

Supplemental Use Guide—Volar Rim Fragment Fixation



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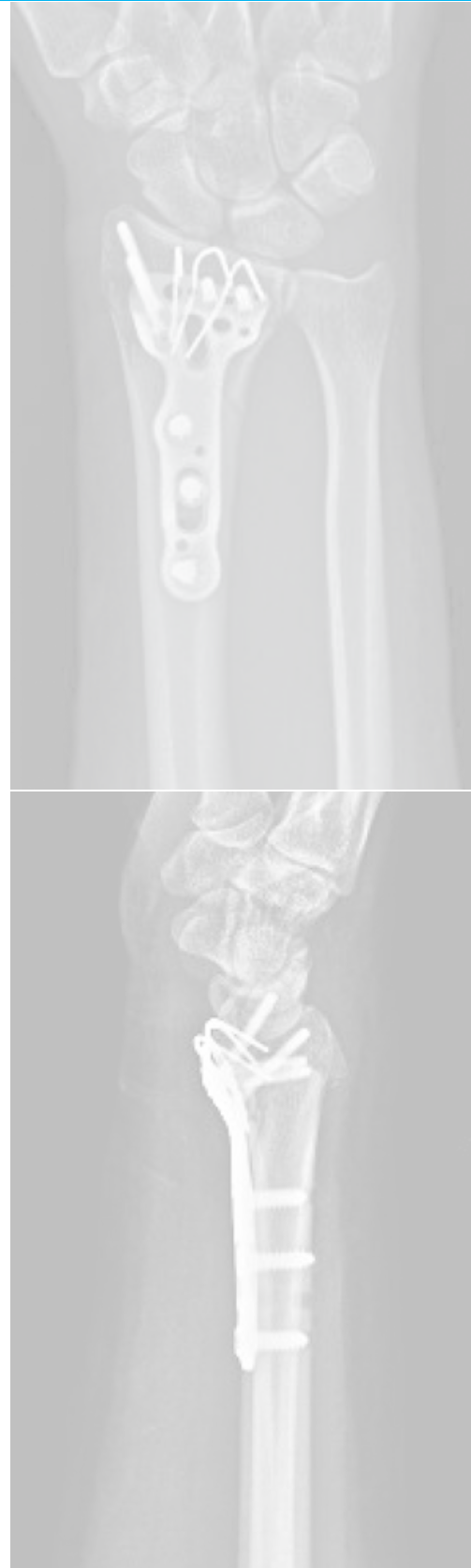


Acumed® Acu-Loc® 2 Wrist Plating System

A comprehensive system to treat fractures of the distal radius and distal ulna, the Acu-Loc 2 Wrist Plating System offers Standard, Variable Angle Locking, Fragment-Specific, and Extension Plates to address a variety of fracture patterns.

Small fragments at the volar rim are rare but can be a challenge to address due to their distal location to the watershed line. The following surgical techniques, which are used in conjunction with the Acu-Loc 2 VDR plates, are intended to address these volar rim or marginal volar fractures of the distal radius.

This guide is intended for supplemental use only and is not intended to be used as a stand-alone surgical technique. Reference the Acu-Loc 2 Wrist Plating System Surgical Technique (HNW00-06) for more information.

