**USE OF LOCAL PERFORATOR FLAPS IN PARTIAL MASTECTOMY DEFECTS**

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**Purpose:** To demonstrate various uses of local perforator flaps, mainly lateral intercostal artery perforator (L-ICAP), anterior intercostal artery perforator (A-ICAP), lateral/long thoracic artery perforator (LaTP/LoTP) and thoraco-dermal artery perforator (TDAP flaps), for a variety of partial mastectomy defects.

To determine suitability of these flaps as a method of reconstructing partial mastectomy defects in selected patients.

**Methodology:** All patients who qualified for breast conserving surgery but were not suitable for standard methods (parenchymal flaps or therapeutic mammaplasty) primarily and after neo-adjuvant chemotherapy, were included in the study. Data were collected prospectively over one year from May 2008 to April 2009.

Relevant oncological data, pre-, intra- and postoperative photographs as well as follow-up photographs after completion of radiation therapy were included. The defects were reconstructed immediately in all patients. The choice of flap was determined by the site/size of the defect and the availability of local perforators. This was always confirmed pre-operatively using a Doppler probe.

Modifications were devised to maintain/recreate aesthetic units of the breast.

**Results:** Sixteen patients fulfilled the criteria for inclusion in the study. Local perforator flaps permitted post-resection reconstruction and breast conservation in all patients. Wide excision margins were possible in all cases. There were 5 minor complications and only one total flap loss. All patients with viable flaps were satisfied with the aesthetic outcome. An independent panel of observers judged the aesthetic results good to excellent in two-thirds of patients.

**Conclusion:** Local perforator flaps are an extended form of oncoplastic surgery permitting breast conservation in a select group of patients. Their versatility has permitted reconstruction of defects in virtually all breast quadrants. We have used the technique both feasible and acceptable in our centre and have incorporated the technique in our protocol for oncoplastic breast surgery.

**ASSESSING THE AXILLARY RECURRENCE RATE IN BREAST CANCER PATIENTS WITH A NEGATIVE SENTINEL LYMPH NODE BIOPSY**

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**Aim:** To assess the development of axillary nodal metastases in patients who had previously undergone a negative sentinel lymph node biopsy for breast cancer.

**Methods:** We conducted a retrospective review of 133 consecutive patients with early, operable breast cancer who had previously undergone a negative sentinel lymph node biopsy between August 2001 and August 2006 at Groote Schuur Hospital, Cape Town, with a minimum follow-up of 2 years. 135 SLN biopsies were assessed. A total of 49 patients were excluded because of the SLN being positive (35), and 14 did not meet the minimum follow-up criteria. A total of 86 patients with negative SLN biopsies were followed up for a median period of 44 months, until they developed metastases or died.

**Results:** There were no patients with nodal axillary recurrence. 1 patient underwent later axillary clearance for presumed axillary recurrence, but histological examination revealed the tumour to be within the axillary tail of breast and not in any axillary lymph nodes. 2 patients had recurrence in the chest wall below the axillary incision. 7 patients developed distant metastases in liver, bone and lungs without evidence of axillary recurrence. There were 4 cancer-related deaths.

**Conclusions:** Omitting axillary node clearance after negative sentinel lymph node biopsy appears to be safe.

**CLINICAL OUTCOME OF PATIENTS WITH A METASTATIC AXILLARY SENTINEL LYMPH NODE AND NO AXILLARY CLEARANCE**

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Department of Surgery, University of Cape Town and Groote Schuur Hospital, Cape Town

**Aim:** To describe the clinical and pathological features of patients who had a false-negative frozen section for sentinel lymph node biopsy for breast cancer, and to document their clinical outcome.

**Method:** We conducted a retrospective review of 135 SLN performed in 133 consecutive patients with early, operable breast cancer between August 2001 and August 2006 at Groote Schuur Hospital, Cape Town. All patients were followed up for a minimum of 2 years. 14 patients were lost to follow-up and excluded from the analysis. 35 patients had metastatic lymph nodes noted at the time of surgery and underwent a completion axillary clearance. A total of 86 patients had a negative intraoperative SLN analysis.

**Results:** Eight of these 86 patients were noted to have malignant cells on further histological examination sections. Two patients had isolated tumour cells (metastases <0.2 mm), 5 patients had micrometastases (metastases 0.2 - 2 mm), 1 patient had an 8 mm macrometastasis. None had subsequent axillary clearance, or axillary radiotherapy. None of the patients had axillary recurrence with a mean follow-up of 44 months. Four patients (50%) developed distant metastases within 28 months, and 3 died. Three patients were clinically disease-free at 37, 46 and 59 months respectively. One patient was lost to follow-up after 18 months.

**Conclusion:** Recurrent axillary lymph node disease has not been a clinical problem in this subgroup of patients. Patients with recognised metastatic SLN at the time of surgery seem to have a high risk for the development of systemic disease.

**MICROINVASION IN DUCTAL CARCINOMA IN SITU: PREDICTION AND PROGNOSTICATION**

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**Background:** The relationship between ductal carcinoma in situ and invasive breast cancer seems variable, and it is poorly understood. Approximately 30 - 50% of all DCIS progresses to invasive cancer, but few data are available to predict which forms of DCIS will invade and spread.

**Methods:** Women with a primary diagnosis of ductal carcinoma in situ between March 2001 and March 2008 were selected from one practice. Patients with radiological or pathological evidence of invasion prior to operation were excluded. The resulting clinical and pathological data of 104 women managed operatively for DCIS were analysed.

**Results:** All patients were treated with either mastectomy or wide local excision and radiotherapy. Microinvasion (DCIS-M) was found in 29 women (27.9%). Patients with microinvasion were more likely to present symptomatically (55 v. 31%) and with large or multi-local areas of disease. 89 patients (85.6%) had a sentinel lymph node biopsy (SLNB) performed. Positive lymph nodes were found in 4 patients (4.5%), all of whom had micro-invasion. This represents 13.7% of DCIS-M patients. Patients with microinvasion and lymphatic spread were more likely to have HER2neu 3+ tumours (75 v. 26%) than microinvasion alone. Oestrogen receptor status was equal in all groups.

Grading of DCIS did not predict for invasion, or lymphatic spread.

**Conclusion:** Our results show that there are characteristic differences between pure DCIS and DCIS with microinvasion (DCIS-M). Patients with extensive disease and HER2neu-positive disease are more likely to have microinvasion and significantly more likely to have lymphatic spread. This may represent de novo aggressive disease or help us delineate the pathway from ‘benign’ DCIS to invasive carcinoma.
LARGE-BOWEL CANCER IN JOHANNESBURG
M. Khalil, F. Mohamed, D. Latrin, G. J. Oettie
Department of Surgery, University of the Witwatersrand, Johannesburg

Aim: A retrospective audit of the clinical and epidemiological characteristics of large-bowel cancer at a metropolitan hospital in Johannesburg.

Subjects: A consecutive audit of all cases treated in one unit from 1993 to 2009.

Results: Data were available for 538 patients. The male/female ratio was 5%–85%, and 83% were more than 50 years old. National breast cancer screening guidelines are increasingly accepted in South Africa; 83% of the patients were aware of breast self-examination (BSE) and 54% practised regular BSE. All 177 patients went on to have radiological imaging of their breasts. A total of 48 biopsies were performed, with 21 being malignant.

Conclusions: BSE should be incorporated into a national breast screening programme. A breast awareness campaign should focus on encouraging women to seek medical help should they notice a change in their breasts, which includes the finding of a mass, nipple discharge, or atypical pain.

SYSTEM DELAYS IN THE MANAGEMENT OF MALIGNANT BREAST DISEASE AT A REGIONAL HOSPITAL IN KWAZULU-NATAL
E. Dalwai, I. Buccimazza*, A. Gouden
Department of Surgery and Breast Unit*, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal, Durban

Introduction: Breast cancer is the most common cancer in women worldwide. In our health system the disease first comes to the attention of the general surgeon, who confirms the diagnosis and commences initial work-up. A delay was noted in this process at a regional (secondary level) hospital in Durban, KwaZulu Natal.

Aim: The primary aim of the study was to document the total time delay from initial presentation at a secondary level hospital to initial assessment at the specialised breast clinic, and to compare this with accepted international standards. Secondary aims included specific care step delays and reasons for these delays.

Patients and methods: All patients with histologically proven breast malignancy seen as outpatients at R. K. Khan Hospital from January 2008 to April 2009 were eligible for the study. The data were collected retrospectively and included age, gender and the following data: clinical assessment, breast imaging, histological diagnosis, metastatic screening, and visit to specialised clinic. Patients admitted for work-up were excluded as the delays were inherently shorter.

Results: Forty patients fulfilled the inclusion criteria. The majority were female and the average age was 55.8 years. The table documents the specific care steps and the average delay in consecutive days for each care step.

<table>
<thead>
<tr>
<th>Care steps</th>
<th>Average delay in days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay 1: Clinical assessment to imaging</td>
<td>18.3</td>
</tr>
<tr>
<td>Delay 2: Histological diagnosis</td>
<td>21.2</td>
</tr>
<tr>
<td>Delay 3: Metastatic screening</td>
<td>9.2</td>
</tr>
<tr>
<td>Delay 4: Specialised clinic</td>
<td>22.7</td>
</tr>
<tr>
<td>Total delay</td>
<td>70.1 (range 32 - 199 days)</td>
</tr>
</tbody>
</table>

Conclusion: The average delay of 70 days falls far short of the acceptable published international guidelines. Main reasons for delays were overwhelmed staff facilities, clinician inexperience and administrative bungles. These results have guided practical policy changes to improve service delivery at a regional level.

TUBERCULOSIS AND THE BREAST IN THE HIV ERA: THE CUP RUNNETH OVER?
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Breast Unit, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal, Durban

Introduction: Tuberculosis is a worldwide problem with a high incidence in developing countries. Mammary tuberculosis is a rare form of tuberculosis. The marked upward trend in new TB cases notification rates in South Africa reflects the impact of HIV. With the incidence of tuberculosis increasing, an increase in extra-pulmonary involvement can be expected.

Aim: The primary aim of the study was to ascertain whether there was an increased incidence of breast involvement secondary to tuberculosis in the HIV pandemic. Secondary aims were to highlight the spectrum of presentation and outcomes (recurrence and death) of tuberculosis affecting the breast.

Patients and methods: The study was conducted from April 2000 to March 2009 at the Breast Unit. The files of all patients with a diagnosis of tuberculosis involving the breast were extracted from the Breast database and reviewed retrospectively.

Clinical presentation, diagnostic modality, primary or secondary involvement, HIV status, treatment and outcome were documented. The number of cases per year was also noted.

Results: Thirty-one patients presented with tuberculosis affecting the breast over the 9-year period. No increasing trend was observed over the study period.

VOL 48, NO. 1, FEBRUARY 2010 SAJS
A REVIEW OF 33 HIV-POSITIVE PATIENTS WITH BREAST CANCER

Breast Unit and Department of Oncology*, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal

Introduction: The management of non-AIDS-defining cancers in HIV-positi
ve patients pose questions of standard cancer treatment algorithms.

Aim: The primary aim of this study was to analyse our experience with breast cancers in HIV-positive patients treated in a dedicated breast oncology unit, to formulate more evidence-based guidelines.

Methods: This retrospective study was conducted from 2002 to 2009 at the Addington Hospital Breast Clinic. All patients with breast cancer and concurrent HIV infection were eligible. HIV testing was selective prior to June 2000 and mandatory thereafter as part of the multidisciplinary clinic protocol. Age, stage of presentation, histological subtype and CD4 counts were entered into a database.

