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Case Report: Hidden Posterior Dislocation of the Clavicular Head

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Abstract

Reported is a case of a 24-year-old male who presented with left shoulder pain and decreased range of motion of the same shoulder upon awakening, diagnosed with a posterior dislocation of the proximal clavicle, with the clavicular head residing in the mediastinum. In the conscious, ambulatory, young adult it is arguably much more common for major bony trauma involving the upper extremity and shoulder to present with pain, deformity, and a known mechanism. This is an example that lacks all three of these characteristics and highlights the importance of details in the physical examination as well as clinical gestalt.

Case Presentation

The patient a 24-year-old male with no significant medical history who presented with left shoulder pain and decreased range of motion of the same shoulder upon awakening. Upon interview it is learned that the patient is a competitive wrestler and described some soreness to the left arm after casual practice with friends the night prior.

The patient's vital signs were as follows: heart rate 67 beats per minute, respiratory rate 20 breaths per minute, blood pressure 124/71 mmHg as measured in the right arm, and a temperature 97.9 °F. Pain at rest was scored ≤ 3 out of 10, however with shoulder abduction was ≥ 6 out of 10. Physical examination revealed significantly decreased and painful range of motion to the left shoulder especially with abduction, and with some soft tissue swelling along the superior margin of the proximal clavicle. The left shoulder joint itself was nontender to palpation, and the remainder of the left upper extremity examined normally. There was no defect of the overlying integument. The rest of the physical examination was unremarkable.

Visualization of the superior clavicular margin appeared to be bilaterally symmetric, with no obvious deformity appreciated. However, on palpation along the superior margin there was reduced ability to discern normally palpable structures. A plain-film chest radiograph was obtained (shown in *Figure 1*) which did not reveal any fracture. The left clavicular head was in a slightly lower position as compared to right but otherwise appeared in the correct anatomical position. This chest x-ray was read by the radiologist as normal. Dedicated clavicle films were also obtained, which were all read as normal.

Despite normal x-ray imaging, a decision was made to perform a CT scan in an effort to exclude occult bony pathology. This revealed a posterior dislocation of the proximal clavicle, with the clavicular head completely retrosternal, inferiorly and posteriorly displaced (shown in *Figures 2* and *3*). The proximal end of the clavicle could be seen abutting the aortic arch and great vessels. An overlying hematoma obscured palpation of the displaced clavicle and mimicked its expected anatomical position – an explanation for the loss of palpable bony landmarks on physical examination.

Orthopedic surgery was consulted, who after evaluation recommended transfer to a tertiary care center with both cardiothoracic and orthopedic shoulder specialties anticipating a collaborative surgery. This was due to the proximity of the free end of the clavicle residing against the great vasculature of the mediastinum. The patient was emergently transferred to a level 1 trauma center and underwent an open reduction by orthopedic/cardiothoracic surgery. The patient was discharged 2 days after admission in stable condition with follow-up with outpatient orthopedic surgery.

References

References are available upon request.

