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CASE REPORT

Conservative treatment of a closed fracture of the clavicle complicated by pneumothorax : A case report

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Isolated clavicle fractures are frequently encountered in the accident and emergency department. Complications of isolated clavicle fractures are rare. Pneumothorax as a complication of a clavicle fracture has only been reported five times in English literature. In all five cases the pneumothorax was treated by a thoracostomy and the clavicle fracture was treated conservatively. In our case, both pneumothorax and clavicle fracture were treated conservatively with good result. Although isolated clavicle fractures rarely present with complications and normally heal with routine immobilisation, we must be aware of the serious complications that may occur, which require urgent treatment. Thorough history, physical examination, with particular attention to the neurovascular and chest examinations and radiographs of the clavicle are necessary to prevent overlooking these potentially serious complications.

Keywords : clavicle ; fracture ; pneumothorax.

INTRODUCTION

Fractures of the clavicle are common injuries in the accident and emergency department, representing approximately 4% of all fractures in an urban population (*7*). Pneumothorax as a result of a clavicle fracture is a rare, but potentially lethal complication. It has only been reported five times in English literature (*1, 5, 6, 13, 14*). In all earlier reported cases, the pneumothorax was treated by thoracostomy. The clavicle fracture was treated conservatively in all cases. This case, however, is the first which describes a closed fracture of the clavicle with a pneumothorax, both of which were treated conservatively. We report our case and review the literature.

CASE REPORT

A 63-year-old male presented to the accident and emergency department of our hospital, after falling off his bicycle. On presentation he complained of a painful right shoulder. There was no relevant medical history. The patient presented without clinical distress. On both sides of the thorax normal breath sounds were heard, with no visible injuries to the thorax. Clinically, there was an evident fracture of the right clavicle with intact skin and no neurovascular abnormalities. Further physical examination was unremarkable. Radiographs of the clavicle (fig 1) showed a displaced comminuted midshaft fracture with a right-sided pneumothorax. A plain

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Fig. 1. — Showing the right sided comminuted clavicle fracture. The signs of a pneumothorax are clearly visible.

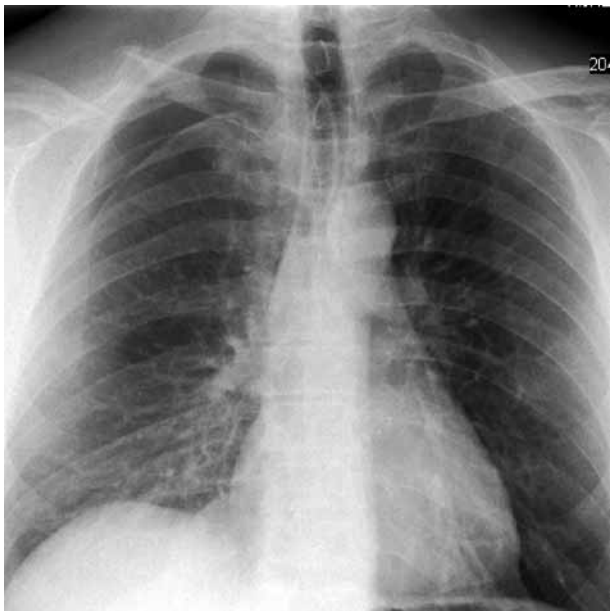

Fig. 2. — Showing the pneumothorax on a conventional X-thorax. There are no ribfractures.

radiograph of the thorax (fig 2) revealed a right-sided pneumothorax, without signs of a tension pneumothorax. A computed tomographic scan revealed an additional fissure of the right scapula. There were no rib fractures. The patient was admitted to the hospital. Pulse and blood pressure were checked every two hours, and three hours after admission a second radiograph of the chest was performed. This second film showed no changes. The fracture of the clavicle and the fissure of the scapula and pneumothorax were all treated conservatively. The following day a radiograph of the chest showed no changes and the patient was discharged with a sling. Regular follow-up chest radiographs showed a resolving pneumothorax and the patient was discharged for further follow-up with a normal shoulder function. Clinically both fractures healed.

DISCUSSION

Clavicle fractures are frequent injuries as they represent approximately 4% of all fractures in the urban population and 35% of all fractures that occur in the shoulder region (*2, 7, 8*). There is a significant difference in age-specific incidence between fractures of different anatomic parts of the clavicle. Allman Group 1, middle third fractures, are most common in children and young adults ; Allman Group 2, lateral third fractures, are most frequent among the middle-aged, and Group 3 fractures, affecting the medial third , are most common among the elderly (*7, 8, 10*). Post (*9*) and Stanley *et al* (*12*) found indications that, irrespective of their localisation, clavicular fractures most frequently result from a direct injury with a fall onto the shoulder. Complications of clavicle fractures include vascular and brachial plexus injuries and pneumothorax. The overall incidence of these complications is below 1-3%, which includes cases with first rib and scapular fractures in addition to the clavicular fracture (*11*). It is in fact surprising that the clavicle fracture does not cause more frequent complications, considering the anatomical surrounding. The apex of the lung lies behind and above the medial one-third of the clavicle, with the anterior scalene muscle, brachial plexus, and subclavian vessels interposed. Pneumothorax complicating an isolated clavicular fracture has only been reported five times in literature (*1, 5, 6, 13, 14*). Clavicle fractures occurring with upper rib or scapular fractures are associated with a higher incidence of pneumothorax (*3, 5*).

Most fractures of the clavicle can be treated conservatively with good results. Fractures sustained by adults are usually more difficult to treat than those of children. The bones displace more easily

and take longer to heal. Nevertheless operative treatment is only occasionally indicated, in cases with a risk of perforation of the skin, neurovascular complications and pseudarthrosis. Most complications occur with operative treatment and include non-union and infection. Neurovascular complications are uncommon but not exceptional (9). In our case the patient did not show any clinical signs of a complicating pneumothorax. Inspection of the radiograph of the clavicle revealed a pneumothorax, which could be treated conservatively. A computed tomographic scan was performed to diagnose any accompanying fractures. Besides the already apparent clavicle fracture, the CT-examination showed a fissure of the scapula. It is unlikely that the fissure was responsible for the pneumothorax. The patient was treated conservatively and was discharged for further follow-up with close to normal shoulder function and a completely resolved pneumothorax.

Although isolated clavicle fractures rarely present with complications and normally heal with routine immobilisation, we must be aware of the serious complications that can occur and need immediate treatment. Thorough history, physical examination, with particular attention to the neurovascular and chest examinations and radiographs of the clavicle are necessary to prevent overlooking these potentially serious complications. Even if the clinical findings suggest a regular uncomplicated clavicle fracture, a radiograph of the chest is still necessary to exclude a potentially dangerous pneumothorax.

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