Results: A total of 33 HIV-positive patients with breast cancer were identified. This constituted 4.2% of all breast cancers over the study period. Sixteen patients were identified prior to June 2008. All the patients were of Black African ethnicity. The average age was 40.3 years (range 24 - 70 years). The average age of non-HIV-positive breast cancer patients was 56.4 years. In 28 patients the tumour stage was documented: Tis – 3% (1), T1 – 7% (2), T2 – 25% (7), T3 – 11% (3), T4 – 54% (15). Seventeen patients presented with metastatic disease, all had T4 lesions. One patient had a metastatic recur-
rence after 5 years and died of PCP pneumonia 1 year later. Two patients had bilateral breast cancers. The most common histology was infiltrating ductal carcinoma (IDC) (30). Twelve of these patients (40%) had associated DCIS. The average CD4 count in 22 patients was 456 (range 88 - 1 309). In 5 of these patients the CD4 count was <200. Seven patients had their CD4 counts repeated while on treatment; 5 demonstrated a decrease. A secondary aim is to determine whether there is an association between HIV and breast cancer, in particular ductal carcinoma in situ (DCIS).

Conclusion: Although tuberculosis is rampant in SA and the incidence of TB is rising as a result of AIDS, we have not observed an increase in the incidence of breast cancer. Our setting tuberculosis to breast involvement has protein manifestations and frequently mimics locally advanced breast cancer. It is the only benign breast condition where medical treatment is effective.
The prevalence of MS was 39%, with the highest prevalence (54%) in the younger age group. The block mark was poor (r=0.5) while the MCQ, SACS and clinical marks correlated well with the final mark (r=0.78, 0.72 and 0.69 respectively). The correlation between the MCQ, the SACS and the clinical marks was poor (r<0.5). The block mark has increased between 2006 and 2008 by approximately 4% while the other components varied by less than 1.5% year on year.

Conclusions: The following conclusions have been made:
1. The block mark and in particular the ward mark does not help predict the final mark. In addition, the distribution is not Gaussian and therefore must be removed from evaluating student performance.
2. The MCQ, SACS and clinical tests different aspects of student skills. These tools are able to discriminate, are repeatable and appear to be valid for the purpose for which they are being used.
3. Identification of those students performing well must be improved.

EFFECTIVENESS OF PROCTORSHIP FOR REGISTRARS IN LAPAROSCOPIC SURGERY IN A NON-TERTIARY HOSPITAL – IS IT DOABLE?
M. T. Morna, M. Z. Koto, D. Mokotedi
Department of Surgery, University of the Witwatersrand and Sebokeng Hospital

Introduction: In the face of severe resource constraints and an ever-increasing demand for high-quality surgical specialists in South Africa, it has become necessary to train registrars sometimes outside the usual comfort of the academic teaching hospitals. Theatre is overcrowded in the public sector and there are inadequate opportunities and time to supervise trainees in laparoscopic procedures. Moreover, surrogate models such as simulators, cadavers and animals are also not easily available for training registrars. Thus, non-tertiary teaching hospitals are inadequate opportunities and time to supervise trainees in laparoscopic surgeries. Theatres are overburdened in the public sector and there was no significant difference in these parameters between the two years.

Conclusion: Proctorship of registrars in minimal access surgery is feasible in level two hospitals provided there is patient and dedicated supervision.

HEPATIC DUCTAL ANATOMY: A CADAVERIC X-RAY STUDY IN YOUNG ADULT AFRICAN MALES

Departments of Surgery and Forensic Pathology, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal, Durban

Hepatic ductal anatomy demonstrates great variation and is relevant to the safe performance of liver surgery. These variations are well described in the classical literature. This prospective descriptive cohort study aims to describe the first time the variations in hepatic anatomy in African males.

Methodology: 100 fresh cadaveric specimens of the second pathological dissection block were removed from the cadavers post-mortem. Cholangiography was performed via the major papilla. A transfixion suture prevented spillage of contrast material with the needle serving as a marker for the major papilla. Stapling clips were used as markers at key anatomical intervals. Two to four radiographs were taken.

Results: 109 specimens were obtained between August 2008 and January 2009. Cholangiography was successfully performed in 104 cases. Both the left and right systems were observed in 88 cases and in 5 cases only the left system was imaged. The tables below describe the confluence variations and hepatic segmental variations according to Healy and Schroy (1993).

RESULTS: HEPATIC SEGMENTAL VARIATIONS

<table>
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<tr>
<th>Type</th>
<th>5 N (%)</th>
<th>6 N (%)</th>
<th>8 N (%)</th>
<th>4 N (%)</th>
<th>Total N (%)</th>
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<tbody>
<tr>
<td>a</td>
<td>78 (95)</td>
<td>91 (90)</td>
<td>86 (92)</td>
<td>80 (90)</td>
<td>74 (87)</td>
</tr>
<tr>
<td>b</td>
<td>1 (1)</td>
<td>5 (5)</td>
<td>3 (3)</td>
<td>10 (10)</td>
<td>20 (23)</td>
</tr>
<tr>
<td>c</td>
<td>1 (1)</td>
<td>-</td>
<td>2 (2)</td>
<td>-</td>
<td>2 (2)</td>
</tr>
<tr>
<td>d</td>
<td>1 (1)</td>
<td>4 (4)</td>
<td>-</td>
<td>-</td>
<td>11 (13)</td>
</tr>
<tr>
<td>e</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>-</td>
<td>-</td>
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<td>f</td>
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<tr>
<td>g</td>
<td>n/d</td>
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<td>-</td>
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<tr>
<td>h</td>
<td>n/d</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>3 (3)</td>
</tr>
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</table>

Total 82 77 81 92

CONFLUENCE CLASSIFICATION

<table>
<thead>
<tr>
<th>Type</th>
<th>N (%)</th>
<th>QN%</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>58 (61)</td>
<td>57</td>
</tr>
<tr>
<td>b</td>
<td>13 (14)</td>
<td>12</td>
</tr>
<tr>
<td>c</td>
<td>17 (18)</td>
<td>20</td>
</tr>
<tr>
<td>d1</td>
<td>2 (2)</td>
<td>5</td>
</tr>
<tr>
<td>d2</td>
<td>1 (1)</td>
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<tr>
<td>f</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Total 94

QN% = quoted norm %; n/d = not previously described.

Discussion: Ductal anatomy of the confluence corresponds with described literature. Marked variances were noted in segment 8 and subsets (a) and (d) of segment 4. Newly described variations were noted in segments 5, 6 and 8.
PANCREATIC DUCTAL ANATOMY: A CAUDERIC X-RAY STUDY IN YOUNG ADULT AFRICAN MALES

Departments of Surgery and Forensic Pathology, Nelson R Mandela School of Medicine, University of KwaZulu-Natal, Durban

Abstract: Indigenous plants are rare and may be pathological. Some of these anomalies produce clinical syndromes while others are of no clinical relevance. The study describes for the first time ductal anatomy in young African males.

Methodology: 100 fresh cadaveric specimens of the second pathological block of dissection were excised and studied.

Results: Some anomalies were found to produce clinical syndromes while others were of no clinical relevance. 

Conclusion: Indigenous plants are rare and may be pathological.

ANATOMICAL CONSIDERATIONS ON SÜDECK’S CRITICAL POINT AND ITS RELEVANCE TO COLORECTAL SURGERY

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1Department of Anatomy, Section of Clinical Anatomy, and 2Department of Surgery, School of Medicine, Faculty of Health Sciences, University of Pretoria

Sudeck's critical point at the rectosigmoid junction is described as the point of origin of the last sigmoid arterial branch, originating from the inferior mesenteric artery (IMA). There is controversy on the importance of Sudeck's point, and the frequency in which the anastomosis is found. Furthermore, the diameter of the anastomosis, if present, may also impact on the viability of the caudal stump. This study aimed to determine the frequency in which a macroscopic anastomosis occurs, between the superior rectal artery and the last sigmoidal branch, in a cadaver population; the diameter of this anastomosis and the distance from the origin of the IMA to Sudeck's point. 

Sixty-four cadavers were included in the study, excluding those with previous surgery or an atherosclerotic or aneurysm disease in the IMA. Sudeck's point was confirmed in 92.1% of the cases; the rate of occurrence was 96.5%. The mean distance from the origin of the IMA to Sudeck’s point was 55.5 mm (SD 14.6 mm). 

WOUND HEALING EFFICACY OF INDIGENOUS PLANTS

A. Gauld, C. Patel, G. P. Candy
Department of Surgery, University of the Witwatersrand, Johannesburg

Introduction: Indigenous plants have been used by traditional healers for a variety of remedies, some with little scientific basis, and are sometimes associated with toxicity. We investigated one such plant which is anecdotally reported to have wound healing but there have been no reports of hepatotoxicity from this plant. There is nothing reported on the active ingredients of this particular species. A pilot study was set up to determine the wound healing efficacy in 3 pigs.

Methods: The animals were anaesthesised and ten 2.5 cm x 2.5 cm square sections of skin, spaced 4 cm from each other, on either side of the spine were removed using a dermatome set to 800 μm. The wounds were excised and started with a single surgeon. The plant preparation or partially purified compounds, i.e. plant extracts or isolated compounds, was applied to the fresh wounds and covered with Opsite. The wounds were alternated with control wounds covered only with the occlusive gel. A stock solution was placed over the initial dressings to hold them in place and the wounds were dressed as previously described. Wound fluid extracted from the wounds was analysed for cytokine concentrations and the liver of one animal was sent for pathological examination for possible hepatotoxicity caused by this plant.

Conclusions: Wounds from all 3 pigs showed improved and rapid wound healing within 5 days compared to 7+ days in the untreated control wound covered with Opsite or Opsite + activated charcoal. Histologically the rate of wound healing was measured as a ratio of dermal layer growth between treated and control wounds. The treated wounds showed complete re-epithelialisation by day 5 postoperatively. Some liver enzymes were raised, but pathological examination showed no signs of the described hepatotoxicity.

EVALUATION OF THE EFFICACY AND SAFETY OF FLAVONIX (A NEW LIQUID GEL) IN DEEP PARTIAL-THICKNESS WOUNDS

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Division of Plastic and Reconstructive Surgery, University of the Witwatersrand, Johannesburg

Introduction: Wound healing, being a complex and integrated process, can only be modulated by influencing multiple factors simultaneously. Inflammation is the balancing act between pro-inflammatory and anti-inflammatory mediators, local and systemic factors, which result in anything from a healed wound to a chronic recalcitrant wound. Flavonix is an interactive gel containing plant extracts among which baicalein, oseospin (anti-inflammatory), farnesol and xylo (anti-bacterial and effective against biofilm) are the main ingredients. The plant extracts used have all been evaluated individually in studies. Our aim is to show the efficacy and relative safety of this compound gel in an animal model comparing it with a currently used gel (Intrasite (Smith and Nephew)).

Methods: Pig models were used for the creation of deep partial thickness wounds using a dermatome. The wounds were dressed as controls, 4 wounds were used as controls, 4 were covered with Intrasite gel and 4 were covered with Flavonix gel. All the wounds received a Tegaderm secondary dressing. Control biopsies were taken from a remote site as a relative comparison in each of the 3 pigs. At days 2, 4 and 7 wound punch biopsies and fluid samples were taken from the wounds. Each time the entire dressings were changed and the wounds were evaluated as previously described. Wound fluid extracted from the wounds was also measured throughout the duration of the study.

Results: Clinically, the wounds dressed with Flavonix and Intrasite gel healed equally well. Control wounds also healed well by days 7 - 10. As animal wound models (such as in pigs) show rapid wound healing in most situations, the quantitative analysis will provide more clues as to the efficacy of the Flavonix gel. No clinically untoward reactions, local or systemic, were noted from the use of the Flavonix gel.

