Piedmont Orthopedic Society

Abstracts 2005

2005 PROXIMAL FEMORAL FRACTURE DURING THA:RISK FACTORS, TREATMENT AND OUTCOME, Michael E. Berend, M.D., Orthopaedic Indianapolis Center for Hip and Knee, Mooresville, Indiana

Proximal femoral fracture is a relatively common occurrence during THA. Treatment with protected weight bearing, cerclage wires, or long stem prostheses has been described. Less is known about risk factors for fracture and clinical outcome of treatment options. The purpose of this study was to identify risk factors associated with proximal femoral fracture during THA examining surgical approach, patient demographics including age, sex, and body mass index, type of femoral component fixation, treatment options, and outcome of the arthroplasty. 3084 hips were examined. The incidence of fracture was 3% for all THA's. Uncemented stem insertion had a significantly higher fracture rate at 8.2% compared to cemented stems at 1.2% ($p<0.0001$). Risk factors for proximal femoral fractures include anterolateral approach, uncemented femoral component fixation, and female gender ($p=0.0018$). Treatment with cerclage wiring was the most common treatment and maintained femoral component stability. This study identifies an "at risk" population based on surgical approach, gender, and the use of uncemented components for proximal femoral fracture during THA. Treatment with cerclage wiring in combination with tapered titanium proximally circumferentially coated implants yielded excellent clinical and radiographic results.

2005 COMPARISON OF PATTERNS OF ARTHRITIS BETWEEN RHEUMATOID ARTHRITIS AND OSTEOARTHRITIS IN PATIENTS UNDERGOING TOTAL KNEE ARTHROPLASTY, Michael E. Berend, M.D., Orthopaedic Indianapolis Center for Hip and Knee, Mooresville, Indiana

Knees with endstage rheumatoid arthritis (RA), and osteoarthritis (OA) have unique radiographic features. The comparative intraoperative patterns of arthrosis, preoperative clinical variables, and outcome of TKA are less well understood. The purpose of this study was to compare these features in knees with RA and OA undergoing TKA. 7036 knees with OA were compared with 179 knees with RA. Intraoperative patterns of arthrosis demonstrate that knees with RA have more symmetric involvement of the medial, lateral, and patellofemoral articulations. ACL and meniscal degeneration was more advanced and involved both menisci in knees with RA ($p<0.0001$). Osteophytic changes were significantly more advanced in patients with OA in all three compartments and on both sides of the articulation ($p<0.02$). Preoperative range of motion was less and preoperative alignment was in significantly more valgus in knees with RA: 4.4° vs. OA: 0.1°($p<0.0001$). TKA survival for both PCL retaining and

PCL substituting implants was no different comparing knees with RA and OA out to 12 years. Mean age at arthroplasty was significantly younger in patients with RA: 61.8 yrs vs. OA: 70.1 yrs. We conclude that the intraoperative pattern of OA including surface arthrosis, meniscal and ACL degeneration, and asymmetry is significantly different than the more symmetric and less osteophytic appearance of RA. Preoperative alignment and range of motion are significantly affected by preoperative diagnosis. Interestingly, the long-term survival of both PCL retaining and PCL substituting implants is not different for knees with RA vs. OA.

2005 EFFECT OF INTRAOPERATIVE ANTERIOR CRUCIATE LIGAMENT INTEGRITY ON SURGICAL TECHNIQUE AND OUTCOME OF TOTAL KNEE ARTHROPLASTY, Michael E. Berend, M.D., Orthopaedic Indianapolis Center for Hip and Knee, Mooresville, Indiana

The aim in this study was to determine the effect of intraoperative anterior cruciate ligament (ACL) integrity on total knee arthroplasty (TKA) surgical technique and functional and radiographic TKA outcome. 6524 primary total knee arthroplasties in 4393 patients were performed for osteoarthritis had the intraoperative appearance of the anterior cruciate ligament graded as normal, present but damaged, or absent. Patients were followed for a minimum of 2 years. Preoperative deformity, intraoperative variables of ligament balancing requirements and implant features, clinical outcomes, and implant survival were compared based on ACL status. The ACL was graded as normal - 43%, present but damaged – 38%, and absent in 19% of knees. Male gender was associated with more advanced ACL degeneration ($p<0.0001$). An absent ACL was associated with the need for more significant medial, lateral, and posterior soft tissue releases, decreased preoperative range of motion, and insertion of a thicker tibial polyethylene implant ($p<0.05$). There was no difference with respect to implant survival at ten years, knee scores, function scores, or late instability between ACL groups. We conclude that an absent ACL is associated with greater preoperative deformity, increased intraoperative balancing requirements, and thicker polyethylene inserts but does not affect clinical outcome of the TKA or implant survival.

