Osgood Visiting Professor / Thesis Day Presentations

Brigham & Women's Hospital

Wednesday, May 5, 2004

Osgood Lecturer
James E. Nunley, MD

Senior Resident Thesis Presentations

Harry Rubash, MD

First Session

Moderator: Harry Rubash, MD

Neil Harness, MD

Philip Blazar, MD

The Influence of Three Dimensional Computed Tomography Scans on the Characterization and Treatment of Distal Radius Fractures

Neil Harness, MD
Advisor: David Ring, MD
Discussor: Philip Blazar, MD

Thirty fractures of the distal radius were evaluated with plain film, 2D CT, 3D CT and intraoperatively to determine the contribution of 3D CT to fracture characterization and management. Sensitivity, specificity and accuracy of fracture classification were determined for each imaging method, and compared to fracture description at surgery. 3DCT was found to improve inter observer agreement about fracture description, and to change operative planning in a significant number of cases.

Dr. Blazar noted that the paper confirmed a reasonable hypothesis—having more information about a fracture is helpful. He criticized the methodology by noting that in order to assess accuracy of fracture pattern prediction the researchers would have needed to open each and every fracture to confirm the pattern directly. Dr. Harness pointed out that nearly every fracture in his series had in fact been opened.


Brandon Earp, MD


Philip Blazar, MD

Arthroscopic Treatment of Post-Traumatic Wrist Instability in Pediatric and Adolescent Patients

Brandon Earp, MD
Advisor: Peter Waters, MD
Discussor: Philip Blazar, MD

The outcomes of arthroscopic management of scapholunate instability in 32 pediatric patients was retrospectively reviewed. Outcome was evaluated with retrospectively calculated Mayo wrist scores, and by contacting many of the patients to administer repeat DASH and Mayo scores with minimum two year follow up. They found sustainable improvement in patients with Geissler II SL tears who were treated arthroscopically.

Dr. Blazar praised the presentation for contributing a landmark series of wrist injuries in a pediatric and adolescent population. He and Dr. Nunley both questioned how the preoperative diagnosis of scapholunate instability had been made, because it seemed more accurate to describe the indication for arthroscopy as "chronic wrist pain" rather than "instability." Dr. Blazar also remarked it was interesting that the author's findings seemed to contradict the accepted wisdom "kids are not just little adults" because it seemed that a treatment algorithm suitable for adults had worked well in their pediatric patients.


Mark Gebhardt, M.D.

Second Session

Moderator: James R. Kasser, M.D


James Huddleston, MD


Thomas Thornhill, MD

Zone 4 Radiolucency in Paired Cemented and Cementless Femoral Total Knee Components

James Huddleston, MD
Advisor: Richard Scott, MD
Discussor: Thomas Thornhill, MD

A series of patients who had had bilateral simultaneous total knee replacements, cemented on one side and uncemented on the other, were compared by plain radiograph for an average follow up of 7.6 years. They found fewer zone 4 lucencies in uncemented femurs than in cemented ones.

Dr. Thornhill asked if there were selection bias, for instance if those femurs selected for cementing may have had poor contact in Zone 1, or if cemented knees were those where the femur had been cut poorly overall. He also asked whether the radiolucencies had been shown to be progressive, and whether it could be determined if they were medial or lateral. He asked whether distal stress shielding was noted in the non-cemented group. Finally, he asked what was the role of the non-cemented femur in this day and age. Dr. Nunley pointed out it is hard to evaluate radiolucency in a non-cemented femur, and also suggested that computer-aided cutting may render all cuts "perfect" and thus obviate the need to evaluate cut quality intraoperatively. Dr. Rubash also pointed out that the implant-cement interface reflects a mechanical process, while the bone-cement interface reflects a biologic one, and so inferences about these two must be considered in a separate fashion.


Robert Parisien, MD


Charles Brown, MD

The Long Term Outcome of Allograft Anterior Cruciate Ligament Reconstruction

Robert Parisien, MD
Advisor: William Tomford, MD
Discussor: Charles Brown, MD

The results of 89 consecutive fresh-frozen tibialis anterior and tibialis posterior allograft ACL reconstructions performed by a single surgeon from 1985 to 1998 were reviewed and patients were evaluated by mail follow up using the IKDC and SF-36, which are validated subjective outcome instruments. Follow up was obtained in 83.5% of this cohort. 87.3 % of these patients were satisfied with the results of the surgery.

