The Nonoperative Management of Hand Fractures in United Kingdom

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KEYWORDS

• Hand fractures • Metacarpal fracture • Spiral fracture • Transverse fracture • Avulsion fracture • Mallet finger

KEY POINTS

- Spiral or long oblique metacarpal fractures, metacarpal neck fractures, and bony collateral ligament injuries of the finger and thumb MP joints do so well with nonoperative treatment that there is rarely a role for surgery.
- Bennett fractures may be successfully treated nonoperatively; surgery should not be the only option.
- Assessment of gliding or pivoting in intra-articular fractures of the bases of the middle (fracture subluxations and pilon fractures) and distal (bony mallet injuries) phalanges helps to identify those fractures likely to do well enough not to need surgery.

INTRODUCTION

One hundred years ago hand fractures were virtually always treated nonoperatively (conservatively). Over the last 50 years surgical treatment of some hand fractures has become popular. This is typically with Kirschner(K) wires or internal fixation, the latter led by the AO group.[1] Although K wiring or open reduction and internal fixation (ORIF) and their many variants can be used to treat any hand fracture, this does not mean they should. It is easy for clinicians and patients to be misled by the purported advantages of surgery. A case series reporting good results may be presented or published and surgeons may believe that that technique should be followed. Yet most hand fractures do well with nonoperative treatment.[2] Therefore even relatively unsuccessful surgical treatment, such as malunion following K wiring or ORIF, may still give a good outcome.

In the United Kingdom medical care has largely been provided within the National Health Service (NHS) especially for treatment of injuries and emergencies. The doctors are paid a salary independent of treatment removing any incentive to operative to improve remuneration. In addition the NHS has been chronically underfunded (ie, underresourced), encouraging staff to adopt less resource-intensive treatment, such as conservative rather than operative treatment. Therefore there has been a much greater emphasis on nonoperative treatment of hand fractures in the United Kingdom than in some other countries. This may sometimes cause undertreatment and acceptance of poorer results. All treatment decisions should be justifiable based on current best evidence.

This article identifies the fractures that are still best treated nonoperatively. A secondary aim is to establish where there may be subgroups of those fractures requiring surgery that have not been defined.

LITERATURE REVIEW

I performed multiple electronic and subsequent hand searches of published literature to identify fractures that do so well with nonoperative treatment that it is currently too difficult for surgery to

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provide significant further benefit. The inclusion criteria were as follows: all adult (≥16 years of age) fractures of the hand, excluding carpal injuries; papers that had a minimum of five cases; and I planned only to include papers with a minimum follow-up of 2 years. This proved impractical because so few had such adequate follow-up and so all papers with a minimum follow-up of 6 weeks were included. Even then reports often had patients less than 16 years old, which could not be separated out. The exclusion criteria were fractures where surgery is plainly needed and proven to have been beneficial: many open fractures, replantations, many crush injuries, displaced intra-articular fractures (excluding bony mallet injuries and ligament avulsion fractures), and pediatric fractures.

TREATMENT OF FRACTURES IN THE HAND

Spiral or Long Oblique Metacarpal Fractures

The spiral or long oblique fractures of the metacarpals are common (Fig. 1). They can be treated surgically; various techniques have been described and good results have been reported.[3–5] Similar good results have been reported with nonoperative treatment.[6] Recently Khan and Giddins[7] have shown that all spiral metacarpal fractures, even in the presence of initial malrotation, can be treated nonoperatively with excellent or very good outcomes and minimal morbidity (Table 1). All patients were treated with early mobilization, without a splint or plaster. They were encouraged to "make a fist" at the first hand clinic visit to correct any malrotation and ensure early mobilization. Twenty-five of 30 patients were reviewed at a minimum of 6 months. They had full, painless movement and grip strength of at least 90% of the other hand. The only adverse problems were minimal malrotation in one patient and mild discomfort in another.

Fig. 1. An oblique fracture of the metacarpal bone.

Previous authors have been concerned by the risk of hand dysfunction caused by shortening of the metacarpals following nonoperative treatment[8–10]; a recent study has suggested that shortening up to 5 mm is not biomechanically significant.[11] This fits with the results of the study of Khan and Giddins.[7] They confirmed that the metacarpals derotate through tightening of the intermetacarpal ligaments, which also limit shortening to 2 to 5 mm. Their results confirm that this degree of shortening is not typically clinically relevant.

Malrotation following spiral metacarpal fractures almost always corrects with finger flexion. If it does not, then encouragement or (rarely) manipulation under local anesthetic is appropriate because a key aim of treatment is avoidance of rotational malunion. Nonoperative treatment gives such good results that recommending surgery seems unjustifiable in almost all patients.

Finger Transverse Metacarpal Fractures: Shaft and Neck

In the past virtually all patients with transverse metacarpal shaft and particularly neck (boxer's) fractures were encouraged to mobilize freely; patients healed with some deformity but almost always good function. In the United Kingdom, Barton[2] in particular showed the benefits of plaster or splint support to reduce and successfully maintain an improved angulation for transverse metacarpal shaft fractures. More recently the results of surgical treatments have been reported with good results.

A crucial question is: what degree of metacarpal malunion is acceptable? The answer is not clear. For metacarpal neck (boxer's) fractures it has been suggested by various authors as 50° to 60° flexion,[12] 30°,[13,14] and 20°.[15,16] It is noticeable that the amount of acceptable angulation has increased over time. For little finger metacarpal shaft fractures 30°[12,17] has been suggested as acceptable. These recommendations are only expert opinion.

The outcome of nonoperative treatment has been reported widely and apart from a mild cosmetic abnormality, there is typically an excellent functional outcome.[18] A Cochrane review has noted that there is no good evidence that more marked malunion reduces hand function