2005 A TEN TO THIRTY-ONE YEAR SURVIVAL ANALYSIS OF TOTAL ELBOW ARTHROPLASTY WITH THE COONRAD/COONRAD-MORREY PROSTHESIS, J. Mack Aldridge III, M.D.†, Nina R. Lightdale, M.D, William J. Mallon, M.D, **Ralph W. Coonrad, M.D.,** Durham, North Carolina

There have been few long term survivability reports of total elbow arthroplasty beyond 10 to 15 years. In a series of 65 consecutive elbow arthroplasties carried out by a single surgeon between 1974 and 2002, using the Coonrad/Morrey prosthesis, 41 elbows in 40 patients with an average age of 56 years (range 19 yrs – 83 yrs) identified with a minimum survival of 10 years were assessed by functional survival analysis, using

permanent implant removal and revision as the failure endpoints. The varied pathology consisted of intermediate stage rheumatoid to extensive traumatic conditions, often with multiple failed previous procedures. Thirty-one of the 40 patients were 60 years of age or older at the time of arthroplasty. Surgical selection excluded prior elbow infection or patient refusal to adopt a sedentary elbow activity level for life of the implant. Objective data was collected from charts, radiographs, clinical photographs, supplemented by referring orthopedists' records and radiographs if health or distance prevented final clinic return. Subjective outcome was defined by patient satisfaction. There were 14 complications, no acute infections or peri-operative fractures. Thirteen elbows had from one to four revisions and all were still functional until the time of death or final evaluation (9 patients were deceased). Bushing wear requiring revision occurred in five elbows and was associated with overuse and preoperative deformity in all. Of the 41 elbows at final assessment, 33 were rated excellent (80%), 7 good (17%) and 1 fair (2%) using the MEPS system. All patients would have repeated their operation. For survival analysis with removal and revision as the sole end points for failure, there were no permanent removals, 13 revisions were classified as failures although at the time of final assessment, 40 of 41 elbows were satisfactory objective outcomes (97%) at a mean of 18 years after surgery (10 to 31 years). The authors considered sedentary activity compliance an important but unproven factor in outcome. Total elbow arthroplasty using the Coonrad/Coonrad-Morrey prosthesis is a durable and effective option in alleviating pain and restoring motion in the salvage elbow.

2005 TIBIOTALOCALCANEAL ARTHRODESIS, Mark Easley, M.D., Duke University Medical Center, Durham, North Carolina

Introduction: Prospective evaluation of tibiotalocalcaneal arthrodesis with standardized algorithm: (1) intramedullary nail when residual talar body present and (2) lateral blade plate with talar collapse/AVN.**Methods:** Thirty-six tibiotalocalcaneal arthrodeses were performed by a single surgeon in 35 patients (Average age: 46 years, (range, 22-71), 17 males, 18 females) for limb salvage. A standardized algorithm was followed: (A) retrograde IM nail with residual talar body (TTC arthrodesis) (24) and (B) lateral blade plate/crossed lag screws with talar body collapse/AVN (TC arthrodesis) (12). Indications included: Post-traumatic DJD of ankle/subtalar joint (20), Charcot neuroarthropathy (10), talar AVN (6). Associated problems included: Failed prior surgery to hindfoot or ankle (22) and history of osteomyelitis/sepsis of hindfoot/ ankle (6). Evaluation was by independent observer.

Results: Average followup of 22 months (range, 12-58) was available for 34 patients. The average AOFAS hindfoot/ankle score improved from 34 to 71 points (maximum AOFAS score possible postop: 86 points.) Leg length discrepancy averaged 1.4 cm in the TTC group and 2.9 cm in the TC group. Standard weightbearing foot and ankle radiographs suggested an 82% union rate at most recent followup, based on bridging trabeculation at the arthrodesis sites. Three patients lacked bridging trabeculation but remained asymptomatic. Complications included: Symptomatic

nonunion (no bridging trabeculation *and* pain/deformity) (3), deep infection (3), fracture above the hindfoot/ankle (2). Further surgeries included: Hardware removal (5), Irrigation and debridement (4), Revision arthrodesis (4), ORIF of tibia fracture (1), transtibial amputation (3).