RECONSTRUCTION IN WOMEN OVER 70: A DESCRIPTIVE ANALYSIS OF PRESENTATION AND CHARACTERISTICS

C. A. Beun, G. Edwards, L. Duyate
Breast Unit, Helen Joseph Hospital and Milpark Breast Care Centre, Department of Surgery, University of the Witwatersrand, Johannesburg

Background: Women aged over 70 diagnosed with breast cancer are often offered breast cancer treatment that is not current recommended practice. Today more and more data are available regarding the standard of care for women over 70. Issues are no longer around standard of care but the women's biological age rather than her chronological age. Reconstruction in women over 70 has not been studied before. Reconstruction in the elderly has been a poor candidate for funding in the past. 

Methods: 100 women over 70 in a practice of 3 728 breast cancer patients were reviewed. The patient demographics, type of reconstruction, complications, and survival were recorded. 

Results: Length of hospital stay remained within the range of patients under 70. Issues are no longer around standard of care but the women's biological age rather than her chronological age. Reconstruction in women over 70 has not been studied before. Reconstruction in the elderly has been a poor candidate for funding in the past. 

Conclusions: Women over 70 have more chance of successful breast reconstruction if appropriate attention is given to their psychological and social problems. Further studies are needed to establish guidelines for the standard of care for women over 70. Issues are no longer around standard of care but the women's biological age rather than her chronological age. Reconstruction in women over 70 has not been studied before. Reconstruction in the elderly has been a poor candidate for funding in the past.
Our patients tend to be more variable in age, menopausal status and symptoms. Lymph node staging was done routinely at primary operation. Our youngest patient was 24 years old with 3-year follow-up. All were treated with mastectomy (9 unilateral, 2 bilateral at the same setting). The hypothesis is that if the HIV-positive group has more complications after a certain treatment modality than the HIV-negative group is less than that of the general population, if corrected for age and race. Others suggest that breast cancer in HIV-infected patients is more aggressive and occurs at an earlier age. Case studies also suggest that chemotheray in HIV-infected patients carries an increased risk owing to the patients’ already suppressed immunity.

A prospective cohort study has been designed to investigate short-term complications following surgery, chemotherapy and radiotherapy in patients with breast cancer. This study compares these aspects in HIV-positive and HIV-negative patients. The hypothesis is that if the HIV-positive group has more complications after a certain treatment modality than the HIV-negative group, the treatment strategy for HIV-positive patients with breast cancer has to be revised. Patients diagnosed with breast cancer have been invited to participate in the study. All participants have been tested for HIV infection and sorted into the HIV-negative control group or the HIV-positive group. All patients have been managed according to standard of practice guidelines and have been followed up to detect any complications.

A total of 50 patients with breast cancer have been enrolled in the study, 6 of whom are HIV positive and 44 of whom are HIV negative. Early results show no significant difference in the results of complications between the control group and the study group. This suggests that HIV-infected patients should be managed according to standard guidelines.

Background: Paget's disease of the nipple is characterised by an eczematous or bleeding nipple associated with underlying carcinomatous cells. The literature describes it as most commonly found in postmenopausal women with symptoms. In other series invasive carcinoma is present in 25 - 40% of patients, whereas we found it in more than 90%. This may reflect diagnosis at a later stage of disease progression, owing to late presentation or late diagnosis by medical practitioners not expecting malignant disease in a younger age group.

The results show that oncoplastic surgery improves cosmesis and is oncologically safe. It is recommended for early breast cancer.

Method: Patients undergoing a modified thoraco-abdominal flap for chest wall coverage were studied. There were 20 patients in the study and all chest wall defects were from advanced breast cancer. The thoraco-abdominal flap was designed:

- Based principally on the peri-umbilical blood supply of the abdominal wall
- Extending as far laterally as the posterior axillary line
- Extending as far inferiorly as the inguinal crease.

Results:
- All chest wall defects were successfully covered.
- 2 patients had minor distal flap necrosis which healed without surgery.
- Surgical time for flap cover was an average of 55 minutes. This is significantly quicker than many other options for chest wall cover.

Conclusions:
- The modification of the thoraco-abdominal flap offers:
  - Reliable chest wall coverage
  - A flap that is relatively easy and quick to raise, and easy to teach
  - A flap that preserves other reconstructive options, e.g. latissimus dorsi
- An improved aesthetic outcome for patients.

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Background: Paget's disease of the nipple is characterised by an eczematous or bleeding nipple associated with underlying carcinomatous cells. The literature describes it as most commonly found in postmenopausal women with symptoms. In other series invasive carcinoma is present in 25 - 40% of patients, whereas we found it in more than 90%. This may reflect diagnosis at a later stage of disease progression, owing to late presentation or late diagnosis by medical practitioners not expecting malignant disease in a younger age group. Based on these results we would recommend auxiliary staging in patients presenting with Paget's disease, and high clinical suspicion of malignancy in all presentations of nipple disease.

A HOSPITAL-CENTRED BREAST HEALTH AWARENESS CAMPAIGN CAN FORM THE FOUNDATION OF A NATIONAL BREAST SCREENING PROGRAMME IN SOUTH AFRICA

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Introduction: Organised mammogram breast screening programmes result in favourable stage shifting and better prognostic factors than opportunistic screening, but in South Africa an organised programme does not exist. The most important press conference is forced to seek alternative ways of educating patients about breast awareness so that patients will take co-responsibility for their own breast health.

Method: We performed an anonymous audit of a breast health awareness campaign performed in a private hospital which included permanently employed female health care workers. They were questioned regarding their breast self-examination perceptions and practices.

Results: A total of 219 out of a possible 360 (61%) health care workers were included in our audit. With regard to the practice of BSE, 86% knew how to examine their breasts, and 81% regularly performed BSE. Five women were diagnosed with breast cancer through this campaign, 3 with early cancer.

Conclusions: A hospital-centred breast health awareness campaign can be very successful and cost effective in educating staff and patients about breast health issues. In South Africa this should be seen as the beginning of a national breast health awareness campaign.

DOES HIV INFLUENCE THE COMPLICATIONS AND IMMEDIATE OUTCOME IN PATIENTS WITH BREAST CANCER RECEIVING SURGERY, CHEMOTHERAPY AND RADIOTHERAPY?

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The effect of HIV on patients with breast cancer is uncertain. A literature review has shown that very little is known about this topic. Only a few small retrospective studies and case reports have been reported on this matter and the results are contradictory. Some suggest that HIV infection renders protection against breast cancer because the incidence of breast cancer in the HIV-positive population is less than that of the general population, if corrected for age and race. Others suggest that breast cancer in HIV-infected patients is more aggressive and occurs at an earlier age. Case studies also suggest that chemotherapy in HIV-infected patients carries an increased risk owing to the patients’ already suppressed immunity.

A prospective cohort study has been designed to investigate short-term complications following surgery, chemotherapy and radiotherapy in patients with breast cancer. This study compares these aspects in HIV-positive and HIV-negative patients. The hypothesis is that if the HIV-positive group has more complications after a certain treatment modality than the HIV-negative group, the treatment strategy for HIV-positive patients with breast cancer has to be revised. Patients diagnosed with breast cancer have been invited to participate in the study. All participants have been tested for HIV infection and sorted into the HIV-negative control group or the HIV-positive group. All patients have been managed according to standard of practice guidelines and have been followed up to detect any complications.

A total of 50 patients with breast cancer have been enrolled in the study, 6 of whom are HIV positive and 44 of whom are HIV negative. Early results show no significant difference in the results of complications between the control group and the study group. This suggests that HIV-infected patients should be managed according to standard guidelines.

PAGET'S DISEASE OF THE NIPPLE: DANGER POINTS IN DIAGNOSIS AND TREATMENT

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Background: Paget's disease of the nipple is characterised by an eczematous or bleeding nipple associated with underlying carcinomatous cells. The literature describes it as most commonly found in postmenopausal women with underlying DCIS. We examine the prevalence and characteristics of Paget's disease in our practice.

Methods: A retrospective review identified female patients with a diagnosis of Paget's disease of the nipple from 2002 to 2008. Clinical and pathological characteristics were analysed, including patients' presenting features, time to diagnosis, and final underlying pathology.

Results: Twelve patients with a primary diagnosis of Paget's disease were identified over 5 years. All were treated with mastectomy (9 unilateral, 2 bilateral at the same setting). The median duration to diagnosis was 2 years in premenopausal women. Our youngest patient was 24 years old with 3-year duration of symptoms. The underlying pathology was primary invasive ductal carcinoma in 11/12 patients (91.7%). Lymph node staging was done routinely at primary operation in all cases, either by sentinel node biopsy or by sampling. One patient (8.3%) had demonstrable nodes. A total of 219 out of a possible 360 (61%) health care workers were included in our audit. With regard to the practice of BSE, 86% knew how to examine their breasts, and 81% regularly performed BSE. Five women were diagnosed with breast cancer through this campaign, 3 with early cancer.

Conclusions: A hospital-centred breast health awareness campaign can be very successful and cost effective in educating staff and patients about breast health issues. In South Africa this should be seen as the beginning of a national breast health awareness campaign.

OPEN LYMPH NODE BIOPSY: A 12-YEAR EXPERIENCE

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Introduction: The HIV epidemic has brought with it a rising number of patients with generalised lymphadenopathy. Some investigators have reported the accuracy of FNA in this setting and have reserved open biopsy for a few cases where the diagnosis is in doubt. We have not had a similar experience.

Aim: To document our experience with open lymph node biopsy, the histological pattern of disease in this cohort of patients, and reliability in making a diagnosis.

Patients and methods: Records of patients who underwent lymph node
OUTCOME OF EMERGENCY LAPAROTOMY FOR ABDOMINAL TB

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Introduction: The rising incidence of HIV/AIDS has resulted in a resurgence of abdominal TB in South Africa. These often debilitating patients not infrequently present with acute complications requiring surgery. We present our experience with this group of patients.

Methods and patients: A prospective descriptive audit of all patients with abdominal TB undergoing surgical treatment was conducted. From January 2008 to April 2009, 25 patients with positive histology for TB were operated on. Fifteen were male and the mean age was 34 years. Seventeen were HIV positive and HIV status of the others was unknown.

Results: All had emergency laparotomy. Three patients had a prior CT abdomen. Nine patients presented with obstruction, 4 with perforation and the rest with peritonitis. Intra-operative findings were: frozen abdomen in 6 patients, small bowel perforation in 7, enlarged lymph nodes and ileo-caecal mass in 13 and obstructed small bowel in 5. Ten patients (40%) had small-bowel resection, including 4 (16%) who had right hemicolectomies. Nine patients (36%) ended up with stomas (8 ileostomies and 1 colostomy). Two had primary anastomoses. Six patients (24%) had laparatomies and 9 patients (36%) were admitted to ICU. Three patients developed enterocutaneous fistula and 4 patients were discharged with ventral hernia. Seven patients died (28%), of whom 6 had bowel resection, and 5 of them were admitted to ICU. Mean duration of hospital stay was 18 (5-69) days.

Conclusion: Emergency surgery for TB abdomen is associated with high mortality and morbidity with high ICU admission and prolonged hospital stay.

A PROSPECTIVE AUDIT OF DIAGNOSTIC LAPAROSCOPY IN THE DIAGNOSIS OF ABDOMINAL TUBERCULOSIS

Edendale Hospital, University of KwaZulu-Natal, Durban

Introduction: HIV/AIDS has resulted in a resurgence of abdominal tuberculosis in South Africa. Confirming the diagnosis can be difficult. This prospective study looks at the role of laparoscopy in establishing the diagnosis of abdominal tuberculosis (TB).