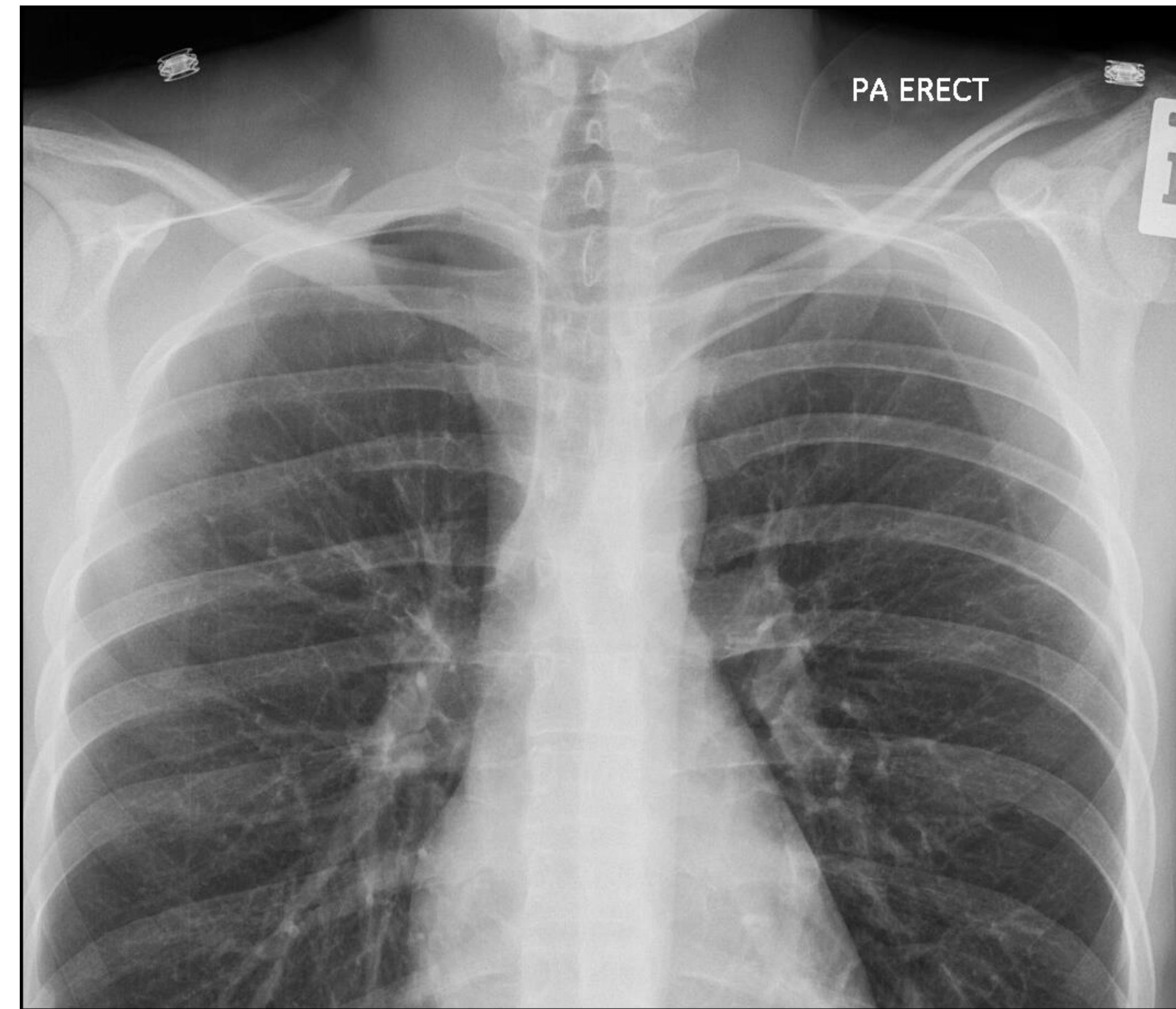


Figure 1: Chest X-ray, PA view, left clavicular head slightly inferior as compared to contralateral side. This was read as an unremarkable chest X-ray by the radiologist.

