AMSER Case of the Month: June 2019

48 yo M with pain over L wrist s/p MVC

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Patient Presentation

- **HPI:** 48 yo M unrestrained intoxicated driver presents s/p motor vehicle crash with chief complaint of left wrist pain. History was difficult to obtain due to intoxication.
- **PMHx:** HTN
- **PSx:** None
- **Social:** Drinks alcohol
- **Physical Exam:** There is obvious deformity of the left wrist with tenderness throughout. Range of motion is limited secondary to pain. Rest of exam deferred due to intoxication.
- **V/S:** Within normal limits
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
</tr>
</thead>
<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>
<td>Varies</td>
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<tr>
<td>CT area of interest without and with IV contrast</td>
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<tr>
<td>MRI area of interest without and with IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>MRI area of interest without IV contrast</td>
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<tr>
<td>Tc-99m bone scan area of interest</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>US area of interest</td>
<td>Usually Not Appropriate</td>
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This imaging modality was ordered by the ER physician.
Findings

Perilunate Dislocation

Proximal portion of capitate should align with the distal “cup” of the lunate.

Lunate remains articulated with distal radius.
Findings: Post Reduction

Successful reduction of perilunate dislocation with subsequent lunate dislocation

“Empty cup” sign with the lunate rotated volarly
Final Dx:

Perilunate dislocation with subsequent lunate dislocation
Select the applicable ACR Appropriateness Criteria

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<tr>
<td>CT wrist without IV contrast bilateral</td>
<td>Usually Appropriate</td>
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<tr>
<td>MRI wrist without IV contrast</td>
<td>Usually Appropriate</td>
<td>O</td>
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<tr>
<td>MR arthrography wrist</td>
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<tr>
<td>CT wrist without and with IV contrast bilateral</td>
<td>Usually Not Appropriate</td>
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This imaging modality was ordered by the Orthopaedic Resident.
Findings

- Scapholunate widening indicating scapholunate ligament disruption
- Bone avulsion at lunotriquetral ligament attachment
- Scapholunate widening indicating scapholunate ligament disruption
Lunate Dislocation with Perilunate Dissociation

• Mechanism of Injury: Typically occurs in high energy trauma with the wrist extended and ulnar deviation

• Classic presentation – Wrist swelling + pain +/- median nerve symptoms

• Classified/Staged by Mayfield Classification
  • Stage I – Scapholunate dissociation
  • Stage II – SL dissociation with capitolunate disruption
  • Stage III – SL + LC with lunotriquetral disruption
  • Stage IV – Lunate displaced from lunate fossa
    • Typically presents with median nerve symptoms
Gilula’s Carpal Arcs

- Radiological lines that allow quick identification of normal alignment of the carpal bone
- 3 total lines
  - First – Proximal convex curve outlining the scaphoid, lunate, and triquetrum
  - Second – Distal concave curve outlining scaphoid, lunate, and triquetrum
  - Third – Proximal curve outlining the capitate and hamate

Gilula LA. Carpal injuries: analytic approach and case exercises. AJR Am J Roentgenol. 1979;133 (3): 503-17. doi:10.2214/ajr.133.3.503
Treatment Options

• Closed reduction
  • Hang the arm by the fingers with the elbow flexed at 90 degrees for 10-15 mins
    • Volar - Flex wrist with volar pressure applied to lunate in attempt to relocate
    • Dorsal – Wrist extension followed by traction and then wrist flexion
  • Sugar tong splint

• Surgical options
  • Open reduction internal fixation with K-wires
    • Multiple approaches depending on surgeon preference.
    • Typically involves ligament repair along with carpal tunnel release due to likelihood of developing carpal tunnel symptoms
  • Proximal row carpectomy

Final reduction
References


• Gilula LA. Carpal injuries: analytic approach and case exercises. AJR Am J Roentgenol. 1979;133 (3): 503-17. doi:10.2214/ajr.133.3.503