readmission within 30 days. All data were entered by attending doctors. (Stellenbosch University HREC # N16/04/054).

## Results

9 799 discharge summaries were included for analysis. Mean age of was 43,4 years (95% CI 43,0–43,8 years) and mean length of stay was 4,9 days (95% CI 4,7–5,1 days). 57,6% (5 647) patients were male. NTSE (47,6%), ESI (38,6%) and trauma (11,9%) form the majority of admissions. Common NTSE diagnoses were appendicitis (23,8% of NTSE admissions), peripheral vascular disease (16,8%) and peptic ulcer disease (13,3%). Common ESI diagnoses were gallstone disease (23,1% of ESI diagnoses), inguinal hernia (21,8%), anal disease (10,2%), midline primary hernia (9,1%) and incisional hernia (8,6%). Most prevalent cancer diagnoses were colorectal (17,6% of cancer diagnoses), oesophagus (16,4%), breast (14,0%) and stomach (13,2%). Overall in hospital mortality rate was 2,2% - highest by subtype was burns patients (6,3%). Trend analysis show a statistically significant increase in admission for NTSE ( $p=0.019$ ) and 30 day readmission rates ( $p<0.001$ ) with a decrease in admissions for ESI ( $p=0.001$ ) over the four year period.

## Conclusion

A precise understanding of burden of disease profile is essential for national, provincial and district resource allocation. Ongoing surveillance such as is performed in this study provides this critical information.

## THYROID CANCER CONSEQUENCES OF IODINE DEFICIENCY – A PERSISTING WORLDWIDE PROBLEM: CHARACTERISTICS IN DIFFERENT POPULATIONS, PORTUGAL AND SOUTH AFRICA

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## Introduction

Iodine deficiency (ID) still affects over two billion people worldwide (266 million school aged children). Pathology patterns in ID include: increase in thyroid cancer, higher percentages of follicular and anaplastic cancers and inversion of the papillary/follicular thyroid cancer frequency ratio. China succeeded in eliminating ID through legislation introduced in 1987 aimed at availability of iodized salt countrywide and South Africa through legislation introduced in 1995. Portugal has no national general population data on iodine nutrition (IN).

## Methods

Comparative evaluation of thyroid histology reports over a 6 year period in BI and a 5 year period in JHB area. Median urinary iodine concentration (UIC) was possible to obtain from BI.

## Results

Region of BI: 279 histology reports evaluated – 60 malignancies (21.2%): 31 papillary carcinomas, 22 follicular cancers (18 follicular carcinomas and 4 Hürthle cell tumours), 3 medullary carcinomas and 4 anaplastic carcinomas.

Region of JHB: 136 histology reports – 3 malignancies (24.3%): 13 papillary carcinomas, 15 follicular cancers (10 follicular carcinomas and 5 Hürthle cell tumours), 1 medullary carcinoma, 3 anaplastic carcinomas and 1 metastatic carcinoma into the thyroid.

There was an overlap in the frequencies of all histology types including relatively high anaplastic carcinoma incidences and papillary to follicular carcinoma ratios close to 1 in both areas. BI area ratio: 1.4 and JHB area ratio 0.87, (overlapping 95% CI's and results of the chi-square calculations). The median UIC of the population sample tested was 62.6 µg/L, 92% of samples having a UIC<100 µg/L.

## Conclusions

During the study periods both regions displayed patterns characteristic of ID with papillary/follicular carcinoma ratios close to 1 and relatively high number of anaplastic carcinomas.

ID could be eliminated by availability of affordable iodised salt, promoting sea-based nutrition and a proactive behaviour from an informed population. These measures could be applicable to other populations in different parts of the world.

## WHERE ARE GENERAL SURGEONS LOCATED IN SOUTH AFRICA?

**Dr Angela Dell<sup>1</sup>, Prof D Kahn<sup>1</sup>**

<sup>1</sup>*University of Cape Town*

## Background

Human resources are the backbone of healthcare delivery systems and the lack of surgical workforce in developing countries is often the greatest challenge to providing surgical care. The workforce availability and composition is an important indicator of the strength of the health system.

## Methods

A descriptive analysis of the general surgical workforce in South Africa was performed. The total number of specialist and non-specialist general surgeons working in the public sector in South Africa was documented between the periods from the 1st October 2014 until the 31st of December 2014.

## Results

There were significant disparities in the number and distribution of general surgeons in South Africa. There were 1.78 specialist general surgeons per 100 000, of which 0.69 per 100 000 specialist general surgeons were working in the

public sector. There were 2.90 non-specialist general surgeons per 100 000. There were 6 specialist general surgeons per 100 000 insured population working in the private sector, which is comparable with the United States (US). Urban provinces such as Gauteng, the Western Cape and KwaZulu-Natal had the largest number of specialist general surgeons per 100 000. These areas had the largest number of medical aid

beneficiaries and nearly 60% of specialist general surgeons were estimated to work exclusively in the private sector.

## **CONCLUSION**

There was a major shortage of surgical providers in South Africa, and in particular the public sector.

# ABSTRACTS

## ASSA Oral Presentations

### A FOUR YEAR ACROSS SURGICAL DISCIPLINE PERIOPERATIVE AND INTRAOPERATIVE EXPERIENCE OF PATIENT MANAGEMENT IN A TERTIARY ACADEMIC HOSPITAL - A REVIEW AT DR GEORGE MUKHARI ACADEMIC HOSPITAL

**Dr Soraya Patel<sup>1</sup>**, Professor Zack Modise Koto, Professor Shingai Mutambirwa

<sup>1</sup>*Sefako Makgatho Health Sciences University*

#### Introduction

The occurrence of iatrogenic injuries related to obstetric and gynaecological procedures can have a significant impact on morbidity as well as mortality to these patients. In this study we reviewed patients presenting with iatrogenic injuries post caesarean section and hysterectomies in order to classify types of injuries frequently encountered as well as the management of these injuries.

#### Methods

Over a four year period, the records of all patients presenting with iatrogenic injuries post obstetric and gynaecological procedures were reviewed. These injuries were classified according to the type of injury, frequency as well as time taken to identify the iatrogenic injury before any intervention was performed.

#### Results

One hundred and eighty two patients were identified over the four year period and the injuries can be classified as follows: Bladder Injury (28.6%), Left Ureter Injury(12.1%), Right Ureter Injury(21.4%), Bladder and Ureter Injury (8.2%), Vascular Injury (2.2%), Small Bowel Injury (17.6%), Large Bowel Injury(6.6%), Rectal Injury (2.8%), Appendicectomy (0.6%), Small Bowel and Bladder Injury (5.5%).

#### Conclusion

There is a high rate of iatrogenic injuries in this subset of patients.

### AN INTERNATIONAL COLLABORATIVE RESEARCH NETWORK TO DESCRIBE VARIATION IN GLOBAL CANCER BURDEN

**GlobalSurg Collaborative<sup>1</sup>**

<sup>1</sup>*GlobalSurg Collaborative*

#### Background

Efforts to collect data on cancer in low and middle income countries (LMICs) to date have been registry based and not detailed enough to allow risk-adjustment for outcome. This study aimed to describe a novel platform's ability to address knowledge gap in surgical care of cancer in LMICs.

#### Methods

This study is a cancer-specific analysis of the GlobalSurg-2 study, which aimed to map international variation in operated

cancer burden using a protocol-driven, collaborative methodology. Patients were grouped into high, middle and low income groups according to United Nation's Human Development Index (HDI).

#### Results

259 hospitals across 59 countries uploaded patient-level data on patients undergoing surgery for intra-abdominal cancer, with 77.1% (1770) from high, 16.4% (378) from middle, and 6.5% (149) from low HDI countries. The proportion of patients undergoing surgery for a primary malignant indication cancer was smaller in low-HDI (7.7%) and middle-HDI countries (8.2%), than high-HDI countries (20.9%). The most common types of operations performed were colonic resection/stoma formation (44.8%), rectal resections (16.9%), and gastrectomies (13.0%). There was significant regional variation in operated cancer burden. Data on variation in morbidity and mortality were captured. Validation of case ascertainment and data accuracy showed a high-level of concordance.

#### Conclusion

The GlobalSurg platform has captured data on the burden of cancer surgery in LMICs. Detailed, frontline data has allowed risk-adjustment to be performed at global scale for the first time and has identified areas to target future research.

### APPLICATION OF GENE PROFILING IN SELECTION OF ADJUVANT THERAPY IN BREAST CANCER IN A DEVELOPING COUNTRY

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#### Introduction

Outcome series for genetic profile tests (MammaPrint/70GP) with medium-term follow-up are rare. We present an outcome series with 5-year follow-up from a developing country.

#### Method

From 2006 to 2016, patients with histopathologically confirmed breast cancer (cT0-3 and cN0-1) were selected and decisions on adjuvant therapy post-surgery were based on 70GP. Data on outcomes were collected prospectively.

