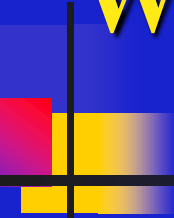


**AAOS: POSNA
SPECIALLY DAY HIGHLIGHTS
WOA Meeting, Carlsbad, CA, 2012**



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Disclosures

- Synthes: Consultant
- Allergan: Consultant
- JBJS A, Turner-White: Hon
- AAOS: Fracture committee/ Dysplasia Committee
- IHDI
- IPSG
- Bernese Hip Society: Hon
- ANCHOR study group: RS
- Rady Children's: PDF
- OREF: Grant 2010
- Stocks: Glaxo, Cadila, Reddy, Johnson, Wockhardt Pharmaceuticals

Quality, Safety and Value; Internally vs. Externally Driven: James Kasser





Quality, Safety and Value; Internally vs. Externally Driven: James Kasser

Value = outcome / cost

Increase value from decreasing cost and increasing outcome

To Err is Human – about 50% of events may be prevented

Checklist implemented in 7 Children's Hospitals

Payer and patient driven outcomes

Leapfrog group

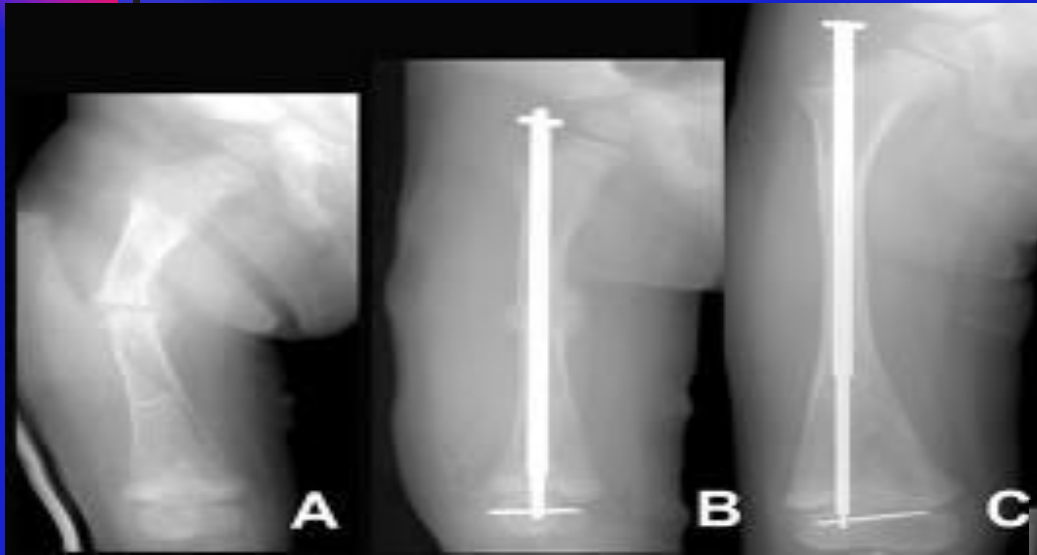


Quality, Safety and Value; Internally vs. Externally Driven: James Kasser

TME = total medical expense

When something is being measured, it leads to performance improvement

Osteogenesis Imperfecta: New Science, New Drugs, New Rods: What is the state of the art?



Osteogenesis Imperfecta: New Science, New Drugs, New Rods: What is the state of the art?

Biphosphonates Treatment and Medical Management to Optimize Fracture and Osteotomy Healing – Arabella Leel

- Biphosphonates are being used off-label
- Children with OI, biphosphonates work to increase bone (not so in adults!)
- Starting to be used as a therapy as early as one month old.

Osteogenesis Imperfecta: New Science, New Drugs, New Rods: What is the state of the art?