Dr. Brown, praised this paper for addressing the "two most controversial questions in ACL research" – what graft to use, and how to evaluate results. He suggested the study's strengths were that a single surgeon had performed all the surgeries, with an unvarying technique with very long term follow up. Dr. Nunley agreed with this praise, adding that he was amazed at the senior surgeon's prescience twenty years ago to have picked the current state-of-the-art technique, and his persistence in sticking with it. Dr. Brown acknowledged that although subjective patient satisfaction was an important outcome to track, he criticized the authors for failing to include objective measures of graft longevity and performance. Dr. Nunley contested this point, saying that patient satisfaction was the most important outcome measure. Dr. Brown also pointed out that the long-term infectious risk of allograft human tissue is unknown, and must be considered to be higher than that for autograft, a point that Dr. Nunley echoed. Dr. Tomford, advisor for this project and director of the MGH bone bank, gave a brief explanation of how the allografts are sterilized.


Thomas Thornhill, MD

Third Session

Moderator: Thomas Thornhill, MD


Robert V. O'Toole, MD


Mitchel Harris, MD

Use of the LISS for Periarticular Fractures of the Knee

Robert V. O'Toole, MD
Advisor: Mark Vrahas, MD
Discussor: Mitchel Harris, MD

A prospectively enrolled cohort of 152 patients whose femur and tibia fractures were treated with the Less Invasive Stabilization System was evaluated. These results were pooled with existing U.S. literature and compared to historical data for other methods of treatment. They found a lower rate of overall complications (15.1% for LISS v. 24.8% for others). Tibia fractures had a lower infection rate (7% LISS v. 13.7%).

Dr. Harris noted that this series represents the largest reported series with the LISS. He noted that the population was skewed toward older patients,

which reflects the trauma population as a whole at MGH and BWH. He noted that a 70% follow up rate was somewhat poor but might be improved with a LISS Registry. He wondered why LISS failed to show a lower infection rate in femur fractures. Dr. Nunley suggested that the study might be stronger if it compared LISS results to Partners trauma's own non-LISS results rather than to pooled results.


Joseph J. Czarnecki, MD


Art Boland, MD

Functional Outcome of Juvenile Osteochondritis Dessicans of the Knee Treated with Internal Fixation.

Joseph J. Czarnecki, MD
Advisor: Mininder Kocher, MD
Discussor: Art Boland, MD

This study compared rate of union and functional outcome in 24 patients (average age 14.7 yrs) treated with different methods of internal fixation for OCD lesions. The total union rate was 84.6%. Outcomes were evaluated with Lysholm and IKDC scores, which noted 73.1% good/excellent results. Results were worse with use of absorbable pins rather than a Herbert screw to achieve fixation.

Dr. Boland asked how the surgeons had decided which lesions to fix with which technique. He also expressed surprise that the anatomic location of the lesion had less influence on the outcome than might be expected. Dr. Vrahas and Dr. Kocher also questioned how outcome might be measured in lesions treated conservatively.


L. Pearce McCarty, MD


Mark Vrahas, MD

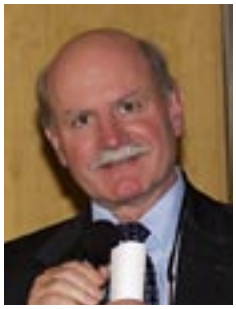
Initial Experience with the Long AO/ASIF Trochanteric Fixation Nail in Unstable Intertrochanteric and Subtrochanteric Fractures

L. Pearce McCarty, MD
Advisor: Malcolm Smith, MD
Discussor: Mark Vrahas, MD

Fifty unstable intertrochanteric or subtrochanteric femur fractures were treated with the trochanteric femoral nail (TFN), and the results evaluated clinically for 36 and radiographically for 38 at an average of 9 months. Thirty seven of 38 were found to heal radiographically, with one delayed union. There were no cutouts or rod failures.