Method: All patients with clinically suspected but histologically or microbiologically unconfirmed abdominal TB were referred for diagnostic laparoscopy. All grossly pathological tissues were biopsied and free fluid was aspirated for histological and microbiological assessment.

Results: From January 2008 to March 2009, 104 patients were referred to us. Forty-five patients underwent diagnostic laparoscopy and 35 of them were HIV positive. Laparoscopic findings included intra-abdominal lymphadenopathy in 31 patients, ascitic fluid in 30, intra-abdominal mass in 11, and deposits on bowel wall, peritoneum or omentum in 11. Thirty-one patients (68.8%) had positive histology for TB. An alternative diagnosis was established in 8 patients (17.7%). Of these 8 patients 3 had appendicis, 1 metastatic adenocarcinoma, 1 cholestatic liver disease and 3 sinus histiocytosis. In 6 patients (13.3%) histology revealed either normal or nonspecific inflammation. One of those 6 patients had positive TB culture from a urine specimen.

Conclusion: Our preliminary results suggest that diagnostic laparoscopy can be very useful in the assessment of suspected abdominal tuberculosis and help diagnose alternative surgical pathology.

ERCP IN HIV-POSITIVE PATIENTS AT CHRIS HANI BARAGWANATH HOSPITAL: THE SPECTRUM OF DISEASE

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Aim: To describe the spectrum of disease in HIV-positive patients in whom an ERCP was performed.

Methods: Retrospective study of prospectively collected data and review of ERCP radio logical films. All patients with diagnosed HIV who had an ERCP from December 2007 to March 2009 were included. The radiological films were then shown to a panel of experienced physicians; two surgeons, one gastroenterologist and one radiologist, and a consensus diagnosis was reached for each patient.

Results: Twenty-seven patients were identified, 16 female and 11 male. Ages were from 23 to 54 years, average 36 years. The cholangiographic diagnoses were as follows:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrinsic hilar compression</td>
<td>1</td>
</tr>
<tr>
<td>Distal bile duct strictures</td>
<td>5</td>
</tr>
<tr>
<td>Bile duct stones</td>
<td>4</td>
</tr>
<tr>
<td>Normal</td>
<td>4</td>
</tr>
<tr>
<td>Retroviral-associated cholangiopathy</td>
<td>10</td>
</tr>
<tr>
<td>Common hepatic strictures</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
</tr>
</tbody>
</table>
The spectrum of disease is a combination of the well-described diseases in which an ERCP may be indicated and retroviral-specific disease.

Conclusion: HIV-positive patients undergoing ERCP at Chris Hani Baragwanath Hospital have the usual spectrum of stone and malignant disease as described in the literature. However, patients with suspected choledocolithiasis and delineating biliary tree anatomy are frequently associated with tuberculosis and HIV/AIDS.

SURGICAL MANAGEMENT OF NECROTISING ENTEROCOLITIS (NEC): OUTCOME OF PERITONEAL DRAINAGE IN BLOEMFONTEIN ACADEMIC HOSPITALS

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Purpose: Peritoneal drainage for NEC has been used since 1975. It was initially described as a temporary procedure, but is increasingly used as the sole surgical intervention. These patients are very fragile, and the insult of drainage is much smaller than a laparotomy. Management of NEC with drains alone versus drains followed by surgery once the patient is stable, is controversial. We assessed patients treated with peritoneal drainage to determine the outcome and to see how many needed definitive surgery afterwards.

Methods: Case records of 29 patients in need of surgical treatment over the past five years were retrospectively reviewed.

Results: Three were taken to theatre directly. In 26, a 6 mm pencil drain was placed in each lower quadrant. Four patients died – 2 before any further intervention and 2 after laparotomy. Of the remaining 22, 11 needed no further surgery. In the remaining 11 the indication for surgery was as follows: worsening of general condition 9, resection of stenotic areas established on contrast enema 1, persistent enteric effusion 1, persistent enteric fistula 1.

Conclusion: 50% of our NEC patients requiring surgical intervention and treated with peritoneal drainage did not need any further surgery. This is in keeping with other authors (27 - 46%). In 9% an emergency was turned into an elective operation on a healthy baby. Although big randomised, controlled studies are still pending, the outcome of this retrospective review emphasises the potential efficacy of peritoneal drainage in the treatment of NEC.

INTRA-OPERATIVE CHOLANGIOGRAPHY USING THE KUMAR CHOLANGIOGRAPHY CLAMP DURING LAPAROSCOPIC CHOLECOSTOMY AT DR GEORGE MUKHARI HOSPITAL

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Aim: Intra-operative cholangiography is an important tool in evaluating patients with suspected cholecocolithiasis and delineating biliary tree anatomy during laparoscopic cholecystectomy. This study investigates the use of the Kumar cholangiography clamp as a rapid and safe cholangiography clamp that can be used to provide intra-operative cholangiography during the procedure. The aim of this study is to provide intra-operative cholangiography to allow performance of an intra-operative cholangiogram using a custom-made needle catheter. The cholangiogram is taken prior to division of the cystic duct. Six patients in whom laparoscopic cholecystectomy was indicated for symptomatic cholelithiasis were selected for the study.

Methods: The Kumar cholangiography clamp is designed to allow performance of an intra-operative cholangiogram using a custom-made needle catheter. The cholangiogram is taken prior to division of the cystic duct. Six patients in whom laparoscopic cholecystectomy was indicated for symptomatic cholelithiasis were selected for the study. A cholangiogram was taken using a standard X-ray plate and a portable machine after injection of 20 ml of dilute Urografin via the catheter. Cholangiography was performed after completion of anatomical dissection of Calot's triangle and after the cystic artery had been divided.

Results: The six patients selected were all female. One patient had presented with acute acalculous cholecystitis and 1 had previously been admitted with an episode of biliary pancreatitis. The other 4 patients had presented with attacks of acute cholecystitis. The mean age was 37 (range 24 - 66). Cholangiography was performed after dissection of Calot’s triangle and identification of the cystic duct and artery. In 4 of the 6 cholangiograms flow of contrast to the duodenum was visualised. In 2 of the 6, the common bile duct and pancreatic ducts were visualised adequately. The volume of contrast injected as well as the taking of a single cholangiography film may have affected the efficacy of the technique.

Conclusion: The Kumar cholangiography clamp has the potential to allow safe and effective intra-operative cholangiography. Refinements in technique and the use of intra-operative X-ray screening may significantly improve efficacy.
Background: Urban trauma centres in South Africa treat many patients with abdominal gunshot wounds. The aim of this prospective, ethically approved study was to determine the unnecessary laparotomy and mortality rates in these patients.

Patients and methods: The study period was from 1 April 2004 to 31 December 2008. Laparotomy was performed for diffuse peritonitis and haemodynamic instability, and those failing abdominal observation. Stable patients with no tenderness or tenderness confined to the wound or wound tract underwent serial abdominal examination. Patients with non-acute abdominal findings with haematura underwent CT scanning. Patients with a suspected right upper quadrant bullet trajectory and/or localised right upper quadrant tenderness suggestive of an isolated liver injury also had a CT scan. An unnecessary laparotomy was defined as negative where no intra-abdominal injuries were found, and non-therapeutic was defined as one where an injury was found but did not require any intervention.

Results: During the study period 1 030 patients with AGSW were seen. Of these, 30 (2.9%) died in the emergency room before reaching the OR. 737 (71.6%) had immediate indication for laparotomy and of these, there were 65 (6.8%) deaths. The unnecessary laparotomy rate among patients undergoing immediate laparotomy was 19 (2.5%). Two hundred and sixty-three (26.3%) patients were selected for non-operative management (NOM), of which there were 15 (5.3%) who failed NOM. There was 1 mortality in the NOM group – this was unrelated to AGSW with postmortem findings confirming a massive pulmonary embolism.

Conclusion: NOM managed in our centre has a low mortality and low unnecessary laparotomy rates. Selective NOM of AGSW is safe.

The study period was from 1 April 2004 to 31 December 2008. Patients were included if they had an abdominal gunshot wound (AGSW) and were managed in the urban trauma unit of a metropolitan hospital in South Africa. The primary outcome measure was the rate of unnecessary laparotomy and mortality. The study was approved by the institutional ethics committee. A total of 1 030 patients with AGSW were seen during the study period. Of these, 30 (2.9%) died in the emergency room before reaching the operating room (OR). 737 (71.6%) patients had immediate indication for laparotomy and of these, there were 65 (6.8%) deaths. The unnecessary laparotomy rate among patients undergoing immediate laparotomy was 19 (2.5%). Two hundred and sixty-three (26.3%) patients were selected for non-operative management (NOM), of which there were 15 (5.3%) who failed NOM. There was 1 mortality in the NOM group – this was unrelated to AGSW with postmortem findings confirming a massive pulmonary embolism.

Conclusion: NOM managed in our centre has a low mortality and low unnecessary laparotomy rates. Selective NOM of AGSW is safe.

CAN S100B ASSIST IN ELIMINATING PATIENTS WITH TRAUMATIC BRAIN INJURY THAT REQUIRE NO FURTHER INVESTIGATION WITH CT SCAN?: PILOT STUDY

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Introduction: S100B protein is most abundant in brain tissue. It is released during trauma and remains elevated in serum for up to 12 hours post injury. Literature suggests correlation of S100B protein with the severity and outcome of TBI. CTB scans are not available in all hospitals managing acute TBI. Selective NOM of AGSW is safe.

Hypothesis: We hypothesise that S100B protein can select out for patients with minor head injuries, who will require no further CTB investigations and can therefore be managed conservatively.

Method: Prospective observational study over 6-month period. Patients with TBI who were entered into the study. All patients had a CT of the brain. Data analysed include demographics, GCS, clinical findings, CTB findings, S100B protein levels.

Results: Of the 49 patients recruited for the study, 47 were male. Thirty-two (65%) patients had GCS of 13 - 15, 4 had 9 - 12 and the remaining 13 had 3 - 8. Skin/soft-tissue trauma was the most common associated injury. Concussion was diagnosed in 29 patients, whereas TBI with bleeds was noted in 21 patients (median S100B protein was 1.25 μg/l and 1.86 μg/l respectively: p-value 0.375). Seven patients had raised ICP on CTB. Three patients had non-traumatic brain lesions (S100B 2.52 μg/l).

Conclusion: There was no correlation between the level of S100B protein and the severity of head injury on CTB. S100B protein did not select out minor head injuries that can be safely managed without a CT scan or need to refer to neurosurgical team.

AN AUDIT OF FAILED SELECTIVE CONSERVATIVE MANAGEMENT

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Selective non-operative management based on clinical assessment has been shown to be generally safe approach in the management of penetrating stab wounds of the torso. However, there will be a subset of patients who fail selective conservative management. This audit focuses on the patients who fail selective conservative management.

Methods: The metropolitan surgical service in Pietermaritzburg covers three hospitals. At the weekly metropolitan morbidity and mortality meeting all trauma patients are reviewed. All cases of failed selective non-operative management of penetrating abdominal stab wounds are discussed. Failed non-operative management is defined as the failure to predict the need for operative exploration within 24 hours of admission. If repeated clinical examination accurately predicts the need for exploration within this time period this is not classified as failed non-operative management.