Upper Extremity Management in OI – Francois Fassier

- DASH tool and PODCI: on Academy website
- UE problem is not just cosmetic, also functional
- Range of motion is more critical to function than strength, but mobility is limited in OI
- Little data on functional outcomes (no pre-op or post-op functional records)

Osteogenesis Imperfecta: New Science, New Drugs, New Rods: What is the state of the art?

Current Trends in Lower Extremity – Paul Esposito

- Bracing doesn't decrease the risk for fracture
- Timing for surgery is controversial – do at the time child begins standing
- Biphosphonate treatment leads to better surgical results, but dc bisphosphonate pre-op for a while and post-op
- Make as many osteotomies as needed to make bone straight – rod is straight



Evolution of Femur Fracture Mx Amongst POSNA Members

In 2011 the Trauma committee of POSNA was surveyed re: femur fracture treatment: Results reported

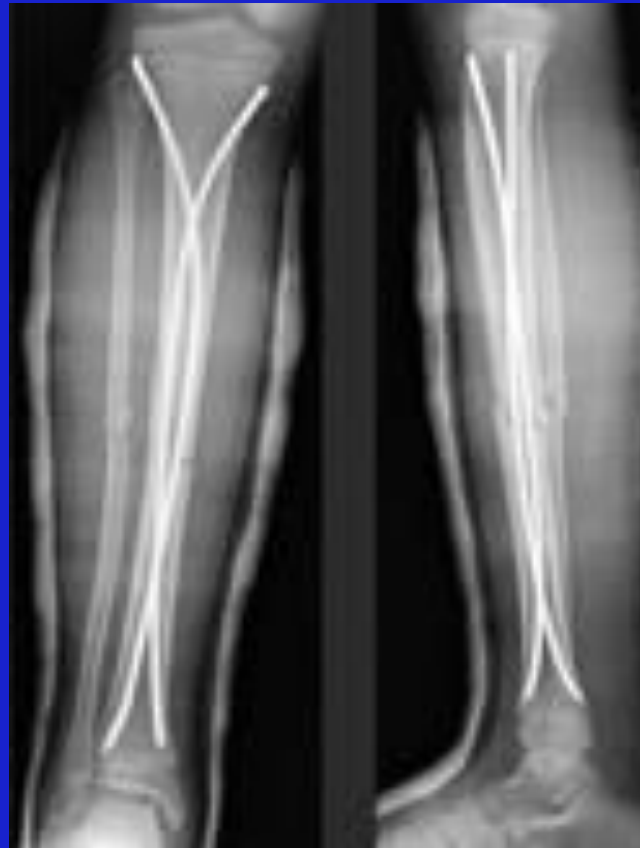
- 58% response (excellent!)
- 44% did not find the guidelines resulting from the 1998 survey helpful (as most of those attending this meeting, when polled)
- Now 1/2 of surgeons use waterproof cast liners (though Gortex is discontinued)
- More use of Pavlik Harness for infants < 6 mos old
- 12-23 month olds; 95% use spica and 5% use traction (compared to 30% traction in 1998)

Evolution of Femur Fracture Mx Amongst POSNA Members

2.5 year olds; lots of treatment options with acceptable 3.5 cm shortening

- Age 11 to maturity; 55% use troch nails (previously spica cast and traction in 1998)
- Trends: Use Troc entry nails. DO NOT USE pyriformis nail –until mature
- * Decrease in external fixators seen in all pediatric ages
- *Age 2 – 5 years: more flexible nails
- ** >11 years, more troch. nails

Tibial elastic nailing



Flexible Intra-medullary Nailing for Tibial Fractures in Children and Adolescents: Indications and Technical Tips

- Many modalities are available.
- External fixation is on the decline
- Titanium nails 2-4mm diameter
- Avoid physes and tibial tubercle





Motocross and ATV's: Are We For Them or Against 'em?

