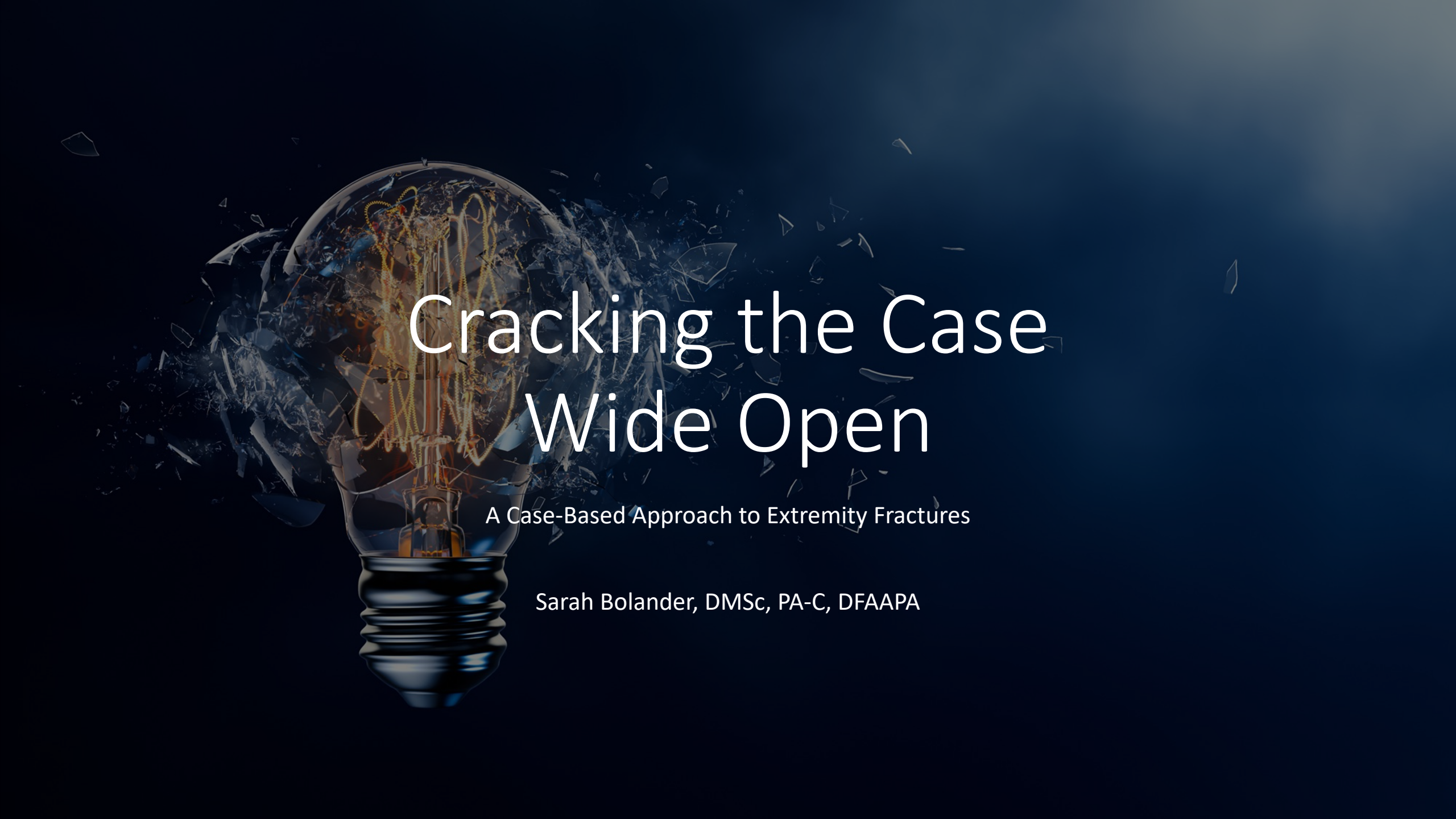


Cracking the Case Wide Open

A Case-Based Approach to Extremity Fractures

Sarah Bolander, DMSc, PA-C, DFAAPA

Objectives

1. Differentiate common radiographic findings in orthopaedic injuries of the extremities.
2. Accurately describe fracture patterns.
3. Recognize fracture displacement including translation, angulation, and rotation.
4. Integrate Salter-Harris classification with pediatric fractures.
5. Differentiate features consistent with benign versus malignant bone tumors and lesions.

