Case report – Thoracic general

Retrosternal dislocation of the clavicle associated with a traumatic pneumothorax

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Abstract

Retrosternal dislocation of the clavicle is a rare injury that is easily overlooked. Significant complications can occur both immediately following the initial injury and in the long term. We report a case of a young male in which the medial aspect of the clavicle was dislocated deep into the pleura abutting the aortic arch. Knowledge of these injuries allows for early detection and intervention, avoiding long-term sequelae.

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1. Introduction

Sternoclavicular injuries are uncommon and the majority of dislocations occur in an anterior direction. Posterior sternoclavicular injuries are relatively rare injuries but can impose immediate life-threatening complications. We present the case history and management of such an injury.

2. Case report

A 38-year-old male was travelling on a pedal bicycle. He was holding on to the back of a truck and freewheeling when he lost control and fell. He sustained injuries to his chest and was brought to the Accident and Emergency Department. On arrival he was found to be: breathing spontaneously but with difficulty, stable haemodynamically and fully conscious with a Glasgow Coma Scale of 15. He had an abrasion beginning half way along the left sternocleidomastoid muscle that became more obvious as it came over the sternal end of the clavicle. Here he had a sucking penetrating wound measuring about 3 cm to the left supraclavicular area with an associated pneumothorax. Initial resuscitation consisted of standard ATLS protocol and a left-sided chest drain was inserted. He stabilized and the wound was sutured. His main complaint at this time was pain over the medial end of his left clavicle and pain down his left arm. Physical examination showed a slight depression of the left sternoclavicular joint and a large amount of bruising. His chest radiograph (Fig. 1) showed a resolving pneumothorax and obvious clavicular asymmetry, which was interpreted as being suspicious for a dislocated clavicle. A CT examination was performed (Fig. 2) which confirmed a retrosternal dislocation of the left clavicle into the pleura that was abutting the aortic arch. An angiogram was performed to rule out any aortic arch injury and there was no vascular abnormality noted. In view of the proximity of the clavicle to the aortic arch a decision was made to perform an open reduction and no attempt at closed reduction was made. Assistance from the cardiothoracic team was sought and a combined procedure was undertaken. The patient was positioned supine and a skin incision was made 2 cm below and parallel to the left clavicle. The platysma was divided and pectoralis major followed to the medial end of the clavicle, which was within the pleural cavity. Here he had a sucking penetrating wound measuring about 3 cm to the left supraclavicular area with an associated pneumothorax. Initial resuscitation consisted of standard ATLS protocol and a left-sided chest drain was inserted. He stabilized and the wound was sutured. His main complaint at this time was pain over the

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3. Discussion

Retrosternal clavicular dislocation is an uncommon injury that is easily overlooked. It is, however, one of the most dangerous joint disruptions, in view of the potential for serious injury to major vessels, the trachea, the oesophagus and the pleura. Sir Astley Cooper is credited with the first report of this entity in 1824. Since then, a little more than 100 cases have been reported, of which only a few have been in the cardiothoracic literature [4,7]. Emergency physicians should, however, be familiar with these potentially life-threatening injuries, the mechanism of injury and physical findings.

Radiological diagnosis can be difficult. Close attention to sternoclavicular symmetry may reveal a discrepancy. Specialized views, such as ‘Hobb’s view’, ‘Heinig’s view’ and ‘Rockwood’s serendipity view’ [9], can aid in the diagnosis when no obvious abnormality is detected. Hobb’s view is performed with the patient seated and flexing over a cassette placed on the X-ray table. The beam is projected dorsally through the cervical spine onto the cassette. Heinig’s view is performed with the patient supine. The beam is directed in a coronal plane tangential to the joint and parallel to the opposite clavicle. A cassette is placed across the opposite shoulder and perpendicular to the central ray. Rockwood’s view is a 40° cephalic tilt view with the patient positioned on his back on the X-ray table. The tube is tilted at a 40° angle off the vertical and is centred directly on the sternum with a cassette placed under the patient’s upper shoulders and neck so that the beam aimed at the sternum will project both clavicles onto the film. CT examination has simplified the process and is the most appropriate imaging method for confirmation of diagnosis and for evaluating mediastinal structures [5]. Angiography is indicated where there is a suspicion of vascular injury [3,9].

The majority of sternoclavicular dislocations occur in an anterior direction and cause no immediate complications. Posterior dislocations on the other hand can impinge on critical thoracic outlet structures and should be identified in the initial survey. Treatment in the emergency setting can readily be achieved by manual traction with a towel clip applied on the medial end of the clavicle. In the absence of thoracic outlet symptoms further evaluation should be undertaken. Some authors recommend closed reduction in the emergency room. We agree with Cook [1] and Selesnick [8] that any attempt at reduction should take place only in the operating room and with the cardiothoracic team on standby. Reduction should take place as soon as is feasible preferably within the first 48 h but closed reduction has been reported to be successful up to 4 days following injury. Failing this, open reduction is advocated. Reports of vascular injury tamponaded by the impaled posterior displaced clavicle [2,10] illustrate the potential for sudden catastrophic bleeding. Obviously closed percutaneous reduction in the emergency room would be disastrous. Out of concern for the proximity of the clavicle to the aortic arch we decided to proceed directly to open reduction.

Unlike anterior dislocations most authors agree that posterior dislocations should be reduced in view of the possibility of compression of mediastinal structures [6]. Chronic unreduced posterior dislocations can cause symptoms of delayed onset including: post-traumatic thoracic outlet syndrome, brachial plexopathy and exertional dyspnoea. The use of pin fixation of the joint is not recommended. Several reports exist concerning the fatal migration of these implants [9].

A high index of suspicion is required for diagnosis along with early and appropriate imaging. We recommend a combined orthopaedic and cardiothoracic approach to these uncommon but potentially fatal injuries.

References

[2] Cooper GI, Stubbs D, Waller DA, Wilkinson GAL, Saleh M. Poster-