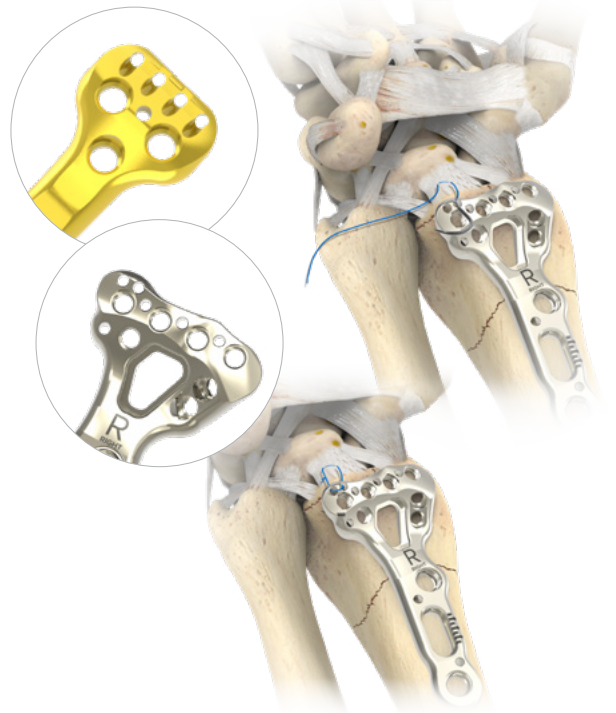


	Definition
Warning	Indicates critical information about a potential serious outcome to the patient or the user.
Caution	Indicates instructions that must be followed in order to ensure the proper use of the device.
Note	Indicates information requiring special attention.

Suture Technique for Fixing Small Volar Ulnar Corner Fragments

This technique uses the DRFS Volar Lunate Suture Plate (70-0334) or Acu-Loc 2 VDR Plate (70-03XX). The volar ulnar fragment is typically rotated with its capsular attachment and de-rotated under direct visualization. Multiple sutures are placed in the capsule, rotating the fragment back anatomically.

Once the fragment is de-rotated, the sutures are passed through the suture holes in the volar ulnar corner of the plate. A plate-specific nonlocking screw is placed through the oblong slot in the plate. The plate is positioned onto the distal radius, with the preferred placement confirmed using fluoroscopy. The sutures are tied, securing the volar ulnar fragment with the plate, and the remaining screws are placed.



K-wire Technique for Fixing Small Volar Ulnar Corner Fragments

An alternative technique using the Acu-Loc 2 VDR Plate (70-03XX) is the insertion of K-wires for fragment-specific fixation of the lunate and scaphoid facets. Directly reduce the lunate and/or scaphoid facet fragments using the Sharp Hook (PL-CL06) or the Fragment Reduction Tool (80-0725).

- ▶ Insert a K-wire of appropriate size from volar to dorsal into the fragment. Repeat this step as needed for additional fragment stability.
- ▶ Cut the K-wire down and bend proximally to contour to the volar aspect of the distal radius. Leave enough wire exposed so that the fragment is secure and able to be fully covered by the Acu-Loc 2 VDR Plate.
- ▶ Select the appropriate Acu-Loc 2 VDR Plate (70-03XX) that adequately covers the K-wires and addresses the remaining distal radius fracture.



Frag-Loc® Compression Screw Surgical Technique

Figure 1



Figure 2



1 Drilling Bicortically

With the targeting guide attached, drill bicortically, using the 2.0 mm Quick Release Drill (80-0318) through the 2.0 mm Locking Drill Guide 4–32 mm (80-0249) or the Drill Guide / Depth Gauge for 2.0 mm Drill (MS-DG23) (Figures 1 and 2).

2 Measuring to Determine Screw Type

Measure screw length using the Distal Radius Probe (MS-DRPB) (Figure 3).

Probe Guidelines:

16–24 mm acceptable to use with the Frag-Loc Compression Sleeve (30-0370) and the Frag-Loc Compression Screw (30-0371).

20–28 mm acceptable to use with the Frag-Loc Compression Sleeve (30-0370) and the Frag-Loc Compression Screw, Long (30-0372).

Caution:

- ▶ Do not use the Frag-Loc Compression Screw outside of 16–24 mm range.
- ▶ Do not use the Frag-Loc Compression Screw, Long outside of 20–28 mm range.

Figure 3

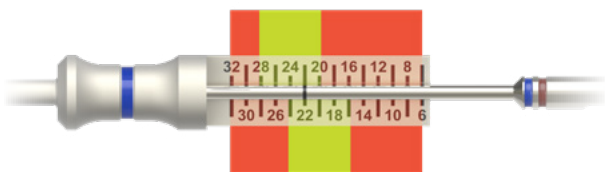


Figure 4



3 Drilling Unicortically

Drill using the Frag-Loc 2.5 mm Drill (80-0724) and Frag-Loc 2.5 mm Drill Guide (80-0730) (Figure 4). The shoulder of the drill must stop against the top of the drill guide.