Discussion: This simple treatment algorithm allows for limb salvage in a majority of cases. The nonunion and complication rates are concerning, but anticipated given the complex hindfoot pathology.

2005 THE MODIFIED LUDLOFF PROXIMAL FIRST METATARSAL OSTEOTOMY FOR SURGICAL CORRECTION OF HALLUX VALGUS DEFORMITY, Mark Easley, M.D., Duke University Medical Center, Durham, North Carolina

Introduction: Prospective Analysis of the modified Ludloff osteotomy for surgical correction of hallux valgus deformity.

Methods: One-hundred nine feet in 99 patients (average age 53 years (range, 16-77), 89 females, 10 males) underwent modified Ludloff osteotomies with DSTP at two institutions. Evaluation was prospective using the AOFAS forefoot-metatarsophalangeal-interphalangeal scoring system preoperatively and at latest followup. Weightbearing foot radiographs were analyzed according to AOFAS guidelines.

Results: Eighty-eight patients (97 feet) (89%) were available at an average followup of 36 months (range, 24-56 months). The average AOFAS score improved from 53 points to 87 points. Preoperatively, all patients complained of pain; at most recent followup 79 patients (90%) were asymptomatic. Radiographic evaluation suggested all osteotomies healed, but 17 cases (16%) demonstrated callus formation at the osteotomy site. Average age of patients with callus formation was 67 years. No cases of dorsiflexion malunion were observed. Average IMAs preoperatively and at latest followup were 17.8 degrees and 7.8 degrees, respectively; average HVAs were 41 degrees and 15 degrees, respectively. Tibial sesamoid position improved an average of 1.5 grades. Hallux varus was observed in 12 feet (11%). Three feet developed hallux rigidus (3%). Recurrence of hallux valgus was observed in 3 feet (3%). One deep infection and one cellulitis were managed effectively with satisfactory outcome.

Discussion: To our knowledge, this prospective, multicenter investigation comprises the largest cohort of patients undergoing a modified Ludloff osteotomy. At intermediate followup, currently available outcome measures suggest that the results of this proximal first metatarsal osteotomy are at least equal to those reported for other proximal first metatarsal osteotomies utilized in correcting hallux valgus.

2005 PERCUTANEOUS ACHILLES TENDON REPAIR, Lamar L. Fleming, MD and Sanda L. Tomak, M.D., Emory University School of Medicine, Atlanta, Georgia

Since 1980 the senior author has used the percutaneous technique for repairs of Achilles tendon in those individuals who normally would have a closed technique of treatment. We have treated them in this manner with an accelerated rehabilitation program. The technique is to use 1% xylocaine with epinephrine injected in eight places along the sides of the Achilles tendon. We then make stab wounds on each side of the tendon, four on each side. Using a Bunnell type suture technique with a No. 0# monofilament polydioaxone suture and two Keith needles we suture the tendon with two weaves above the rupture and two below the rupture. This suture is tied on the lateral aspect of the ankle. It must close down the rupture gap. Any puckering of the skin is released subcutaneous with a hemostat. The wounds are closed with staples and the patient is put in an equinus padded splint.

At ten days the patient is brought back to the clinic where he is put into adjustable plantar flexion brace at 15° of plantar flexion for two weeks then raised to neutral degree at one-month post- op. He is able to walk and to ambulate weight bearing while in his brace. Therapy is started at four weeks with concentric strengthening and range of motion. At two month eccentric exercises are begun. None of them are allowed to go back to sports for six months. We were able to get ten of our cases who were at two years or more post-op and found their AOFAS ankle hind foot score was 94 out of a possible 100,all were satisfied with the treatment, no complications, and no re-ruptures. One patient stated that he was still weak when playing basketball. The Cybex 11 dynamometry studies show that they all had mean decrease in total work capacity compared to the uninvolved leg by 21% less strength. The circumferences of their involved calves were smaller by a means of 1.6 cm. They were all satisfied with the results their treatment.