Disclosures

- None

Musculoskeletal Imaging

Choice of Imaging:

- Clinical presentation: history, MOI, location of pain
- DDX
- Availability of imaging modalities

Guidelines for Imaging:

ACR Appropriateness Criteria

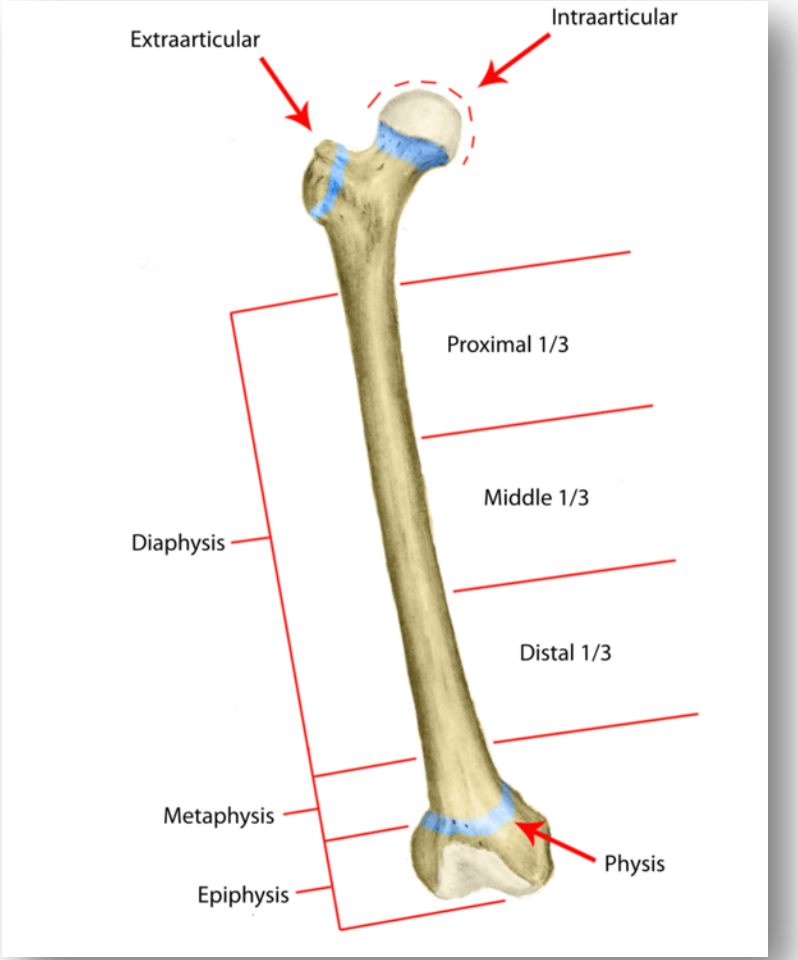
- Plain radiographs is the initial **imaging of choice** for most MSK conditions

