

# Posterior sternoclavicular joint dislocation

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**T**raumatic sternoclavicular joint dislocation is an uncommon condition whose diagnosis is often missed.<sup>1</sup> The posterior version of this dislocation has been associated with multiple complications, including respiratory compromise, vascular injury, brachial plexopathy, pneumothorax, dysphagia and even death, and should be managed by timely closed or open reduction. Owing to the rarity of this injury, there is a relative lack of familiarity with the diagnosis, surgical anatomy and treatment options.

## Case report

Six days before presentation, a 41-year-old, right-handed male farmer was struck in the chest by a charging bull that forced him to the ground and trampled on him. With the use of axial CT, the local orthopedic surgeon diagnosed a posterior dislocation of the right sternoclavicular joint. An envelope sling was applied. He was otherwise uninjured.

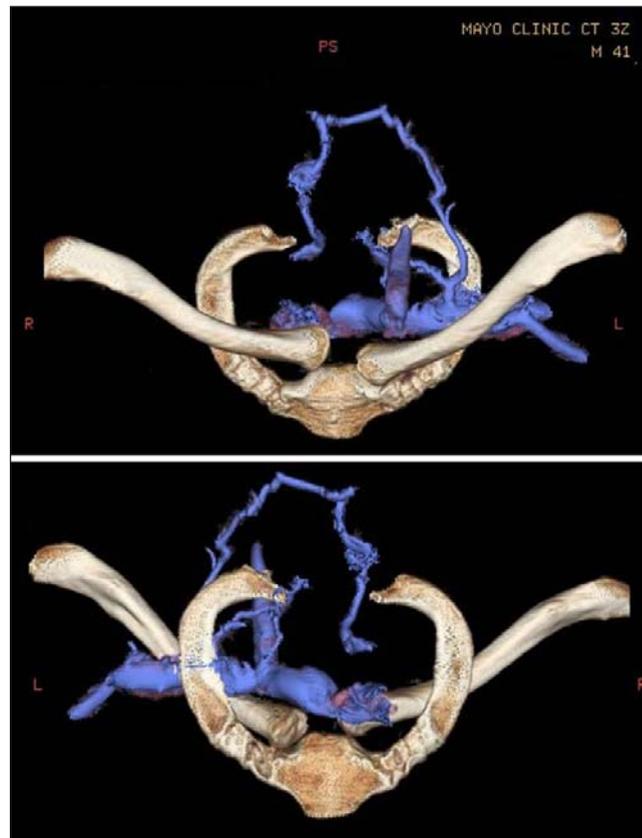
He presented to our institution with complaints of pain localized to the right sternoclavicular area, intermittent right upper extremity paresthesias, and occasional subjective feelings of shortness of breath. He denied hand, wrist or elbow weakness and had no difficulty swallowing.

On clinical examination he had a “stooped” posture with protraction of his right scapula. There was resolving ecchymosis about the right sternoclavicular joint, with obvious local deformity. Neurovascularly, motor activity and sensation in the median, ulnar, musculocutaneous, radial and axillary nerves were intact. His radial pulses were symmetric

in both upper extremities. The range of motion of his right arm was markedly limited secondary to pain.

Because of the subacute nature of the injury and the potential for complications, surgical intervention was discussed. CT with intravenous contrast and reconstructed 3-dimensional images and tho-

racic surgery consultation were obtained in preparation (Fig. 1). CT revealed that the combination of the displaced clavicular head and the associated mediastinal hematoma had caused marked, nearly occlusive narrowing of the brachiocephalic vein near its junction with the superior vena cava. There was reflux of