Results: A total of 340 patients with a penetrating anterior abdominal stab wound were managed over the 2-year period under review. A total of 182 (51%) of these patients were subjected to mandatory laparotomy. Of these mandatory laparotomies, 98% were positive. The remaining 148 (44%) patients were observed. Of the 148 observed patients a total of 24 (16%) subsequently underwent surgery. A total of 13 patients were only taken to surgery after 24 hours of observation. In this group of 13 patients the average delay between admission and recognition of injury was 40 hours. There were 6 gastric injuries, 1 pyloric and 1 pancreatic injury, 6 gallbladder injuries, 1 liver, 1 colon and 2 small-bowel injuries. There were no deaths. Nine patients recovered with no additional morbidity. In the remainder, morbidity included relaparotomy (1), open abdomen (3), renal failure (1) and prolonged stay in ICU (3).

Conclusion: Clinical assessment accurately predicts the need for urgent laparotomy following a stab wound to the torso. In patients who do not meet the indications for urgent laparotomy and who are subjected to conservative management, 20% will come to surgery. However a significant number will only come to surgery after more than 24 hours of observation. There appear to be particular anatomical sites and structures that are prone to error.

A RETROSPECTIVE STUDY OF PANCREATIC TRAUMA AT THE CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL TRAUMA UNIT

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Introduction: Pancreatic injuries are uncommon but remain a diagnostic and therapeutic challenge with high morbidity and mortality.

Aim: To re-evaluate factors influencing outcomes of pancreatic injury at an urban trauma unit.

Methods: Retrospective review of prospectively collected data for pancreatic injury from June 2005 to April 2009. Data included age, gender, mechanism of injury, Injury Severity Score (ISS) and NISS, systolic BP on admission, indications for urgent laparotomy and who are subjected to conservative management, complications and mortality.

Results: Ninety-four (94) patients with mean age 30 years were evaluated. GSW were 35 (38%), stab 31 (33%), and blunt 28 (29%). Minor pancreatic trauma (grade I-II) and major (G III-V) were 37% and 57% respectively. ISS ranged from 4 to 75 (mean 24). Intra-abdominal associated injuries were 73 (71.6%) and non-therapeutic was defined as one where an injury was found but did not require any intervention.

Conclusion: The majorities of injuries were due to penetrating trauma. A significant number of patients had concomitant intra-abdominal injuries. Mortality correlated with haemodynamic instability, grade of pancreatic injury and presence of a concomitant intra-abdominal injury.

Fig. 1. Associated injury. Fig. 2. Site of death.
Cardiac trauma is still associated with significant mortality. Penetrating trauma remains the common mechanism, with poorer outcomes in GSW injuries, and/or patients presenting in extremis.

**Aim:** Audit the outcomes of penetrating cardiac trauma in patients presenting at the Charlotte Maxeke Johannesburg University Hospital Trauma Unit.

**Method:** Retrospective analysis of electronic trauma data and clinical notes over a 3-year period. Data included demographics, injury patterns, haemodynamic status on arrival, ISS, NISS, ISS PS (percentage survival), NISS PS, in-hospital death and mortality outcomes. Survivors’ physiological scores were compared with non-survivors.

**Results:** Forty-five (45) patients presented to our unit, 3 of whom were female. Median age was 28 years. There were 41 stabs and 4 GSW. Median RTS of 5.6, ISS 25, NISS 34.5 with calculated survival of 92% and 44% by ISS and NISS respectively. Only 15 patients were stable on arrival. The right ventricle was the commonly injured chamber (21/45), followed by the left ventricle (15/45). Thoracotomy was performed in 24 patients and sternotomy in 19. Survival was 30/45 (66%) overall, 29/41 (71%) in stabs, and only 1/4 (25%) in GSW. Survivors versus non-survivors had ISS PS of 96 v. 22.5%, and NISS PS of 92.5 v. 4%. Complications included wound sepsis in 6 patients and pneumonia in 1.

**Conclusion:** Mortality remains high in penetrating trauma. Haemodynamic instability and GSW were associated with poorer outcomes.

**EULICIDATION OF ARGinine UPTAKE BY ENDOTHELIAL CELLS**

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Arginine is a constituent of proteins as well as the precursor of nitric oxide (NO), creatine and creatinine, and with glumaine regulates the availability and concentration of nitrogen in the body. Uptake of arginine by endothelial cells regulates NO production and is reported to be mediated by at least 2 transporters, one of low capacity/high affinity and the other of high capacity/low affinity.

**Methods:** Simultaneous uptake of molecules follows Michaelis-Menten kinetics:

\[
V = \frac{V_{\text{max}} \cdot [S]}{K_m + [S]},
\]

where \( V \) = uptake velocity, \( S \) = substrate concentration, \( V_{\text{max}} \) = maximum velocity of uptake and \( K_m \) = [S] at \( V = V_{\text{max}}/2 \) of the transporters a and b.

In the presence of inhibitors (I) the \( K_m \) term includes an inhibition constant (K) which then becomes \( K_m(1 + [I]/K_i) \) if the inhibitor competitively inhibits uptake. The above equation then has 6 unknowns and reported methods to determine the kinetics of uptake are not clear. Some studies subtracted the linear uptake (transport by diffusion) noted at supra-physiological concentrations (>1 500 μmol/l), assuming that this occurs at all substrate concentrations. The frequently used method of Deves et al. (1992) assumes that the type of inhibition of both transporters is identical at all substrate and inhibitor concentrations.

We determined uptake of 14C-labelled arginine by endothelial cells in the presence of unlabelled arginine (Nel et al, 2008) and/or an inhibitor, leucine. After correcting for isotope dilution (assuming that labelled and unlabelled arginine were taken up identically), the type of inhibition at the various concentrations of I and S, were determined using the reciprocals Linear-Burke plot (1/v. 1/[S]) or by plotting 1/v. 1/I. In addition the 6 kinetic constants were simultaneously determined by minimising differences between experimental data points and the theoretical curve (competitive/non-competitive inhibition) using EXCEL Solver (Microsoft Corp, least-squares method).

The Linear-Burke plot revealed that arginine uptake was clearly biphasic above and below 100 μmol/g (approximately physiologically concentrations). At physiological concentrations there was no evidence of linear uptake by diffusion, which would be suggested by curvature of the reciprocal plot. However, when the calculated kinetic constants were substituted into the equation (above), the calculated calculated velocity was much greater than that experimentally determined. Leucine competitively inhibited arginine uptake by endothelial cells only when [arginine] ≤ 100 μmol/l and [leucine] > 100 μmol/l.

There appears to be interaction between the transporters, or they operate independently of each other. The assumptions reported in the literature that a) uptake of arginine by diffusion occurs at physiological concentrations and b) the inhibition of arginine uptake by endothelial cells is identical at all concentrations of arginine substrate and/or leucine inhibitor concentrations, are not correct.


**FASTING PLASMA ARGinine CONCENTRATIONS AND AMBULATORY BLOOD PRESSURES**

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Department of Surgery, University of the Witwatersrand, and Department of Pharmacology, University of Pretoria

**Introduction:** Stroke, end-stage renal failure and heart failure are the consequences of elevated blood pressures which afflict the African community far more than other racial groups. Arginine is the precursor to the arterial vasodilator nitric oxide (NO), a key cellular messenger and mediator of a host of physiological functions. Although supplementation with arginine is known to reduce blood pressure, there have been several reports, including our own study, demonstrating elevated fasting plasma arginine concentrations in patients of African ancestry with hypertension. This suggests that arginine is available but is either not available for NO formation or the NO formed is degraded or cannot mediate vasodilatation. There are a few baseline data, both locally and internationally, on fasting plasma arginine concentrations and whether these affect ambulatory blood pressure profiles.

**Methods:** 24-hour ambulatory blood pressures (ABPM) were measured in consenting participants recruited from clinics in the Johannesburg area. Fasting blood samples were obtained and frozen until analysed by HPLC/mass-spectrometry.

**Results:** Arginine concentrations were elevated in subjects with hypertension and correlated with average diastolic pressures, particularly night-time DBP (r=0.280, p<0.05). In males of BMI < 30 kg/m², arginine correlated with both night-time diastolic (r=0.461, p<0.005) and systolic pressures (r=0.420, p<0.005). These data are similar to data reported in the literature. Re-analysis of the data, dichotomising by the median arginine concentration (56 μmol/l), showed differences in the ABPM profile pattern between the arginine groups.

**Conclusion:** Plasma concentrations of the NO precursor arginine are elevated in black South Africans with hypertension and correlated with average night-time blood pressure, particularly in men of lower BMI. As fasting arginine concentrations were elevated in black South African subjects with hypertension, further studies are needed to determine whether decreased arginine uptake into endothelial cells or NO production/availability contributes toward the increased blood pressure in this high-risk population. ABPM profile patterns differed between study participants with higher and lower arginine concentrations.

**THE EFFECTS OF ARGININE AND HOMOCYST(E)INE ON NITRIC OXIDE PRODUCTION IN ECV304 AND HUVEC VASCULAR ENDOTHELIAL CELLS**

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**Introduction:** Nitric oxide (NO) is known to play a crucial role in arterial vasodilation. Reductions in vasodilation can arise from a deficiency of arginine (arg), the precursor of NO, and/or an excess of Hcy which inactivates NO. As arg and Hcy share the same membrane transporter (y+ cationic amino acid transporter, Foreman et al. 1980 and 1982), the degree to which they impact upon each other and hence influence the NO available for vasodilation needs to be explored. To address this issue we have previously performed studies in a transformed human umbilical vein endothelial cell line, ECV304 (ECVs), as these cells are immortal. However, whether these transformed cells (ECVs) are appropriate to use as a model of endothelial cells remains to be determined. Hence we need to investigate and compare the impacts of arg and Hcy on NO production in ECV304 cells and non-transformed primary endothelial cells (human umbilical vein endothelial cells, HUVECs).

**Aim:** The aim of this study was therefore to compare the effects of arg and Hcy on NO production in the transformed ECV304 cell line versus in the primary HUVEC cells.

**Materials and methods:** Cells were plated out in six well cell culture plates. The cells were incubated at 37 degrees centigrade at 5% CO₂ for 24 hours in a cell culture media. Culture media were replaced with test media for 24 hours. Test media were replaced with phosphate buffered saline containing various concentrations of either arg or Hcy. Production of NO was measured using a fluorescent probe and a fluorometer.

**Results:** In both ECVs and HUVECs, increased arg concentrations resulted in an increase in NO production rapidly over time. Greater concentrations of
NO production were induced by HUVECs compared with ECVs. In both types of ECs, NO production was found to be optimal at 100 μM arg, which is in keeping with the normal serum concentration of arg. Moreover, Hcy rapidly inhibited the production of NO in both EC types, even at low Hcy concentrations.

Conclusions: These findings indicate that although the ECVs are a transformed cell line, they are a good model for investigating the effects of arg and Hcy on NO production in endothelial cells.

ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP): A COMPARISON OF TWO PROSPECTIVE AUDITS

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Objective: An audit was established in December 1995 by the author to determine the pathology found at ERCP and the success and complications of ERCP and endoscopic sphincterotomy. In November 2003 results of the audit were reviewed and published, and the conclusion reached was that ERCP should be used for therapeutic purposes only and less invasive modalities (e.g., magnetic resonance cholangiography) for diagnosis. We did a follow-up audit from January 2002 to December 2008 to compare the pathology, success and complications of ERCP and therapeutic interventions (sphincterotomy, stone extraction, stent placement).

Study design: The study is a prospective audit of data for ERCPs performed between 1 January 2002 and December 2008 and a comparison with the previous audit (December 1995 until November 2003).

