

AMSER Case of the Month

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Shoulder Pain in a 35-Year-Old Male

Kyle Astleford, MS4

Liberty University College of Osteopathic Medicine

Amanda Aguilera, MD

Loma Linda University, Department of Radiology



Patient Presentation

- **Patient:** 35-year-old male
- **Chief Complaint:** Acute onset right shoulder pain after mountain biking accident
- **Clinical History:** Patient reports falling while mountain biking onto his right side. Immediately after, he had right shoulder pain that localized to the right clavicle with a visible deformity.
- **Physical Exam:** Right shoulder tenderness with palpable deformity and decreased ROM, neurovascularly intact

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant: 1 Adult. Acute shoulder pain. Any etiology. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography shoulder	Usually Appropriate	☢
US shoulder	Usually Not Appropriate	○
MR arthrography shoulder	Usually Not Appropriate	○
MRI shoulder without and with IV contrast	Usually Not Appropriate	○
MRI shoulder without IV contrast	Usually Not Appropriate	○
Bone scan shoulder	Usually Not Appropriate	☢☢☢
CT shoulder with IV contrast	Usually Not Appropriate	☢☢☢
CT shoulder without and with IV contrast	Usually Not Appropriate	☢☢☢
CT shoulder without IV contrast	Usually Not Appropriate	☢☢☢
CT arthrography shoulder	Usually Not Appropriate	☢☢☢☢
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the ER physician

Findings: (unlabeled)

