

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

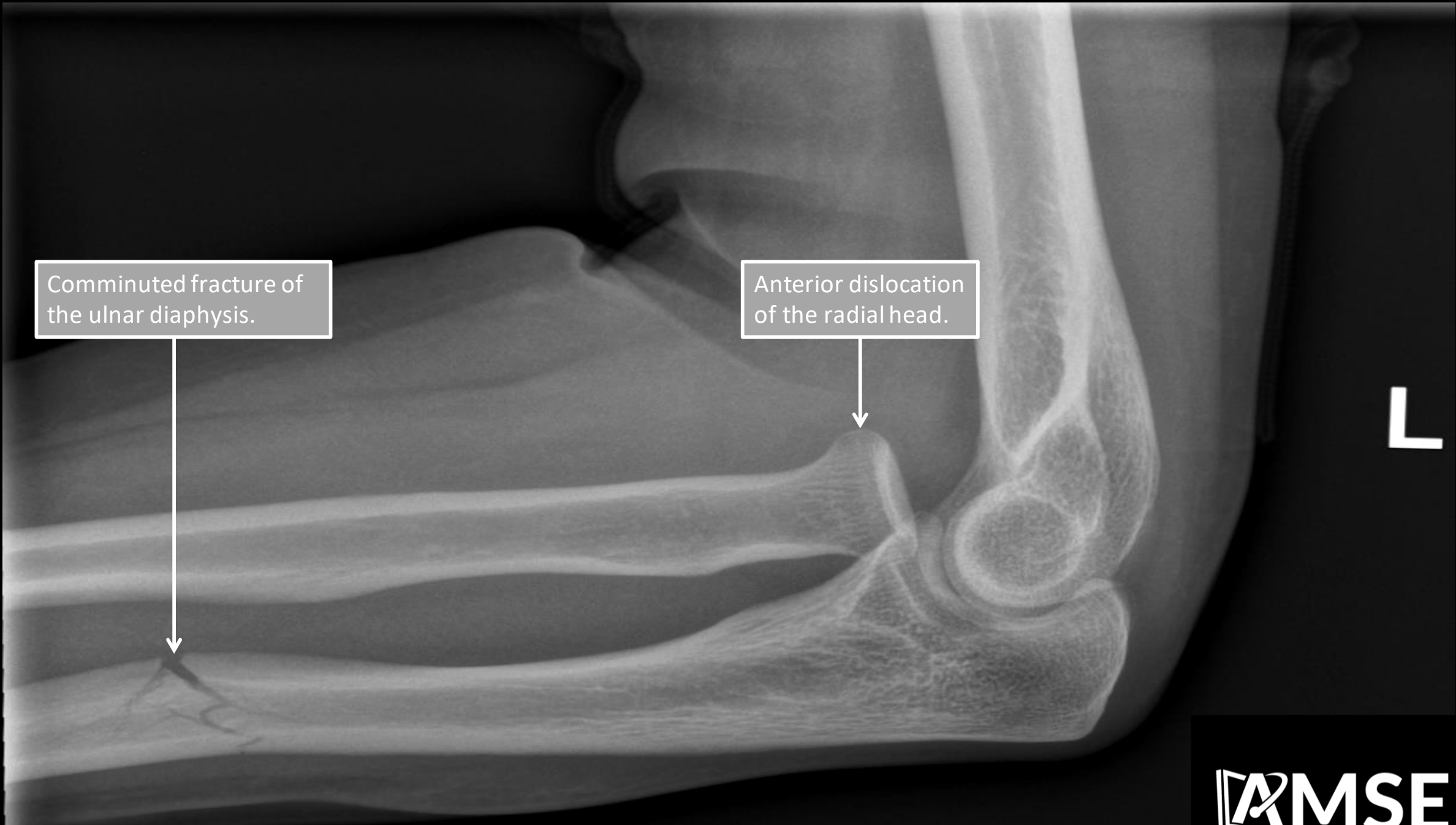
Procedure	Appropriateness Category	Relative Radiation Level
Radiography area of interest	Usually Appropriate	Varies
CT area of interest with IV contrast	Usually Not Appropriate	Varies
CT area of interest without and with IV contrast	Usually Not Appropriate	Varies
CT area of interest without IV contrast	Usually Not Appropriate	Varies
MRI area of interest without and with IV contrast	Usually Not Appropriate	○
MRI area of interest without IV contrast	Usually Not Appropriate	○
Bone scan area of interest	Usually Not Appropriate	☢☢☢
US area of interest	Usually Not Appropriate	○



Comminuted fracture of the ulnar diaphysis.