Frag-Loc® Compression Screw Surgical Technique [continued]

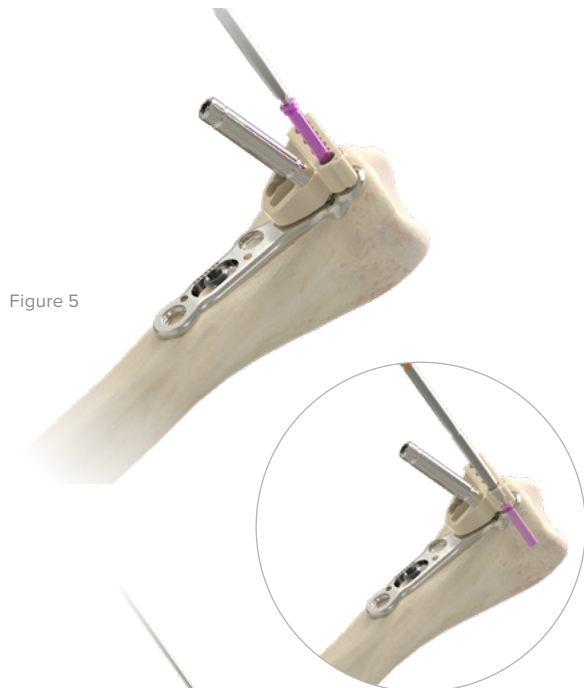


Figure 5



Figure 6

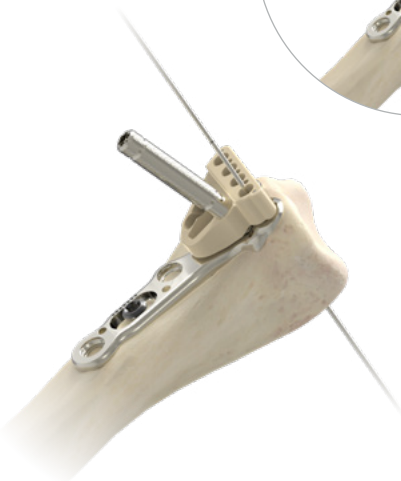


Figure 7

4 Frag-Loc Sleeve Insertion

Insert the Frag-Loc Compression Sleeve (30-0370) into the plate using the silver Cruciform Driver Handle (MS-2210) with the 1.5 mm Hex Driver Tip, Locking Groove (80-0728) (Figures 5 and 6).

5 K-wire Insertion

Insert the .035" x 5.75" K-wire (WS-0906ST) through the Frag-Loc Compression Sleeve and dorsal skin (Figure 7).

6 Frag-Loc Wire Insertion

Make a small incision dorsally over the K-wire and use the Heiss Retractor (80-0756) to maintain clearance of soft-tissue and tendons.

Drive the Frag-Loc Compression Screw (30-0371) or the Frag-Loc Compression Screw, Long (30-0372) over the .035" x 5.75" K-wire (WS-0906ST) using the Frag-Loc 1.5 mm Cannulated Driver (80-0758) (Figure 8).

Tighten the Frag-Loc Compression Screw into the Frag-Loc Compression Sleeve (30-0370) until the desired compression is achieved (Figure 9).

Ensure the Frag-Loc Compression Screw head is fully seated on the bone and that the tendons are clear of the screw head.

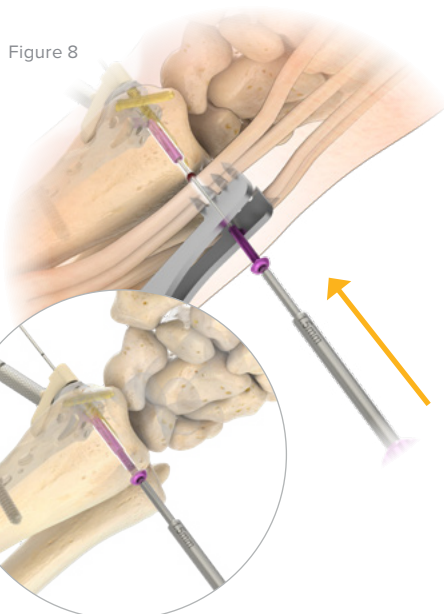


Figure 8

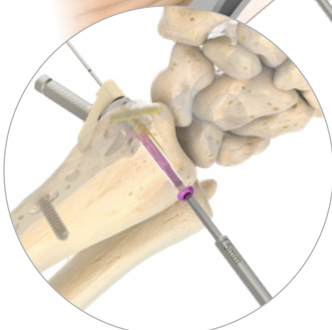


Figure 9

Frag-Loc® Compression Screw Surgical Technique [continued]