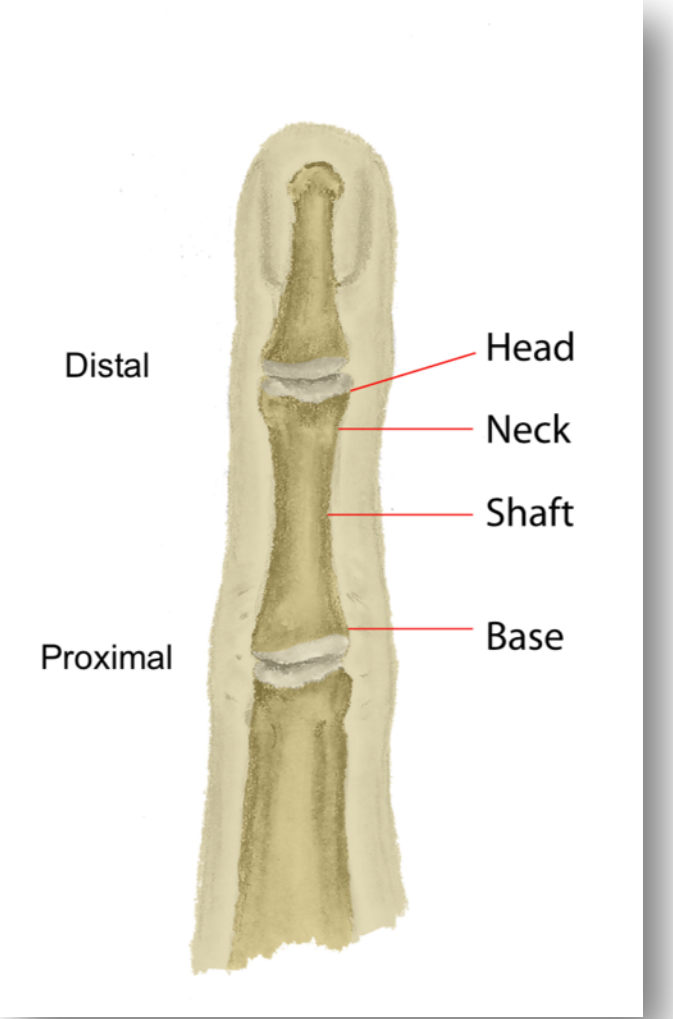
Location

Which bone?

Where in the bone?

Joint involvement?





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