Pelvis and Acetabular Fractures in Children

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Pelvis and Acetabular Fractures

• Pelvic fractures comprise 0.2% of all pediatric fractures
• 1-5% of admissions to Level 1 pediatric trauma centers have a pelvis fracture

Pelvis and Acetabular Fractures

• Most traumatic pelvic injuries requiring admission in children are a result of motor vehicle accidents
  • Pedestrian struck: 60%
  • Passenger in vehicle 22%
  • Falls from a height: 13%
  • Other: 5%

Pelvis and Acetabular Fractures

• The leading cause of death in children with a traumatic pelvis injury is a coexisting traumatic brain injury
• In children, a traumatic pelvis fracture is a marker for the presence of more severe injuries and overall high Injury Severity Scores (ISS)

Open Pelvis Fracture

• Bowel injury
• Rectal injury
• Bladder injury
• Urethral injury
• Sacral injury with dural tear
• Right tibia and fibula fracture
• Left pneumothorax
• Hemorrhagic shock
• Dilutional coagulopathy
  • 7 units of pRBC’s
  • 4 units FFP
  • 10 liters of PlasmaLyte
  • Platelets, cryo, albumin

• Injury Severity Score (ISS) of 54!
Pelvic Apophyseal Avulsion Fractures

- Pelvic apophyseal avulsion fractures typically occur in adolescent athletes due to a sudden strong muscle contraction while pelvic growth plates are still open.
- Most of these are treated conservatively with rest and protected weightbearing, followed by rehabilitation and gradual return to sports participation.
- In patients with fragment displacement greater than 15 mm and high functional demands, surgical treatment should be considered.
Pelvic Apophyseal Avulsion Fractures

• 2 year and 6 month old female backed over by a pick-up truck in the driveway
• No LOC, hemodynamically stable
• Complaining of abdominal pain

Pelvis and Acetabular Fractures

• Pain with palpation of the abdomen and pelvis
• ? AP pelvis x-ray in trauma bay?
• Skip it because she is going to CT anyways?

Pelvis and Acetabular Fractures

• Single screening AP pelvis x-ray will provide a lot of information about pelvic ring stability in the acute setting
• CT scanning is the best modality to evaluate bony pelvic injury, especially posterior structures (sacro-iliac joints, sacrum) and the acetabulum
No thoracic or abdominal injuries identified on her CT scan

Underwent closed reduction and application of hip spica cast

Last seen 8 months post-injury (3 years, 2 months of age) with supine AP pelvis x-ray

Walking and running in the office

No hip or back pain and no leg length inequality

? Long-term outcome?
• 15 y 10 m previously healthy male unrestrained back-middle seat passenger in MVC, hit a tree at highway speed. Fatality at scene.
• Presented at OSH, reported to have sternal fracture, pulmonary contusions, L1/L2 fractures, and right acetabular fracture.
• Alert and hemodynamically stable on arrival.
• Urethrogram shows intact bladder/urethra.
• Able to move BLEs, 2+ symmetric pulses.
Transferred to PICU for monitoring
A few hours after transfer experienced acute respiratory failure requiring intubation

- Taken to OR later that evening for T12-L4 PSIF & interbody fusion L1-L3
- 2 L blood loss
- Traumatic discectomy
- Multiple rootlet avulsions
- Post op on 2 pressors to maintain cord perfusion MAP >60
- Continued intubated post operatively

Post-injury day 2 – Open reduction and internal fixation (ORIF) of right acetabular fracture
- EBL 600 ml
- Extubated
- TOWR RLE
- SCDs for DVT prophylaxis
- 2 weeks of Celebrex for HO prophylaxis

Pelvis and Acetabular Fractures

- 14 year and 4 month old male tried to jump a creek but his lead foot hit the cement retaining wall and he sustained an injury to his right hip
- He felt a lot of hip pain initially, but felt a pop after trying to move, and felt better afterwards
- Came to ER and had AP pelvis x-ray done

- 3 weeks post-op – discharge home
  - TOWR RLE
  - AFO LLE for partial foot drop
  - 4 weeks post-op
    - Doing well, incison healed
  - 9 weeks post-op
    - Right hip doing well, WAT
    - Left external snapping hip, PT
  - 15 weeks post-op
    - Right hip doing well, WAT
    - Left hip doing well
    - Left ankle dorsiflexion 5/5, AFO
  - 16 months post-op
    - Doing well with hip and spine
    - 5/5 strength at left ankle

- 6 weeks post-op – discharge home
  - TOWR RLE
  - AFO LLE for partial foot drop
  - 4 weeks post-op
    - Doing well, incison healed
  - 9 weeks post-op
    - Right hip doing well, WAT
    - Left external snapping hip, PT
  - 15 weeks post-op
    - Right hip doing well, WAT
    - Left hip doing well
    - Left ankle dorsiflexion 5/5, AFO
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Pelvis and acetabular fractures

Axial CT
Sagittal CT

Simple Types
- Anterior wall
- Posterior wall
- Transverse
- Oblique

Associated Types
- Tscherne
- Blunt trauma
- Osteoporotic
- Pathological fractures

Images of various fracture patterns and treatments.