

## Case Study:

### Use of Acu-Loc<sup>®</sup> 2 Wrist Plating System VDR Plate for Complex Intra-articular Fracture of Distal Radius

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### Case Presentation

Patient was a 66-year-old right-handed female who fell on her right upper extremity while playing pickleball. She presented with a closed, displaced intra-articular fracture of the distal radius. Radiographs revealed significant comminution of the radial column and a fragment of the distal volar ulnar corner. Due to the complex, intra-articular nature of the fracture, and the need to stabilize the critical corner, open reduction internal fixation (ORIF) was recommended. The surgery was performed under regional block at seven days post injury.

### Preop Plan

The primary treatment goals were anatomic restoration of the articular surface, fixation of the critical corner, and stabilization of the radial column. Often, these fractures require distal intermediate column fixation to prevent escape of the volar lunate facet. Given the severity of the injury, Dr. Ruch decided to use an Acu-Loc® 2 Volar Distal Radius (VDR) Plate. A volar locked plate was chosen over pins, a dorsal spanning plate, or external fixation, due to its ability to achieve anatomic reduction and buttress the volar lunate corner.

### Operative Findings and Approach

Dr. Ruch used an extended flexor carpi radialis (FCR) approach to expose the surgical site. The fracture was manually reduced, paying close attention to the alignment of the critical corner/lunate facet fragment. Provisional fixation was achieved with K-wires, and the reduction verified under fluoroscopy before applying the Acu-Loc 2 VDR Plate. The plate was placed as distally as possible without violating the articular surface, and tilted distally on the intermediate column without violating the watershed line on the radial column. A nonlocking screw was first placed through the slotted shaft hole, using the plate to buttress the distal ulnar fragment.

Care was taken to place K-wires in the distal wire holes to keep the plate centered and provide fixation of the critical corner. A sigmoid notch view is very helpful to verify that the plate is in the proper position. At this point, the articular surface is firmly reduced to the distal plate to avoid plate prominence distally (as locking screws do not diminish the gap between the plate and the articular surface). Two locking screws were placed in the ulnar corner to provide subchondral support to the lunate facet. Two radial styloid screws were also inserted to support the radial column. Locking distal screws and nonlocking proximal screws completed the construct. The total tourniquet time was 47 minutes.

### Preoperative



### Postoperative



### Follow-up

Postoperatively, the patient was placed in a removable wrist splint for comfort for six weeks. At six weeks postop, the patient began occupational therapy with active assisted range of motion (AAROM) and then strengthening at 10 weeks postop.

Radiographs at the six months follow-up showed satisfactory parameters and clinical outcome. No soft tissue complications were seen.

### Discussion

This case presented challenges of an unstable, distal volar ulnar corner fragment and comminution of the radial column. For these types of complex intra-articular fractures, Dr. Ruch used the Acu-Loc 2 VDR plate because of its anatomic shape, distal position, screw trajectory, and support for the radial column.

The shape of the Acu-Loc 2 plate enabled it to be used as an anatomic template to aid in fracture reduction. Its profile allowed it to be placed distally on the radius without prominence that would put flexor tendons at risk of irritation. The trajectory of the distal screws provided subchondral support for the most distal of fracture patterns, and the two locking screws directed into the radial styloid resulted in rotational and axial stability for even small fracture fragments.



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