

Bridging Plate and its role in the treatment of Communited Distal Radius Fracture: A Review



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Abstract

Management of communited distal radius always present as a challenge to the treating surgeon. In this article the advantages, disadvantages as well as the indications and contraindications of the dorsal distraction plating as a method to treat the communited distal radius fracture are discussed.

Mini Review

The treatment goals for the management of distal radius fractures include restoring congruity to the radiocarpal and distal radioulnar joint (DRUJ) surfaces and maintaining radial length. There are several established surgical options for displaced distal radius fractures will depend on fracture displacement, joint surface involvement, patient age, bone quality, and occupation. Biomechanical understanding of wrist fractures has prompted a more aggressive approach to the fixation of the distal radius ensuring a more consistent correction of displacement and

maintenance of reduction increasing the trend for operative treatment of these fractures. This article refers specially to comminuted distal radius fractures. This fracture exhibits a bimodal age-related distribution occurring the first peak during the youthful age associated to high energy trauma, fall from height, due to severity of injury, this fracture is associated with extensive comminution of metaphysis and articular part. The second peak occurs after 60 years of age due to poor bone mass where even minor fall can cause extensive injuries [1].

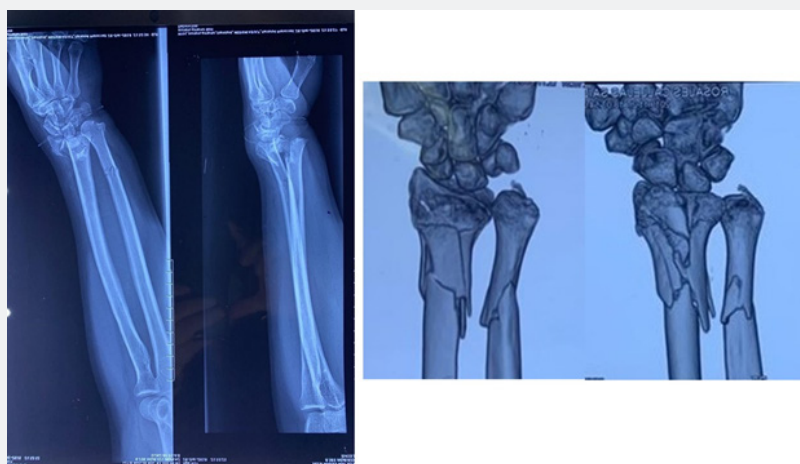


Figure 1: Preoperative x- ray and CT of patient showing fracture of distal end of radius.

Historically, this type of fracture has been treated by external fixation, but due to the comminution of the fragments, it is associated with a high rate of complications about 52-63% [2,3]. With the development of internal fixation with a volar plate, it was thought to be the solution for managing comminuted fractures of the distal radius however with this option it was not possible to capture all short fragments and due to strong proximal muscle force, there is further collapse of carpus [4]. The use of internal distraction plating or bridge plating for distal radius fractures was first introduced by Burke and Singer [5] and further expanded by

Ruch and coworkers, who described the use of a 12- to 16-hole 3.5-mm dynamic compression plate (DCP) placed in the floor of the fourth dorsal extensor compartment to span from the intact radius diaphysis to the third metacarpal [6]. Use of dorsal bridging plate has many advantages such as it is more rigid in comparison of external fixator, it can be used for prolonged period till union occur. Disadvantage of this method could be, to regain mobility of wrist due to prolong immobilization, rupture/ adhesion of extensor tendon and need of another surgery for implant removal (Figures 1-4).

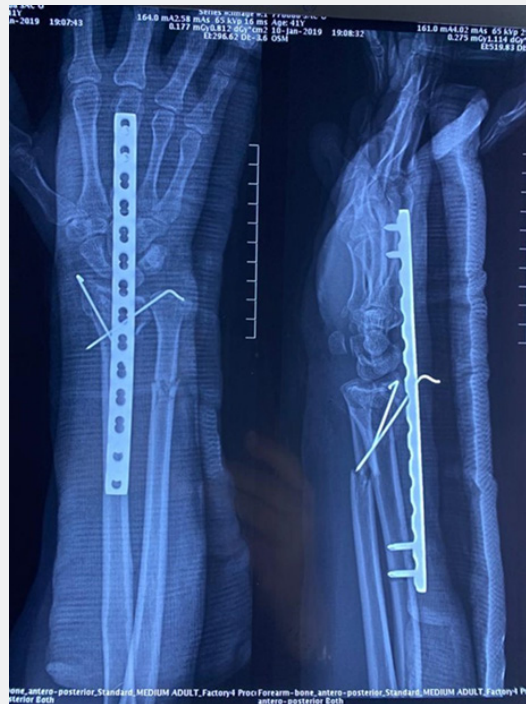


Figure 2: Post-operative x- ray.



Figure 3: Post-operative x- ray after implant removal.



Figure 4: Range of motion after implant removal.

The bridge plating technique is technically easy and achieves the goals of maintenance of fracture reduction, allows weight bearing through the injured extremity, and is associated with few complications. This technique is indicated in patients with any type of distal radius fracture with extension into the radial metadiaphysis as well as polytrauma patients with associated lower extremity injuries requiring early weight bearing through the upper extremities. General orthopaedic contraindications include medical comorbidity precluding surgical procedure and active infection. The only specific contraindication is metacarpal fracture of index and middle fingers, which would compromise the distal fixation of the bridge plate.

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