



Technical note

Mano's line: An easy anatomical landmark to locate the flexor carpi radialis tendon in swollen wrists

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1. Introduction

Internal fixation of distal radius has become a widely accepted treatment. The flexor carpi radialis (FCR) tendon is an important landmark in the approach to the distal radius. Three different palmar approaches to the radius have been described. The first is the classical Henry's approach where the surgical plane is between brachioradialis and the radial artery. Next is the modified Henry's approach where the surgical plane is ulnar to the radial artery. Another approach described by Allen et al. is the modified approach to the flexor surface of the distal radius and this approach too FCR is an important tendon.¹ Very often the wrist is swollen and the landmarks are obscured. This situation is often made worst if the patient is obese. An incision too medial may injure the palmar cutaneous branch of the median nerve, and on the other hand an incision too lateral may injure the superficial branch of the radial nerve or the radial artery.² Accurate placement of the incision would make the exposure to the distal radius much easier and also the amount of retraction required to visualise the fracture site. We describe a simple and reproducible method to locate the FCR tendon.

2. Objective

To find a suitable anatomical landmark to locate the FCR tendon which maybe obscured due to swelling or obesity.

3. Surgical technique

The volar approach to the distal radius is commonly used. The surface marking is drawn after identifying the lateral and medial epicondyle (Fig. 1). A transverse line was drawn connecting the medial and lateral epicondyle. Next a perpendicular line was drawn from the midaxial line of the middle finger, with the wrist in

neutral position to bisect the first transverse line. In the distal forearm just proximal to the wrist crease the FCR tendon can be identified along this line. As you go more proximally the FCR tends to be located more ulnar to the perpendicular line (Fig. 2).

4. Clinical cases

In our experience we were able to identify the FCR tendon using this surface marking. In a series of 30 patients with distal radius

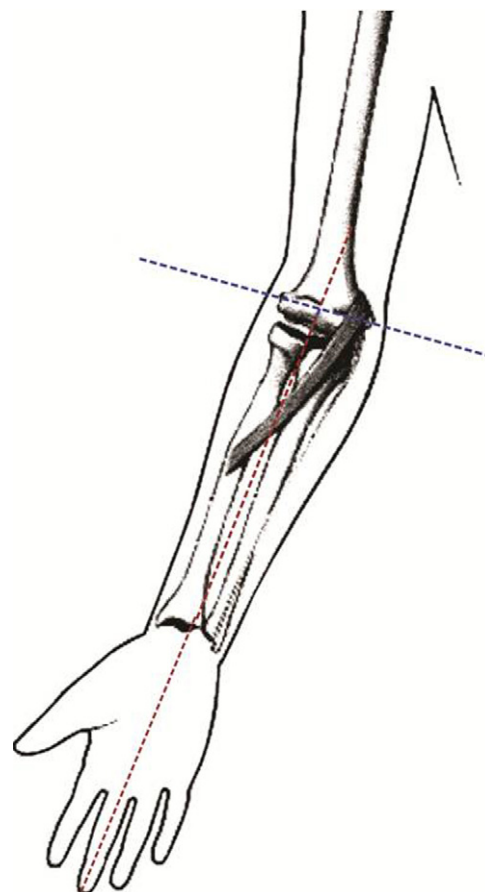


Fig. 1. The diagrammatic representation of the line drawn to identify the FCR tendon. The blue line is a line between the lateral and medial epicondyle. The redline is the midaxial line along the middle finger.

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Fig. 2. The cadaveric dissection of the forearm. The metallic ruler represents the line along the midaxial line of the middle finger.



Fig. 3. The swollen wrist of a patient with a distal radius fracture. The interrupted line shows the midaxial line of the middle finger.

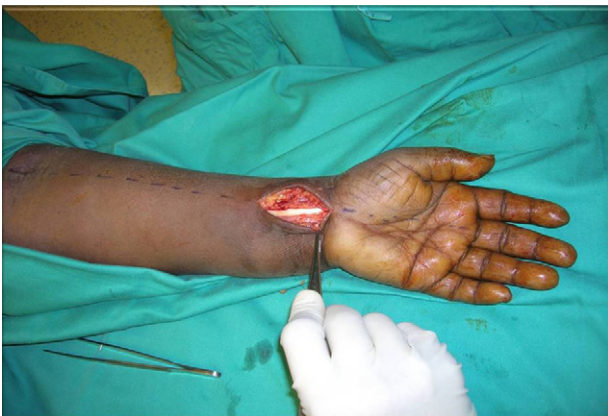


Fig. 4. The flexor carpi radialis tendon located along the line in the distal part of the wound and diverges ulnarly as we go proximally.

fracture requiring open reduction and internal fixation using the volar approach. We used the landmarks as described above and we were able to identify the FCR tendon precisely despite the wrist being swollen (Figs. 3 and 4).

5. Discussion

The volar approach to the distal radius is frequently used for internal fixation of the distal radius fracture. In normal circumstances the FCR tendon can be easily palpated. However in obese individuals or in patients with fractures of the distal end of the radius, the swelling can obscure the location of the FCR tendon. For senior and experienced surgeon this may not pose a problem. However for junior surgeons and residents the site of planning the incision accurately is essential. An incision too medial may injure the palmar cutaneous branch of the median nerve, while an incision which is placed too lateral may injure the superficial branch of the radial nerve. A properly placed incision also reduces the need for excessive traction.

6. Conclusion

This simple surface marking is helpful when approaching the distal radius using the volar approach. In a patient with swelling or in a patient who is obese especially when the sheath of the FCR is to be open.

References

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