Results (results of the previous audit in brackets): The author performed 1,224 (1,991) ERCPs on 1,085 (1,498) patients, an average of 15 (22) per month. The indication for the procedure (sphincterotomy, stone removal, or stent placement) was 86.5% (55%) and diagnostic in 13.5% (45%) of patients. Pathology found included gallstone disease 52% (39%), malignant disease 22.5% (19%), pancreatitis 3.8% (12%), bile duct injuries 6.5% (5%) and other diseases 8.2% (8%). The findings on ERCP were normal in 7% (17%) of patients. ERCP was successfully performed in 95% (86%) of patients, stone extraction was successful in 92% (81%) and stent placement was successful in 88% (59%). Complications occurred in 2.6% (2.8%) of procedures, and they were pancreatitis 0.9% (1.1%), bleeding 0.3% (0.9%), perforation 1.1% (0.7%), aspiration 0.16% (0). Two (3) patients died due to a complication (0.16% vs. 0.19%).

Conclusion: Fewer ERCPs were performed compared with the previous audit, postulating that these were for therapeutic purposes and MRCP was used for diagnosis. The success rate went up with regard to stone extraction and stent placement. The complication rate remained the same. ERCP remains a successful and safe procedure for therapeutic purposes.

ANTIBIOTIC PROPHYLAXIS FOR PATIENTS UNDERGOING ELECTIVE ENDOSCOPIC RETROGRADE CHOLANGIO-PANCREATOGRAPHY: A META-ANALYSIS

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Background: The use of prophylactic antibiotics before endoscopic retrograde cholangiopancreatography (ERCP) is recommended by all major international gastro-enterological societies, especially in the presence of an obstructed biliary or pancreatic system. Their use is intended to decrease or eliminate the incidence of septic complications following the procedure (cholecystitis, cholangitis, and sepsis). Whether this is the case is debatable.

Objectives: To determine whether or not prophylactic antibiotics before ERCP for patients presenting with the disease state (biliary obstruction, sphincterotomy, stone removal, or stent placement) is warranted. A systematic literature search was performed to determine whether prophylactic antibiotics are necessary for the prevention of postoperative cholangitis, cholecystitis, and sepsis. A meta-analysis was done to determine whether prophylactic antibiotics are necessary to prevent cholangitis.

Methods: All studies included in the review were meta-analyzed using the random effects model. The chi-square test was used to assess heterogeneity across the studies. Assessments of publication bias were not possible because of the number of studies included in this review. The pooled odds ratios (OR) were calculated using the Mantel-Haenszel method. An OR of less than 1 indicates a reduction in risk (prophylactic antibiotics), whereas an OR of greater than 1 indicates an increase in risk. Several subgroups were formed based on the antibiotic regimen used, the indication for the procedure, and the number of patients included in each study. A subgroup analysis was performed to determine whether prophylactic antibiotics were necessary for the prevention of postoperative cholangitis, cholecystitis, and sepsis. A meta-regression was performed to determine whether the number of patients included in each study, the indication for the procedure, and the antibiotic regimen used influenced the results of the study.

Results: A total of 11 studies, involving 1,106 patients, were included in this review. The incidence of postoperative cholangitis, cholecystitis, and sepsis was significantly reduced in patients who received prophylactic antibiotics (OR: 0.4, 95% CI: 0.2-0.8). In addition, a meta-regression analysis revealed that the number of patients included in each study, the indication for the procedure, and the antibiotic regimen used influenced the results of the study.

Conclusion: Prophylactic antibiotics are necessary for the prevention of postoperative cholangitis, cholecystitis, and sepsis. The incidence of postoperative cholangitis, cholecystitis, and sepsis was significantly reduced in patients who received prophylactic antibiotics. In addition, a meta-regression analysis revealed that the number of patients included in each study, the indication for the procedure, and the antibiotic regimen used influenced the results of the study.

PREVALENCE OF HELICOBACTER PYLORI INFECTION IN PATIENTS WITH BENIGN PEPTIC ULCER DISEASE AT DR GEORGE MUKHARI HOSPITAL

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Aim: Helicobacter pylori infection is recognised as a significant aetiological factor in the pathogenesis of peptic ulcer disease. This study investigates the prevalence of infection in this patient group.

Methods: Patients with peptic ulcer disease diagnosed at endoscopy from the period July to October 2008 were screened for H. pylori using the CLO test method. All patients were treated with triple therapy consisting of amoxicillin (1 g PO 8-hourly), clarithromycin (500 mg PO 8-hourly) and omeprazole (20 mg PO daily). Patients with suitably completed endoscopy reports detailing the CLO test result as well as documentation of appropriate risk factors (smoking/NSAID use) were selected for analysis.

Results: Thirty-five patients (female/male ratio of 1:1.3) were studied. The mean age was 49 (range 19 - 88). Thirty-four of these patients were black. H. pylori was present in 7 out of 14 patients with duodenal ulcers versus 7 out of 19 patients with gastric ulcers. Twenty-one patients had a history of NSAID use. Ten of these patients were H. pylori positive. Fifteen patients gave a history of smoking. Five of these patients were H. pylori positive. In total 15 of the 19 patients tested H. pylori positive.

Conclusion: 1) These preliminary data suggest that empiric treatment for H. pylori in patients with peptic ulcer disease at Dr George Mukhari Hospital is not justified. 2) Further studies are required to assess eradication of H. pylori and long-term recurrence.

SYMPTOMATIC DIVERTICULOSIS IN JOHANNESBURG

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Aim: To describe the pattern and frequency of symptomatic diverticulosis in an urban South African population.

Methods: A consecutive series from a single hospital in Johannesburg (1994 to 2009), diagnosed endoscopically or radiologically.

Results: 56 patients and 436 diverticula were identified. There were 43 female and 13 male patients. The mean age was 48.1 years (range 14 - 89). The indication for the procedure was diarrhea 27 patients, bleeding 12 patients, pain 7 patients and other 4 patients.

Symptoms: Common presenting symptoms were abdominal pain (69 patients, 85%), rectal bleeding (10 patients, 13%), and diarrhea (4 patients, 5%). The severity of symptoms was mild in 19 patients, moderate in 15 patients, severe in 4 patients, and life-threatening in 5 patients.

Preoperative localization: The preoperative localization of diverticula was determined in 50 patients. The localization of diverticula was most common in the sigmoid colon (64 patients, 79%), followed by the rectum (14 patients, 18%), and the transverse colon (9 patients, 11%).

Conclusion: Diverticulosis in Johannesburg is not an uncommon condition. The majority of patients presented with mild symptoms, and the localization of diverticula was most common in the sigmoid colon.

MANAGEMENT OF LEFT-SIDED COLONIC OBSTRUCTION: AN AUDIT OF A STENT-BASED PROTOCOL

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Introduction: Colonic obstruction is a potentially fatal condition with mortality rates for emergency surgery of 15 - 22%. Since 2006, we have treated left-sided obstructing colon cancers by endoscopic decompression using self-expanding metal stents. The purpose of this study is to determine the safety and efficacy of this management protocol.

Patients and methods: This is a retrospective audit of all patients who presented with left-sided colon obstruction due to adenocarcinoma to the colorectal surgery unit at Groote Schuur Hospital, Cape Town, between January 2006 and April 2009. Data were collected for level of obstruction, extent of disease, indication for stent (palliative or bridge to surgery), length of hospital stay, complications, stoma rate and mortality.

Results: Forty-eight patients presented to the unit during the study period.
Patient records could not be obtained for 1 patient and he was excluded from the study. The level of the obstructing lesion was sigmoid 32, rectosigmoid 14, splenic flexure 5, descending colon 3, ileocelecal anastomosis (recurrence) 2, rectal 1. Stents were successfully placed in 46 of the 57 patients (80.7%). Twenty- one patients (37%) were classified as ‘bridge to surgery’. In 25 patients, the stent served as their definitive palliative treatment. The median length of hospital stay after successful stent placement was 7 days (range 1 - 18). The median hospital stay after failed stent placement was 16 days (range 4 - 46). Of the 11 patients in whom stenting failed, emergency stoma creation was required in 8, 2 underwent emergency definitive surgery without diverting stomas which were deemed unfit for further intervention. Complications of stenting occurred in 6 patients, and 1 of these patients required a permanent colostomy. Four patients (6.8%) died in hospital. No patient died from complications related to stenting.

Conclusion: In our unit, stent placement for malignant left-sided colonic obstruction could be performed safely, with a low mortality and complication rate, and allowed most patients to avoid colostomy.

RADIOGUIDED OCCULT LESION LOCALISATION FOR IMPALPABLE RADIOLOGICAL ABNORMALITIES OF THE BREAST: A PROSPECTIVE STUDY

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Background: Radioguided occult lesion localisation (ROLL) is a new technique for localising and excising clinically impalpable radiological abnormalities for histological assessment. The technique relies on intraluminal injection of a radiolabelled radioactive seed into a colloid and intra-operative use of a hand-held gamma probe to guide the excision.

Aim: The aim of the study was to clinically validate the technique in the Breast Surgery Department at Groote Schuur Hospital. The primary end-point of the study was the accuracy of this technique in removing the suspicious lesion.

Patients and methods: Data were collected prospectively on 71 patients from January 2003 to December 2007. In all patients the abnormality detected either on ultrasound or mammogram was injected with a radiolabelled colloid 1 - 26 hours pre-operatively (mean 18 hours) and removed with a hand-held gamma probe. All specimens were X-rayed to confirm the accuracy of the excision. Patient demographies, clinical and radiological data, operative details, accuracy of localisation, histopathological assessment and subsequent management were recorded.

Results: Accurate removal of the suspicious lesion was confirmed in 70 of 71 patients. One patient required a repeat localisation procedure.

Conclusion: We have found ROLL to be an accurate and easily reproducible technique in localising impalpable radiological abnormalities, which has logistical and practical advantages over other localisation techniques.

THE EARLY MANAGEMENT OF HYPERTRIGLYCERIDAEMIA IN ACUTE PANCREATITIS

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Introduction: The management of acute pancreatitis associated with elevated triglyceride (TG) levels poses unique problems. Insulin dextrose therapy, placement of nasoenteric feeding tubes and percutaneous drainage of the pseudocyst for lowering TG levels. Decreasing the TG levels to below 5.65 mmol/l alleviates the abdominal pain and is purported to improve outcome. We analyse our experience with insulin management in this setting.

Patients and methods: Patients presenting with pancreatitis and hypertriglyceridaemia were assessed. All patients presenting with TGs >10 mmol/l were managed with dextrose and insulin (3 unit insulin to 10 mmold glucose) or 5% dextrose and 10 units of insulin infusion. Patients with TG levels in excess of 10 mmol/l were treated with standard therapy (rpm and intravenous fluid) or 5% dextrose and 10 units of insulin infusion.

Results: In the period June 2003 to April 2008, there were 434 admissions of patients with a diagnosis of acute pancreatitis and 24 (6%) had hypertriglyceridaemia in excess of 10 mmol/l at admission. Standard therapy was used in all patients and in 5 patients it was the sole therapy. Dextrose and insulin infusion was used in 19 cases. Two patients died prior to repeat estimation. On day 3, (32%) of the measured triglyceride levels had fallen below 5.65 mmol/l and on day 5 all had decreased drastically though in 4 (17%) levels remained above 5.65 mmol/l, 1 of these patients died.

Conclusion: Standard therapy was equivalent to the use of dextrose and insulin in the resolution of hypertriglyceridaemia. Our morbidity and mortality is above 5.65 mmol/l; 1 of these patients died.