#### Results

There were 154 patients, 140 luminal type, 13 HER2 type and one triple negative; 57.8% were 70GP low-risk; only one of these did receive chemotherapy; 42.2% were high-risk; 3 patients did not receive chemotherapy. After an average follow-up of 54.1 months, only 3 systemic recurrences occurred (all skeletal metastases); all in the high-risk group that had received chemotherapy. Across both groups overall survival was 99.9% and compliance with the treatment recommendations based on 70GP was >95% in both arms. Two patients each had two tumours in the same breast with divergent 70GP results and were treated in accordance with the High-risk result. Six patients showed discordant 70GP and FISH results for HER2 where three patients

did not receive Trastuzumab on basis of 70GP, none of these tumours recurred. A further 11 patients had equivocal immunohistochemistry and a FISH was not done, therapy was decided upon considering the 70GP result and none of these patients had any recurrences.

### Conclusion

Chemotherapy use was much reduced versus the rate of use with conventional methods using 70GP and it may possibly be reasonable to replace immunohistochemistry for ER, PR and HER2 with 70GP especially considering borderline expression.

## EFFECT OF TIMING OF SOURCE CONTROL IN PATIENTS WITH ACUTE APPENDICITIS

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### Introduction

It has been well researched that early source control is essential to patient outcome in septic condition. For appendicitis, the point at which waiting for source control affects patient outcome is not well described; the limited data that are available, advocate a decision for operative management to be taken by 72 hrs, but there is no known amount of time which is proportional to adverse patient outcomes. The aim of this study is to determine the optimum time (if any) to achieve source control in patients undergoing emergency surgery for acute appendicitis, using complications, 30-day morbidity and mortality as an analogue for effective source control.

### Methods

A prospective clinical database of patients with appendicitis were identified. The data were then entered into an anonymised database and analysed for this series. Patients will be included based on clinical diagnosis made by the consulting doctor responsible for the initial encounter. Upon imaging or surgery should alternate pathology be found patients will be excluded from this study. This study is observational and will have no impact on patient management, therefore participant consent is not required.

### Results/Discussion

This study is being conducted from January to December 2017. Data are being collected at present. Provisional results will be presented after provisional statistical analysis.

## HYDATID DISEASE IN SOUTH-AFRICA – IS IT A DIFFERENT DISEASE IN PATIENTS WITH HIV CO-INFECTION?

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### Background

Echinococcus granulosus remains a clinical problem in rural sheep-farming communities, with HIV co-infection often seen in patients from endemic regions.

### Methods

Data from a prospective database was used to identify patients with and without HIV co-infection that underwent surgery for hepatic hydatid disease between 2012 and 2017. Clinical presentation, preoperative intervention, surgical treatment, postoperative mortality and morbidity are reported according to the Accordion severity score.

### Results

Twenty-two patients (18 women, 4 men, median age 38 years, range 19-71 years) underwent surgery, of whom 11 (50%) were HIV positive (HIV+). Two patients in each group that presented with jaundice underwent pre-operative biliary drainage (ERCP=3; PTC=1). Four patients (2 in each group) had intraperitoneal rupture on imaging. Three patients (27%), all HIV+, needed emergency surgery. Two HIV+ patients were found to have secondary infected cysts. Pericystectomy was performed in 20 patients and formal resection in 2. In 8 patients, 4 from each group, biliary communication could be identified intraoperatively. Postoperative complications occurred in 10 patients, 5 in each group of which 9 were severe. Two postoperative deaths occurred, one in each group.

### Conclusion

Fifty percent of patients with hydatid disease in our service are co-infected with HIV. HIV+ patients more often had infected cysts and more frequently required emergency surgery.

## INTERNATIONAL VARIATION IN OUTCOMES FOLLOWING CANCER SURGERY

GlobalSurg Collaborative<sup>1</sup>

<sup>1</sup>GlobalSurg Collaborative

### Background

Surgery is an integral part of treatment for cancer, although little data exist about outcomes of cancer surgery across low-middle income countries (LMICs).

### Method

This study is a cancer-specific analysis from a multicentre, prospective, observational cohort study including consecutive patients undergoing elective or emergency gastrointestinal resection for cancer between January and July 2016. Patients were grouped into high, middle and low-income countries according to United Nation's Human Development Index (HDI). Factors associated with the 30-day postoperative mortality rate (POMR) were explored using a multilevel, mixed-effects regression model.

## Results

2297 patients undergoing cancer surgery from 259 hospitals in 59 countries were included, with 6.5% from low-HDI, 16.4% from middle-HDI and 77.1% from high-HDI countries. In low-HDI countries there were more patients presenting as an emergency than in middle or high-HDI countries (24.2% vs.15.6% vs.14.5%).

The 30-day POMR was higher in low- (16.8%) than middle- (6.1%) or high-HDI countries (3.2%). The factors associated with 30-day POMR included low-HDI (OR=1.75, 95% CI=2.66-12.47), an emergency operation (OR=4.31, 95% CI=2.64-7.04), perforation (OR=3.97, 95% CI=1.79-8.82), and ASA III or above (OR=4.05, 95% CI=2.21-7.40).

## Conclusion

There is wide variation in outcomes of surgery for gastrointestinal cancer around the world. More cases needed emergency surgery in LMICs, which may highlight differences in access to care.

## IS KI67 PREDICTIVE OF TUMOUR RESPONSE TO NEOADJUVANT CHEMOTHERAPY AND TO LONG-TERM DISEASE OUTCOME IN BREAST CANCER PATIENTS AT DR GEORGE MUKHARI ACADEMIC HOSPITAL: A PRELIMINARY REPORT

**Dr Dikeledi Mokone<sup>1</sup>, Dr Brenda Ratlaba<sup>2</sup>, Prof Modise Zacharia Koto<sup>1</sup>, Prof Jan Hendrik Reynor Becker Becker<sup>1</sup>, Prof Meshak Bida<sup>2</sup>**

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## Background

The difference in tumour response to neoadjuvant chemotherapy has been attributed to difference in tumour biology. Ki67, a proliferative protein, is one of the molecular markers that are used to predict tumour response to chemotherapy. A high Ki67 index and or a decrease in Ki67 index after a short-term of NAC is said to predict clinical and pathological response and thus disease free survival but not over-all survival.

## Aim

To determine the predictive and prognostic value of Ki67 in patients with locally advanced breast cancer receiving NAC at Dr George Mukhari Academic Hospital.

## Methods

A prospective study. Core needle biopsy is repeated after 2 cycles of NAC (8 weeks) in Stage IIb and Stage III breast cancer patients and is compared to base-line biopsy. The trend of Ki67 is then compared to clinical response (after 8 weeks) and or pathological response after surgery.

## Results

Fifty one patients gave consent for repeat biopsy. Biopsy was repeated in 43 patients and repeat Ki67 was only reported in 31 patient aged 32 to 81 years. Thirteen patients with luminal A cancer, 8 luminal B, 3 Her 2+ve and 7 triple negative cancer. Ki67 levels dropped in comparison to baseline values in 14 patients (45,16%), increased in 12 patients (38,71%) and remained stable in 5 patient (16,13%). Fifteen patients (48,39%) had good clinical response. In 9 patients (60%), this correlated with a drop in Ki67, 5 (33,33%) had increase in Ki67 and 1 (6,67%) stable Ki index. Sixteen patients (51,61%) had poor clinical response. In 9 patients (56,25%) this corresponded with increase in Ki67 index, 5 (31,25%) had a decrease in Ki67 value and 2 (12,5%) stable values.

## Conclusion

Due to the small number of patients analysed, it cannot be concluded that clinical response to 2 cycles of NAC (8 weeks) correlated with Ki67 values. A minimum of 100 patients is needed.

## IS ROUTINE STAGING LAPAROSCOPY IN POTENTIALLY RESECTABLE DISEASE JUSTIFIED IN GASTRIC CANCER? A SINGLE UNIT EXPERIENCE

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<sup>2</sup>Groote Schuur Hospital

## Background

Gastric adenocarcinoma is a heterogenous disease with often a late presentation. Staging laparoscopy (SL) improves the detection of metastases not visible on standard cross-sectional imaging. Routine SL may avoid unnecessary surgical exploration in a significant proportion of patients.

## Methods

A retrospective review of a prospectively maintained database was performed identifying the use of routine SL in patients presenting with potentially resectable gastric (GCA) and oesophagogastric junction (OGJ) adenocarcinoma; with patients presenting between April 2013 and April 2017 to a single surgical unit reviewed.