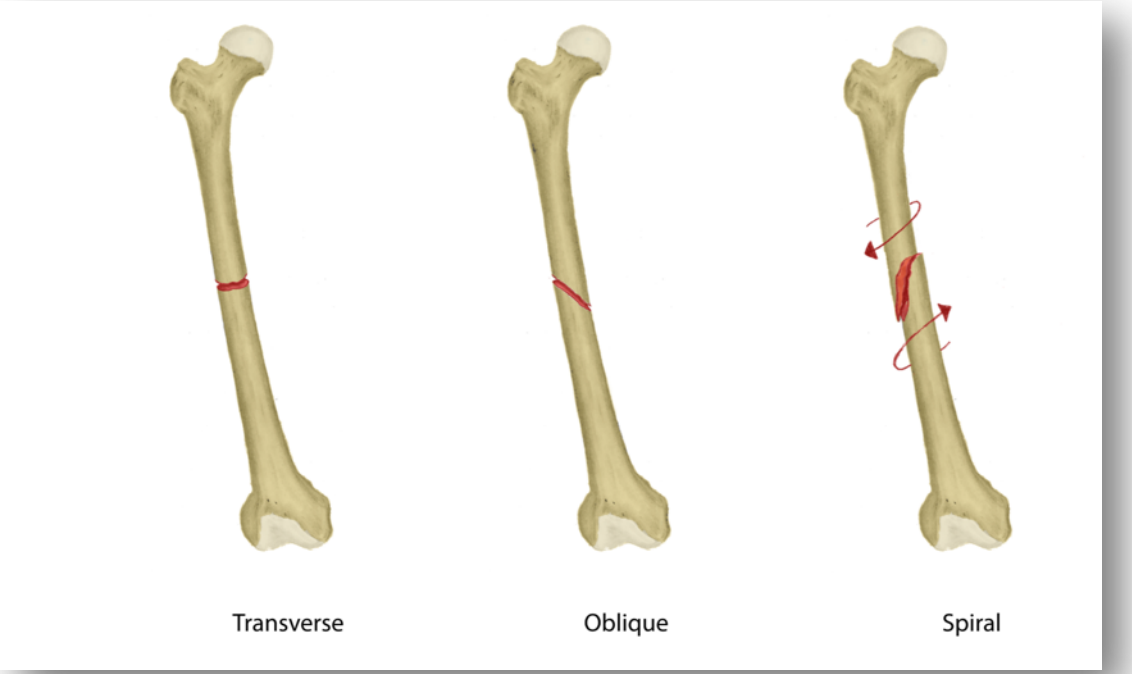
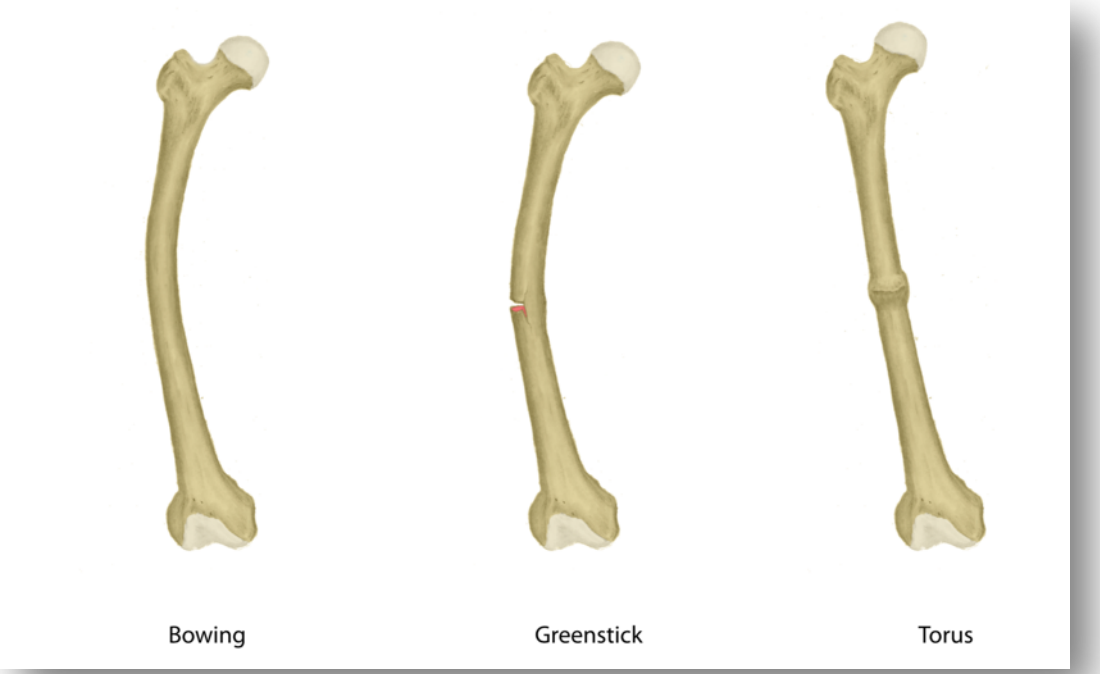
Type Severity and Pattern