This technique can be done in the emergency room or in a minor surgical room where the cost is remarkably less than compared to an operation room setting where the operation room cost itself is 4 to 5 times as much.

We have found this to be an acceptable, economical, and reproducible technique for semi-closed treatment of Achilles tendon ruptures.

REFERENCES

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2005 LAMINOPLASTY VERSUS ANTERIOR CORPECTOMY IN THE TREATMENT OF CERVICAL SPONDYLYTIC MYELOPATHY, Christopher G.

Furey, M.D., Assistant Professor, Department of Orthopedic Surgery, Case Western Reserve University, Cleveland, Ohio

OBJECTIVE: To identify perioperative experience, neurologic improvement, clinical outcome, and patient satisfaction in patients undergoing either anterior cervical corpectomy and fusion or posterior cervical laminoplasty for the treatment of cervical spondylytic myelopathy.

MATERIALS & METHODS: 2 cohorts, each with 20 patients, with comparable demographics and similar degree of neurologic dysfunction underwent surgical treatment for cervical spondylytic myelopathy.

Choice of surgery was non-random and was primarily based on the degree of cervical lordosis and the magnitude of axial neck pain. Patients with relative maintenance of cervical lordosis and minimal complaints of neck pain underwent multi-level laminoplasty. Patients with advanced degenerative spondylosis and loss of cervical lordosis, with any significant component of axial neck pain, underwent multi-level anterior cervical corpectomy and fusion.

Patients were evaluated with Nurick disability scale of cervical myelopathy, a SF-36 score, and a specialty questionnaire relating personal satisfaction, resumption of prior lifestyle, and willingness to repeat the operation. Radiographs were obtained at 6 weeks, 3,6,and 12 months post-operatively.

Minimum follow-up was 2 years with an average of 4.6 years.

RESULTS: Operative time, surgical blood loss, and hospital stay were significantly lower in the laminoplasty cohort. Post-operative dyphagia, need for narcotic pain medication, and persistence of axial neck pain were also significantly less common in the laminoplasty cohort. SF-36 scores and change in Nurick grade post-operatively, as well as satisfaction with the procedure and willingness to repeat the specific surgery were not significantly different.

3 patients in the corpectomy cohort required additional surgery, two for the removal of prominent anterior plate and one to address a pseudarthrosis with a posterior fusion. No patient in the laminoplasty cohort required further surgery.

CONCLUSION: Anterior cervical corpectomy and laminoplasty are both effective techniques to treat the neurologic sequelae of cervical spondylytic myelopathy. While indications for laminoplasty are limited by the need for preserved cervical lordosis and minimal axial neck pain, it is a surgery of less magnitude and more tolerable in the immediate post-operative period.

2005 USE OF A HUMERAL NAIL WITH SPIRAL BLADE FOR PROXIMAL HUMERUS FRACTURES, Wildstein MS, Valentine B, An YH, Horan M, Kmiec S, and Hartsock, LA, Medical University of South Carolina, Charleston, South Carolina

Purpose: The purpose of this study was to test the strength of the spiral blade intramedullary nail system (SBIN, Synthes, Paoli, PA) when augmented with the bone cement, Norian (Norian Co, Cupertino, CA) and report on preliminary clinical results.

Biomechanical Materials and Methods: Twelve pairs of sawbones and twelve pairs of fresh frozen cadaveric humeral bones (range 55 – 82 years, average 69 years) were obtained. X-rays showed significant osteopenic changes in the cadaveric bones.

An osteotomy was made in each bone to reproduce a Neer two part humeral fracture. The fracture was reduced and the SBIN construct was inserted into the proximal humerus. In augmented specimens, the spiral blade was then removed and 10 ml of Norian was injected into the void in the humeral head created by the spiral blade. The blade was then reinserted, the bones wrapped in moist towels and placed in an incubator at 37°C overnight. Each bone/SBIN construct underwent either torsional or cantilever testing using a hydraulic mechanical testing system (MiniBionix 858; MTS, Eden Prairie, MN). The ultimate load to failure for each humerus was determined, with the machine run under displacement control at a rate of 25 mm/min. An identical procedure was followed for all humeri. Data were evaluated using paired students t-test.