WHO SHOULD OPERATE ON NEPHROBLASTOMAS? QUESTION STILL NOT SOLVED

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Purpose: Since there had not been a dedicated paediatric surgeon in Bloemfontein until 2003, more or less anyone operated on Wilm’s tumours. In a study done in 2003 we showed that urologists’ patients in our institution did best when compared with outside surgeons and academic, non-paediatric general surgeons. We revisited this scenario and looked at 36 new patients operated on between 2003 and 2007.

Results: We retrospectively looked at 36 patients who had nephrectomies done for nephroblastoma from 2004 until 2007. The relapse and death rate were compared, taking into account the staging of the tumours.

The paediatric surgeons performed 31 nephrectomies and the urologists 5. The spread between stages 1/2 and 3/4 was according to average for the surgeons (76% vs 24%), but favoured the urologists (100% vs 0%). Operation for nephroblastoma was done for a bleeding tumour (urology). The urologists had 1 relapse (20%) and no deaths (0%), while the surgeons had 2 relapses (6%) and 8 deaths (26%) of whom 4 were done by the urologists, we combined the numbers with those from the previous study: the total was now 95. There were 11 (12%) relapses and 20 (21%) deaths.

Conclusion: Our conclusion is that this procedure should be done in a tertiary, academic institution, where all the parameters are controlled. The second observation is that the occasional paediatric surgeon (adult surgeon) should also abstain from this operation and refer the patient to a nephroblastoma surgeon. General paediatric surgeons are concerned: Is it merely a question of who does most?

ABDOMINAL SURGICAL SITE INFECTION RISK FACTORS AND FREQUENCY IN HARARE TEACHING HOSPITALS

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Aim: This study aimed at determining risk factors for surgical site infections and frequency. A cross-sectional survey in Harare teaching hospitals for the period May 2007 to June 2008.

Background: Surgical site infections are among the most common complications in the inpatient surgical population. The associated morbidity and mortality and cost increases hospital cost. Risk factors may be related to age, immunosuppression, wound class, duration of operation, ASA score, prophylactic antibiotics, blood transfusion, use of steroids and smoking.

Materials and methods: A prospective observational study was carried out on 289 patients admitted for elective and emergency abdominal surgery. Patients were followed up for 30 days. Data were collected from postoperative examinations and telephone follow-ups and recorded on data collection sheets. Of 283 patients 141 (49%) consented to be tested for HIV infection. Student’s test, the chi-square test and regression analysis were used for statistical evaluation.

Results: Of the 289 patients in the study group, 232 (81%) were general surgical patients and 53 (19%) were gynaecological patients. There were 158 males (55%) and 127 (45%) females. Operations performed during the day were 199 (68%) and 90 (32%) were performed at night. Elective operations were 55 (19%) and 230 (81%) were emergency operations. Abdominal surgical site infections were detected in 74 (26%) of patients. Wound class, pre- and postoperative blood transfusion, ASA score were associated with SSI (p<0.05). The use of prophylactic antibiotics was associated with reduced rates of infection (p<0.05). The class wound infection rates were as follows: clean 9%, clean-contaminated 24%, contaminated 23% and dirty 44%. Out of 97 tested non-HIV-infected patients 24 (25%) developed SSI. Forty-four patients were HIV infected and 23 (52%) of these developed SSI (p<0.05). Co-morbidity, use of steroids and smoking were not associated with SSI. Superficial infections were 55 (74%), deep infections were 18 (24%) and organ/space infections 1 (2%). The mean time of detection of SSI was 62 days after surgery.

Discussion: Our conclusion is that this procedure should be done in a tertiary, academic institution, where all the parameters are controlled. The second observation is that the occasional paediatric surgeon (adult surgeon) should also abstain from this operation and refer the patient to a nephroblastoma surgeon. General paediatric surgeons are concerned: Is it merely a question of who does most?

PROGNOSTICATION IN MALIGNANT GERM CELL TUMOURS

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Purpose: To assess the prognostic factors (tumour markers, histological type, stage and age) in malignant germ cell tumours in childhood.

Methods: A retrospective study of 49 patients was done. The histological type, tumour markers, site and age were analysed based on the staging, and stage was analysed based on on the classification.

Results:

1. Tumour markers: 37 patients had tumour markers (AFP, βHCG) in various combinations done. No (0) stage I or II had any rise in tumour marker. 68% of stage III had a rise in one or more tumour markers, as did 60% of stage IV.

2. Histological type: 13% of immature teratomas were stage III (the rest were stage I or II stage); 5% of endodermal sinus tumours were stage I and 40% stage II; 20% stage IV; 18% of dysgerminomas were stage I, 9% stage II, 55% stage III and 18% stage IV.

3. Overall, 28% gonadal tumours were stage I, 4% stage II, 48% stage III and 17% stage IV; 11% of sacral tumours were stage III and 22% were stage IV – the rest were not staged.

4. Age: 34 patients’ stage was known. Their ages ranged from less than 1 year to 14 years, mean 6.9 years. There was no correlation between age and stage.

5. In our unit, stent placement for malignant left-sided colonic obstruction could be performed safely, with a low mortality and complication rate, and allowed most patients to avoid colostomy.

6. We have found ROLL to be an accurate and easily reproducible technique in localising impalpable radiological abnormalities, which has logistical and practical advantages over other localisation techniques.
Devastating cyto-destructive effects of HIV disease.²

where there were large areas of smooth intact membranes with minimal distur-

pared. This observation suggests that HIV does not impact on the fragility of

networks from the control, untreated and treated HIV patients were com-

Results:

by adding human thrombin to the platelet-rich plasma. After the fibrin clots

Method:

the immunomodulator, Canova, compared with control individuals and HIV

on the ultrastructural morphology of the platelets from patients treated with

Aim:

showing a progressive resistance to the available antiretroviral medication,

Pretoria

Departments of Anatomy and Surgery, School of Medicine of the University of

R. C. Franz

et al.

MUCIN EXPRESSION IN CYSTIC NEOPLASMS OF THE PANCREAS

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Introduction: Mucins are both secreted and form gels on epithelial surfaces or

membranous, whereby they are involved in the apical polarity of cells that line

ducts and tracts. MUC4, a trans-membrane mucin, is a diagnostic marker of

adenocarcinoma of the pancreas.

Aim: To determine the expression of mucins in mucinous and serous cystic

neoplasms and solid pseudopapillary neoplasms of the pancreas.

Method: We investigated mucin expression in solid pseudopapillary neoplasm,
mucinous cystic neoplasm and serous cystic neoplasms. Formalin-fixed par-

affin-embedded tissues were retrieved from the archives of the Division of

Anatomy, George Square Hospital. H&E stains and histochem-

istry for sulphated and acidic (HID/AB) and neutral (PAS/AB) mucins were

performed. Mucin expression was detected with antibodies to MUC1, MUC1

core, MUC2, MUC4, MUC5AC, MUC5B and MUC6.

Results: Eleven of the 17 cystic neoplasms showed a predominance of sialo-
mucin. Histochromically the solid pseudopapillary neoplasm showed no mucin

positivity. Intracytoplasmic MUC5AC was seen in the majority of mucinous

cystic neoplasms. MUC5B, MUC1 and MUC1c were seen in a minority of

cases with the latter two staining the membrane. The solid pseudopapillary and

serous cystic neoplasms did not show any mucin expression by histochemistry.
The serous neoplasms by contrast showed predominantly membranous expres-

sion of MUC1 and MUC1c. The comparison of MUC1 and MUC1c in muci-

nous and serous cystic neoplasms revealed a consistent higher expression in

the serous neoplasms. There was no expression of mucins in the papillary

cystic neoplasms.

Conclusion:

1. The solid pseudopapillary neoplasm is consistently negative for mucins.

2. The serous neoplasms had a consistently higher expression of MUC1 and

MUC1c than the mucinous neoplasms.

INVESTIGATING THE ULTRASTRUCTURE OF PLATELETS OF HIV PATIENTS TREATED WITH THE IMMUNO-REGULATOR, CANOVA: A QUALITATIVE SCANNING ELECTRON MICROSCOPY STUDY

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Introduction: In view of the well-documented evidence that HIV strains are

shifting, from the available antiretroviral medications, researchers have turned to the possible use of alternative drugs such as immu-

nomodulators to enhance the immune system of patients infected with HIV.

We now being studied as a possible prognosticator.

INVESTIGATING THE ULTRASTRUCTURE OF PLATELETS OF HIV PATIENTS TREATED WITH THE IMMUNO-REGULATOR, CANOVA: A QUALITATIVE SCANNING ELECTRON MICROSCOPY STUDY

et al.

The incidences of renal cell carcinoma (RCC) seems to be increasing, partly

as rates of oesophageal cancer increase around the world so does the prevalence of smoking. It is increasing in South Africa at an alarming rate.

We present a retrospective study from Tshwepong Hospital, a secondary hospital in South Africa.

Conclusions:


ULTRASTRUCTURAL APOPTOTIC PLATELET AGGREGATES AND DEFECTS IN FIBRIN NETWORKS IN A PATIENT WITH RENAL CLEAR CELL ADENOCARCINOMA

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The incidence of renal cell carcinoma (RCC) seems to be increasing, partly as a result of incidental detection of small tumours, but despite new technol-

ogy and management options, the mortality rate is still 40% (Montague et al, 2003). Most of the important prognostic features take account of tumour-related factors. Thrombocytopenia has been recently suggested to indi-

cate a poor prognosis in patients with various malignancies including RCC (Bensalah et al, 2006). The question arose whether platelet morphology could provide information on the implications on thrombocytopenia. In this paper we report on a case with RCC, thrombocytopenia and apopotic circulating platelets.

A 47-year-old man presented with weight loss, haematuria and a left renal mass, which was a clear cell renal carcinoma with multiple ly, pulmonary and bone metastases. He also had thrombocytopenia (41×10^9/L). Fibre clot was prepared for scanning electron microscopy (SEM) from blood collected from the patient and 3 controls and examined on a Zeiss Ultra 55 FEG SEM.

The platelet aggregates contained multiple breakages in the platelet mem-

brane, showing a pock-marked, creased, prune-like appearance as opposed to the smooth, rounded globular membrane of the controls. Overall, the ultra-

structural morphology of the fibrin-bound platelet aggregates had a disrupted cytoskeletal architecture which appeared to be similar to the apoptotic changes of programmed cell death as described by Bornman et al (2007) and Pretorius et al (2008). In view of increased platelet activation associated with RCC, the apoptotic platelets might represent platelets after activation and aggregation, contraction and secretion had occurred. These features may also be a distinct ultrastructural haematological manifestation of a previously unidentified para-

neoplastic syndrome. The use of apoptotic platelets in patients with RCC is now being studied as a possible prognosticator.

IS OSEOPHAGEAL STENTING THE ANSWER? A REPORT FROM A SECONDARY HOSPITAL IN THE DEVELOPING WORLD

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Introduction: As rates of oesophageal cancer increase around the world so do studies evaluating the best method of palliation, given the poor outcomes asso-

related with this malignancy. It is increasing in South Africa at an alarming rate. Most of these studies have taken into account the social and economic constraints associated with the developing world. We present a retrospective study from Tshwepong Hospital, a secondary hospital in South Africa.

Patients and methods: We retrospectively reviewed the data from 29 patients between February 2005 and January 2008. All patients presented with inop-

erable oesophageal cancer and were palliated with either stenting (N=12) or radiotherapy (N=12). We compared number of admissions, length of hospital stay and time from first seen to intervention as primary outcomes. Secondary outcomes were time from first seen to biopsy, procedure-related complications and median survival following initial intervention.

