

DISTAL RADIUS VOLAR PLATING

Orthopaedic Trauma for NPs and PA's Course

Jack Anavian, MD

1. Patient Positioning and Set-up

- Patient is placed supine with the affected extremity on a radiolucent arm table
- The surgeon sits on the side of the axilla, facing the patient's head; the assistant sits on the side of the head, facing the patient's legs
- A tourniquet is applied, within or outside the sterile field
- Fluoroscopy is brought in from the end or corner of the hand table

2. Volar (Henry) Approach to the Wrist

- A 4 - 8 cm longitudinal incision is made in line with the flexor carpi radialis (FCR) tendon, starting from the wrist flexion crease extending proximally
- Superficial structures to avoid: palmar cutaneous branch of median nerve that runs medial to FCR tendon; branches of the dorsal radial sensory and lateral antebrachial cutaneous nerve; palmar branch of the radial artery at the distal end of incision
- Incise anterior sheath of FCR, retract tendon medially, then incise posterior sheath of the FCR. It is not necessary to dissect out median nerve (ulnar to FCR) or the radial artery (radial to FCR)
- Bluntly dissect down to pronator quadratus muscle; a blunt self-retaining retractor is placed between radial artery and FCR for exposure to the pronator
- Incise the pronator at its proximal, distal, and radial borders, leaving the ulnar-based flap for repair later
- Subperiosteally elevate the pronator to expose the fractured radius

3. Fracture Reduction & Provisional fixation

- A lobster-claw clamp may be useful for translational and rotational control of the radial shaft during fracture reduction
- Apply traction distally to disimpact the fracture and allow for cleaning fracture of any hematoma or interposed soft tissue
- In cases where there is significant comminution, reduce and provisionally stabilize fragments with K-wires starting with the articular surface, taking into account plate & screw position later
 - Fragments may be reduced under fluoroscopic guidance through the fracture using a periosteal elevator, K-wire, or dental pick
 - A K-wire is placed from the radial styloid into the lunate fossa fragment
 - Once articular fragment reduction is complete, reduce and stabilize the distal radius as a single unit to the radius shaft

4. Plate Application and Fixation

- Apply and position plate to volar surface in accordance with the design of the plate being used, with the distal end as close to the articular surface as possible without distal screws penetrating the joint
- A lobster-claw clamp is used to secure the proximal end of the plate to the radial shaft
- Place provisional K-wires through the plate to maintain proper plate position and confirm proper position both proximally and distally on fluoroscopy (AP and lateral views)
- Drill and insert a provisional screw in a proximal oblong hole of the plate; a second screw may be placed in the proximal plate to control rotation of the plate and maintain its alignment to the shaft
- To reduce the distal radius to the plate, use the lobster-claw to control the shaft and apply distal traction combined flexion and ulnar deviation of the hand and wrist
- While reduction is held, place a provisional K-wire through the distal plate into the distal radius
- Drill and place distal ulnar screws first, then proceed radially and proximally
- Use fluoroscopy to ensure that the proper reduction is maintained and that the screws are of proper length and are not penetrating the joint
- Drill and insert the remaining screws in the proximal plate and remove the provisional K-wires

5. Closure

- Repair the pronator quadratus to its radial insertion with 3.0 absorbable suture using figure-8 interrupted stitches
- Close subcutaneous tissue with interrupted 3.0 or 4.0 absorbable suture and reapproximate skin with interrupted 4.0 nylon suture or a running subcuticular monocryl stitch
- Place a nonadherent gauze over the incision and 2 layers of gauze over that, wrap the wrist and forearm with Webril, and apply a below-elbow splint with the wrist in neutral position