

A Minimally Invasive Technique of Reducing Difficult Distal Radius Fractures

Divya Prakash*

Sandwell and West Birmingham Hospital NHS Trust Lyndon West Bromwich, Birmingham, England

Abstract

Severely displaced distal metaphyseal fractures of radius can some times be difficult to reduce by manipulation. In such cases, the operating surgeon normally proceeds with an open reduction of the fracture through a standard incision. In cases where manipulation has failed to achieve proper reduction of fracture, and open reduction is being considered, a technique is presented by the author, which he has used for a number of years, to achieve satisfactory reduction through a very small incision instead.

Keywords: Distal radius fracture; Minimally invasive; Percutaneous

Introduction

Distal radial fracture is a very common injury both in adults and in children (Figures 1 and 2). It may or may not be associated with a fracture of distal ulna. In the vast majority of cases, the fracture is extra-articular and occurs about an inch or an inch and a half proximal to the articular surface. Severely displaced fractures of the radius in this region can sometimes be difficult to reduce. Initially manipulation is attempted, but it occasionally fails to achieve satisfactory reduction.



Figure 1: Pre-operative deformity (AP View).



Figure 2: Pre-operative deformity (Lateral View).

Open reduction is then considered, usually through a standard approach such as Henry's. The author would like to present a technique that he has used for a number of years to achieve good reduction of the fracture, through a small incision on the dorsal side.

Patients and Methods

In most cases of displaced extra-articular fractures of distal radius, an attempt is first made to reduce the fracture by manipulating it with the patient anaesthetised. Exaggerating the deformity to disimpact the trabeculae, and then giving traction to the hand may help achieve a good reduction. If a satisfactory reduction is not obtained after a reasonable attempt, the author then proceeds to use the technique, which is described here.

The forearm and hand of the patient is cleaned and prepared with an appropriate anti-bacterial solution; the author prefers to use an alcoholic iodine solution for this. The extremity of the patient is then draped with sterile drapes. Under X-ray imaging control, the site of the fracture in the radius is identified. A small incision is made at his level of the fracture dorsally. The curved part of a McDonald's retractor is introduced carefully into the fracture, by blunt dissection of the soft tissues. Under X-ray guidance, it is negotiated past the distal end of the proximal fragment (Figure 3). The distal fragment is then levered up by the McDonald's retractor, while the tip of the curved part of the retractor rests against the distal end of the proximal fragment (Figure 4). After satisfactory reduction is achieved and the McDonald's retractor removed, the fracture fragments may be stabilised with two Kirschner wires (Figures 7 and 8), introduced percutaneously. The skin may be closed with a single stitch.

Results

The author has successfully used the technique in numerous such fractures in children and adults over the last 12 years and

***Corresponding author:** Divya Prakash, Sandwell and West Birmingham Hospital NHS Trust, Lyndon West Bromwich, Birmingham, England, E-mail: divya7nov@aol.com

Received November 29, 2012; **Accepted** December 18, 2012; **Published** December 20, 2012

Citation: Prakash D (2013) A Minimally Invasive Technique of Reducing Difficult Distal Radius Fractures. J Trauma Treat 2: 155. doi:10.4172/2167-1222.1000155

Copyright: © 2013 Prakash D. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



Figure 3: Introduction of instrument in the fracture.



Figure 4: Reduction of fracture.



Figure 5: Introduction of instrument in the fracture.

in all cases, a formal open reduction of the fracture has been avoided.

Discussion

Fracture of the distal radius is one of the commonest injuries treated in the orthopaedic department. In the majority of cases, the fracture is in the metaphyseal region of the bone, with no extension into the articular surface. The first step in the management of these injuries is to achieve a satisfactory reduction. Although most of these fractures are reduced with simple manipulation, difficulties may be encountered if the distal fragment is displaced dorsally and proximally [1]. The technique described here is a simple manoeuvre using a common

surgical instrument to reduce distal radius fractures in patients of all ages. In doing so, the complications and morbidities associated with a formal open reduction of a fracture are avoided. This technique also significantly reduces the theatre operating times for the patients.

It must be emphasized that this technique may be used only for an extra-articular fractures with little volar comminution and where the distal fragment has displaced proximally on the dorsal side.



Figure 6: Reduction of fracture.



Figure 7: Fixation of fracture with wires.



Figure 8: Fixation of fracture with wires.

There is potential for this procedure to have complications in the form of failure to achieve satisfactory reduction, damage to the dorsal branch of radial nerve and infection, but in the author's series none of these were encountered (Figure 5). This underlines the safety of this technique.

A further advantage of this technique is that, as the incision made is very small, it is cosmetically superior and less painful than a formal open reduction.

Despite search of medical literature, the author did not find a similar technique where a simple and common surgical instrument has been used to reduce displaced distal radial fractures successfully (Figure 6), safely and efficiently [2].

Conclusion

The technique described here is simple, effective, safe and cosmetically superior. It also has shorter anaesthetic and surgical times, and few complications when compared with formal open reduction of such fractures.

References

1. Distal radius and ulna fractures (2001) Fractures in children. Chapter 9 (5th edn), Rockwood and Wilkins.
2. Fractures of distal third of forearm (2003) Campbells' Operative Orthopaedics. Chapter 33 (10th edn).