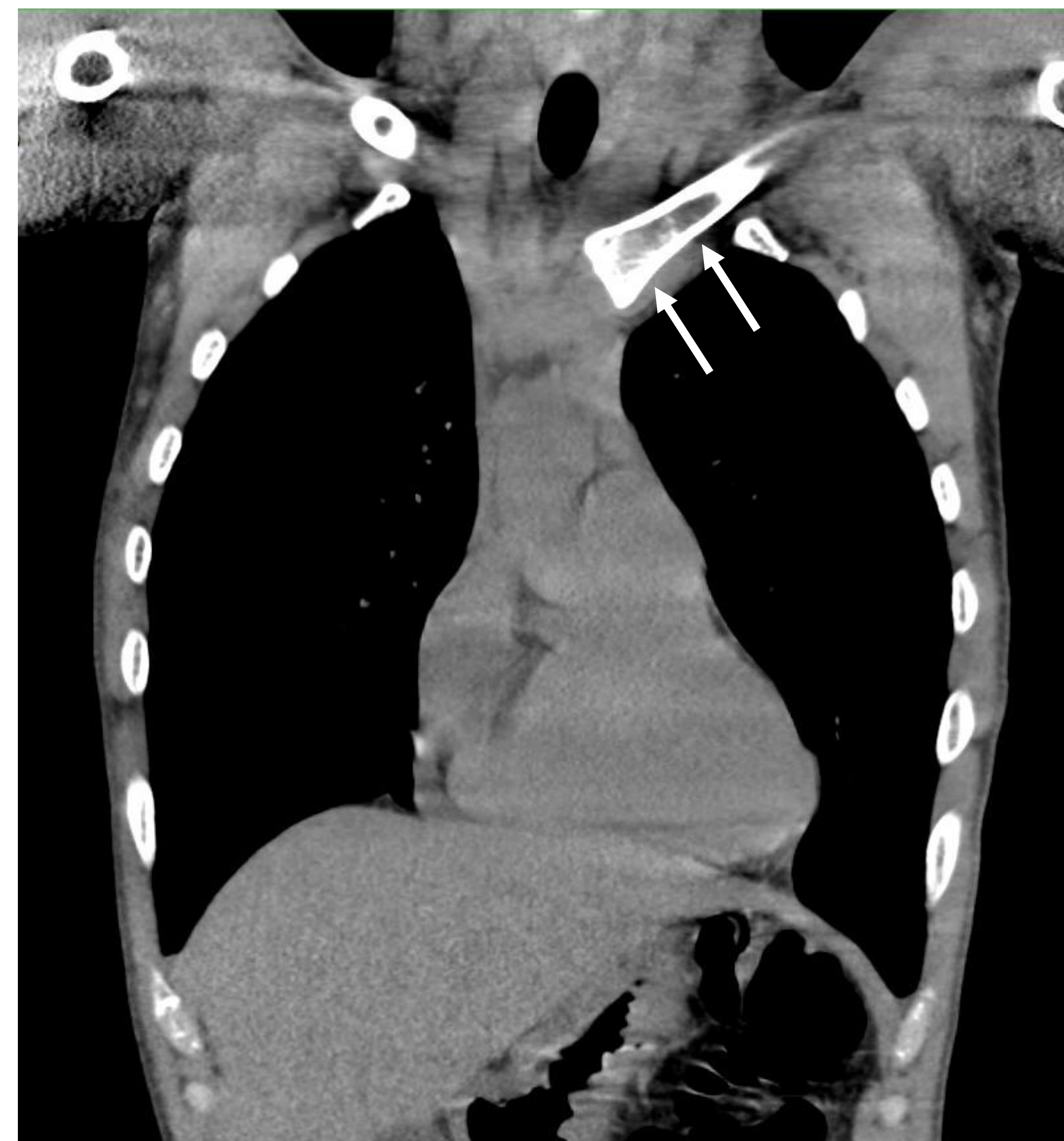


Figure 2: CT scan, coronal view, showing an inferiorly and posteriorly displaced left clavicular head that is residing in the mediastinum, abutting the great vessels.

Discussion

Because of the proximity of multiple vital structures, posterior dislocation of the proximal clavicle represents a uniquely life-threatening injury. In this case the clavicular head was abutting or just millimeters away from the great vessels, trachea, and esophagus. Compression or perforation of any of these structures is possible.