## Results

A total of 323 patients were identified with 14% African, 21% Caucasian and 75% of Coloured ethnicity. Sixty six per cent of GCA and 62% of OGJ cancers were male. The median age of GCA presentation was 63 years (range 31-88 years) and 61 years (range 37-83 years) for OGJ cancers. Ninety six GCA and 24 OGJ patients were deemed potentially resectable following staging CT, with exclusion of 203 patients irresectable on CT or due to patient comorbidities. 121 pyloric and 44 OG junction palliative stents were subsequently placed. Of the 120 resectable patients, 107 were fit and agreeable to surgery with 84 GCA and 23 OGJ patients proceeding to staging laparoscopy. Twenty eight (33%) of

resectable GCA and 7 (30%) of resectable OGJ were deemed irresectable after staging laparoscopy due to occult metastatic disease. The remaining 85 patients resectable after staging laparoscopy were referred for neoadjuvant therapy with 50 eventually presenting for curative surgery (35 were not operated due to disease progression or clinical deterioration). A further 15 patients were found at laparotomy to be locally advanced and irresectable.

### Conclusion

Gastric adenocarcinoma is an aggressive disease presenting late in our environment. Staging laparoscopy should be routinely included in the pre-treatment evaluation, as a third of patients judged resectable on imaging will have occult metastases.

## POSTOPERATIVE TRANSIENT HYPOPARYTHROIDISM: INCIDENCE AND RISK FACTORS – A SOUTH AFRICAN PERSPECTIVE

**Dr Jennifer Downs<sup>1</sup>, Dr Kerry Wilson<sup>2</sup>, Mr Felix Made<sup>2</sup>, Dr Francois Malherbe<sup>1</sup>, Professor Eugenio Panieri<sup>1</sup>, Dr Lydia Cairncross<sup>1</sup>**

<sup>1</sup>*Groote Schuur Hospital*

<sup>2</sup>*National Institute of Occupational Health*

### Background

There is limited published data on the incidence and risk factors for developing postoperative hypoparathyroidism (POHP) in the South African setting.

### Objectives

This study aims to calculate the incidence of postoperative hypoparathyroidism in a South African tertiary high volume setting. The second objective was to compare local risk factors for POHP to international published data.

### Methods

All patients who underwent a total thyroidectomy or completion thyroid lobectomy at an academic referral centre from January 2010 to December 2015 were included in this study. Data reviewed included post-operative parathyroid hormone (iPTH) level within 24 hours of surgery, age, gender, type of operation and lymphadenectomy if performed, size and weight of thyroid glands resected, final histological diagnosis, presence of extracapsular extension of carcinomas, number of lymph nodes resected, and the number of parathyroids present in the histology specimen.

### Results

Twenty nine per cent of patients in this unit were found to have postoperative hypoparathyroidism as defined by their immediate postoperative iPTH levels. No data on 6–8 week or 6 month PTH levels was available. Overall, there was no association between POHP and age or gender. In patients with benign histology, size, measured by weight and volume, was significantly associated with higher rates of POHP. In patients with thyroid carcinoma on final histology, lymphadenectomy

and specifically the number of lymph nodes resected were associated with higher rates of POHP.

### Conclusion

The incidence of immediate postoperative hypoparathyroidism is within international standards. Standardised postoperative follow up to determine the proportion of patients with permanent hypoparathyroidism is necessary. With the identification of high risk groups, strategies to improve POHP such as autotransplantation in these subgroups should be considered.

## RECONSTRUCTION IN LOCALLY ADVANCED BREAST CANCER: WHO, WHAT AND WHEN?

**Dr Lucienne Van Schalkwyk<sup>1</sup>, Prof Carol-Ann Benn<sup>1</sup>, Kyara Bergstrom<sup>1</sup>**

<sup>1</sup>*Netcare Breast Care Centre of Excellence*

<sup>2</sup>*Helen Joseph Breast Care Clinic*

### Background

Locally advanced breast cancer (LABC) is defined as the most advanced stage of non-metastatic breast cancer. While breast reconstruction is not contraindicated in this subset of patients, the decision-making process is influenced by several considerations, including recurrence risk and the need for and timing of adjuvant therapy such as radiotherapy. This retrospective analysis investigates the reconstructive procedures performed on women presenting with locally advanced breast cancer at the Netcare Breast Care Centre (NCBC) in Johannesburg.

### Methods

Patients with LABC who underwent breast reconstruction were identified from a database of breast cancer patients presenting to the NCBC during a 1 year period (June 2015 – June 2016). Data collected included demographic details, histology and details regarding surgery and reconstructive procedures.

### Results

Of the 28 patients initially identified, 6 were excluded due to incomplete information. The remaining 22 patients were all female, with a median age of 60 years (range 24–72 years). The majority (18/22) of the patients presented with infiltrating ductal carcinoma and the luminal B subtype predominated (12/22). Nineteen patients were initiated on neoadjuvant therapy prior to surgery. Breast conservation therapy was possible in 13 patients, the rest underwent mastectomy. Immediate reconstruction was performed in 13/22 patients and immediate-delayed reconstruction in 9/22. All 22 patients in the study group had autologous tissue reconstruction, and the majority (17/22) had a procedure on the contralateral breast at the same time.

### Conclusion

At the NCBC, autologous reconstruction as an immediate or immediate-delayed procedure is the preferred reconstructive strategy in LABC.

## **SURGERY POST NEOADJUVANT THERAPY FOR BREAST CANCER: AN ANALYSIS OF 82 PATIENTS TREATED AT A SPECIALIST UNIT IN JOHANNESBURG**

**Dr Lucienne Van Schalkwyk<sup>1</sup>, Prof Carol-Ann Benn<sup>1</sup>, Kyara Bergstrom<sup>1</sup>**

<sup>1</sup>*Netcare Breast Care Centre of Excellence*

### **Introduction**

Neoadjuvant therapy in the breast cancer setting not only provides an indication of response to systemic therapy, but also results in tumour downsizing/downstaging, which facilitates breast conservation therapy (BCT). The aim of this retrospective analysis is to examine the surgical management of patients who have received neoadjuvant therapy for breast cancer at the Netcare Breast Care Centre (NCBC) in Johannesburg.

### **Methods**

All breast cancer patients managed surgically at the NCBC after neoadjuvant chemotherapy/primary endocrine therapy were identified from a database of 431 breast cancer patients presenting to this facility from June 2015 to June 2016. Patients with incomplete information were excluded. Demographic information, tumour characteristics and details regarding surgical management were collected and analysed.

### **Results**

Seventy-two female patients with a median age of 48 years (range 24–75 years) were included in the analysis. The majority (68/72, 94.4%) had invasive ductal carcinoma. Stage at presentation was stage I in 16 patients (16/72, 22.2%) stage II in 31 patients (31/72 43.1%) and stage III in 25 patients (25/72, 34.7%). Pathologic complete response to neoadjuvant therapy was observed in 31 patients (31/72, 43.1%), partial response in 32 patients (32/72, 44.4%) and poor response in 7 patients (7/72, 9.7%). More than half (49/72, 68.1%) of the patients had BCT. Seventeen of the BCT patients (17/49, 34.7%) had initially presented with locally advanced (stage III) disease.

### **Conclusion**

BCT is feasible in a significant proportion of patients treated with neoadjuvant therapy for breast cancer.

## **THE AFRICAN SURGICAL OUTCOMES STUDY: A 7-DAY PROSPECTIVE OBSERVATIONAL COHORT STUDY**

**Prof TE Madiba<sup>1</sup>, Prof Bruce Biccard<sup>2</sup>**

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<sup>2</sup>*Perioperative Research Group, Discipline of Anaesthesiology and Critical Care, School of Clinical Medicine, University of KwaZulu-Natal*

### **Background**

Postoperative mortality represents a major global health burden. There is little internationally comparable data from Africa of outcomes following surgery.

### **Methods**

Seven day, national, multicentre, prospective, observational cohort study of patients  $\geq 18$  years of age undergoing in-patient surgery in Africa. The primary outcome was in-hospital postoperative surgical complications. Secondary outcomes included; i) in-hospital mortality, ii) and the relationship between postoperative complications and postoperative mortality, and the risk factors independently associated with in-hospital mortality and postoperative complications.

### **Findings**

11422 patients participated from 25 countries in Africa. In-hospital complications following surgery were observed in 1977/10885 (18.1%, 95% CI 17.4-18.9) patients, and mortality was 239/11193 (2.1%, 95% CI 1.8-2.4). The median duration of hospital stay was 3 (IQR 2-5) days which was significantly increased to 6 (IQR 4-13) days ( $p<0.001$ ) following a complication. The postoperative admission in intensive care unit was 511/10991 (4.6%, 95% CI 4.3-5.0). When compared to the International Surgical Outcomes Study (ISOS), patients in Africa were twice as likely to die following surgery and following a surgical complication ( $p<0.001$ ).

### **Interpretation**

Although, surgical patients in Africa have a lower risk profile than high-income countries, there is a significantly increased mortality following a surgical complication in Africa.

