DISCIPLINE OF SURGERY
Memorial University of Newfoundland

ABSTRACTS

Residents’ Research Day 2010
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General Surgery

Use of Human Patient Simulation and Validation of the Team Situation Awareness Global Assessment Technique (TSAGAT): A Multidisciplinary Team Assessment Tool in Trauma Education

Michael Crozier, MD

**Objective:** We developed the TSAGAT assessment tool and used it to assess multidisciplinary teams performing trauma resuscitation using human patient simulation.

**Method:** Using the Human Patient Simulator, we designed the Team Situation Awareness Global Assessment Technique (TSAGAT), a multidisciplinary team assessment tool for trauma education. Individual Situation Awareness Global Assessment Technique (SAGAT) tools were developed for each member of a trauma resuscitation team (trauma team leader, anesthesiologist, and trauma nurse). Each SAGAT contained components of shared knowledge (knowledge that all team members should have) and complimentary knowledge (knowledge unique to the different specialties). TSAGAT scores were calculated as the sum of the individual SAGAT scores. Multidisciplinary trauma teams were assessed using TSAGAT and traditional checklist assessment. 4 teams completed 2 simulated scenarios each. The teams varied by experience, including a student team, a junior resident and nurse team, a senior resident and nurse team and a staff physician and highly experienced nurse team. TSAGAT and checklist scores were analyzed using the ANOVA tool. Correlation studies for inter-rater reliability on checklist scores and for correlation between TSAGAT and Checklist scores were calculated using Pearson’s Coefficient. Satisfaction questionnaires were completed by participants regarding the Human Patient Simulator experience as well as the experience with the TSAGAT assessment tool.

**Results:** Shared, complimentary, and total TSAGAT scores improved with increasing experience. The greatest improvement was observed between student and staff group complimentary knowledge (p<0.038) and total TSAGAT scores (p<0.031), implying construct validity of the test. Mean checklist score differences were statistically significant, and improved with increasing level of experience. TSAGAT scoring correlated strongly with traditional checklist performance measures (Pearson Correlation, r=0.99565). Inter-rater reliability for checklist scoring was high (Pearson Correlation, r=0.93675). Mean time required to complete both scenarios was shorter for the senior and staff teams compared with student and junior teams (p<0.0442). Satisfaction scores were high both for the Human Patient Simulator experience as well as for the TSAGAT assessment tool.
Conclusions: TSAGAT is a valid and reliable assessment tool for multidisciplinary team performance in a dynamic simulated trauma resuscitation environment. Teams with more individual trauma experience have greater scores using the TSAGAT assessment tool. The TSAGAT scores correlate strongly with traditional checklist scores. Overall satisfaction was high for the Human Patient Simulator and for the TSAGAT assessment tool. The TSAGAT supports multidisciplinary training and assessment. TSAGAT may provide more in-depth assessment of knowledge and awareness compared to traditional checklist tools. Information provided by TSAGAT could provide specific feedback, direct individualized teaching, and support curriculum change. The TSAGAT provides individual and team assessment simultaneously, while promoting CanMEDS roles of teamwork, communication and collaboration. Introduction of TSAGAT could improve the current assessment model for practical trauma education.

Do Antibacterial Sutures Reduce the Incidence of Surgical Site Infections in Clean Contaminated Colorectal Surgeries?

Kathy Hutchings, MD

A quality control study aimed at reducing NL SSI rate. Aims to compare historical data currently collected by Safer Health Care Now regarding the province's SSI rate and compare it to data collected following the substitution of the antibacterial suture PDS Plus.

Outcomes Following Patent Ductus Arteriosus Ligation in Preterm Infants: Can Pediatric General Surgeons Safely Perform PDA Ligations?

Kathy Hutchings, MD

This is a retrospective chart review that will be comparing outcomes of PDA ligations currently performed by pediatric general surgeons at three Canadian centers with the literature standards performed by pediatric cardiac surgeons.

The Effect of Medication on the Risk of Post-ERCP Pancreatitis

Sharon Koubi, MD

Pancreatitis remains the most common and significant complication of ERCP. Previous observational studies have suggested a protective effect from various medications. We set out to determine the risk of post-ERCP pancreatitis in patients using unfractionated heparin (UFH), low molecular weight heparin (LMWH), non-steroidal anti-inflammatory drugs (NSAIDs), nitrates and statins.

Methods: A database of all inpatient ERCPs performed by one therapeutic endoscopist that has been compiled prospectively was retrospectively reviewed from July 2000 to November 2008.
The endoscopic and patient outcomes had been recorded prospectively. Medication exposure was determined by reviewing the electronic file for each patient. Exposure to the medications of interest within one week prior to the procedure was recorded. The rates of pancreatitis were compared between the different groups using chi-squared analysis. Logistic regression analysis was used to identify risk factors for the outcome of pancreatitis. Each medication was considered separately. When a patient was on more than one medication of interest, the interaction of the medications was analyzed. We used SPSS (version 17.0) to perform the statistical analysis. A p-value of <0.05 was considered statistically significant.