- Motocross is becoming more popular in Rochester, with competition ages as low as 4-8 years old
- More related fractures have been seen
- In 2009, the morbidity and cost of these injuries were investigated
- 363 injuries in 297 patients, 50% of which required admission
- 90% of the pediatric motocross injuries were orthopedic, whereas 68% of all injuries were orthopedics
- >90% of the patients requiring surgery were Ortho patients
- Long bone fractures were most common
- Head injuries second most common, with all but one sustaining injury while wearing a helmet.
- Average charges related to these injuries \$15,000 up to \$4.5 million
- Don't have the total number of patients (denominator)

Motocross and ATV's: Are We For Them or Against 'em?

- 2010 May-October, 139 riders surveyed: 50% sustained a concussion, only 40% of them sought medical care, 30% continued to ride the same day.
- Kids that are sponsored and aggressive drivers are more prone to injury
- If they get help fitting helmets, concussion rate is 41%
- Now the goal is not to stop the sport, but to partner with the Motocross community for better safety
- ATV (4 wheels, now 3 wheels are outlawed):
- 2005, 41,000 pediatric ER visits and 146 pediatric deaths
- 30% ATV injuries are in <16 year olds
- 1997-2006: rate increased 240% and Spine injuries increased 476%
- Parents and patients need to be educated and MDs are working with families of motor sports

Sports Concussions



The head strikes a hard object creating a concussion-type injury

When Can Pediatric and Adolescent Patients Return to Sport Following Concussions or Closed Head Injury? - Lawrence Wells

- 4 million/year sports related concussions
- Symptoms are recognized and management improved due to media and increased awareness
- #1 sport is football, #2 is soccer
- Females > males
- Induced by biomechanical forces
- Functional, not structural injury
- MTBI: decreased cerebral blood flow and decreased glucose at time of injury lead to decreased healing time.
- Balance off – vestibular system

When Can Pediatric and Adolescent Patients Return to Sport Following Concussions or Closed Head Injury? - Lawrence Wells

- **Key is cognitive rest (no school, reading, texting)
- Vestibular Therapy: (OT, PT, AT) gaze and gait stabilization
- Baseline impact tests of all athletes
- Is concussion suspected, out of game!
- Tolerance: symptom free before sports and normal exam
- Younger patients take longer to recover as metabolic demands decrease as athletes get older.

Neuromuscular spine



Preventing Complications in Neuromuscular Spine Surgery: Kirk Dabney

- Mortality now 1%
- Multidisciplinary medical team should be involved
- GI considerations: optimize nutrition, but don't delay surgery so much the deformity gets significantly worse
- Cardiac: in syndromes especially
- Pulmonary: aggressive post-op pulmonary toileting

Preventing Complications in Neuromuscular Spine Surgery:

Kirk Dabney

- Endocrine issues- bone density
- Shunt failure – shunt material gets stiffer over time
- Beware latex allergies
- Fusion levels: consider cardio-pulmonary complications
- Hypovolemia, pneumothorax
- Unit rod vs. Screws discussion
- Preventing Infection: Gentomysin in allograft



SPINAL NEWS

International

Issue 20 July 2011



Wasted implants contribute to high costs of spinal surgery

A study presented in March at the ISASS Annual Meeting, Las Vegas, USA, has shown that material waste during spinal surgery is considerably higher than that published in the trauma and arthroplasty literature, with estimated annual costs of US\$127 million every year in the USA. The study also showed that the implementation of an awareness programme reduced monthly costs attributable to intra-operative waste by 66% in one US institution

“Prior studies have demonstrated that surgical implant waste is a factor influencing cost in arthroplasty and orthopaedic trauma.

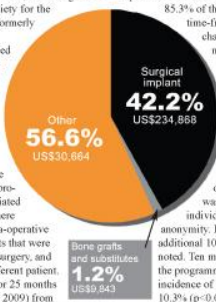
However, the role of intra-operative waste has not yet been studied in the context of spinal surgery.” Alexandra Sorocescu, Department of Orthopaedic Surgery, Dalhousie University, Halifax, Canada, told delegates at the ISASS (The International Society for the Advancement of Spine Surgery, formerly the Spine Arthroplasty Society) Annual Meeting. “This study aimed to quantify the incidence of intra-operative waste in spinal surgery, and to examine the efficiency of an awareness programme directed at surgeons in inducing a decrease in the intra-operative waste.”

