AMSER Case of the Month
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Left Arm Injury

Nickveer Heer, OMS-IV, Lake Erie College of Osteopathic Medicine

Dr. Matthew Wrench, D.O. PGY-4, Allegheny Health Network
Dr. Matthew Hartman, M.D., Allegheny Health Network
Dr. Jason Long, M.D., Allegheny Health Network

Allegheny Health Network
Lake Erie College of Osteopathic Medicine
Patient Presentation

- **HPI:** Patient is a 36 year old female who presented to the ED secondary to a motor vehicle collision and left arm injury. She was at a stoplight when she was hit by a truck. Patient denies loss of consciousness, headache, neck pain, back pain, abdominal pain, nausea/vomiting, chest pain, or shortness of breath.
- **PMH:** Significant for heroine use
- **Surgical Hx:** None
Patient Presentation

• **Social Hx:** Nonsmoker, drinks alcohol socially, IV heroine use
• **Family Hx:** None
• **Allergies:** None
• **PE:**
  • VS: BP 105/71, RR 16, Height 5’2”, Weight 52.2 kg, SpO2 97%, Temp 36.6°C
  • General: Not in acute distress
  • Heart: RRR, no M/R/G
  • Lungs: CTABL, no wheezing, rhonchi, or rales
  • Abdomen: Soft, non-tender, normoactive bowel sounds
  • MSK: Tenderness and signs of injury present – patient has tenderness and swelling of the left elbow, forearm and wrist.

• **Labs:** Non-contributory
Which imaging should we order?
## ACR Appropriateness Criteria

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<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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<tr>
<td>Radiography area of interest</td>
<td>Usually Appropriate</td>
<td>Varies</td>
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<tr>
<td>CT area of interest with IV contrast</td>
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<td>MRI area of interest without IV contrast</td>
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<td>Bone scan area of interest</td>
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<td>US area of interest</td>
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Comminuted fracture of the ulnar diaphysis.

Anterior dislocation of the radial head.
Abnormal widening of the left radiocapitellar joint space.
Differential Diagnosis

- Elbow Dislocation
- Elbow Fracture
- Hand dislocation
- Hand fracture
- Wrist dislocation
- Wrist fracture
Final Diagnosis:
Monteggia Fracture
Discussion

- Monteggia fractures are most commonly a result of a direct blow to the forearm with the elbow in extension and forearm in hyperpronation.
- Fracture of the proximal third of the ulna with dislocation of the head of the radius.
- Bimodal distribution: young males – high energy trauma; elderly females – low energy trauma (ground level falls)
- Account for about 1-2% of all forearm fractures
- Most significant risk factors:
  - Sports, osteoporosis, and post-menopausal phase
- Bado Classification:
  - Type I – Fx of the proximal third of the ulna with Anterior dislocation of radial head (60%)
    - Most common in children and young adults
  - Type II – Fx of the proximal third of the ulna with Posterior dislocation of the radial head (15%)
    - 70-80% of adult Monteggia fractures
  - Type III – Fx of the proximal ulnar metaphysis with lateral dislocation of the radial head (20%)
  - Type IV – Fx of the proximal thirds of both the ulna and radius with dislocation of the radial head in any direction
Prognosis and Management

• Nonoperative
  • Closed reduction – more common and successful in children
    • For Bado Type I and III, cast in supination after reduction

• Operative
  • Most Monteggia fractures in adults are treated surgically
  • Indications:
    • Acute fractures which are open or unstable
    • Monteggia fractures associated with radial head fractures

• Complications
  • Posterior Interosseus Neuropathy seen in up to 10% of acute injuries
    • Treatment – observation; spontaneously resolves in most cases
    • If no improvement, obtain nerve conduction studies
Radiology Diagnosis

• AP and lateral radiographs of both the elbow and wrist will show an ulnar fracture with a radial head dislocation.

• Classification of the Monteggia fracture is based on the direction to which the radial head is dislocated
  • Type I – Anteriorly
  • Type II – Posteriorly
  • Type III- Laterally
  • Type IV- Radial and ulnar fractures with radial head dislocation in any direction
References


• Peter, V. (2002, January 01). Rare presentation of a type I Monteggia fracture. Retrieved December 06, 2020, from https://emj.bmj.com/content/19/1/88
