

Olecranon stress fracture in a weight lifter: a case report

P S Rao, S K Rao, B C Navadgi

Abstract

Stress fractures have been reported in the upper limb of sportspeople involved in upper limb dominated events. Olecranon stress fractures have been cited in baseball pitchers, javelin throwers, and gymnasts. The unusual case of a stress fracture of the olecranon in a young weight lifter is reported here. The minimally displaced stress fracture was treated with tension band and two Kirschner wires. The fracture healed in four months and the patient returned to light sports activity after six months.

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The intense repetitive stress placed on the elbow, especially the olecranon, may produce physiological and pathological changes in the bone and surrounding soft tissues. This may lead to undisplaced olecranon stress fracture.¹ Such stress fractures of the olecranon have been reported in baseball pitchers,² javelin throwers,³ and gymnasts,⁴ but not in weight lifters.

The purpose of this report is to present the clinical and radiological features of a stress fracture of the olecranon in a weight lifter, focusing on the probable mechanism of injury and mode of treatment.

Case report

A 20 year old male intercollegiate level weight lifter felt dull aching pain in his left elbow while lifting weights. He continued with his daily activities and weight lifting. Three months after the appearance of the initial discomfort, he felt severe pain in his left elbow, which prevented him from lifting even a small bag. He then sought medical advice. Examination of the left elbow showed tenderness and irregularity at the middle third of the olecranon. Resisted extension produced pain. There was no swelling or crepitus in the joint. Range of movement was normal. There was no evidence of any elbow instability.

A radiograph showed a minimally displaced stress fracture of the mid third of the olecranon. The margins of the fracture were sclerosed (fig 1).

The fracture was treated surgically by excision of fibrous tissue, drilling across the fracture site, and tension band wiring with two Kirschner wires (fig 2). After suture removal, the patient was started on exercises to mobilise the elbow. He was reviewed every six weeks.



Figure 1 Radiograph of the left elbow showing a minimally displaced stress fracture with sclerosed fracture margins.



Figure 2 Postoperative radiograph at three month follow up.



Figure 3 Radiograph showing signs of complete union at the end of four months.

The fracture showed signs of complete healing at the end of four months (fig 3). The range of movement of the elbow was normal and there was no evidence of any instability. The patient remained asymptomatic and returned to light sporting activities after six months.

Discussion

Olecranon stress fractures are rare injuries that have previously been reported only in pitchers, throwers, and gymnasts.²⁻⁴ This is the first

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report of a stress fracture of the olecranon in a weight lifter.

Repeated stress may lead to physiological and pathological changes in both bone and soft tissue structures. Physiological changes include hypertrophy of the bone along with muscle and ligamentous structures. Pathologically there may be sclerosed margins at the fracture site, osseous spurs, and loose bodies.¹

The valgus and extension overload of the elbow, which produces repeated violent pull of the triceps muscle on the olecranon during the terminal act of weight lifting, is the probable mechanism of stress fracture in the mid third of the olecranon. In throwers, explosive muscular forces applied to the olecranon during the terminal phase of throwing and impingement of the olecranon against the medial wall and base of the olecranon fossa may produce stress injuries of the elbow.^{3 5 6} Fractures of the tip of the olecranon probably occur as the result of violent contact with the olecranon fossa in maximal extension. Such fractures are often diagnosed in the acute phase unlike stress fractures in the mid third of the olecranon.²

Stress fractures in athletes heal well if the cause is eliminated and a long period of rest from the causative activities is enforced.⁷ The process of healing of a mid third stress fracture of the olecranon is slow with potential for displacement. The risk of delayed union or non-union is high. It is for these reasons that we feel that a mid third stress fracture of the olecranon should be treated with a tension band and two Kirschner wires according to AO (Arbeitsgemeinschaft für Osteosynthesefragen) principle.

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Take home message

No stress fractures of the olecranon have so far been reported in weight lifters, although they have been cited in association with other upper limb dominated sporting events. The explosive force of triceps muscle contraction may be the common causative mechanism.

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