## **UPTAKE AND PERFORMANCE OF CLINICAL BREAST EXAM SCREENING BY TRAINED LAYWOMEN IN MALAWI**

**Dr Lily Gutnik<sup>2</sup>, Dr Clara Lee<sup>2</sup>, Dr Vanessa Msosa<sup>1</sup>**

<sup>1</sup>*College of East Central and Southern Africa*

<sup>2</sup>*UNC Project Malawi*

### **Introduction**

Breast cancer awareness and early detection are limited in sub-Saharan Africa. Resource limitations make screening mammography or clinical breast examination (CBE) by physicians or nurses impractical in many settings. We aimed to assess feasibility and performance of CBE by laywomen in urban health clinics.

### **Method**

Four laywomen were trained to deliver breast cancer educational talks and conduct CBE. Eligible women were 30 years, with no prior breast cancer or breast surgery, and clinic attendance for reasons other than a breast concern. Women with abnormal CBE were referred to a study surgeon. All palpable masses confirmed by surgeon examination were pathologically sampled. Patients with abnormal screening

CBE but normal surgeon examination underwent breast ultrasound confirmation.

## Results

Among 1220 eligible women, 1000 (82%) agreed to CBE. Lack of time (69%) was the commonest reason for refusal. Educational talk attendance was associated with higher CBE participation (83% versus 77%,  $P < 0.012$ ). Among 1000 women screened, 7% had abnormal CBE. Of 45 women with normal CBE randomized to physician examination, 43 had normal examinations and two had axillary lymphadenopathy not detected by CBE. Sixty of 67 women (90%) with abnormal CBE attended the referral visit. Of these, 29 (48%) had concordant abnormal physician examination.

Thirty-one women (52%) had discordant normal physician examination, all of whom also had normal breast ultrasounds. Compared with physician examination, sensitivity for CBE by laywomen was 94% (confidence interval (CI, 79%-99%), specificity 58% (CI, 46%-70%), positive predictive value 48% (CI, 35%-62%), and negative predictive value 96% (CI, 85%-100%). Of 13 women who underwent recommended pathologic sampling of a breast lesion, two had cytologic dysplasia and all others benign results.

## Conclusion

CBE uptake in Lilongwe clinics was high. CBE by laywomen compared favourably with physician examination and follow-up was good. Our intervention can serve as a model for wider implementation.

# ABSTRACTS

## VASSA Poster Presentations

### A COMPARISON OF RADIATION EXPOSURE DURING ENDOVASCULAR AORTIC ANEURYSM REPAIR WITH OR WITHOUT ENDOSTAPLING

Mr Aadil Ahmed<sup>1</sup>, Mr Ayman Badawy<sup>1</sup>, Mr Arindam Chaudhury<sup>1</sup>

<sup>1</sup>Bedford Hospital NHS Trust

#### Introduction

Complications of endovascular aneurysm repair (EVAR) include endoleaks, proximal neck dilatation and stent migration, which have a greater likelihood with larger neck angulations. To mitigate against these complications endostapling of the stent-graft to the aortic wall is being implemented. With this extra stage in EVARs, this study aims to establish whether use of endostapling increases patient radiation exposure.

#### Methods

A retrospective analysis of a prospectively collected database of patients undergoing infrarenal EVAR and EVAR with endostapling was obtained. Radiation dose, fluoroscopy time, aneurysm size and patient characteristics were collected. Endostapling was performed using the Aptus Endostapling system (Aptus Endosystems Inc, Sunnyvale, Calif). Results are expressed as mean with 95% confidence interval. Statistical significance was set at  $P<0.05$  and calculated with an unpaired t-test.

#### Results

This study included 30 patients undergoing elective aorto bi-iliac EVAR with endostapling and 147 patients undergoing elective aorto bi-iliac EVAR without endostapling. Patient characteristics between the two groups were comparable. Within the endostapled group the mean dose area product (DAP) was 5.54 (4.18-6.91) mGy.m<sup>2</sup>, cumulative air kerma (CAK) 289 (230-348) mGy and fluoroscopy time 35.9 (29.6-42.2) minutes. Within the non-endostapled group the mean DAP was 5.91 (5.07-6.75) mGy.m<sup>2</sup>, CAK 248 (211-284) mGy and fluoroscopy time 32.5 (28.5-36.5) minutes. There was no statistically significant difference in DAP, CAK or fluoroscopy time between patients undergoing EVAR with or without endostapling.

#### Conclusion

Radiation exposure during endovascular aneurysm repairs is a significant hazard to both the patient and the theatre staff. Our

study shows that the additional step of endostapling the aortic stent-graft to prevent future reinterventions for endoleaks, stent migration or rupture does not increase radiation exposure to the patient.

### SALMONELLA TYPHIMURIUM INFECTED ABDOMINAL AORTIC ANEURYSM ENDOVASCULAR REPAIR WITH SECONDARY AORTO-ENTERIC FISTULA FORMATION

Dr Marilla Dickfos<sup>1,2</sup>, Dr Katherine Garnham<sup>1,2</sup>, Dr Jason Jenkins<sup>1</sup>

<sup>1</sup>Royal Brisbane Women's Hospital

<sup>2</sup>University of Queensland

Endovascular aneurysm repair (EVAR) is a widely accepted and used technique for the treatment of abdominal aortic aneurysms (AAA). However, it comes with a unique set of complications, two of the rarer being infection and aorto-enteric fistula formation. Due to the infrequency of the situation, there are currently no guidelines for their management. A 75-year-old male presented with vague abdominal pain and fevers. He was diagnosed with an infected abdominal aortic EVAR stent graft on computer tomography imaging. The stent graft was explanted and an extra-anatomical bypass graft inserted. Intra-operative findings were an aorto-enteric fistula and left psoas abscess, both containing copious purulent fluid. He recovered slowly and his intra-operative samples grew *Salmonella typhimurium*. On review, he was found to have cultured this organism several times over a period of 14 months. It is hypothesised that his EVAR stent graft infection originated from a disseminated salmonella infection. From this case report, the following recommendations have been made. Firstly, if a patient with an EVAR develops a bacteraemia, they should receive pathogen-specific antibiotics for an appropriate length of time with regular surveillance of blood cultures until a negative culture is produced. Secondly, patients may require closer monitoring of their stent graft after a bacteraemia to allow for earlier detection of infection of the graft. Finally, explantation of infected stent grafts and the creation of an extra-anatomical bypass or an in-situ replacement may be the only method for detection of small AEFs; whose presence may change the management options for the patient. Hence, surgical management of infected EVARs and AEFs is still the current recommendation.

# ABSTRACTS

## VASSA Oral Presentations

### ACUTE UPPER LIMB ISCHAEMIA IN DIABETIC PATIENTS - A RECENT EXPERIENCE

**Dr Russel du Toit<sup>1</sup>**, Prof ATO Abdool-Carrim<sup>1</sup>, Dr Taalib Monareng

<sup>1</sup>University of the Witwatersrand

#### Introduction

The outcome of acute upper limb ischaemia in diabetic patients is not well known. We report our recent experience with 5 patients.

#### Methods

Retrospective case reviews.

#### Results

All patients presented with Rutherford 2b ischaemia at a median 1.6 days after symptom onset.

Age range: 43-76 years. M:F 1:4.

Mean HbA1c: 10.1% (range 6.1 - 14.0)

Mean LDL cholesterol: 3.1g/dL (range 1.61 - 4.80)

Other comorbidities included: Ischaemic heart disease, atrial fibrillation, dyslipidaemia, hypertension, morbid obesity.

One patient was an ex-smoker.

Four patients had preoperative CT angiograms.

All patients underwent Fogarty catheter embolectomy of the forearm and arm arteries as initial procedure as well as forearm fasciotomy in 3 patients.

#### Subsequent procedures included:

- i. Re-embolectomy in three patients
- ii. In one patient – subclavian origin angioplasty and stenting as well as brachial, radial and ulnar angioplasty
- iii. In another patient – radial angioplasty & a brachioulnar saphenous vein bypass
- iv. Over-the-wire subclavian artery origin embolectomy in another

Despite these interventions 4 patients had to undergo amputation of the arm (1) or forearm (2), one patient eventually requiring shoulder disarticulation. The patient with limb salvage required a forearm fasciotomy and brachial, radial and ulnar embolectomy. This patient had newly diagnosed atrial fibrillation and a one day history of symptoms. No flow into the palmar arch was noted preoperatively in two patients as well as forearm arterial occlusive disease on preoperative and subsequent imaging in four patients. There were no mortalities at 30 days.

#### Conclusion

Acute upper limb ischaemia in patients with diabetes appears to carry a grave prognosis for limb salvage (20% in this group). Re-intervention was associated with subsequent amputation. Proximal arterial disease can occur but the common finding of occlusive disease in the run-off vessels of the arm, as in this group, may account for the high limb-loss rate.