Each year, over 600,000 surgical interventions are performed on the spine in the United States. Spine procedures are known for their associated high cost, particularly in cases where instrumentation is employed. Intra-operative waste has been defined as products that were prepared but not used during the surgery, and which cannot be re-used for a different patient. The investigators collected data for 25 months (from October 2007 to November 2009) from one US academic centre. During the initial observation

period (15 months), a total of 1,304 spine procedures were performed. In that time, intra-operative waste occurred in 263 cases (20.2%). This corresponded to a total number of 739 items, amounting to a total of US\$275,356. Surgical implants accounted for only 42% of the number of items wasted. However, surgical implants accounted for a cost burden of US\$234,868 or 85.3% of the cost of all waste during the initial time-frame. Contamination and surgeon’s change of mind accounted for the majority of the wasted items.

After an initial observation period of 15 months, Sorocescu said, an awareness programme was put in place. “As part of the programme, all spinal surgeons and operating room staff were made aware of what constituted intra-operative waste. Surgeons were also presented with the data of costs associated with surgical waste, both on an institutional and an individual level monthly without anonymity. Data were collected for an additional 10 months after the intervention,” she noted. Ten months after the implementation of the programme, the results showed that the incidence of intra-operative waste had fallen to 10.3% (p<0.0001). Monthly costs associated

Continued on page 4



Can epidural stimulation help paralysed patients to stand and walk?

A case study published in *The Lancet* in May gathered tremendous media attention around the world. It showed that epidural stimulation enabled a 23-year-old man who had paraplegia from a C7-T1 subluxation to stand (with assistance provided only for balance) for 4-25min. The researchers also showed that seven months after surgical implantation of a 16-electrode array on the dura (L1-S1 cord segments) in December 2009,

the patient recovered supraspinal control of some leg movements, but only during epidural stimulation.

The team of researchers from the University of California, Los Angeles (UCLA), the California Institute of Technology (Caltech), and the University of Louisville have shown that using a stimulating electrode array has assisted a paralysed man to stand, step on a treadmill with assistance, and, over time, to regain volun-

tary movements of his limbs.

They have found that the electrical signals provided by the array stimulate the spinal cord’s own neural network so that it can use the sensory input derived from the legs to direct muscle and joint movements.

The patient, Rob Summers, had the subluxation as a result of a motor vehicle accident and presented with complete loss of clinically detectable voluntary motor function and partial preservation of sensation

below the T1 cord segment.

Leading researchers on the 11-member team are two prominent neuroscientists: Susan Harkema, of the University of Louisville’s Department of Neurosurgery, Kentucky Spinal Cord Research Center and Frazier Rehab Institute, a service of Jewish Hospital & St. Mary’s HealthCare in Louisville; and V Reggie Edgerton, the Division of Life Sciences and David Geffen School of Medicine at UCLA. Joel W Burdick, professor of Mechanical Engineering and Bioengineering at Caltech, developed new electromechanical technologies and computer algorithms to aid in locomotion recovery in spinal cord

Continued on page 4

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BIBA Publishing

Cost Difference in a Randomized Prospective Study of Hybrid Versus All-Pedicle Screw Construct in Adolescent Idiopathic Scoliosis Patients: Lawrence Haber

- At Dr. Habner's institution (Jackson, MS), OR is \$17/minute
- Screws \$12,203
- Hybrid \$9,571
- Difference is \$2,632 plus OR time = \$3,215 extra for screws case
- Radiation ALARA – Screws 2.5 msv, Hooks 0.5 msv
- 1ms = 4/100,000 risk of fatal cancer
- 10-30 msV = threshold for breast cancer



Thank You