Results: There was no significant difference between the two groups with respect to age and days to biopsy: There was however, a significant difference in number of admissions, length of hospital stay and days to procedure. There were no major complications reported as a result of brachytherapy. One patient in the stent group complained of chest pain, in one patient there was tumour recurrence requiring restenting, and in one patient the stent migrated, which required endoscopic retrieval. A further patient was excluded from the study because he died in theatre during stenting.

Discussion: There have been studies showing the superiority of brachy-

therapy over stenting with regard to long-term palliation and number of complications. However in our setting, given socio-economic constraints such as problems with follow up, transport and administrative errors, patients were delayed when it came to receiving definitive palliation. Given the short-term survival expected in these patients, stenting may be a more reasonable option than surgery given the decreased time to final intervention and hospital stay in patients with a poor prognosis. Adopting a prognostic score can help in identi-

fying these patients.

FAMILIAL PALMAR-PLANTAR HYPERKERATOSIS ASSOCIATED WITH CARCINOMA OF THE OESOPHAGUS: A REPORT ON THE FIRST SOUTH AFRICAN FAMILY

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Background: Squamous cell carcinoma (SCC) of the oesophagus is endemic among Africans in South Africa and yet to date, no familial association has yet been described for its development. The rare familial palmar-plantar hyperkeratosis (FPPK) or tylosis is the only genetic syndrome that has been described in association with SCC of the oesophagus. Aim: To study the family of an index patient (DM) with palmar-plantar hyper-

keratosis presenting with SCC of the oesophagus.

Method: A family tree and medical history of the family of DM was con-

5. Stage: 100% of stage I are doing well (alive with no relapse); stage II could not be studied (abscended); 21% of stage III died and 50% relapsed; 83% of stage IV died and 17% relapsed.

Conclusions: Tumour markers did not rise with early stages of these tumours. Only stage I and IV had any rise in anyone of the 2 tumour markers done. A firm conclusion cannot be made regarding the histological type, but it seems that endodermal sinus tumours and dysgerminomas tend to be of later stages. Other studies further describe that gonadal tumours may harbour favourable staging and outcome in our study. Also against findings in other studies, age was not a good indicator of prognosis. Staging remains a good prognostic tool in these tumours: 100% survival rate in stage I, the only stage II abscended after 3 years looking well, 21% of stage III died and 50% relapsed, and 83% of stage IV died, while 17% relapsed.
structured by interview of the patient and some living relatives. First-degree relatives were examined for palmar-plantar hyperkeratosis and consenting adults were subjected to upper GI endoscopy and biopsy as necessary.

**Results:** Four asymptomatic members of the family were evaluated clinically and endoscopically. One MS6 had early oesophageal SCC confirmed histologically and another E37 had gastric metaplasia. Both had hyperkeratosis. One teenage girl had hyperkeratosis but normal endoscopy. The 4th adult female had normal skin and endoscopy. Family medical history revealed 3 further members with hyperkeratosis and 2 deaths from possible oesophageal cancer. Our patients have so far declined treatment for the past 18 months despite numerous explanations of the nature of their condition.

**Discussion:** FPPK is a rare familial syndrome associated with SCC of the oesophagus and sometimes of the skin or bronchi. Other features of FPPK include oral leukoplakia and abnormal differentiation of oesophageal epithelium. One member of the study family showed gastric metaplasia. Very few cases have been described in the literature from the UK, US, Australia, Europe and India; some of which could be traced to one family or region. The current study is the first to be reported from an African family and the first in South Africa. Genetic studies on the family are underway.

**Conclusion:** Although FPPK is rare, it has a strong association with SCC of the oesophagus with the risk of SCC of the oesophagus estimated at 95% at age 65 years. It warrants regular screening of all relatives for early detection and treatment of cancers.

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**PHYSIOLOGICAL CHARACTERISATION AND OUTCOMES OF PATIENTS AFTER EMERGENCY ROOM THORACOTOMY (ERT): RETROSPECTIVE REVIEW**

B. I. Monzon Torres, S. H. Israelit, M. S. Moeng, J. Goosen

**Introduction:** ERT is a resource-intensive, high-risk procedure where rapid decision-making is essential.

**Aim of study:** To audit the outcomes of patients who underwent ERT to identify what groups of patients obtained the most benefits from this procedure.

**Method:** Retrospective review of data collected on patients who underwent ERT, between 1 February 2005 and 31 March 2008. Variables include: mechanism of injury, type of injury severity score (ISS), and outcome (30-day hospital mortality).

**Results:** The TU managed 6720 cases of major trauma in study period; 61 underwent ERT (1.31%). Five sub-groups were identified: isolated stab chest (N=19), isolated gunshot chest (GWS) chest (N=6), combined thoraco-abdominal stab (N=9) and GWS chest (N=3); and blunt trauma (N=4). The majority of patients were young healthy males (mean age 29 years). Mortality was high (88.2%), but patients with stab chest trauma seem to fare better than those with combined thoraco-abdominal or sub-diaphragmatic trauma.

**Complications**

- Failed conservative treatment
- Delayed major bleed
- Bile leak
- Death

**INJURY PATTERNS IN FALL FROM HEIGHT (FFH) PATIENTS: OUTCOME STUDY AT THE JOHANNESBURG HOSPITAL TRAUMA UNIT**

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**Introduction:** FFH causes a varied pattern of injury presenting a management challenge to the treating clinician. Outcomes in FFH depend on height, what group of patients sustained injuries, and the consequences of injury.

**Aim:** To analyse the outcome in FFH patients managed in an urban trauma unit.

**Methods:** A retrospective series review of prospectively collected data between January 2005 and September 2008. Data were retrieved from the Trauma Bank at the Charlotte Maxeke Hospital Trauma Unit. Data analysed included age, sex, height fallen, haemodynamic status, injury pattern, ISS and hospital mortality outcomes. ISS was classified into mild (<16), moderate (16 - 24) and severe (>24).

**Conclusions:** Although this series is small, results tend to support the idea that ERT should be reserved for patients with a potential cardiac or pulmonary injury. Ongoing data collection analysis may offer better insight.
The aim of this study was to answer the question: What is the mortality and LD 50 in the 'adult' section of the Pelonomi burns unit? What are the important contributing factors and what strategies are needed to favourably influence our mortality?

Methodology: This was a chart review of 109 patients who were admitted between March and July 2004, 2005 and 2006 and who filled the inclusion criteria. Study permission was obtained from the UOFS ethics committee and the clinical director, Pelonomi Hospital.

Results: 109 patients could be included. There were 26 deaths, yielding an overall mortality of 23.8%. 58% of the patients who died were older than 50 years. Both genders were equally represented. The LD50 was 41% TBSSA and 43.5% deaths occurred in the 1st 7 days (the resuscitation - post-resuscitation phase).

Conclusion: Our mortality rate is unacceptable high but is similar to that reported from other lower-income countries. We should manage our days 0 - 7 more effectively and should recognise that the older patient is exceptionally vulnerable to burn death.

CANCANEAL X-RAYS: SHOULD THEY BE DONE ROUTINELY IN FALL FROM HEIGHT (FFH) PATIENTS?

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Introduction: FFH is a multisystem pattern of injury with head injuries being the most common in our series. Mortality was highest in the patients with an ISS >24. Patients who presented with pre-hospital and in-hospital hypotension (systolic <90 mmHg) were associated with a worse outcome. A GCS <9 in hospital was associated with a worse outcome.

Methods: A retrospective analysis of prospectively collected data between January 2005 and September 2008. All patients who fulfilled the criteria were classified as priority 1 patients and were resuscitated according to the unit protocol. Calcaneal fractures were confirmed in 37 (16.4%) of the 225.

Conclusions: Our protocol of selective calcaneal radiological investigation is safe; however, it is still associated with a low yield of 1:6.

THE ROLE OF A REPEATED ABDOMINAL SONOGRAPHY IN BLUNT INJURY

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Introduction: FAST may enhance clinical examination of stable blunt trauma patients.

Aims: To investigate the accuracy of repeated-delayed FAST, in the subgroup of stable blunt trauma victims, compared with primary normal FAST

Methods: Retrospective review of prospectively inserted data (Feb 2005 - Feb 2009) of 482 patients who sustained a fall from height. Data collected: demographics, GCS, HR, RR, sBP, RTS, AIs, FAST, repeated FAST, CT scans and diagnosed injuries.

Results: 156 stable patients with GCS 15. Mean age 30 years. Average admission HR, sBP and RR were 81 b/min, 127 mmHg and 20/min respectively. Average RTS and AIs were 7 and 5 respectively.

Conclusions: FAST is a reliable screening tool for stable blunt injury. Negative repeat FAST is sufficient to rule out significant abdominal injury.

DEVELOPING THE ELECTRONIC OPERATIVE RECORD CAPABLE OF GENERATING A SURGICAL TRAINEE LOGBOOK

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Background: Logbooks form an important part of the trainee surgeon's personal portfolio. Currently these logbooks are compiled by trainees in a variety of formats. No electronic national database of surgical trainee logbook data exists. This study examines the electronic operative record as a possible source for automatic logbook generation.

Method: A minimum dataset for operative notes was defined, and a database and user interface developed. The program was deployed on a computer in the operating theatre and operation notes were entered by registrars and consultants following surgery. A printed copy was produced for the patient's chart. Data entry was validated during input to ensure high-quality data. Operative records for an index operation, using the Royal College of Surgeons (RCS) standards, were compared pre- and post-electronic operative record. User satisfaction using an electronic system was measured using the standardised QUIS questionnaire. Trainee logbooks and consolidation sheets were automatically generated and measured against published CMSA standards for trainee logbooks.

Conclusions: Electronic operative notes were 99% compliant to RCS standards as opposed to 71% for paper records. The questionnaire for user interaction satisfaction (QUIS) scored an average of 7.23 out of 9. Trainee logbooks were automatically generated in standard format and consistently matched the standard as set out by the CMSA.

SURGICAL REGISTRAR PORTFOLIOS: WHAT INFORMATION DO WE GET?

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Introduction: In 2002 the Colleges of Surgeons of the CMSA introduced the portfolio as a prerequisite for FCS candidates. The portfolio is intended to

ABSTRACTS

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record academic progress, operative experience, and formative assessment during training. The prescribed format for the portfolio is detailed on the CMSA website.

**Methods:** 24 recent portfolios were evaluated in terms of candidate demographics, layout, duration of logbook and exposure to fundamental emergency and elective procedures.

**Results:** No two logbooks were presented in the same manner. The length of training varied from 40 to 77 months. Only 7 candidates complied with College regulations by submitting both rotation and overall consolidation sheets. Procedure exposure according to the categories: assistant, supervised surgeon, unsupervised surgeon were not accurately recorded. Hence total exposure in all categories is presented. The procedures performed expressed as mean and (range) were comparable between all centres for emergency operations: laparotomy 148 (66 - 298), appendicectomy 31 (17 - 83). For elective operations a lot of variance was found: open cholecystectomy 13 (1 - 30), thyroidectomy 11 (0 - 30), with 6 individuals being involved with less than 5 cases in either of these operations. Laparoscopic surgical experience was confined to cholecystectomy, with a mean of 21 cases (9 - 63). The mean for gastroscopy was 84 (0 - 441), with 6 individuals being involved with less than 5 endoscopies.

**Conclusions:** The format of the portfolios is not standardised. Candidates were not diligent in their data capture regarding their role in the procedure. Only one-third presented consolidated sheets in the prescribed format. FCS candidate portfolios need better regulation and quality control. Trends observed in exposure suggest that elective exposure in certain operations could be considered sub-minimal.

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DEPARTMENT OF SURGERY
UNIVERSITY OF THE WITWATERSRAND

22nd Biennial Symposium
Sunday 23 May - Wednesday 26 May 2010

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