Complications and Injuries Associated with Traumatic Hip Dislocations: What Predicts Outcome?

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Background

- Hip joint is a ball-and-socket joint
- High energy to disrupt an inherently stable joint
- Traumatic dislocations are an orthopaedic emergency
- Risk of osteonecrosis is known to increase with a delay in diagnosis / reduction
- A prompt, stable reduction is necessary
Background

Posterior

Anterior (obturator)
Purpose

- Evaluate the outcomes of traumatic hip dislocations in a large series at a Level I trauma center
- Identify prognostic factors of outcome to better educate first line providers and patients and to prevent missed injuries
Methods

- Retrospective review of a prospectively obtained trauma database at a Level 1 trauma center
- May 2003 – December 2008
- All patients ages 15 and over who presented with a traumatic hip dislocation (157 patients)
Methods

- Excluded – 37 patients
- Exclusion criteria:
  - Prior total or hemiarthroplasty of hip
  - “Central dislocation”
  - Expired within 1 week of admission
  - Patients without adequate documentation of injury time or reduction time (transfer from outside hospital)
Methods

- 120 patients met our inclusion criteria (121 hips)
- Chart reviews were completed
  - Demographic data
  - Mechanism of injury
  - Associated musculoskeletal injuries and nerve palsies
  - Treatment of dislocation and associated acetabular fracture
  - Progression to total hip arthroplasty
Methods

• Radiographs:
  • Plain x-ray
  • Computed Tomography (CT) scans
  • Fluoroscopy (intraoperatively)

• Classification
  • Direction of dislocation
  • Presence of acetabular retroversion
  • Acetabular fractures
  • Heterotopic ossification
  • Osteonecrosis
  • Post-traumatic arthritis
Results

- 84 males (70%) / 36 females (30%)
- Mean age: 32 (13-82)
  - Males: 33
  - Females: 30
- Avg ISS: 13.08 ± 9.45 (4-57)
- Type of dislocation:
  - Posterior: 110 (91%)
  - Anterior: 11 (9%)
- Side:
  - Right hip: 47 (39%)
  - Left hip: 74 (61%)
Results

- Acetabular retroversion -16% incidence
Results

- Average time to reduction: 5h 12min (1.5-15.2h)
- Follow up (87pts) 9.29 mos (1-61 mos)
- 33 pts lost to follow up (27.5%)
Incidence of Associated Injuries

- Contra UE: 6%
- IP UE: 7%
- Contra - ankle/foot: 6%
- IP - ankle/foot: 8%
- Contra - knee/leg: 7%
- IP - knee/leg: 10%
- Contra - femur: 6%
- IP - femur: 3%
- IP - femoral head: 19%
- Total extremity: 62%
- Pelvis: 9%
- Acetabulum: 69%

IP – Ipsilateral, Contra – Contralateral, UE – upper extremity
83 of 121 dislocations (69%) had associated acetabular fractures.
Simple Dislocations

- 26 patients (21%)
  - 10 had additional injuries (pelvis and UE/LE injuries)
  - No incidence of AVN or post-traumatic arthritis
  - 1 patient with HO
  - Poor follow up (1-9 months)
Obturator Dislocations

- 11 (9%) in this series
- All underwent closed reductions in ED
- No associated acetabular fractures, ipsilateral LE injuries, HO, or AVN
- 1 with pelvic ring injury
- 1 THA (17 mos post injury for post-traumatic arthritis)
Osteonecrosis

- 6 hips (4.96%)

- Average time to reduction:
  - Osteonecrosis: 9.11 hours
  - No osteonecrosis: 5.08 hours
  - p < 0.001

- Average time to diagnosis – 11.5 months

- All displaced acetabular fractures necessitating operative treatment
Peripheral nerve injury

- 13 (11%) sciatic or peroneal nerve palsies
- 7 transient

Post-traumatic arthritis

- 10 hips (8%) developed x-ray evidence
  - Joint space narrowing, cyst or osteophyte formation
- Avg time to reduction: 7 hours
- 7 of 10 had ORIF for associated acetabular fractures

Heterotopic Ossification

- Overall rate: 8%
  - 9 of 10 associated with acetabular fractures
Total Hip Arthroplasty

- **Progression to THA – 7 (5.7%)**
  - Average age: 48 (25-75)
  - Average time of THA 11.8 months
  - 4 transverse + PW
  - 2 posterior wall

- **1 obturator dislocation**
  - Time to reduction: 2.5h
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<td>fracture-dislocations?</td>
<td>Yes 101 5 years</td>
<td>Yes 204 21 years</td>
<td>Yes 91 40 years</td>
<td>No 50 (simple) 15 years</td>
<td>Yes 121 5 years</td>
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<td>Post-traumatic arthritis</td>
<td>26%</td>
<td>32%</td>
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<td>7%</td>
<td>13%</td>
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Discussion

- 16% incidence of acetabular retroversion
- Incidence in normal population reported 6%
- Explore a cohort in this population
Summary

- Examining MD should have high degree of suspicion for associated LE / pelvic injuries

- Follow up is extremely important
  - Even at short term follow-up, significant complication rates are found in this young population
    - Average time to diagnosis for AVN – 11.5 months
    - Average time to diagnosis for posttraumatic OA – 11.6 months

- Educate the patient about injury and potential complications
Limitations

- Study is retrospective
- Single center study
- Poor follow up
- No functional outcome scores
Thanks...

- Drs. Maureen Finnegan, John McDonald, Rahul Banerjee, Lisa Cannada, & Joseph Borrelli
• Questions….

• Comments…