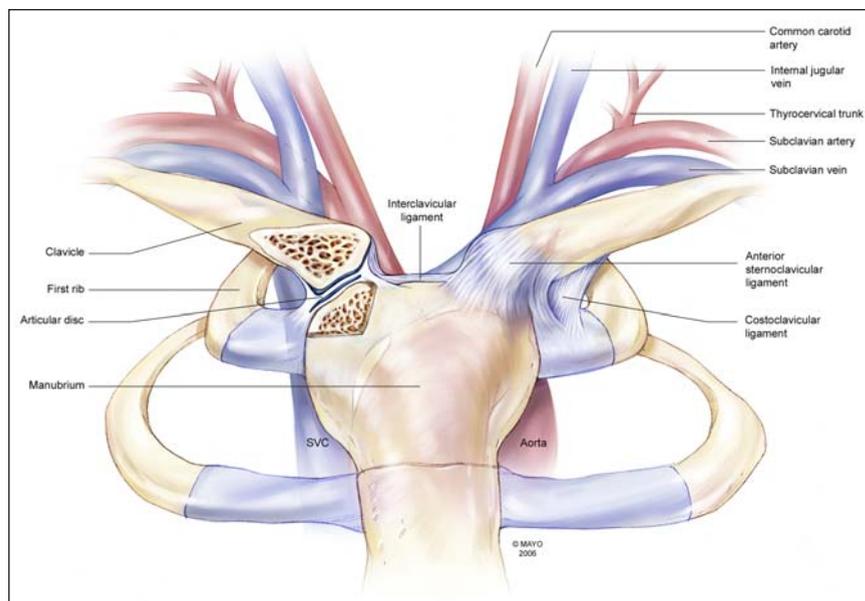


**FIG. 1.** Three-dimensional CT scan demonstrating dislocation of the right posterior sternoclavicular joint with venous impingement.

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**FIG. 2. Normal sternoclavicular anatomy showing the relation of bones to ligaments, arteries and veins.**

the contrast material into the left internal jugular vein as well as filling of chest wall collaterals, indicating marked hemodynamic impact. No active bleeding or intravenous clot was seen.

At operation, in conjunction with both thoracic surgery and orthopedic surgery services, his right sternoclavicular joint was isolated and reduced using open techniques. The joint was unstable, with a tendency to redislocate posteriorly. A high-speed burr was used to make holes in the medial portion of the clavicle and the manubrium. The joint was reduced and held in place by 2-gauge polydioxanone suture (PDS; Ethicon/Johnson & Johnson, Piscataway, NJ), reconstructing the sternoclavicular ligaments, capsule and rhomboid costoclavicular ligament. Intraoperative alignment and stability were excellent. The sternocleidomastoid and platysma muscles were repaired, and

the incision was closed in standard fashion. A postoperative chest radiograph showed restoration of the normal anatomy of the thoracic cage and no evidence of pneumothorax.

At 6 months' follow-up, the patient had returned to unrestricted activities as a farmer. There was no visible deformity and no tenderness over the sternoclavicular joint. On follow-up at almost 2 years, the patient remains in excellent health with unrestricted activity.

### Discussion

The sternoclavicular joint is a saddle-type synovial joint located between the medial end of the clavicle, the clavicular notch on the manubrium and the upper medial surface of the first costal cartilage (Fig. 2). It is the only bony attachment of the arm to the axial skeleton. The

interarticular disc separates the joint into 2 synovial-lined spaces. The joint is stabilized on the anterior and posterior aspects by the anterior sternoclavicular ligament and the more robust posterior sternoclavicular ligament, respectively. The interclavicular ligament is a continuation of the deep cervical fascia and connects the medial heads of the 2 clavicles. The costoclavicular ligament, or rhomboid ligament, consists of anterior and posterior laminae connecting the clavicle to the first rib and first costal cartilage. All the ligaments must be torn for the joint to dislocate posteriorly.<sup>2</sup>

Treatment should be prompt. Multiple techniques for closed reduction have been described. Most involve the patient lying supine over a bolster placed between the scapulae and manipulating the ipsilateral arm. Surgical treatment may be necessary in the case of a nonreducible dislocation or when neurovascular structures are involved. Bicos and Nicholson<sup>3</sup> have reported unsuccessful closed treatment in patients who were seen more than 48 hours after injury. Aftercare should include either a figure-of-eight sling or some type of immobilizing shoulder sling.

**Competing interests:** None declared.

### References

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