Biomechanical Results: The ultimate load to failure of the Norian augmented and non-Norian augmented humeri were compared. In the 6 pairs of sawbones, the difference was statistically significant (Cemented: 1035±338 N, non-cemented: 454±249 N, $p = 0.00056$). In the cadaveric humeri, there was an obvious trend of increased ultimate load sustained by the Norian augmented specimens (Cemented: 527±103 N, non-cemented: 342±126 N, $p = 0.07$).

Clinical Materials and Methods*:* Twenty-five patients were treated from 2002-2005. Patients were treated with a humeral nail and spiral blade. Norian was used to fill metaphyseal voids. Early full range of motion was initiated immediately after surgery. Results were collected retrospectively and outcomes scores were obtained using the DSAH, oxford and SST.

Clinical Results: Outcome data are available for 11 patients. There were seven 2 part fractures and four 3 part fractures. Seven patients were female and four were male. The average age was 55, average ISS was 12 and average follow up was 17 months. There were no deep infections and no nonunions. The average DASH Score was 36.7(1-82), oxford score was 30 (14-47), and SST was 4 (1-12).

Discussion: The SBIN system is an effective method for fixation of Neer two part fractures of the proximal humerus. Norian augmentation shows a clear trend in increasing load to failure.

The addition of the spiral blade to the intramedullary construct yields an increase in surface area contact in the proximal humerus When combined with the void filling bone cement, Norian, this study demonstrates increased strength in the fixation of proximal humerus fractures.

Preliminary clinical results are encouraging and warrant continued use of this technique for two part and selected three part fractures.

* This research was supported by a grant from the AO foundation.

2005 THE ROLE OF A GEARED MULTIPLANAR EXTERNAL FIXATOR IN THE CORRECTION OF SOFT TISSUE AND BONEY DEFORMITY, Jian Shen, MD, PhD, Beth Paterson Smith, PhD, **L. Andrew Koman, MD**, Wake Forest School of Medicine, Winston-Salem, North Carolina

Acute correction of joint deformity with or without associated soft tissue contractures is a difficult problem that requires radical release of the joint, osseous resection, or staged correction using pins and a cast or thin wire multiplanar ring fixation. Pins and cast and multiplanar fixation techniques often are tedious and complicated. In order to simplify the correction process, a multiplanar-geared minirail device was designed to allow incremental longitudinal distraction, flexion-extension, and radial-ulnar correction. The hypothesis of the study was that the availability of a device that permits staged correction of complex joint deformities and non-surgical lengthening of musculotendinous contractures will improve patient outcomes and will aid in the management of complex upper extremity deformities. The specific aims were: 1) to present techniques for the use of this device, 2) to review clinical indications, contraindications, and complications associated with its use, and 3) to present preliminary results of our clinical experience.

Methods: The multiplanar geared minirail (M3J; patent pending; Orthofix, Inc., McKinney, Texas) was envisioned by LAK and developed by Orthofix engineers. The device consists of linked monorails connected by paired worm gears. It allows the positioning of the radial-ulnar or palmar-dorsal gears over the center rotation of the joint in order to permit distraction and/or compression of either railed segment.

The geared multiplanar fixator was used in 7 patients (8 extremities). All the patients were males with an average age of 10 years (range: 3-18 years). Clinical indications for use of the fixator included longitudinal deficiency of the radius (radial club hand n=5 extremities) and wrist flexion contracture and spasticity (n=3 extremities).

Results: After application of the fixator followed by incremental correction of the joint deformity, patients experienced improved wrist range of motion, improved range of dorsiflexion and improvements in grasp, release, and activities of daily living. There were no pin tract infections, device failures, and all patients achieved their desired goals.

Conclusions: Multiplanar-geared fixation is a useful adjunct for the management of complex upper extremity deformities in pediatric patients. The use of the fixator is simple, allows correction in the palmar-dorsal and radial-ulnar planes, and permits distraction, if it is required.

2005 KIKUYU KENYA, James A. Pressly, Charlotte Orthopaedic Specialists, Matthews, North Carolina

Kenya, a country of 30 million people in Africa, was formerly a part of British East Africa. It is bordered by Ethiopia and Sudan on the north; Uganda and Lake Victoria on the west; Tanzania on the south; and Somalia and the Indian Ocean on the east.