Dr. Vrahas noted that this patient cohort was comprised of older, "sicker" patients than usually studied, with difficult fractures and osteoporosis. He noted that the follow up rate was impressive, but suggested it should have contrasted findings with similar patients and injuries treated in other ways. He also wondered whether limbs treated with the TFN shortened less. He pointed out that the cost of the TFN was approximately twice the cost of some alternatives, but that it might be justified for the 28% of fractures that

are unstable (as defined in this study). Dr. Nunley praised this paper for teaching him something he would put into practice immediately—recognizing and treating differently the reverse-oblique intertrochanteric fracture.


James Kasser, M.D.

Fourth Session

Moderator: James Kasser, MD


Renn J. Crichlow, MD


Mitchel Harris, MD

Depression in Orthopedic Trauma Patients: Prevalence, Severity and Etiology

Renn J. Crichlow, MD
Advisor: Mark Vrahas, MD
Discussor: Mitchel Harris, MD

This study enrolled and interviewed 161 orthopedic trauma patients at MGH and BWH, then followed them after hospital discharge. Their depression was evaluated with the S-MFA and PF-10 validated instruments, and compared with their injury type and severity. Results: Clinically significant depression approaches 45% in a diverse cohort of orthopedic trauma patients. Global disability and presence of an open fracture were found to correlate with highest rates of depression.

Dr. Harris asked how the rates of PTSD might relate to the rates of depression. He wondered why the depression rate for minor injuries was similar to that for much more serious ones, and proposed it might be related to pre-existing marginal status within society, so that they had less "reserve" after injury. Dr. Boland compared this to a similar rate of situational depression among injured athletes. Dr. Nunley suggested that socioeconomic data would improve the paper, and asked when should we refer trauma patients for treatment of their depression.


Sean O. Rassman, MD


Peter Millett, MD

Prevalence of Associated Injuries in Pediatric Anterior Cruciate Ligament Tears.

Sean O. Rassman, MD
Advisor: Mininder Kocher, MD
Discussor: Peter Millett, MD

Ninety-nine pediatric patients undergoing ACL reconstruction were examined arthroscopically. Fifty three meniscal tears, 6 articular cartilage lesions and 1 posterior cruciate ligament tear were seen. This rate of other lesions found at surgery is similar to the rate for adults.

Dr. Millett observed that the bottom line of the paper was that, as is the case with adults, other injuries must be suspected and investigated in a child with an ACL injury. This is difficult because children are hard to examine, but it is important since the risk of not operating must be weighed against operative risk, considering all the injuries that may be unrecognized before surgery. Dr. Nunley asked whether a series of patients with pre and post surgical MRs could help determine the true incidence of the these associated lesions.

Jason Tavakolian, MD

Mininder Kocher, MD

Decision Analysis for Complex Proximal Humerus Fractures

Jason Tavakolian, MD
Advisor: David Ring, MD
Discussor: Mininder Kocher, MD

Using best-available data on outcomes of different treatment methods for three and four part proximal humerus fractures, a decision analysis tree was constructed to determine appropriate evidence-based treatment strategy. Factors considered were the rate of AVN, the rate of malunion, salvage after failed fixation, and satisfactory results after hemiarthroplasty. The model was found to favor operative fixation at baseline for both three and four part fractures. In sensitivity analysis, the decision was found to vary most strongly with the rate of satisfactory results after hemiarthroplasty

Dr. Kocher praised the author's quick grasp of an analysis technique that many have found challenging. After asking some clarifying questions about the details of the model's construction, he asked how the model fit into the concept of shared decision-making, and suggested that a simplified version of it could be used for shared decision making with a patient.

Awards

The Harvard Combined Orthopaedic Residency Program would like to thank Dr. Jack Barrett ('72) for his continuing support of the two awards presented on Osgood Thesis Day: best basic science paper and best outcomes/clinical science paper. Following tradition, this year's Osgood Lecturer Dr. Nunley was asked to perform the judging.

Dr. Tavakolian was awarded best basic science paper for his study "Decision Analysis for Complex Proximal Humerus Fractures," which was praised by Dr. Nunley for its rigorous application of a decision model in order to bring evidence-based recommendations to orthopedics. Dr. Parisien was awarded the best outcomes/clinical science paper for his study "The Long Term Outcome of Allograft Anterior Cruciate Ligament Reconstruction." Dr. Nunley commended the study's long-term follow up and careful use of data.