### ENDOVASCULAR AORTIC ANEURYSM REPAIR AT JOHANNESBURG ACADEMIC HOSPITALS

**Dr Kuruvilla Thomas<sup>1</sup>**, Dr Russel du Toit<sup>1</sup>, Prof ATO Abdool-Carrim<sup>1</sup>

<sup>1</sup>University of the Witwatersrand

#### Introduction

Abdominal aortic aneurysm (AAA) is a common disease seen in vascular units. AAA is defined as transverse diameter greater than 3 cm and affects men more than women. Endovascular aortic aneurysm repair (EVAR) is increasingly being used to treat AAA. Renal dysfunction, graft-related endoleaks, graft limb occlusion, device migration and delayed aneurysm rupture are possible complications that have been encountered after EVAR.

#### Objective

To assess the incidence of patients post EVAR developing endoleaks, limb occlusion and deterioration of renal function.

#### Design

Retrospective review.

#### Setting

Charlotte Maxeke Johannesburg Academic Hospital and Chris Hani Baragwanath Academic Hospital.

#### Participants

36 patients.

#### Interventions

Three patients had distal limb occlusion and had fem-fem crossover done.

#### Outcome measures

Changes in renal functions after one month, six months and twelve months. The incidence of endoleaks, limb occlusion and re-interventions required.

#### Results

Total of thirty-six patients had EVAR done from February 2014 to April 2017. There were two patients who had type 2 endoleaks on completion angiograms, these resolved on one month CT scan. Fourteen patients had post-EVAR imaging at 1, 6 and 12 months which showed no endoleaks. Three patients developed iliac limb occlusion and was appropriately managed with fem-fem crossover. Eight patients had pre-existing renal impairment with worsening of renal function in one patient (not requiring dialysis). Three patients developed renal impairment after EVAR. Twenty-two patients are waiting for the follow up imaging and few patients missing follow-up blood tests – this data will be added before the congress.

#### Conclusions

The follow-up data demonstrates that EVAR can be performed safely in anatomically suitable patients. The limb occlusion rates are within accepted rates to standard vascular registry. The patients who developed renal dysfunction (Glomerular filtration rate between 50-60ml/min/1.73m<sup>2</sup>) after EVAR remained static for 12 months.

## RADIATION EXPOSURE DURING INFRARENAL ENDOVASCULAR AORTIC ANEURYSM REPAIR

Mr Aadil Ahmed<sup>1</sup>, Mr Ayman Badawy<sup>1</sup>, Mr Arindam Chaudhuri<sup>1</sup>

<sup>1</sup>Bedford Hospital, NHS Trust

### Introduction

Endovascular aneurysm repair (EVAR) of abdominal aortic aneurysms exposes patients and healthcare professions to the deterministic and stochastic effects of ionization radiation. The study aim was to determine our standard of radiation exposure in infrarenal EVARs and compare it against other published data and national guidelines.

### Methods

A retrospective analysis of a prospectively collected database of patients undergoing EVARs was obtained. Radiation dose, fluoroscopy time, aneurysm size and patient characteristics were collected. Results are expressed as mean with 95% confidence interval.

### Results

This study included 147 elective patients undergoing aorto bi-iliac EVAR with a mean age of 76 years from June 2013 until December 2016. The mean dose area product (DAP) was 5.91 (5.07-6.75) mGy.m<sup>2</sup>, cumulative air kerma (CAK) 248 (211-284) mGy and fluoroscopy time 32.5 (28.5-36.5) minutes. A greater BMI and a longer fluoroscopy time caused a significantly greater DAP to be administered to the patient. The device type, sex, AAA size, smoking status did not significantly effect the DAP administered to the patient.

### Conclusion

Radiation exposure during endovascular aneurysm repairs is a significant hazard to both the patient and the theatre staff. Our study shows that a greater BMI and total fluoroscopy time can cause greater radiation exposure to patient. Anatomical and technical difficulties are also related to increased radiation exposure. Radiation exposure at our centre is below threshold levels suggested by Stecker et al before radiation induced skin injuries can manifest. Additionally, radiation exposure is comparable to other centres but can be reduced further by reducing our fluoroscopy time and adhering to the principles of ALARA (As low as reasonably achievable).

## SPECTRUM OF DISEASE AND OUTCOME OF PRIMARY AMPUTATION FOR DIABETIC FOOT SEPSIS

Dr Shalen Cheddie<sup>1</sup>, Dr Che Manneh<sup>1</sup>, Dr Halalisani Zulu<sup>1</sup>

<sup>1</sup>Madadeni Hospital, University of Kwa-Zulu Natal

### Background

Guillotine amputation for diabetic foot sepsis followed by an elective refashioning of the stump is regarded as standard practice. Primary amputation is associated with higher re-amputation rates.

### Aims

To provide an epidemiological analysis of the spectrum of disease and outcomes of primary amputation for diabetic foot sepsis in a regional hospital.

### Methods

A prospective cohort study of 85 patients who underwent surgery for diabetic foot sepsis from 2014 to 2016 at Madadeni Provincial Hospital, KwaZulu-Natal was done. Ethical approval was granted. The Wagner classification (Wag) was used to classify disease severity. Outcome measures included length of hospital stay, mortality and re-amputation rates.

### Results

Of the 85 patients, females (n=45) accounted for 53% of admissions. The mean age was 61 years (range: 29 to 80 years). The majority of patients were African, n=75 (88%). Only 1 patient presented with diabetic ketoacidosis and 18 (21%) presented with renal failure. Most patients presented with advanced disease: [Wag 5, n=66 (78%); Wag 4, n=12 (14%); Wag 3, n=5 (6%); Wag 2, n=2 (2%)]. The levels of vascular occlusion included aortoiliac disease n=2 (2%), femoro-popliteal disease n=18 (21%), tibio-peroneal disease n=65 (76%). Radiographic features included normal findings n=60 (71%); gas gangrene n=11 (13%), osteitis n=8 (9%). The following amputations were done: AKA, n=29 (34%); BKA, n=39 (46%); TMA, n=8 (9%); Toe-ectomy, n=5 (6%) and Debridement, n=4 (5%). The re-amputation rate to above knee amputation was n= 3/39 (8%). All AKA stumps healed well. The overall in-hospital mortality was n=5 (6%) and mean length of hospital stay was 7.8 days  $\pm 3.83$ .

### Conclusion

The majority of patients presented with advanced disease requiring a major amputation. A definitive one stage primary amputation is a safe and effective procedure for diabetic foot sepsis and is associated with a low re-amputation rate, length of hospital stay and mortality. A guillotine amputation should be reserved for physiologically unstable patients.

# ABSTRACTS

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## TSSA Poster Presentations

### A CASE REPORT OF DELAYED PRESENTATION OF A PATIENT WITH A RUPTURED DIAPHRAGM COMPLICATED BY OBSTRUCTED DIAPHRAGMATIC HERNIA WITH GUT GANGRENE

**Dr Ashish Vyas, Dr Gourab Goel**

*SMS Medical College*

Diaphragmatic rupture is a common occurrence following a major chest trauma and is most commonly associated with road-traffic accidents. Here we report a case of delayed presentation of a 40-year-old man with a ruptured diaphragm with obstruction and bowel infarction, three and a half year following a blunt trauma to chest. This case illustrates how the diagnosis and aggressive management of ruptured diaphragm can be central to life saving and demonstrates the importance of early intervention in cases with features suggestive of compromise of bowel vascularity. Subsequently exploratory laparotomy with resection of gangrenous segment with double barrel ileo-jejunostomy with diaphragmatic repair was done successfully.

## TSSA Oral Presentations

### COMPARATIVE ASSESSMENT OF IN-HOSPITAL TRAUMA MORTALITY AT A SOUTH AFRICAN TRAUMA CENTRE AND MATCHED PATIENTS TREATED IN THE UNITED STATES

Dr Richard Spence<sup>1</sup>, Dr John Scott<sup>2</sup>, Prof Adil Haider<sup>2</sup>, Prof Pradeep Navsaria<sup>1</sup>, Prof Andrew Nicol<sup>1</sup>

<sup>1</sup>University of Cape Town

<sup>2</sup>Harvard University

#### Background

The unacceptably high rate of death and disability due to injury in sub-Saharan Africa is alarming. The objective of this work is to compare mortality rates between severely injured trauma patients at a high volume trauma centre in South Africa with matched patients in the United States.

#### Methods

Clinical databases from the Groote Schuur Hospital (GSH) for patients treated in Cape Town, South Africa and the American College of Surgeon's National Trauma Databank (NTDB) for patients treated at large academic trauma centres in the US were used. Coarsened exact matching (CEM) identified the most comparable patient populations based on sex, age, intent, injury type, injury mechanism, Injury Severity Score, Glasgow Coma Score (GCS), and systolic blood pressure. Conditional logistic regression generated odds ratios for mortality among the entire sample and clinically relevant subgroups.