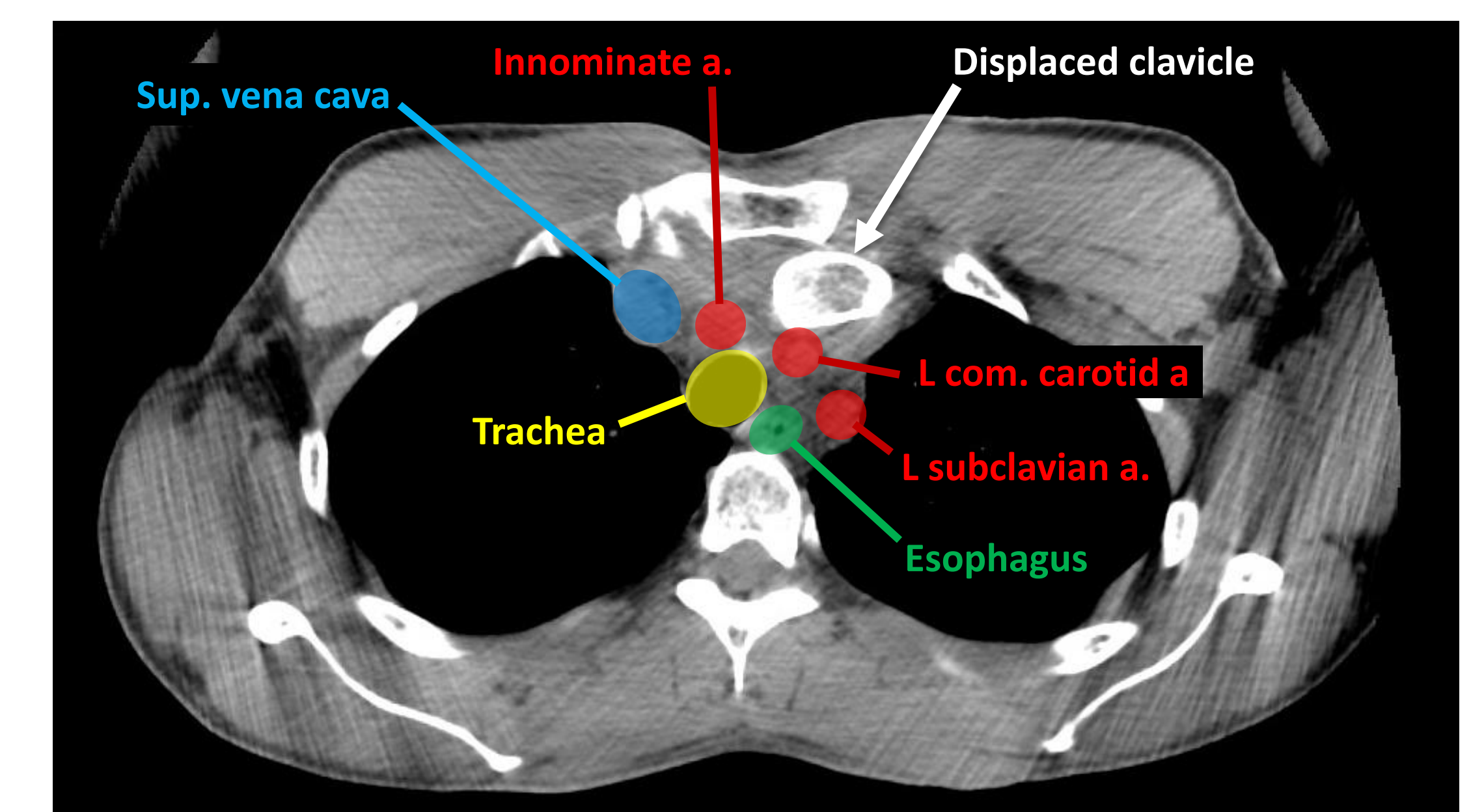


Figure 3: CT scan, transverse view, with adjacent vital structures to posteriorly displaced left clavicular head highlighted.

Challenges of radiographic evaluation:

Due to the unique anatomy of the clavicle, evaluation of posterior sternoclavicular dislocations is difficult secondary to superimposition of surrounding structures. [Khorashadi]. Standard views of the chest, clavicle, and shoulder typically do not adequately capture the anatomy of this injury. For evaluation of suspected posterior clavicular dislocation in the emergency department, CT is the preferred imaging modality.

Challenges of physical examination:

With most of the injury contained within the chest cavity, there are reduced opportunities to elicit evidence of this injury on physical examination. In this particular case an overlying hematoma approximated the normal anatomy of the clavicle and prevented direct palpation of the injury. The most significant overt sign of injury on examination was limited and painful range of motion, especially with shoulder abduction.

Definitive treatment is operative reduction:

Posterior clavicle dislocations should be reduced in the operating room, again due to the proximity of the clavicular head to the mediastinal structures. In the case presented here, it was the recommendation of orthopedic surgery for a collaborative effort with cardiothoracic surgery.

Conclusions

While this particular injury is relatively rare, it is important to be cognizant of the diagnostic difficulties when evaluating for posterior clavicular dislocation using plain-film x-rays, and have a low threshold for ordering a CT scan when suspected. Potentially missing this injury can have devastating and life-threatening consequences for the patient.