

ITERATIVE DISTAL RADIUS FRACTURE, MINI INVASIVE SURGERY: A CASE REPORT**Aadel Teghida*, R. Boueld, Z. Benali, H. Berrada, B. Chelouah, A. Bennis, O. Zaddoug, M. Benchakroun, S. Bouabid**

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ABSTRACT

Distal radius fractures are the most common fractures in adults. Because of the prevalence of these injuries, patients may present with a repeat distal radius fracture on the same wrist through the site of a malunion. In this setting, the restoration of acceptable alignment can be challenging. There is little guidance in the literature for the management of these fractures. We report our experience with repeat distal radius fracture. The secondary fracture plane was used to correct the prior deformity, and the construct was fixated using percutaneous pinning technique.

KEYWORDS: Radius, Iterative, Displaced, Percutaneous.**INTRODUCTION**

As the worldwide population ages, there is an expectation for an increasing incidence of distal radius fracture (DRF) in adults.^[1-2] Surgical management of DRF is increasing; however, most cases are conservatively managed with casting.^[2-3] Conservatively managed DRF cases have higher rates of malunion than those in surgically managed cases.^[4-5-6] Recent evidence demonstrates a trend in improvement of outcomes after surgical management of DRF.^[7]

MATERIELS ET METHODES

Study of the case of a patient with no relevant medical or surgical history admitted to the emergency department for iterative post traumatic distal radius fracture.

Patient information

A 51-year-old woman, who had a Colles fracture, conservatively managed with casting (figure 1, 2, 3) was admitted to the emergency department of the Mohamed 5 military instruction hospital in Rabat, on 22/09/2023, for a trauma to the right wrist caused by a fall from a standing position onto an outstretched arm (the same that was injured 14 months earlier).

**Figure 1: Anteroposterior and Lateral X-ray showing initial fracture.**



Figure 2: Anteroposterior and Lateral X-ray showing initial fracture with cast immobilization.



Figure 3: X-ray realized one year later showing callus formation is complete. Using orthopedic treatment.

On physical examination of the right forearm, dinner fork deformity was present (figure 4), with tenderness and swelling in the wrist. The springing test of the radius was positive along with restricted wrist movements. But

the external skin was intact without any bruising or injury and the neurovascular status of the affected extremity was satisfactory with no associated injuries to the joints above and below the injury.



Figure 4: Classic dorsiflexion deformity or 'dinner fork' deformity during the visit.

The complaints presented by the patient together with the interpretation of anteroposterior and lateral views of the X-ray right forearm, diagnosed distal radius and ulna

fracture with significant radial and dorsal displacement as shown in (figure 5).



Figure 5: Anteroposterior and lateral X-ray view of the right wrist joint.

Patient prepared and admitted to the operating room, through the use of peripheral (axillary) nerve block, performing a closed fluoroscopy assisted reduction of the fracture, and later applying a Kirschner pin entering through the radial styloid, going across the fracture site and anchoring in radial medial cortex; two additional

intrafocal pins inserted from the dorsal-radial side (figure 6). Then, we placed the cast below the elbow, which, similar to the orthopedic management, for a 6-week period. The patient received antibiophylaxis (1g cephalosporin).



Figure 6: Anteroposterior and Lateral X-ray on 25th day showing correction of the deformity using percutaneous pinning.

Postoperative instructions: Cast immobilization for 6 weeks, with immediate finger motion, full rehabilitation and reasonable weight-lifting can be allowed after pins removal towards the end of 6th week.

DISCUSSION

Distal radius fracture (DRF) is the most common fracture in adults (Although historically infrequent, repeat DRFs may become more common because the worldwide population is aging).^[8]

DRF represents 17.5% of all fractures seen in the emergency room.^[9] In other words 2.5% of all emergency department visits are due to DRF.^[10] It is the second most frequent fragility fracture in elderly people aged 50 years or older. The lifetime risk of 50-year-olds sustaining a distal radius fracture is estimated about 15% for women and 2% for men.^[11] However, frequency has a bimodal gender specific distribution. In younger male patients high-energy trauma usually leads to DRF, whereas in elderly women typically low-energy trauma

such as standing level fall result in DRF.^[9] 85% percent of the women presenting with DRF suffer from osteopenia and 52% of osteoporosis, respectively.^[12] Aging of the Western population results in an increase of DRF. For reasons not completely understood, frequency of DRF increases faster than the Western population ages. Changes in lifestyle, such as higher activity levels in the elderly alone, could not explain this observation.^[10] Dorsally displaced distal radius fractures (DDDRFs) are the most frequent fracture pattern. This pattern was first described by Abraham Colles in 1814 and named after him.^[13]

Treatment of DRF has evolved over time and in the last century several operative techniques for reduction and fixation were developed. Albin Lambotte was the first to attempt fragment fixation by percutaneously inserted wires. In the 1940s, external fixators were used for transfixation of the wrist for the first time. Afterwards, the principles of open reduction and internal fixation were introduced by the AO group for the treatment of

displaced fractures. These guidelines were then also applied for DRF treatment and implants were refined the following years.^[14] However, there is a lack of consensus regarding the best treatment of DRF. Conservative treatment is generally reserved for undisplaced or minimally displaced fractures. For unstable DRFs, literature does not support that operative intervention outclasses conservative treatment. While radiographic outcomes such as volar tilt, radial inclination and ulnar variance were significantly better after operation, an improved functional outcome could not be evidenced after surgical treatment,^{[15],[16],[17]} Furthermore, complication rates were significantly lower for conservative treatment,^{[15],[16],[17]} Nevertheless, data demonstrating better long-term results after VLP fixation compared to conservative treatment by cast immobilization in AO type-C fractures directly contradict these findings.^[18] Reasons might be different surgical interventions, different fracture fixation implants, a broad range of included fracture types and degree of experience of the treating surgeon. Consequently, treatment of DRF remains a controversial issue. The American Academy of Orthopedic Surgeons (AAOS) published a clinical guideline for DRF treatment with 29 recommendations; none of them were rated strong. Among these recommendations, some are inconclusive: “we are unable to recommend for or against operative treatment for patients over age 55 with distal radius fractures; we are unable to recommend for or against any one specific operative method for fixation of distal radius fractures.” Other recommendations are moderate: “we suggest operative fixation for fractures with post-reduction radial shortening >3 mm, dorsal tilt >10°, or intra-articular displacement or step-off >2 mm as opposed to cast fixation”.^[19]

CONCLUSION

Although repeated DRF is rare, it is increasingly diagnosed, and can be treated by simple pinning despite significant displacement of the fracture.

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