**Results:** A total of 494 patients were included in this study. The mean age of the patients was 59 ± 19.75. 46.8% were male. The overall rate of pancreatitis was 5.9%; 5.2% in males and 6.5% in females. One hundred and forty four patients received UFH, 13 received LMWH, 24 received NSAIDs, 26 received nitrates and 46 received statins within one week of the procedure. In univariate evidence, pancreatic filling with contrast medium was associated with an increased rate of pancreatitis: 2.4% in patients with no pancreatic filling and 11.2% in patients with any degree of filling, p<0.001. Logistic regression found age and pancreatic filling to be risk factors for the occurrence of pancreatitis (OR=0.98; p=0.041 and OR=5.12; p<0.001, respectively). UHF and NSAIDs usage showed non-significant trends towards reduction in the rate of pancreatitis OR=0.685; p=0.38 and OR=0.580; p=0.35, respectively. LMWH, nitrates, statins and the different combinations of the above medications did not show any significant effect.

**Conclusion:** Although there was a non-significant trend toward benefit in patients exposed to unfractionated heparin and NSAIDs, these results suggest that the medications of interest are not effective for prevention of pancreatitis post-ERCP.

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**Rural Trauma Team Development Course - The Newfoundland Experience**

N’Gai Porte, MD

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**Effect of a Flight Program on the Process of Care of Trauma Patients**

Chris Smith, MD

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**Orthopedic Surgery**

**Risk of Intra-Articular Steroid Hip Injections Prior to THA**

Stephen Croft, MD
The Role of Genetic Variants in Predicting Response to Intra-Articular Steroid Injections for Knee Osteoarthritis (OA)

Mark Gatha, MD

Introduction: Intra-articular corticosteroid injections are a well established treatment for knee OA. However, metaanalysis suggests that the benefit is limited beyond 4 weeks. Genetic variants may play a role in predicting response to corticosteroids. A genetic variant of the macrophage inflammatory factor (MIF) (a physiologic counter-regulator of glucocorticoids), has been associated with poor clinical response in various inflammatory diseases. No studies to date have evaluated the effect of this variant on steroid injections for knee OA. We set out to determine the impact of the -173(G) variant of the MIF gene on clinical response to intra-articular injections for knee OA.

Methods: 80 patients with Kellgren-Lawrence Grade 2-3 OA of the knee were prospectively followed for 3 months following a standard dose of steroid injection. All patients were genotyped for the -173(G) variant of the MIF gene. WOMAC questionnaires for knee OA were done at baseline, 1, 4 and 12 weeks to assess response to treatment.

Results: 21 patients (25%) carried the G allele of -173 variant of the MIF gene. At all time intervals (1, 4 and 12 weeks) both groups showed statistically significant improvement on the WOMAC from baseline. There was no difference demonstrated between patients with the G allele variant and those with the normal MIF gene.

Conclusion: A specific polymorphism in the MIF gene does not appear to be associated with a diminished response to intra-articular glucocorticoid treatment in osteoarthritis of the knee.

Biomechanical Investigation of a New Locking Plate for Hip Fractures

Stephen Hunt, MD

Timing of Femoral Prosthesis Insertion During Cemented Arthroplasty - Cement Curing and Static Mechanical Strength in a in vivo Model

Stephen Hunt, MD

Modern cementing techniques aim to fix the implanted femoral prosthesis in the medullary cavity in order to minimize long-term complications such as aseptic loosening. The cure stage of bone cement into which the femoral component is being inserted is an important variable that is decided at the time of surgery. Late-cure stage cement is more viscous and requires greater force on the part of the surgeon to insert the femoral prosthesis. We have compared two cementing techniques, femoral component insertion into early-cure stage cement and insertion into late-cure stage cement using an in vivo model to identify if cement cure stage affects the strength of the bone cement interface. Bilateral hemiarthroplasties – using only the femoral component – were
performed in vivo on paired porcine femora. The femora were harvested and cross-sectioned in preparation for strength testing. Bond strength was measured by peak load required to push the femoral prosthesis and surrounding cement mantle free of the cancellous bone. Femoral component insertion into late cure stage cement required statistically significant higher loads for push-out when compared to femoral component insertion into early cure stage cement.

The Canadian Orthopaedic Elective Experience

Chris Lopez, MD

Is There a Need for an Orthopedic Trauma Room in St. John's?

Chris Lopez, MD

Effect of Sleep Deprivation on Medical Residents’ Situational Awareness in a Trauma Scenario

Alexandra Lys, MD

Investigation into the Natural History and Treatment Outcomes for Kienbock’s Disease

Glynn Martin, MD

**Background:** The precise etiology and natural history of Kienbock’s disease is unclear. It is generally believed that the disease progresses through stages (classified as I through IV), whereby initial sclerosis of the lunate eventually leads to collapse. Unfortunately, since symptoms may be present for years before patients seek medical care, identifying Kienbock’s disease true incidence as well its natural history is difficult. The present study sought to investigate the natural history and clinical outcomes of patients suffering from various stages of Kienbock’s disease in the NL population.