Complete vs Incomplete?

Simple vs Comminuted?





Complete: transverse, oblique, spiral

Incomplete: greenstick, torus, bowing

Unique pattern considerations: compression, impaction, avulsion, stress

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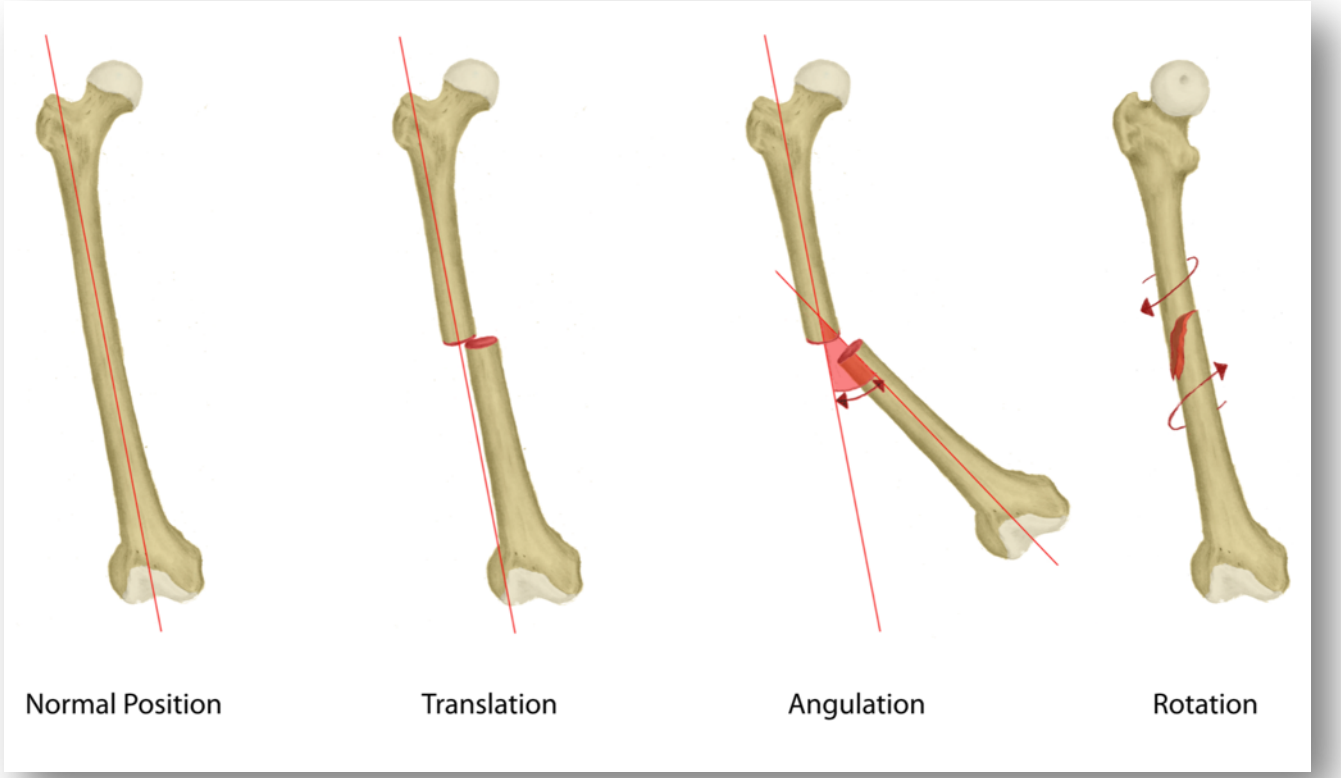
Position

Non-Displaced vs Displaced?

Translation, Angulation, or Rotation?



Translation: Described by % of Width or Measurement
Angulation: Measured in Degrees
Length: Shortening, Distraction, or Impaction

*Description of position is based on distal fragment placement.

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Additional Considerations

Open Fracture, Physeal Involvement, Pathologic, Associated Injuries

Image #1

Case courtesy of Dr Jeremy Jones, Radiopaedia.org, rID: 6387

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #2

Case courtesy of Dr Ahmed Abdrabou, Radiopaedia.org, rID: 2889725704

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #3

Case courtesy of Dr Andrew Dixon, Radiopaedia.org, rID: 25704

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #4

Case courtesy of Dr Alexandra Stanislavsky, Radiopaedia.org, rID: 10961

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #5

Case courtesy of Dr Sajoscha Sorrentino, Radiopaedia.org, rID: 16164

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #6

Case courtesy of Dr Henry Knipe, Radiopaedia.org, rID: 27643

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #7

Case courtesy of Dr Tom O'Graphy, Radiopaedia.org, rID: 41772

Location and Site:

Type:

Pattern:

Position:

Complications:

