36-year-old female presents with right wrist deformity

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Patient Presentation

- HPI: 36-year-old female presents with right wrist deformity. Patient reports she tripped and fell over a curb onto her right arm. She reports swelling and pain at the distal aspect of her right forearm but denies numbness or tingling.
- PMH: hyperlipidemia, hypothyroidism
- PSH: none
- Meds: none
- Physical exam: vitals normal. MSK exam with closed deformity of the distal right forearm.
What Imaging Should We Order?
### ACR Appropriateness Criteria for acute hand and wrist trauma

<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
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<tbody>
<tr>
<td>X-ray wrist</td>
<td>9</td>
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<tr>
<td>CT wrist without IV contrast</td>
<td>1</td>
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<td>CT wrist with IV contrast</td>
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<td>CT wrist without and with IV contrast</td>
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<tr>
<td>MRI wrist without IV contrast</td>
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<td>MRI wrist without and with IV contrast</td>
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<tr>
<td>Tc-99m bone scan wrist</td>
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**Rating Scale:** 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level

This imaging modality was ordered.
Radiographic findings (unlabeled)

Our patient:

Normal radiograph, for comparison:
Radiographic findings (unlabeled)

Our patient:

Normal radiograph, for comparison:
Radiographic findings (labeled)

- Radioulnar joint dislocation
- Distal radius fracture
Final Dx:

Galeazzi fracture (distal radial fracture with distal radio-ulnar dislocation)

The patient’s forearm was splinted in the ED, and she later underwent surgical fixation (ORIF, or open reduction with internal fixation).
Radiographs s/p ORIF
Galeazzi fracture

- Epidemiology: accounts for approximately 7% of all forearm fractures. Risk factors include sports, osteoporosis, and being post-menopausal. This results in a bimodal distribution of incidence, with young males and elderly females being most susceptible.

- Mechanism: usually due to fall onto outstretched hand with extended wrist and hyperpronated forearm.

- Presentation: as with most fractures, presents with pain and localized swelling. Although rare, damage to ulnar or radial nerves can present with numbness, tingling, or weakness in the hand.
Galeazzi fracture

• Evaluation: for suspected acute wrist fracture, preferred first exam is AP and lateral wrist x-ray. Findings consistent with Galeazzi fracture include fracture of the distal radius with signs of distal radio-ulnar joint dislocation (widening of DRUJ, dorsal displacement of ulna on lateral view, radial shortening >5mm, and ulnar styloid fracture).
  • If radiographs show evidence of comminuted, intra-articular fracture, CT wrist without IV contrast is the preferred next exam (see next slide).
  • If vascular compromise is suspected, further evaluation is typically performed with MRA, CTA, or color doppler sonography.
**ACR Appropriateness Criteria for acute hand and wrist trauma, Variant 3**

**Comminuted, intra-articular distal radius fracture on radiographs. Surgical planning.**

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<tr>
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<td>9</td>
<td>This procedure is especially useful if 3-D</td>
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<td></td>
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<td>reconstruction is available.</td>
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<td>MRI wrist without IV contrast</td>
<td>5</td>
<td>This procedure may be helpful to diagnose</td>
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<td></td>
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<td>for ligament or soft-tissue injuries.</td>
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<tr>
<td>US wrist</td>
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*Relative Radiation Level*
Galeazzi fracture

• Treatment:
  • In adults, surgical repair with ORIF is preferred, as they tend to have poor outcomes with closed reduction.
  • In children, closed reduction is preferred, as their bones are immature and heal well.
References


• Normal wrist radiographs courtesy of Dr. Andrew Dixon, https://radiopaedia.org/cases/normal-wrist-x-rays