Our church and OrthoCarolina, the orthopaedic group I am affiliated with in Charlotte, NC, has supported Kikuyu Orthopaedic Rehabilitation Hospital for the past 9 years. The hospital was constructed in 1997 as a combined project of USAID and the Presbyterian Church USA with 15 acres of land donated for the project by the Presbyterian Church of East Africa. It borders the general hospital complex originally established by Scottish Presbyterians as a mission station in 1898.

Kenya is about the size of Texas. It was granted independence in 1962 after the Mau Mau "emergency". Most of the population is Christian with a growing Muslim minority mostly along the coast around Mombasa. Access to orthopaedic care is not good. Education is valued and the literacy rate is about 75 per cent.

In Kikuyu, there is a general hospital, an eye unit, a dental facility and the orthopaedic rehab hospital. The orthopaedic hospital is well-known and may be one of the best places to receive orthopaedic care in sub-saharan Africa. It is a 36 bed unit with male, female and children's wards. It has an outpatient clinic, an x-ray department, lab, physical therapy and a pharmacy. There are two well-equipped operating rooms.

The hospital had over 10,000 outpatient visits in 2004 and over 900 operative cases were done. The physical therapy and orthotics department were very active. The hospital is self sustaining. A clinic visit is $3 or 225 shillings; a total joint is $700 or 50,000 shillings.

On the orthopedic hospital grounds, small duplexes have been built to house doctors, administrators and nurses. Since housing is limited and so expensive in Kenya, this allows the hospital to compete with hospitals in Nairobi that can pay high salaries but do not offer housing. There is also a hostel for visiting doctors and mission teams. The hospital is staffed permanently by Dr. Johnson Murila, who attended the Alliance School and the University of Nairobi. He received his orthopaedic training in Great Britain. He is an excellent clinician and technician and a dynamic leader.

Patients come from all over Kenya and as far away as Somalia. Dr. Murila treats many different orthopaedic problems including club feet and other congenital deformities, burn scar contractures, old mal-united fractures, unreduced dislocations, and much acute trauma. He is adept at tibial and femoral nailings, total hip and knee arthroplasty and arthroscopy.

Generally, the groups going to Kikuyu include an orthopaedist, a scrub nurse and an anesthetist. Most trips also include a construction group to work on various projects around the hospital or at local churches, schools and orphanage. Each person on the team takes a 70 pound container of medical equipment donated by local hospitals and representatives of Dupuy and Zimmer. Visits are usually for 2-3 weeks in length and serve to supplement other volunteers from the USA and Europe who assist Dr. Murila.

Each volunteer doctor from my practice has found the experience unforgettable, from hospital work and contact with the Kenyan people, to the amazing beauty of the scenery and animals.

2005 HIGH RESOLUTION MRI CAN HELP DETERMINE TUMOR RESECTABILITY IN CASES OF BENIGH SCIATIC NOTCH LESIONS, Robert J. Spinner, M.D., Kimberly K. Amrami, M.D., Eric J. Dozois, M.D., Dusica Babovic-Vuksanovic, M.D., Franklin H. Sim, M.D., Mayo Clinic, Rochester, Minnesota

We believe that the integration of advanced imaging is an important component of a multidisciplinary surgical team approach in the comprehensive evaluation and treatment of patients with sciatic notch dumbbell tumors. This imaging technique allows distinction between tumor and nerve and can help predict a tumor's resectability. It appears that in patients with extensive unilateral sciatic notch dumbbell tumors, safe and complete resection may be achievable and may be predicted. Furthermore, even when these tumors are of neural origin, they seem to arise from small branches rather than the main sciatic nerve along which they track more frequently than previously thought.

2005 RECONSTRUCTION OPTIONS FOR MASSIVE BONE LOSS OF THE ELBOW, James R. Urbaniak, M.D., Division of Orthopaedic Surgery, Duke University Medical Center, Durham, North Carolina

The author discussed the management of massive bone loss of the elbow (the entire elbow joint is completely lost). Some type of external support such as a brace is usually inadequate because to get good function of the elbow the brace compresses the area of nerves in the upper arm and forearm because of lack of any buttressing of the brace with the elbow joint being absent.