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Image #8

Case courtesy of Assoc Prof Frank Gaillard, Radiopaedia.org, rID: 8012

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

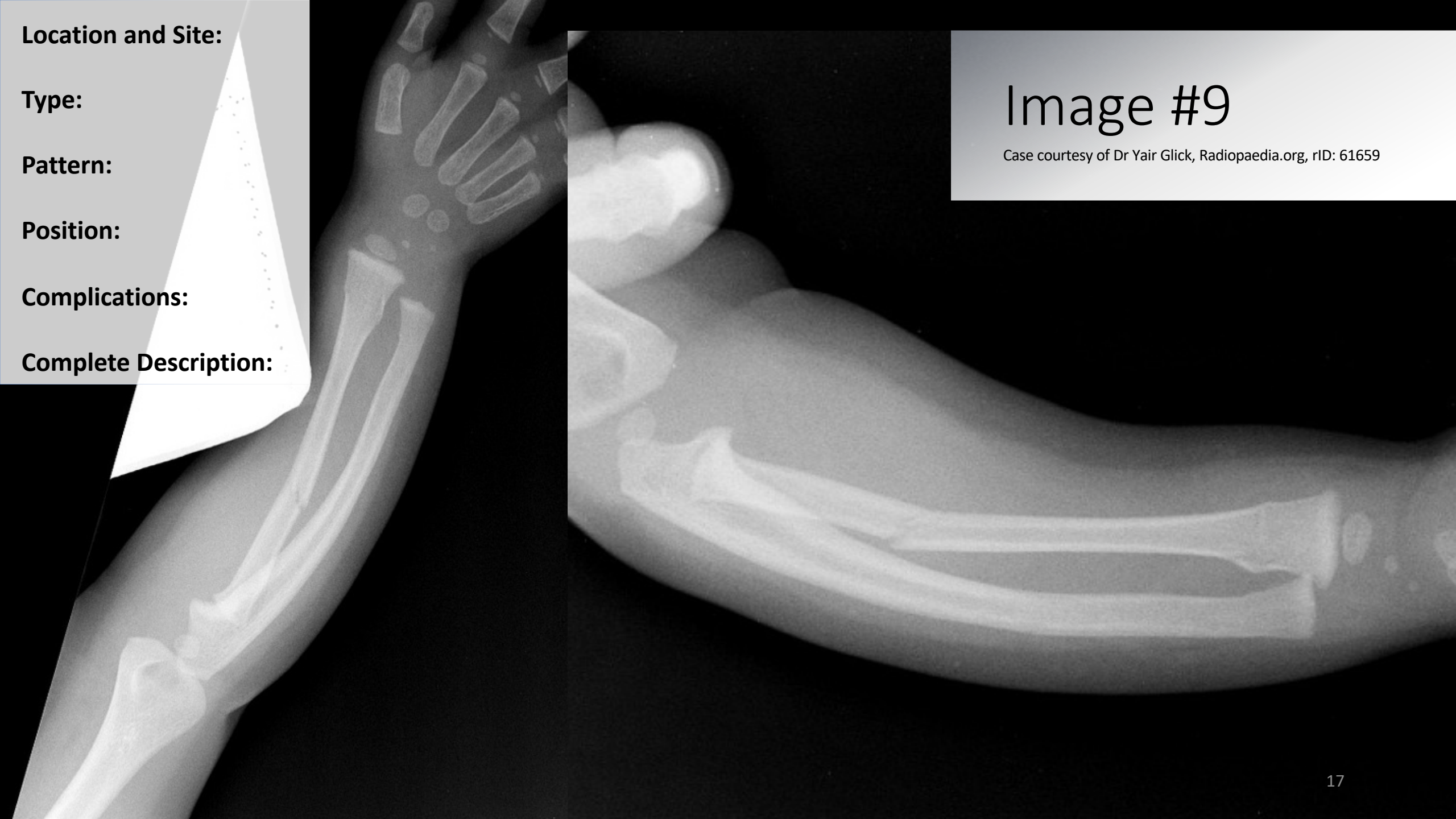


Image #9

Case courtesy of Dr Yair Glick, Radiopaedia.org, rID: 61659

Image #10

Case courtesy of Dr Stefan Lazic, Radiopaedia.org, rID: 51225

Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Location and Site:

Type:

Pattern:

Position:

Complications:

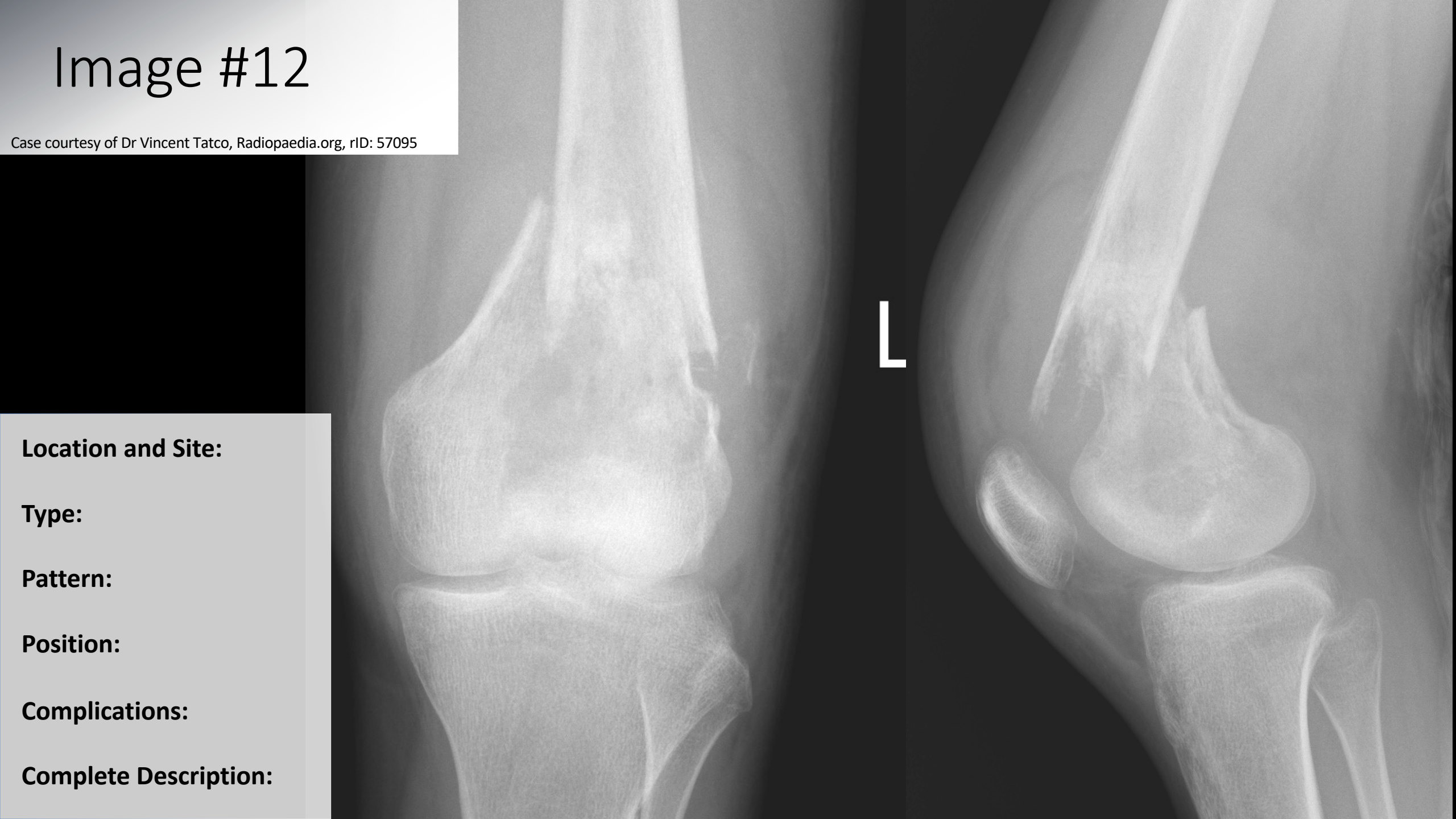
Complete Description:

Image #11

Case courtesy of Dr Benoudina Samir, Radiopaedia.org, rID: 22063

Image #12

Case courtesy of Dr Vincent Tatco, Radiopaedia.org, rID: 57095



Location and Site:

Type:

Pattern:

Position:

Complications:

Complete Description:

Summary

Be systematic

Verify your patient

Obtain quality films

- Multiple views
- Joint visualization

Identity fractures

- Compare to unaffected side if needed

Describe fractures accurately

- Location
- Type/Severity
- Pattern
- Position
- Complications

*Correlate Findings with Clinical Exam

Thank You

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Resources for Images and Figures*

- Radiopaedia. http://radiopaedia.org/. Accessed April 8th, 2021.
- Sandra Ehrler, MWU PA student, provided original artwork for May 2019 JAAPA article. Illustrations were reproduced for this presentation with permission from JAAPA and illustrator.
- AO Foundation. https://www2.aofoundation.org. Accessed April 8th, 2021.
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*Hyperlink or case number available for specific references