#### Results

CEM matched 97.9% of the GSH patient sample, resulting in 3,206 matched-pairs between the GSH and NTDB cohorts. Conditional logistic regression revealed an odds ratio of mortality of 1.67 (95% CI: 1.10-2.52) for patients at GSH compared to matched patients from the NTDB. Subset analyses revealed significantly increased odds of mortality among patients with blunt injuries (OR 3.40, 95% CI: 1.68-6.88) and patients with a GCS of 8 or lower (OR 4.33, 95% CI: 2.10-8.95). No statistically significant difference was identified among patients with penetrating injuries or with a GCS greater than 8 (p-value 0.90 and 0.39, respectively).

#### Conclusion

International comparisons of inter-hospital variation in risk-adjusted outcomes following trauma can identify opportunities for quality improvement and have the potential to measure the impact of any corrective strategy implemented.

### LAPAROSCOPIC MANAGEMENT OF RETROPERITONEAL INJURIES IN PENETRATING ABDOMINAL INJURIES

Dr Fusi Mosai<sup>1</sup>

<sup>1</sup>Sefako Makgatho Health Sciences University

#### Purpose

Laparoscopy in penetrating abdominal injuries is now accepted and practiced in many modern trauma centres. However its role in evaluating and managing retroperitoneal injuries is not yet well established. The aim of this study was to document our experience in using laparoscopy in a setting of penetrating abdominal injuries with suspected retroperitoneal injury in haemodynamically stable patients.

#### Methods

A retrospective descriptive study of prospectively collected data from a trauma unit at Dr George Mukhari Academic Hospital (DGMAH) was done. All haemodynamically stable patients with penetrating abdominal injury who were offered laparoscopy from January 2012 to December 2015 were reviewed and those who met the inclusion criteria were analysed.

#### Results

A total of 284 patients with penetrating abdominal injuries were reviewed and 56 met the inclusion criteria and were analysed. The median age was 30.8 years (15-60 years) and males constituted 87.5% of the study population. The most common mechanism of injury was penetrating stab wounds (62.5%). Forty-five patients (80.3%) were managed laparoscopically, of these n=16 (28.5%) had retroperitoneal injuries that required surgical intervention. The most commonly injured organ was the colon (19.6%). The conversion rate was 19.6% with most common indication for conversion been active bleeding (14%). The complication rate was 7.14% (N=4) and were all Clavien-Dindo grade 3. There were no recorded missed injuries and no mortality.

#### Conclusion

The positive outcomes documented in this study with no missed injuries and absence of mortality suggests that laparoscopy is a feasible option in managing stable patients with suspected retroperitoneal injuries.

### THE CORRELATION OF CT SCAN IN THE MANAGEMENT OF PENETRATING ABDOMINAL INJURIES

Dr Soraya Patel<sup>1</sup>, Mr Moses Balabyeki<sup>1</sup>, Professor Zack Modise Koto<sup>1</sup>

<sup>1</sup>Sefako Makgatho Health Sciences University

#### Introduction

Penetrating abdominal trauma contributes significantly to the burden of disease in South Africa. The role of imaging, particularly CT scan in this subset of patients has yet to be established. In this study we reviewed patients with penetrating abdominal injuries and correlated the imaging and intra-operative findings.

#### Methods

Over an 18-month period (June 2015 to January 2017), the database as well as patient records of all patients presenting with penetrating abdominal trauma were reviewed. Patients

presenting with haemodynamic instability and peritonitis were excluded from the study and immediately underwent a laparotomy. Patients presenting with penetrating abdominal trauma and who were haemodynamically stable and not peritonitic had imaging done in the form of a CT Scan. The CT scan findings were then correlated with the intraoperative findings.

## Results

One hundred and thirty one patients with penetrating abdominal trauma were eligible for imaging. Fifty two patients had positive CT scan findings as well as positive intraoperative findings. Seventy nine (60%) had negative findings on CT scan. Of the 79 patients, 59 (74%) had negative imaging findings as well as negative intraoperative findings. Twenty (25%) had negative CT findings but positive intraoperative findings.

## Conclusion

CT scan correlates poorly with intraoperative findings and thus is a poor modality for screening patients.

## THE ROLE OF LAPAROSCOPY IN BLUNT ABDOMINAL TRAUMA: DIAGNOSTIC, THERAPEUTIC OR BOTH?

Dr Fusi Mosai<sup>1</sup>

<sup>1</sup>*Sefako Makgatho Health Sciences University*

### Aim

The purpose of this descriptive analytical study was to describe the role of laparoscopy in stable blunt abdominal trauma patients.

### Background

The use of laparoscopy in blunt abdominal trauma is gaining popularity as a useful diagnostic tool to avoid unnecessary laparotomies where there is diagnostic dilemma. But the feasibility of using laparoscopy for therapeutic intervention in these patients has been debated. Even though recent case reports seem to suggest that these patients can be managed using laparoscopy, the practice is not yet widely adopted.

### Methods

A retrospective analysis of a prospectively collected data was done. All adult patients who presented with abdominal trauma and were offered laparoscopic surgery at DGMAH from 2012 to 2015 were reviewed. Data was retrieved from our departmental database and analysed using descriptive statistics.

### Results

A total of 318 patients were reviewed and 35 patients had blunt abdominal trauma and were included in the study. All the patients were offered laparoscopy. The median age was 30, with 91% of our patients being males. The highest injury severity score calculated was 38. At least 77% of the patients were managed using laparoscopy. This includes 43% who had both diagnostic and therapeutic intervention and 34% had only

diagnostic laparoscopy. Eight patients were converted to open surgery mainly due to active bleeding and complex injuries. We did not have any non-therapeutic laparotomies, with no documented procedure related morbidity and mortality.

### Conclusion

The positive outcomes seen from the study suggest that laparoscopy can be safe and feasible in both diagnostic and therapeutic interventions in carefully selected blunt abdominal trauma patients. A conversion to open surgery should not be regarded as a failure but rather as a sign of mature and sound clinical judgement acknowledging the limitations of laparoscopy and/or the surgeon.

## THE USE OF LAPAROSCOPY IN MANAGING PENETRATING THORACOABDOMINAL INJURIES IN AFRICA: 83 CASES REVIEWED

Dr Fusi Mosai<sup>1</sup>

<sup>1</sup>*Sefako Makgatho Health Sciences University*

### Background

The use of laparoscopy in managing haemodynamically stable patients with penetrating thoracoabdominal injuries in developed countries is widely practiced, but in Africa the use of laparoscopy is still in its infancy stage. We reviewed a single centre experience in using laparoscopy in Africa for management of patients with penetrating diaphragmatic injuries with or without associated intra-abdominal injuries.

### Methods

A retrospective analysis of prospectively collected data of patients presenting with penetrating thoracoabdominal injuries was done. All patients offered laparoscopic exploration and repair from January 2012 to December 2015 at Dr George Mukhari Academic Hospital were analysed. Means ( $\pm$ SD) were presented for continuous variables and frequencies (%) were presented for categorical variables.

### Results

A total of 83 stable patients with penetrating thoracoabdominal injuries managed with laparoscopy met the inclusion criteria and were included in the study. The Injury Severity Score ranged from 8 to 24, with a median of 18. The incidence of diaphragmatic injuries was 54%. The majority (46.8%) of patients had Grade 3 (2-10 cm defect) diaphragmatic injury. Associated intra-abdominal injuries requiring intervention were encountered in 28 (62%) patients. At least 93.3% of the patients were treated exclusively with laparoscopy. The morbidity was encountered in 7 (16%) patients; the most common cause was a clotted haemothorax Clavien-Dindo III-b but only one patient required a decortication. There was one non-procedure related mortality.

### Conclusions

A success rate of 93% in using laparoscopy exclusively was documented, with an overall 82% uneventful outcome. The positive outcomes found in this study when laparoscopy was used in stable patients with thoracoabdominal injuries seem

to suggest that the presence of peritonitis in stable patient is not a contra-indication to laparoscopy and thoracoscopy may be useful especially in right side diaphragmatic injury where the liver can precludes adequate visualisation of the entire diaphragm.

## TRAUMA LAPAROSCOPY: TEACHING AN OLD DOG NEW TRICKS

**Dr Oleh Matsevych<sup>1</sup>**, Prof Modise Koto<sup>1</sup>, Prof Colleen Aldous<sup>2</sup>

<sup>1</sup>*Sefako Makgatho Health Sciences University*

<sup>2</sup>*University of KwaZulu-Natal*

### Introduction

Diagnostic laparoscopy is well-accepted in management of penetrating abdominal trauma (PAT) with the rate of missed injuries below 1%. However, there is a reluctance to accept therapeutic laparoscopy in trauma society. The main reason is the lack of laparoscopic skills by trauma surgeons. Moreover, no formal laparoscopy training program for trauma exists.