Bridge plating can be used in a child with elbow fixed about 90 degrees and then the plates subsequently removed and oftentimes good elbow function with essentially full

range of motion can be achieved when the child reaches maturity.

Allografts are extremely useful, however after two to four years there is usually cartilage degeneration on both sides of the joint although painless function may persist with some instability. The allograft may be revised by:

a. re-allograft
b. prosthetic implant.

A custom-made implant of the Coonrad-Morrey type of elbow is reserved when the above fail or in the older patient (over 60 years of age).

Patient videos demonstrating the function of all of these methods were included in the presentation.

2005 ADVANCES IN REGIONAL ANESTHESIA FOR HIP SURGERY,
Thomas Parker Vail, MD, Duke Medical Center, Durham, North Carolina

Universal interest in less invasive surgical techniques, quicker rehabilitation, and improved pain management has led to innovation and improvement in regional anesthetic options for major lower extremity reconstruction. Regional anesthetic techniques hold the potential to meet the demand for improved pain management, decreased postoperative nausea and vomiting, and early return to function. While advances in the field of anesthesia have made the wider use of regional technique possible, surgeons retain a strong influence on patient choice in anesthetic options. Historically, regional anesthesia has been associated with unpredictable outcome and longer operative turnover times. Surgeons without experience in the use of regional anesthesia are hesitant to adopt the technique because of perceived inefficiency and prolonged room turnover, while also indicating great satisfaction with the pain relief provided by continuous peripheral nerve blockade. A focus on safety and effectiveness combined with newly developed catheters for continuous medication delivery, specialized infusion pumps, and a growth in the subspecialty of regional anesthesia have made this option more attractive to patients and surgeons. Regional anesthesia for major lower extremity reconstruction includes the use of single shot and continuous epidural injection, single shot and continuous spinal injection, continuous lumbar plexus blockade, and continuous peripheral blockade of the femoral and sciatic nerves. Success with these techniques has led to the application of regional anesthetic technique in conjunction with major lower extremity reconstructive procedures such as multi-ligament knee reconstruction, tibial osteotomy, unicompartmental replacement, ankle fusion, and ankle replacement, as well as hip and knee replacement. Recent evidence indicates a high degree of reliability, safety, effectiveness, and patient satisfaction with regional anesthesia. Shorter stays in the recovery room area contributes to the cost effectiveness of these techniques. Widespread adoption of regional anesthesia will require an increase in the number of anesthesiologists trained in regional techniques, continued demonstration of safety, the possibility of early mobilization with weight-bearing, the early return of proprioceptive function, and system efficiency.

2005 CHARITÉ ARTIFICIAL DISK REPLACEMENT, Kenneth E. Wood, MD, Samuel J. Chewning, MD, H. Lee Gooch, MD, Jonathan Garrett, PA-C, Piedmont Health Care, Statesville, North Carolina

OBJECTIVE: To present a brief review of the pertinent literature and data on a small series.

SUMMARY OF BACKGROUND DATA: Pathologic changes of degenerative disk disease include diminished H2O binding, annular fissures, loss of mechanical competence and subsequent narrowing and osteophyte formation.

The rationale for artificial disk replacement is based on maintaining motion at the operative segment and restoring disk height while maintaining segmental lordosis.

The first Charité disk replacement was developed in East Berlin at the Charité Clinic (1982) by Dr. Kurt Schellnach and Dr. Karin Buttner-Janz. The components of this device include two endplates made of high quality cobalt, chromium, alloy and a sliding conforming convex ultrahigh molecular weight polyethylene core insert.

Indications approved by the FDA:

a. Single level disk disease.
b. Age greater than 60 years.
c. No more than 3 mm of spondylolisthesis.
d. Failure of six months treatment.

The Charité disk replacement is implanted through an anterior retroperitoneal approach. Implantation requires complete diskectomy and proper alignment under bipolar imaging.

The US and European literature include several hundred patients and still promising results.

RESULTS: To date we have performed fourteen (14) artificial disk replacements in twelve (12) patients since December 2004. The short-term data show outstanding results with minimal complications.

DISCUSSION: Early results appear promising for the Charité disk replacement device. Concerns remain significant and include such things as possible loosening and infection.