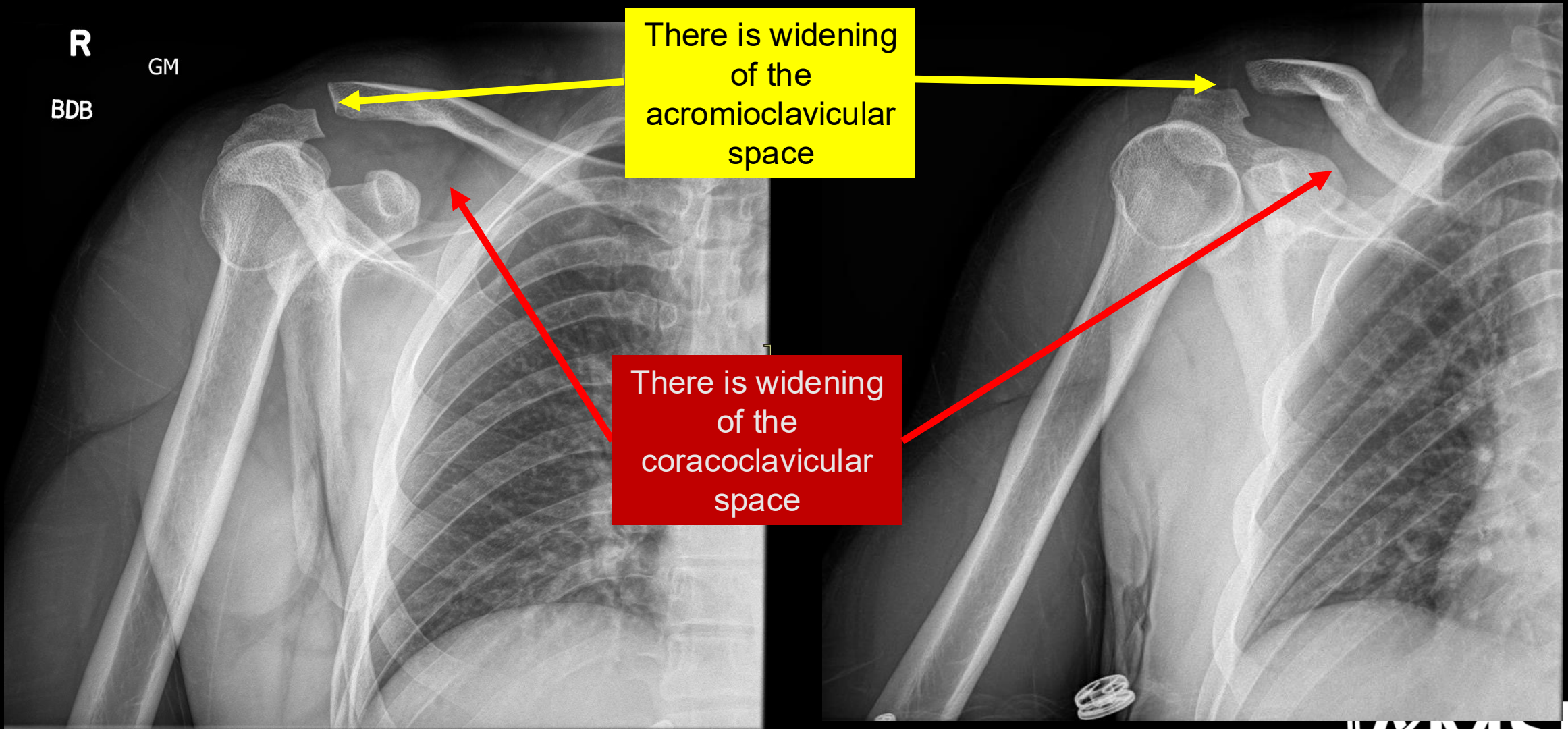


AP Right Shoulder External Rotation



AP Right Shoulder Internal Rotation

Findings: (labeled)



AP Right Shoulder External Rotation

AP Right Shoulder Internal Rotation

Final Dx:

Type III Acromioclavicular Joint Injury

Case Discussion

Definition: Damage to the acromioclavicular joint and surrounding structures, usually due to trauma and can range in severity using the Rockwood Classification

Etiology: can be caused by direct or indirect forces³

- **Direct** fall onto adducted arm forces the acromion to be pushed inferior and medial with respect to the clavicle
- **Indirect** fall onto outstretched hand which causes the humerus to be pushed into the acromion, usually results in lower grade injuries

Clinical Features: Typically localized shoulder pain with a tenderness at AC joint with decreased ROM in the affected shoulder²

Case Discussion

Rockwood Classification (I-VI)¹⁻⁵

- Type I – Partial tear/sprain of acromioclavicular (AC) joint ligaments
- Type II – AC ligament tear with coracoclavicular (CC) sprain
- Type III – AC and CC tear with mild superior displacement of the clavicle
- Type IV – AC and CC tear with posterior displacement of distal clavicle
- Type V – AC and CC tear with severe superior displacement of distal clavicle
- Type VI – AC and CC tear with inferior displacement of distal clavicle

Case Discussion

Additional Imaging

- Best Imaging Tool: AP radiograph of both AC joints and clavicles in one image¹
- Lateral and axillary view of injured shoulder to check for posterior displacement of clavicle^{1, 4, 5}
- Can add images with and without weights^{1, 4, 5}
 - Shows true severity of injury and help differentiate Type II vs Type III
 - Without weights shows expected alignment during healing

Case Discussion

Management^{1, 3, 5}

- Types I, II – Typically managed nonoperatively with rest and immobilization with a sling
- Type III – can be treated nonoperatively with a sling and rest or treated with surgical intervention to repair the damaged ligaments³
- Types IV, V, VI – surgical repair of AC and CC ligaments

References:

- (1) Lindborg CM, Smith RD, Reihl AM, et al. Current Concepts in Management of Acromioclavicular Joint Injury. *J Clin Med*. 2024;13(5):1413. Published 2024 Feb 29. doi:10.3390/jcm13051413
- (2) Warth RJ, Martetschläger F, Gaskill TR, Millett PJ. Acromioclavicular joint separations. *Curr Rev Musculoskelet Med*. 2013;6(1):71-78. doi:10.1007/s12178-012-9144-9
- (3) Flores DV, Goes PK, Gómez CM, Umpire DF, Pathria MN. Imaging of the Acromioclavicular Joint: Anatomy, Function, Pathologic Features, and Treatment. *Radiographics*. 2020;40(5):1355-1382. doi:10.1148/rg.2020200039
- (4) Gastaud O, Raynier JL, Duparc F, et al. Reliability of radiographic measurements for acromioclavicular joint separations. *Orthop Traumatol Surg Res*. 2015;101(8 Suppl):S291-S295. doi:10.1016/j.otsr.2015.09.010
- (5) Melenevsky Y, Yablon CM, Ramappa A, Hochman MG. Clavicle and acromioclavicular joint injuries: a review of imaging, treatment, and complications. *Skeletal Radiol*. 2011;40(7):831-842. doi:10.1007/s00256-010-0968-3