The aim of this study was to discuss the trauma laparoscopy training at our institution.

### Methods

All patients managed laparoscopically for PAT from January 2012 to December 2015 were included in the study. The seniority of operating surgeon was recorded and correlated with adverse outcomes, and with conversion to open laparotomy. The following groups were identified: surgeon-consultant (SC), assistant-consultant (AC), surgeon-senior-registrar (SSR) and surgeon-junior-registrar (SJC) groups. Laparoscopic manoeuvres used in this cohort were investigated and the set of essential laparoscopic skills was identified. Laparoscopic training program at our institution was described and discussed.

### Results

Out of 283 patients with PAT approached with laparoscopy 33 (11.7%) were converted to laparotomy. The majority (49.6%) of laparoscopy were performed by a senior registrar. A consultant was an operating surgeon in 21.2% and an assistant in 8% of cases. A consultant was involved in cases with higher severity of injury and the complication rate was higher in the SC and AC groups. Essential laparoscopic skills were mobilisation of abdominal organs, bowel run and intracorporeal suturing. During training, an average senior registrar performed 20% of operations for trauma (a half was done laparoscopically) and trauma constituted 16% of all laparoscopy.

### Conclusion

Laparoscopy for trauma is feasible and safe approach. It can be safely performed by registrars provided that the senior help is on standby. The surgeon performing trauma laparoscopy should have an appropriate mindset and a dexterity with advanced laparoscopic skills. Performing a wide range of non-

trauma laparoscopy contributes significantly to performance in trauma laparoscopy.

## TRAUMA LAPAROSCOPY: WHEN TO START AND WHEN TO CONVERT?

**Dr Oleh Matsevych<sup>1</sup>**, Prof Modise Koto<sup>1</sup>, Dr Moses Balabyeki<sup>1</sup>, Prof Colleen Aldous<sup>2</sup>

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### Introduction

The use of laparoscopy for stable patients with abdominal trauma is increasing and its accuracy is nearly 100%. However, indications for laparoscopy and for conversion differ among centres. The aim of this study was to investigate indications for trauma laparoscopy and for conversion to laparotomy.

### Methods

All trauma patients managed with laparoscopy over a four-year period were retrospectively analysed. Indications for laparoscopy, morbidity, and reasons for conversion were investigated and predictors of morbidity and conversion were sought. The management algorithm of trauma patients was reviewed and updated.

### Results

Laparoscopy was used in 318 stable trauma patients. The conversion rate was 11.7% for penetrating and 22.9% for blunt abdominal trauma patients. The most common reason for conversion was continuous intraabdominal bleeding that could not be controlled quickly. It was followed by multiple complex injuries, haemodynamic instability, and intraoperative visualisation problems. Diagnostic laparoscopy was performed in 45%, and therapeutic laparoscopy in 55% of cases. There were no missed injuries. The complication rate was lower and length of hospital stay (LOS) shorter in the laparoscopic group. Lower pH was associated with conversion.

### Conclusion

The management of all stable trauma patients with laparoscopy appears to be a safe approach. The use of sound laparoscopic equipment by a well-coordinated trauma team with adequate expertise in laparoscopy, adherence to the algorithm, and strict compliance with predetermined procedural steps are fundamental to success. Laparotomy can be avoided in more than 80% of cases. Continuous intraoperative bleeding, complexity of injuries, deterioration of the patient, poor visibility, and equipment failure are indications for conversion. The rate of missed injuries is negligible and comparative with laparotomy. Lower complication rates and a shorter LOS are associated with laparoscopy. However, further studies are needed to identify specific predictors for complications and conversion.

# ABSTRACTS

## SASES Video Presentations

### LAPAROSCOPIC APPROACH TO COMBINED BILATERAL INGUINAL AND VENTRAL HERNIAS

**Heather Bougard**

*Head Clinical Unit Surgery, New Somerset Hospital, Cape Town*

Herniosis is a well-documented phenomenon amongst patients who develop any hernia over their lifetime. Multiple hernias at different anatomical locations are quite common though they more often occur metachronously. When they present synchronously, there is an additional advantage to tackling these hernias laparoscopically as it affords the advantage of thorough inspection of the entire peritoneal cavity and the ability to address all hernias simultaneously. This video demonstrates one of the modified approaches to the groin and midline that facilitates a combined procedure without the need for additional port placements. A bilateral TAPP and Midline IPOM repair is performed simultaneously.

### LAPAROSCOPIC LEFT LATERAL SECTIONECTOMY AT DR GEORGE MUKHARI ACADEMIC HOSPITAL

**Dr Magenthalan Govender<sup>1,2</sup>, Dr Oleh Y Matsevych<sup>1,2</sup>**

<sup>1</sup>*Sefako Makgatho Health Sciences University*,

<sup>2</sup>*Dr George Mukhari Academic Hospital*

#### Introduction

Laparoscopic left lateral sectionectomy has rapidly become a standard of care for patients requiring excision of segments 2 and 3. We present our technique of the resection.

#### Methods

Videos of patients having had left lateral sectionectomies were reviewed. Patients were placed in supine with reverse Trendelenburg position. Three ports were used: one 12 mm at the umbilicus for the camera, one 12 mm placed 5 cm above and to the right of the umbilicus and one 5 mm port to the left. A Ligasure® 5 mm (Covidien®) was used to take down the falciform ligament initially staying close to the abdominal wall and then stopping at the bifurcation of the two layers of peritoneum. The triangular ligament was incised to create a window between diaphragm and liver. Unlike open surgery the entire ligament was not mobilised at this stage. A line was scored on the left of the falciform ligament. Transection of the parenchyma was achieved with Ligasure®. Once the liver parenchyma was thinned, an endostapler – EndoGIA® Gold (Covidien®) – was used to complete the transection. It was also possible to dissect out individual vessels and ligate with Hem-o-lok® (Teleflex®) clips in one case. The cut surface was examined for bleeding or bile leaks. A small pencil drain was placed.

#### Results

Three patients had laparoscopic resections. All were female. Two cases were haemangioma with one diagnosed preoperatively and the other not having typical features on imaging. The third case was a large adenoma in a patient with hepatic adenomatosis. No bile leaks were noted. No patient required blood transfusion. Average length of stay was 1 day.

#### Conclusion

Laparoscopic left lateral sectionectomy is a stepping stone to more complex laparoscopic liver resections. It is feasible and safe in a tertiary institute in South Africa

### LAPAROSCOPIC PANCREATICODUODENECTOMY AT DR GEORGE MUKHARI ACADEMIC HOSPITAL: A CASE REPORT

**Dr Magenthalan Govender<sup>1,2</sup>, Dr Christopher Kalenga<sup>1,2</sup>, Dr O Mongale<sup>1,2</sup>, Dr Tebo Mosasi<sup>1,2</sup>**

<sup>1</sup>*Sefako Makgatho Health Sciences University*,

<sup>2</sup>*Dr George Mukhari Academic Hospital*

#### Introduction

The first total laparoscopic pancreaticoduodenectomy was performed in 1994 by Gagner and Pomp. Their comments coupled with the inherent technical difficulties stifled development of the technique. In the last decade there has been a renewed interest in the technique with high volume centres publishing large series. We present our experience with the first operation completed at Dr George Mukhari Academic Hospital.

#### Methods

Pre-operative CT confirmed a resectable head of pancreas mass. The gastroduodenal artery (GDA) was noted to arise from the right hepatic artery which ran parallel and anterior to the bile duct. Five ports were used. After excluding metastases we proceeded to dissect the hepatoduodenal ligament. A combination of hook diathermy and Harmonic ACE+7® (Ethicon®) was used. We then entered the lesser sac and ligated the right gastroepiploic vessels and right gastric vessels. The stomach was transected with an Endo GIA® Black 60 mm (Covidien®). The duodenum was kocherized. The GDA was ligated with a Haemolok® (Teleflex®) clip. A retropancreatic tunnel was created the pancreas was transected with the energy device. The jejunum was transected 10 cm distal to the ligament of Treitz with an Endo GIA® Purple 45 mm and passed posterior to the SMA. The pancreaticojejunostomy was done as per Blumgart with a duct to mucosa anastomosis. The hepaticojejunostomy was completed with 4/0 PDS (Ethicon®) continuous. The gastrojejunostomy was completed with 3/0 Maxon (Covidien®). The specimen was retrieved via a 5 cm midline incision. Two pencil drains were placed.

#### Results

The patient was transferred to ICU postoperatively. She developed a short period of delirium which resolved spontaneously. No bile or pancreatic leaks were noted. She was discharged on day 28.