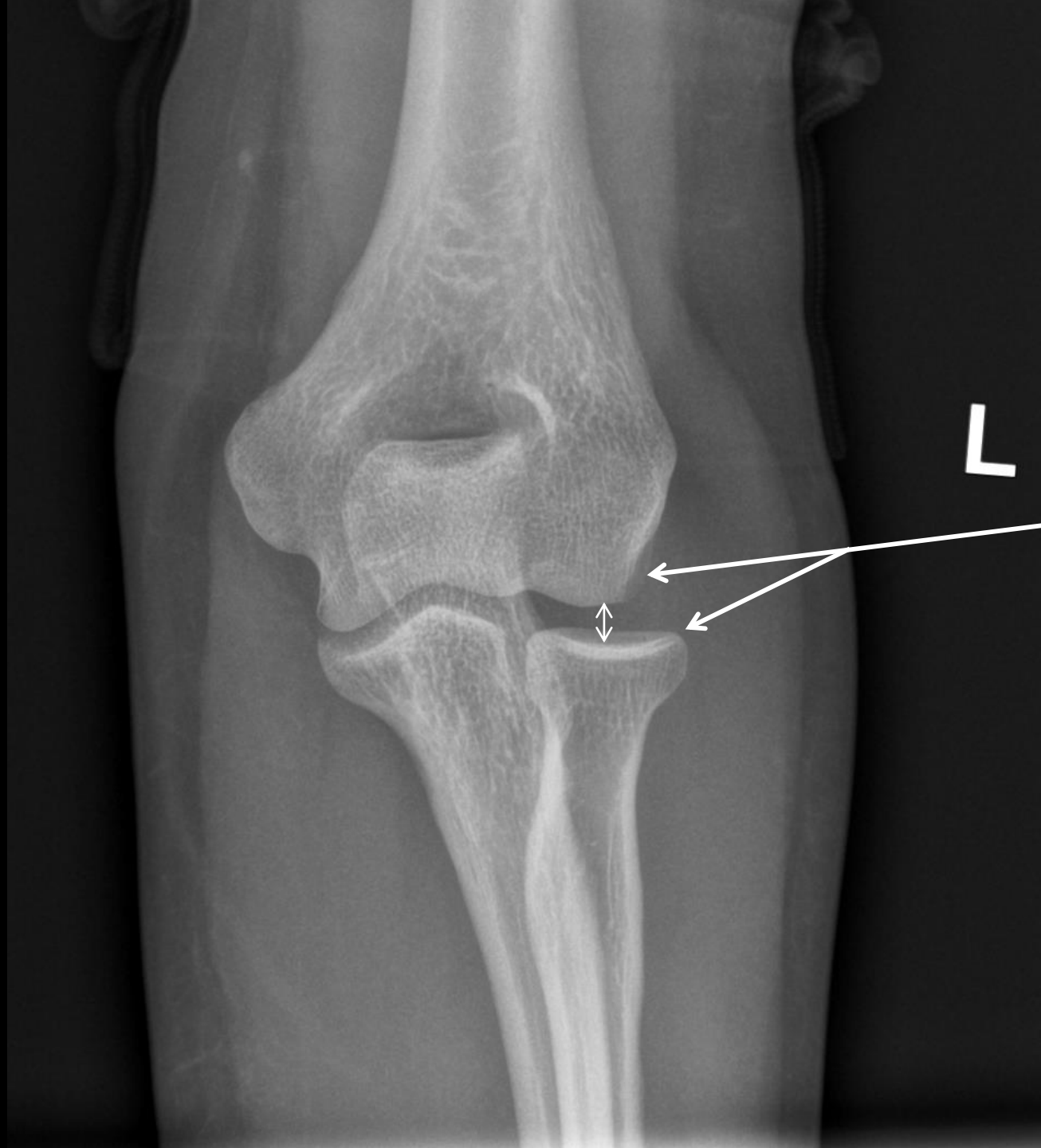
Anterior dislocation of the radial head.

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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

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