



Isolated fracture of the coronoid process

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Approximately 2% to 15% of the patients with dislocated elbows are thought to present a fracture of the coronoid process of the ulna, but such a fracture does not often present in isolation. Its exact incidence is difficult to ascertain given the lack of studies on the subject. One case is presented of an isolated fracture of the coronoid process and it is placed in the context of the existing literature.

Keywords : coronoid process ; fracture.

INTRODUCTION

Few studies have been published on fracture of the coronoid process. When studies do mention such a fracture, it is usually associated with dislocation of the elbow, whereas isolated fracture of the coronoid process is considered by most authors as a rare or exceptional occurrence (3, 7-9, 14, 18, 21).

We present one case of an isolated type II fracture of the coronoid process in a 10-year-old boy after an accidental trauma. We also review the literature on the topic.

CASE REPORT

While playing, a 10-year-old boy fell on his elbow in full extension. He was taken to the emergency room with pain over the anteromedial aspect of the joint. Movement was preserved but was painful and there was minimal joint effusion. A simple radiograph (fig 1) showed that a small bone fragment had become detached from the anterior



Fig. 1. — Lateral x-ray view showing a small fragment corresponding to the coronoid process.

aspect of the joint. Computed axial tomography (CAT) confirmed that this fragment originated from the coronoid process (fig 2). After immobilisation of the joint in a plaster cast with the elbow in 90° flexion for 3 weeks and subsequent rehabilitation, the radiological outcome (fig 3) was

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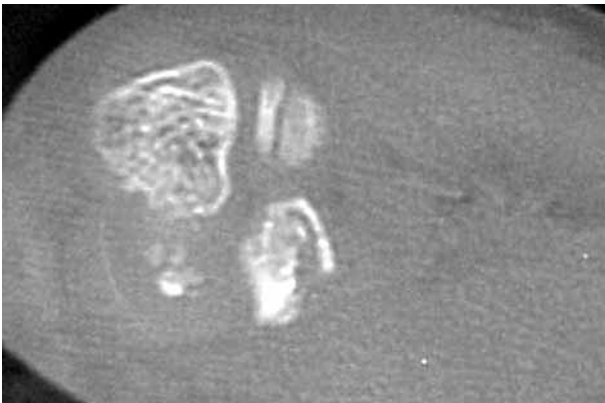


Fig. 2. — Computed axial tomography

satisfactory, as well as the functional outcome, with a full range of painless motion.

DISCUSSION

The incidence of fracture of the coronoid process is hard to ascertain because few studies are available in the literature. It is estimated to occur in 2% to 15% of patients with dislocation of the elbow (14, 18), whereas isolated fractures of the coronoid process are thought to occur very rarely (2, 3, 9, 14, 18). In a study of 1469 fractured elbows, Bracq (3) and Penneçot (12) found 23 fractures of the coronoid process (1.65%) associated with other elbow lesions and only 8 isolated fractures, corresponding to 0.5% of all elbow fractures. In fact, publications that mention such isolated fractures are rare (3, 7, 21). Boussemamme *et al* (2) studied 22 cases of fractures of the coronoid process, but only two were isolated fractures. Regan and Morrey (14) in a study spanning 17 years, found 35 fractures of the coronoid process, mostly associated with other lesions. Gadgil *et al* (7) reported the case of an isolated avulsion fracture that required surgery, Akagi *et al* (1) described a similar case in a baseball player, and Vishwanath *et al* (21) published a report of a type IIIA fracture.

The mechanism is usually a fall with the elbow in full extension causing the anterior part of the coronoid process to shear (3, 4, 9, 11). However, other possible mechanisms have been described,



Fig. 3. — The same elbow 3 weeks later, showing consolidation of the fracture.

either in combination or isolated, such as tearing produced by penetration of bone into the anterior joint capsule or the brachialis anticus (8, 9) or violent traction of the anterior part of the ulnar collateral ligament, described in baseball players and athletes (1, 7, 17).

The most widely used classification of these fractures is that of Regan and Morrey (14) who distinguish type I, II and III fractures according to the percentage of bone detached from the coronoid process. Subclassification A is not associated with elbow dislocation, and in B the elbow is dislocated. The case we present can therefore be classified as type IIA.

Diagnosis is usually based on plain radiographs, but it is not always easy to determine from which particular part of the elbow the bone fragment originates because images may be superimposed, or to distinguish a loose osteochondral fragment. In such cases, a CAT scan may be necessary to confirm the diagnosis and to provide an exact localisation, as in our case study. X-ray views described by Tomás (20) such as the Oblique 45° projection with abduction of the arm and the elbow in 90° of flexion and the Oblique 45° lateromedial projection with anterior displacement of the arm and the forearm in full supination, may also be useful in such situations because they allow suitable visualisation of the coronoid process.

Most authors agree that the coronoid process plays an important role in stabilising the elbow (5,

6, 10, 13, 15, 16, 19) and that type I fractures should be treated with 3 to 4 weeks of immobilisation followed by physiotherapy (6, 9, 14). Type IIA fractures, if not associated with other fractures, can also be treated conservatively (14). For type IIB and type III fractures, open reduction and internal fixation is recommended (14).

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