■ EDITORIAL

Managing displaced fractures of the medial humeral epicondyle in children

UNVEILING THE ENIGMA

D. Ferguson,
D. C. Perry

From The James Cook University Hospital, Middlesbrough, UK

Introduction

Fractures of the medial humeral epicondyle typically occur in children aged about ten to 12 years, with or without dislocation of the elbow.[1] These usually seemingly innocuous injuries have become the subject of much continuing controversy. The question is whether the fragments should be realigned anatomically by open reduction and internal fixation, or whether they should be allowed to heal in their current position, usually with symptomatic immobilization in a cast.

The controversy

In 1986, Josefsson and Danielsson[2] published the long-term follow-up of 56 displaced fractures of the medial humeral epicondyle treated nonoperatively and reviewed between 21 and 48 years later. Only 12 patients (21.4%) reported mild or moderate symptoms related to the fracture, though none interfered with athletic activities or work. The presence of a pseudarthrosis did not appear to be related to symptoms. Observational studies have subsequently offered support to both operative and nonoperative treatment, which has generated uncertainty among surgeons. Systematic reviews of the optimal treatment have also arrived at opposing conclusions.[3,4] One concluded that nonoperative treatment offered excellent functional results equivalent to surgical treatment,[3] while another concluded that surgical fixation should be advised in order to achieve union and maximize the stabilty of the elbow in an increasingly athletic group of children.[4]

Much of the current controversy has arisen because there have been no high-quality prospective studies evaluating the management of these fractures. The studies which have been reported have serious methodological limitations, particularly with inconsistent follow-up, no standardization of the forms of treatment, the infrequent use of patient reported outcome measures, and selection bias among those chosen to undergo fixation. There has also been a lack of agreement about how a successful outcome should be reported. Radiological union of the fragments is the most commonly used outcome in these studies, with pain or function being infrequently recorded, although there is known to be a poor correlation between radiological evidence of union and functional outcomes.[3]

This uncertainty has produced much variation in the way these fractures are treated. There has recently been an increased tendency towards offering surgical treatment, particularly encouraged by studies from the USA identifying the athletic demands of children and adolescents and their expectations, including those of parents and coaches, of early mobilization and return to sport.[1,5] This trend towards surgical treatment is not supported by rigorous research.

Indications for surgery

There is agreement that absolute indications for operative treatment are when the fragment of medial epicondyle is trapped (incarcerated) within the joint, or when the elbow is dislocated and the epicondylar fragment prevents reduction. However, beyond these relatively rare presentations, the usual indication for surgery is radiological evidence of displacement of the fragments by a distance deemed by the treating surgeon to be unacceptable, which may be between 2 mm and 15 mm.[6,7] However, radiographs on which this assessment is made are known to be extremely misleading, with studies showing that minimally displaced fractures on radiographs may be displaced by > 10 mm on CT scans.[8,9] Most of these injuries are not assessed using CT scans.

When the fracture is associated with a dislocation and the elbow can be satisfactorily reduced, there is controversy about whether fixation is required irrespective of the degree of displacement of the fracture. A systematic review from 2017 did not find evidence to support the need for surgery under these circumstances.[3]

The pros and cons of treatments

Fixation of the fracture, using either a wire or a screw, is thought to improve the likelihood of union.[4] However, the functional benefit of union

Correspondence should be sent to D. Ferguson; email: david.ferguson5@nhs.net

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