Posterior Wall Fractures Evaluation Approach & Treatment

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No financial disclosures for this talk

"I get by with a little help from my friends" Some slides in this talk are from colleagues







- Posterior Wall and Posterior Column Fx
- Case Examples
- Surgical Approach
 - Kocher-Langenbeck
- Marginal Impaction
- Reduction Techniques and Assessment





Posterior Wall Fx Biomechanics

- Simulated Single Leg Stance
- Intact Pelvic Ring, Proximal Femurs
- Simulated Abductor Mechanism
- Simulated Abdominal Muscle Tethers
- Femurs Free Translation
- Sacrum Limited Constraints

Olson et al JBJS 1995





Posterior Wall Fractures

Single Large Fragment 27% Articular Surface Area



Tested Normal, Defect Removed, Repaired





Posterior Wall Fxs Alter Hip Mechanics

- Alteration of Loading After Fracture
- Small Amounts of Femoral Head Subluxation
- Change in Deformation of Innominate Bone
- Both May Play a Role



Olson et al JBJS 1995



Indications for Treatment

Instability Incongruence

If there is any question Consider an intra-operative stress examination





Olson & Matta JOT 1993

Tornetta et al JOT 2015



Which Posterior Wall Fxs Are Unstable?

 Radiographic assessments of techniques to determine instability after posterior wall fractures

Keith et al.; Calkins et al; Moed et al

 All techniques predict instability with large fragments and stability with small ones.
 Moed et al points out the need for EUA to assess stability of the joint.





Criteria for Non-Operative Management

 A retained small osteochondral fragment in the acetabular fossa with no associated incongruence of the femoral head







Decision to Operate or Not Case 1





C-Arm - Ipsilateral

Obturator Oblique

Flexion

Adduction

Internal Rotation



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Nonoperative treatment: 3 months











Decision to Operate or Not Case 2





Stress Exam



Decision to Operate or Not: Injury Factors

- Congruent hip
 - Fracture displacement
 - Loose bodies
- Stable joint
 - size Isn't Everything Fracture pattern
 - Size
 - Location







Surgical Approach Kocher Langenbeck the preferred choice Prone position





Kocher-Langenbeck Exposure



Trochanteric Bursa Gluteus Sling







Piriformis ——— Sciatic Nerve —— Gluteus Medius —





Normal Anatomy

Piriformis Sciatic Nerve









Variant Anatomy

Bifid Sciatic







"Conjoined" Tendon Sup Gemellus Obt Internus Inf Gemellus







Obturator Internus Tenotomy – Lesser Notch

Reflect muscle over nerve for retractor placement





Elevate Gluteus Minimus Clean Retroacetabular Surface Elevate Wall











Marginal Impaction





Treatment









Superior

Anterior

Spring Plates

Used to hold small fragments of posterior rim Can be used with or without a plate







Marginal Impaction Case 4





Post-op Assessment



Case 5







Digastric Trochanteric Osteotomy

Trochanteric "Digastric" Osteotomy (aka Trochanteric Flip) Gluteus Medius and Vastus Lateralis remain incontinuity with Troch

Relaxes gluteus medius muscle tension Much better access to anterior/superior posterior wall







Incidence10 Yr SurvivalPost Wall fx13%81%Post Col fx2%100%Post Col+Pw fx3%85%Median time to failure ~ 1.5 yr

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Two to Twenty-Year Survivorship of the Hip in 810 Patients with Operatively Treated Acetabular Fractures

Moritz Tannast, MD, Soheil Najibi, MD, PhD, and Joel M. Matta, MD

Investigation performed at the Hip and Pelvis Institute, Santa Monica, California







- Posterior Wall common pattern
- Instability and Incongruence
- Kocher-Langenbeck Approach
- Marginal impaction can be associated with any type of fx - Look carefully on pre-op imaging
- Buttress wall fragments, Stable column fixation