2005 BANDA ACEH, Lewis G. Zirkle, Jr., M.D., SIGN, Richland, Washington, www.sign-post.org

SIGN was founded in 1999 to design and manufacture IM nil interlocking screw systems that could be used in developing countries where no C-arm is available. Nine-hundred (900) SIGN surgeons in 37 countries have performed 13,000 surgeries on fractured femurs, tibias and humeri using the donated SIGN systems. Six-thousand two-hundred (6,200) SIGN surgeries have been recorded on our surgical database within the last 18 months. These include pre and post operative x-rays.

When the tsunami struck Aceh, Indonesia and the surrounding areas many SIGN surgeons volunteered to help. These include surgeons from Vietnam, Nepal, India, Bangladesh and the US. I traveled with the executive director of SIGN to Banda Aceh in January 2005 to help and to assess the situation for future help. We were met in Jakarta and accompanied to Aceh by Dr. Azharuddin. He was the only orthopedic surgeon in Aceh with a population of 4.5 million people.

Dr. Azharuddin's hospital was destroyed so we worked in a Danish mobile surgery hospital. We then traveled back to Jakarta where we demonstrated the SIGN system to Dr. Azharuddin and to the Fatmawati Hospital residents. Dr. Azharuddin then returned to Aceh after the hospital had been cleaned. The first elective orthopedic surgery was a SIGN nailing of a fractured femur. Since then many tsunami victims have shown up for treatment. These patients had been previously treated by bone setters and malunions and nonunions resulted.

I showed an interview of Dr. Azharuddin and his hospital. The hospital lost all of the surgical equipment including Dr. Azharuddin's personal equipment and the hospital had eight inches of mud on the floor. Dr. Azharuddin lost his house and all of his possessions including his library and teaching materials. Fortunately his family was unharmed. We showed the destruction of the tsunami in Banda Aceh and the people attempting to return to the activities of their daily living.

We hope this video will show Dr. Azharuddin's sadness yet determination to continue caring for his people.

2005 RING REMOVAL FROM A SWOLLEN FINGER – A REFINED TECHNIQUE, Wayne B. Venters, M.D., Spokane, Washington

Removing a ring or other circular object (wide steel band) from a swollen finger can be most difficult if not almost impossible.

The usual method of removing rings made of soft or precious metal is by lubricating or soaping the finger well, wrapping with a string, using the standard circular blade ring cutter or using a pneumatic saw or diamond burr on steel bands. These methods mutilate the ring, often held very precious by the wearer, may lacerate or burn the finger, leave micrometal shavings in an open wound which have caused foreign body granulomata and may not be feasible with a massive object, such as a large threaded nut from a lug bolt. J.D. Nancarrow in 1973 recognized that vascular inflow to the finger had to be stopped before venous and lymph drainage outflow could shrink the finger.[1] He used a blood pressure cuff briefly.

C.R. Cresap also used a blood pressure cuff only before unwrapping the elastic tape from a finger but did not prevent inflow to the palm while trying to compress the edema

out of the finger.[2]

The following technique was developed while I was removing a 12 mm wide threaded lug nut from a 2½ year-old child's finger some hours after it had become impaled. The following refined method has been used extensively in our office, emergency department, and preoperative area.

Apply a padded pneumatic tourniquet, or blood pressure cuff, on the upper arm, wrap the digit with a small Penrose drain or elastic tape (Coban®), wrap the entire extremity with an Esmarch or Ace bandage and inflate the tourniquet above systolic blood pressure. Re-wrap the finger with the elastic tape several times to compress the blood and lymph out of the swollen digit into an empty palm, because the tourniquet is still inflated, and the palm has been emptied with the Esmarch or Ace. Remove the ring or object using a mechanical method desired, such as a string, rubber band or piece of glove as described previously in the literature. The equipment for removal is readily available in all medical offices and emergency departments and this method provides a simple solution to a common and often difficult problem. This technique may not work to remove rings from large arthritic knuckles often seen in the preoperative area. However, it is worth a try and the technique is recommended.

I am not aware of any complications using this technique.

References:

1. Nancarrow, J.D.: "A Simple Technique for Removing Stubborn Rings Prior to Hand Surgery", J.HANDSBURG (BR) 1993, 18B:544.

2. Cresap, C.R.: "Removal of a Hardened Steel Ring from an Extremity", AM J EMERG MED, 1995 May; 13(3): 0318-20.