### **Conclusion**

Laparoscopic pancreaticoduodenectomy is technically feasible despite the steep learning curve. The results from large series worldwide suggest a need to encourage and further develop the technique in South Africa.

### **THE OPEN RETRORECTUS AND TRANSVERSUS ABDOMINUS RELEASE**

**Heather Bougard**

*Head Clinical Unit Surgery, New Somerset Hospital, Cape Town*

The open retrorectus approach to the repair of incisional hernias remains the gold standard approach despite the availability of multiple options. The addition of a transversus abdominus release to the procedure increases the number of patients and the complexity of the cases for which this approach is suitable. It facilitates midline closure in almost all cases, avoids significant neuromuscular bundle injury and dissection of poorly vascularized subcutaneous tissue, and allows the placement of a very large but simple mesh in a space outside the peritoneal cavity. This video demonstrates the steps involved and the important anatomical details.

# ABSTRACTS

## SASES Oral Presentations

### CONSTRUCTION AND VALIDATION OF LOW COST LAPAROSCOPIC SIMULATOR USING ANDROID SMARTPHONE AND POP CAST AND A LAPTOP

Dr Ashish Vyas<sup>1</sup>, Dr Gourab Goel

<sup>1</sup>SMS Medical College

Minimal invasive surgery training requires a lot of practice and for this purpose innovative tools are needed to develop methods for practice and training skills outside the operating room. Commercially available devices are readily available but cost effectiveness and availability are major limiting factors in resource limited setting. We present an innovative and cost effective laparoscopic simulator which can be easily manufactured and used for practice of laparoscopic surgery. Using a free android application, such as IP webcam we can relay video to laptop without the use of any cables and uniquely we use the flash of a camera as the light source and a selfie stick for movement of the camera. Use of this type of setup can help to reduce cost of simulated learning in low income countries and makes laparoscopic training facilities readily available.

### LAPAROSCOPIC VENTRAL HERNIA REPAIR: A SINGLE SURGEON STUDY USING A CIRCUMFERENTIAL TRANSFASCIAL SUTURE TECHNIQUE

Mr Craig Campbell<sup>1</sup>, RP Mills<sup>1</sup>

<sup>1</sup>Private Practice

#### Background

The ideal technique for ventral primary and incisional hernia repair is unclear. There is a paucity of literature from South African authors. In this report, a standardised technique of intraperitoneal mesh placement and fixation is described.

#### Methods

A retrospective study of 152 patient records. Each patient underwent laparoscopic ventral hernia repair between 2007 and 2016 by a single surgeon. A standardised technique was used in every operation. In each case a circumferential mesh overlap of 5 centimetres from the defect was achieved. The same composite mesh was used in every operation. The mesh was secured with transfascial Tycron sutures placed around the circumference at 2 centimetre intervals. The correct position of the mesh was confirmed with skin markings from a template, prior to pulling the sutures through the abdominal wall with an Endoclose.

#### Results

152 patients underwent a total of 154 operations. They were followed up at 2 and 6 weeks postoperatively and longer in many patients. The average follow up time was 327 days.

Seromas occurred in 16 patients, one persisting beyond 6 weeks, which resolved after aspiration. Three patients developed abscesses, requiring mesh removal in 2. Hernia recurrences occurred in 3 patients (1.97%). More than one mesh was used in 6 patients. Few patients had any residual pain at 2 weeks and none at 6 weeks. The average hospital stay was 2 days.

#### Conclusion

The described standardised technique of laparoscopic ventral hernia repair results in a very secure mesh fixation with evenly distributed load on the mesh. The potential complications associated with tacks, inadequate fixation and cost of tacks are avoided.

### MANAGEMENT AND OUTCOMES FROM APPENDECTOMY: AN INTERNATIONAL, PROSPECTIVE, MULTICENTRE STUDY

Dr Julian Camilleri-Brennan<sup>1</sup>, Dr Thomas Drake<sup>2</sup>, Dr Richard Spence<sup>3</sup>, Dr Aneel Bhangu<sup>2</sup>, Dr Ewen Harrison<sup>1</sup>

<sup>1</sup>University of Edinburgh

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<sup>3</sup>University Of Cape Town

#### Aim

To identify variation in surgical management and outcomes of appendicitis across low, middle and high Human Development Index (HDI) country groups.

#### Methods

Multi-centre, international prospective cohort study of consecutive patients undergoing emergency appendectomy over a 6-month period. Follow-up lasted 30 days. Primary outcome measure was overall complication rate.

#### Results

4546 patients from 52 countries underwent appendectomy (2499 high, 1540 middle and 507 low HDI groups). Complications were more frequent in low-HDI (OR 3.81, 95% CI 2.78 to 5.19,  $p<0.001$ ) and middle-HDI countries (OR 2.99, 95% CI 2.34-3.84,  $p<0.001$ ) compared with high-HDI countries, but differences were adjusted out by case-mix and hospital structural factors. Surgical site infection (SSI) rates were higher in low-HDI (OR 2.57, 95% CI 1.33 to 4.99,  $p=0.005$ ) but not middle-HDI (OR 1.38, 95% CI 0.76 to 2.52,  $p=0.291$ ) compared with high-HDI countries after adjustment. A laparoscopic approach was common in high-HDI countries (1693/2499, 67.7%), but infrequent in low- (41/507, 8.1%) and middle-HDI (132/1540, 8.6%) groups. After accounting for case-mix, laparoscopy was still associated with fewer complications (OR 0.55, 95% CI 0.42 to 0.71,  $p<0.001$ ) and SSIs (OR 0.22, 95% CI 0.14 to 0.33,  $p<0.001$ ). The number-needed-to-treat with laparoscopic surgery to save an SSI was lower in low-HDI countries (NNT=6, 95% CI 4 to 9) than in high-HDI countries (NNT=9, 95% CI 6 to 16). In propensity-score matched groups within low- and middle-HDI countries, laparoscopy was still associated with fewer

overall complications (OR 0.23 95% CI 0.11 to 0.44) and SSI (OR 0.21 95% CI 0.09 to 0.45).

### Conclusions and Relevance

Outcomes from appendectomy vary worldwide. A laparoscopic approach is associated with better outcomes and availability appears to differ by country HDI. There are profound clinical, operational and financial barriers to the introduction of laparoscopy that if overcome, could result in significantly improved outcomes for patients in low-resource environments, with potential for wider health-system benefits.

## SIGNIFICANT CLINICAL AND PATIENT REPORTED OUTCOMES AT 6 MONTHS FOLLOWING HERNIA REPAIR WITH AN ABSORBABLE FIXATION DEVICE

**Dr Heather Bougard<sup>1</sup>, Dr Carl Doerhoff<sup>2</sup>, Prof Sven Bringman<sup>3</sup>, Dr Michal Chudy<sup>4</sup>, Ms Christine Romanowski<sup>5</sup>, Mr Peter Jones<sup>5</sup>**

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### Background

Surgeons utilise various mesh fixation methods during hernia repair which may include tacks/straps and/or sutures. One of these tack/strap choices, is an absorbable fixation device, Securestrap<sup>®</sup> (ETHICON, Somerville, NJ), consisting of

polydioxanone and L (-)-lactide/glycolide copolymer. The 6 month clinical results and patient outcomes with Securestrap<sup>®</sup> fixation are reported.

### Methods

The International Hernia Mesh Registry, prospective multi-centre registry, designed to collect patient reported, longitudinal data on hernia mesh products and fixation methods. Patients completed the Carolinas Comfort Scale<sup>TM</sup> (CCS). Symptomatic patient defined as responding >1 to any CCS<sup>TM</sup> question. P-values obtained by McNemar test and Kaplan Meier methods used to estimate the recurrence rate up to 183 days.

### Results

Patients enrolled at 17 centres with data on 101 of the 216 patients who had reached the 6 month time point. Demographics were: mean age 53.0 (13.2 SD); mean BMI 33.0 (7.7 SD) kg/m<sup>2</sup>; females (51.4%); nonsmokers (46.4%). Majority of hernias were incisional/ventral (57.9%) and most were laparoscopic (98.1%). Mesh fixation was with tacks/straps (50.5%) or tacks/straps and sutures (49.5%). Symptomatic CCS<sup>TM</sup> pains scores improved from baseline to 1 month and improved significantly from 1 month to 6-months (69.1% to 60.6%, p=0.0858; 60.6% to 22.8%, p=0.0002), respectively. Similar results were observed with symptomatic CCS<sup>TM</sup> movement limitations. The recurrence rate was 1.8% (0.6%-5.4%); 2 medically confirmed; 1 had not yet been assessed.

### Conclusions

Mesh fixation using absorbable tacks/straps with or without additional sutures results showed statistical significant improvement in patient reported outcomes at 6 months as compared to baseline. Follow-up continues.

