AMSER Case of the Month
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HPI: 32 y/o with presenting with severe R elbow and wrist pain after mechanical fall

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Patient Presentation

• **HPI:** 32-year-old male presented with severe elbow and wrist pain after falling off a horse. Pt fell on his R side and the horse subsequently fell on top of his arm. Pt complained of severe R elbow and wrist pain, and denied fevers, chills, numbness or tingling.

• **MHX:** No pertinent medical hx.

• **Medications:** No anticoagulation or pertinent medication.

• **SurgHx:** No past surgical hx.
Patient Presentation

Physical Exam

Vitals: T: 36.7 °F, Pulse: 74, BP: 147/80, Respirations: 25, Spo2: 96.7%

MSK Exam:
- RUE:
  - Swelling + deformity of wrist, forearm, and elbow
  - Severe tenderness to palpation at wrist and elbow
  - ROM: painless passive motion at shoulder, deferred at wrist/elbow due to pain
  - Compartments: soft + compressible
  - Vascular: Radial pulse intact
  - Motor: AN/PIN/Radial/Ulnar intact
  - Sensation: Axillary/median/Ulnar/Radial intact
- LUE/RLE/LLE:
  - Unremarkable Exam
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

### Variant 1: Acute blunt or penetrating trauma to the hand or wrist. Initial imaging.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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<tbody>
<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>
<td>Usually Not Appropriate</td>
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<td>MRI area of interest without and with IV contrast</td>
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<td>MRI area of interest without IV contrast</td>
<td>Usually Not Appropriate</td>
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<td>Bone scan area of interest</td>
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<td>US area of interest</td>
<td>Usually Not Appropriate</td>
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AP/L/Oblique wrist, AP/L forearm, and AP/L Elbow radiographs were ordered and the Orthopaedic Surgery service was consulted.
Findings (unlabeled)
Findings: (labeled)

Arrow demonstrates a posteriorly displaced radial head fragment on forearm AP view

Arrow demonstrates a comminuted, displaced, oblique fracture of the radial head on elbow lateral view

Arrow demonstrates widening of the radioulnar joint on wrist AP view
Final Diagnosis:

Essex-Lopresti Fracture-Dislocation
Case Discussion

• Anatomy
  • Radius
  • Ulna
  • Interosseous Ligament Complex

• Essex-Lopresti Injury Complex
  • Peter Essex-Lopresti, consultant to the Birmingham Accident Hospital, described two cases of this injury in 1951
    • Radial head fracture
      • If missed, can lead to proximal migration of the radius
    • Interosseous ligament complex disruption
      • Leads to instability and widening of the distal radioulnar joint
Case Discussion

• Mechanism of Injury
  • Tremendous axial compression force transmitted from wrist to elbow
  • Elbow in full extension
  • Arm in pronation
  • Maximizes contact between the radial head and the capitellum, resulting in radial head fracture and interosseous ligament complex disruption

• Imaging
  • Bilateral radiographs of wrist, forearm, and elbow should be obtained
  • Findings of radial head fracture and distal radioulnar joint widening
  • In delayed diagnoses, proximal radial migration can be seen
  • Bilateral radiographs should be performed to compare ulnar variances
Case Discussion

• Treatment
  • Open reduction and internal fixation:
    • Radial head preservation is imperative to prevent proximal migration of radius
    • If unable, a prosthetic replacement should be considered

• Outcomes
  • Essex-Lopresti injuries are commonly missed, with multiple studies reporting over a 60% first presentation missed diagnosis
  • Misdiagnosis and delayed treatment result in worse clinical outcomes
    • Wrist and/or elbow pain
    • Forearm deformity
    • Need for additional surgical procedures
References: