



**QUESTION** | I HAVE A PATIENT WHO HAS HAD A WRIST FRACTURE FIXED WITH A VOLAR PLATE. I HAVE BEEN TREATING THEM NOW FOR 2 MONTHS. IT IS 3 MONTHS AFTER THE FRACTURE AND THE WRIST STILL HAS SOME PAIN ON MOVEMENT. IS IT COMMON TO HAVE PAIN AT THIS STAGE OR IS THERE ANYTHING THAT I SHOULD BE THINKING ABOUT THAT MAY BE CAUSING ONGOING PROBLEMS?

**ANSWER:** |

When managing patients after a wrist fracture, it is important to watch for potential complications. Pain is certainly one symptom that may alert the treating therapist or doctor that something is not quite right.

The American Academy of Orthopaedic Surgeons has issued a Clinical Practice Guideline on The Treatment of Distal Radius Fractures<sup>1</sup> which quite sensibly states that “all patients with distal radius fractures and unremitting pain during follow-up be re-evaluated”. So when assessing pain, it is important to assess not just the amount, but also the trend of the pain. Is it getting better, or has the improvement stagnated? If the pain is mild to moderate, but improving with time, then the likelihood of a serious complication is lessened.

Some patients do take longer than others to improve. Wei et al<sup>2</sup> showed that patients who underwent a volar plating of a distal radial fracture still had average pain scores of  $1.7 \pm 1.0$  on a 10-point visual analog scale at 3-months post-injury. This sometimes persisted until the final 12-month follow-up visit, indicating that some degree of discomfort appears to be quite common after distal radial fractures, even in the absence of complications.

It is also known that there are some patient traits that are associated with increased patient-reported pain and disability, in the absence of complications.<sup>3,4</sup> These include the presence of a third-party compensation claim, a lower level of education and the presence of other medical problems. One must be wary though of not brushing these patients off if they have continuing pain. Each patient with ongoing issues warrants a proper evaluation.

The site of the pain gives an important clue as to any potential underlying problems. Most commonly in these situations, it is the ulnar side of the wrist that continues to hurt, localising the issues to ulnar-sided anatomical structures. More central wrist pain may indicate a problem towards the radiocarpal or intercarpal joints.

The patient in your question is 3 months post-open reduction internal fixation (ORIF). Some potential complications that should be considered include joint stiffness, infection, joint incongruity, malunion, nonunion, ulnar impaction, triangular fibrocartilage complex (TFCC) tears, complex regional pain syndrome (CRPS), or instability of the carpus or distal radioulnar joint (DRUJ).

Most patients with wrist stiffness continue to make gains in range of motion with further therapy, albeit slow in some cases. Very rarely is surgical release of arthrofibrosis required.

Infection does not always present as the classic red, hot, swollen wrist. It may present as a deep-seated pain at rest which worsens with movement, or may be painful only with movement. It would be prudent for the treating surgeon to exclude infection with a clinical evaluation and some imaging and blood tests. Further interventions may be required based on these findings.

Joint incongruity at the radiocarpal joint or DRUJ may cause minimal pain at rest, but severe pain on movement. DRUJ incongruity pain may also be elicited by compressing and grinding the distal radius against the distal ulna. Incongruity may be due to malunion of a fracture with an intraarticular step, or an extraarticular malunion with abnormal inclination of the radial articular surface. Once again, sometimes these require further surgical intervention.

Malunion of a distal radial fracture can also lead to ulnocarpal abutment. Relative shortening through the fracture leads to an ulnar positive wrist, which may then lead to impaction between the ulnar head and the carpus, or between the ulnar styloid and carpus. This presents as ulnar-sided wrist pain, worse with ulnar deviation, and the patient will be tender over the impacting bones. Evaluation of this would include standardised PA X-ray views of both wrists with the forearm in neutral rotation. The ulnocarpal abutment pain may be severe enough to warrant surgical correction, such as an ulnar shortening procedure.

Nonunion of distal radial fractures is uncommon, except in cases of high energy trauma. However, nonunion of the distal ulnar styloid is quite common although it rarely presents clinical problems. Symptomatic nonunion of a small to moderately-sized ulnar styloid fragment may require excision. Nonunion of a large ulnar styloid fragment may contribute to DRUJ instability and may require fixation rather than excision.

The stability of the DRUJ can be assessed by testing for the piano key sign. The examiner steadies the radius and carpus, then attempts to sublax the distal ulna volarly and dorsally. This is tested with the forearm in neutral, full supination and full pronation, and compared to the contralateral side. Ideally, DRUJ instability would be picked up earlier in the course of treatment when there is a chance of the soft tissues healing while the DRUJ is surgically fixed in position. However, at 3 months post-fracture, a symptomatically unstable DRUJ would require a more aggressive approach to repair, reconstruct or resect the DRUJ.

Peripheral TFCC tears can contribute to DRUJ instability and may need to be repaired in the process. Other types of TFCC tears however, may cause ongoing pain but may not be amenable to or require repair. In these cases, sometimes it is useful to debride the joint arthroscopically.

Wrist fractures can lead to carpal instability if the intercarpal ligaments have been disrupted. It has been demonstrated in one study that about 30% of patients with intraarticular fractures of the distal radius undergoing ORIF have partial or complete scapholunate ligament tears<sup>5</sup>. If the instability is significant, this may require further evaluation or surgical correction.

CRPS is relatively common after distal radial fractures and ranges from a milder form with pain on movement to a more severe form with an exquisitely painful, tender limb. Vitamin C has been shown to reduce the risk of CRPS in patients with wrist fractures in a multicentre randomised controlled trial.<sup>6</sup> For this reason, I advise every patient with a significant distal radius fracture to take Vitamin C 500mg twice a day.

In summary then, it is fairly common to have some continuing wrist pain on movement at 3-months post-ORIF. However, persistent pain greater than expected warrants a full evaluation of the patient's wrist, then a treatment plan targeting the cause of the pain. In the absence of any serious problems, treatment may involve continuing to strengthen and increase range of motion. If any complications are discovered, then these need to be managed appropriately.

#### References:

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