**Methods:** The present study was a retrospective analysis of 66 patients (42 male and 24 female) diagnosed with Kienbock’s disease. All charts from patients diagnosed with Kienbock’s disease were reviewed. Patients were subsequently called at their residence and asked if they would provide responses to the DASH questionnaire, which served as a subjective outcome to the treatment they received. All analyses were performed using SPSS for Windows (version 15.0), and significance was set at P<0.05. Student’s t-test was used to assess any differences in DASH score between surgical and non-surgical treatment. Analyses were done within each group of Kienbock’s, as well as combined groups. One-way ANOVA was used to assess differences in DASH scores among 3 groups based on time since first assessed in clinic (<5 years, between 5-10 years, and >10 years). Pearson correlation was used to assess for a correlation between DASH scores and age of diagnosis and radiographic stage of disease.
Results: The average age of presentation was 38.8 ±11.6 (18-70), right wrist affected in 61.5% of cases and left in 38.5%. History of trauma was present in 42% of cases. With respect to radiographic stage of Kienbock’s at time of diagnosis, 6 cases were in stage I, 26 cases in stage II, 9 cases in stage IIIa, 16 cases in stage IIIb, 5 cases in stage IV, and 4 cases with unknown stage. Forty-eight patients were treated conservatively, while 18 surgically (7 of which were done so following failed conservative treatment). There was no statistically significant difference in DASH scores between any of the groups according to time since first diagnosed (<5 years=23.1±21.9; between 5-10 years=26.9±24.2; >10 years=18.1±20.1). There was also no statistically significant difference in DASH scores between surgically treated and conservatively treated patients, regardless of Kienbock’s stage (23.7±24.5 and 20.0±20.1, respectively). Nor was there any difference in DASH scores among surgical and conservatively treated patients when individual stages of Kienbock’s were considered. Furthermore, because of low numbers within each Kienbock’s stage, stage III and stage IV were combined. However, once again no significant difference was found between the surgical and conservative treatment modalities (14.1±14.6 and 15.5±20.0, respectively). Interestingly, a positive correlation was found between age of diagnosis and DASH score (r=0.42, p=0.007). This finding remained significant even after accounting for the radiographic stage of disease, gender, and time since diagnosed using multiple linear regression (p=0.029).

**Conclusion:** No statistically significant difference in DASH scores were found between surgically treated and conservatively treated patients in the NL population with Kienbock’s disease regardless of stage of disease. A positive association was found between age of diagnosis Kienbock’s disease and DASH score, even after account for confounding factors such as gender, stage of disease, and time since diagnosis. This finding suggests that those patients’ who are diagnosed and treated later in life tend not to do as well.

Operating in Haiti

**William Moores, MD**

A Case Study of Bilateral Inferior Shoulder Dislocations

**William Moores, MD**

Urology

Open Radical Prostatectomy (RP) Versus External Beam Radiation Therapy in Patients (EBRT) with Localized Prostate Cancer: Oncological Outcomes and Quality of Life

**Ehab Elzayat, MD**

**Objectives:** To conduct a prospective study comparing the oncological outcomes and quality of life after RP and EBRT in patients with localized prostate cancer.
Patients and methods: All patients with low and intermediate risk of prostate cancer who met all inclusion and exclusion criteria will be assigned to either RP (group 1) or EBRT (group 2) based on physician’s assessment and patient preference. Patient evaluation will include history, physical examination, PSA, routine laboratory tests and transrectal ultrasound-guided needle biopsy. Before treatment all patients were asked to fill in questionnaires concerning lower urinary tract symptoms (IPSS), and quality of life (QoL) questionnaires (EORTC-QLQ-C30/PR25). All of the patients will be seen in follow-up at 1, 3, 6, and 12 months postoperatively. The evaluation parameters to be assessed at each time point are listed below. Postoperative complications, oncological results and biochemical free-survival will be reported. Urinary symptoms, QoL and erectile function will be evaluated by comparison of the preoperative and postoperative questionnaires’ scores. Comparison between the 2 groups will be performed as well.

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<th>Parameter</th>
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Prostate Cancer: Wait Times to See a Urologist

Mr. Taylor Ferrier

In 2010, there is an expected 123 per 100 000 Canadian men that will be diagnosed with prostate cancer and an estimated 22 per 100 000 that will potentially die from it. In 2010, Newfoundland and Labrador (NL) has an expected incidence rate of 147 per 100 000 of men diagnosed with prostate cancer and at least 29 per 100 000 will die it (CCS, 2009). Timely access is believed to be one of the keys in reducing morbidity and mortality related to prostate cancer (Saad et al., 2006). While there have been few studies that have examined wait times for prostate cancer care in Canada, there have been none in NL. Today, appropriate wait times or benchmarks have not been established for prostate cancer. Through chart auditing, this study will describe wait times for prostate cancer care provided by urologists in NL. Specifically, we will examine the differences in wait times related to community of residence, disease stage and age for residents with suspected or confirmed prostate cancer. To explore prostate cancer patients’ satisfaction with wait times, we will conduct focus groups with prostate cancer patients and have them reflect on their own experiences and comment on the results of the chart audits.
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