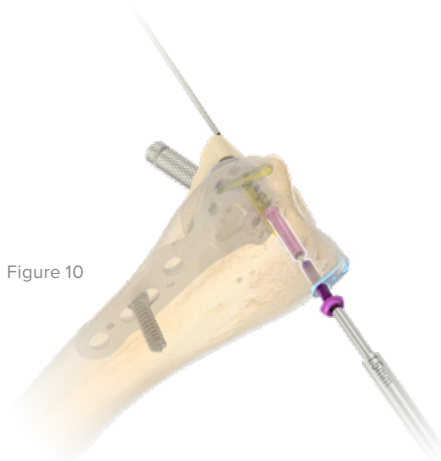


Figure 10

Optional: If using the Avulsion Hook Plate (7005-08001-S) with Frag-Loc to buttress a dorsal rim fragment, slide the correct Frag-Loc Compression Screw through the screw hole of the hook plate prior to implantation. Drive the Frag-Loc Compression Screw with the hook plate attached below the screw head until desired compression is achieved and the dorsal fragment is adequately buttressed.

If necessary, insert an additional .035" x 5.75" K-wire (WS-0906ST) through the hook plate k-wire hole or a .054" x 6" K-wire (WS-1406ST) through the hook plate tines to stabilize the fragment and plate as the Frag-Loc Compression Screw is tightened. One may also use a small bone tamp to seat the tines of the hook plate prior to final tightening of the Frag-Loc Compression Screw.

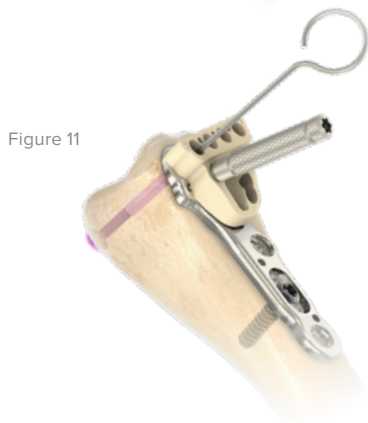


Figure 11

7 Final Confirmation

Remove the targeting guide.

Check Frag-Loc thread engagement using the Frag-Loc Depth Gauge (80-0726). The depth gauge ensures that the minimum number of threads are engaged into the Frag-Loc Compression Sleeve (30-0370) (Figure 10).

Note: A visible laser band on the depth gauge ensures acceptable Frag-Loc thread engagement (Figure 11).

If the depth gauge laser band is not visible, tighten the Frag-Loc Compression Screw one revolution and recheck (Figure 12). Repeat until the laser band is visible.

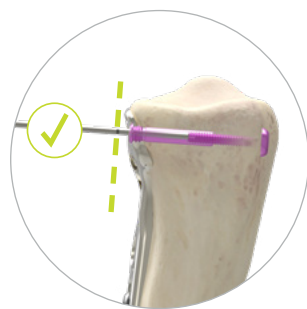


Figure 12

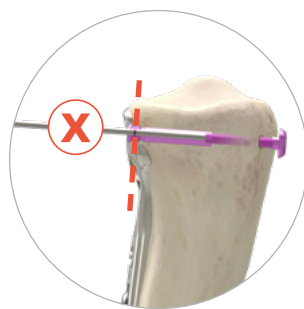


Figure 13

8 Optional: Implant Removal Instructions

To extract the Frag-Loc Compression Screw, use the 1.5 mm Hex Driver Tip, Locking Groove (80-0728) with the Cruciform Driver Handle (MS-2210).

If there is resistance or a risk of breakage, reference the Screw Removal Brochure (SPF10-00) and additional removal tools 80-0598 and 80-0600; Easyout, Quick Release.

Avulsion Hook Plate Technique for Fixing Small Volar Rim Fragments



The 0.8 mm Avulsion Hook Plate (7005-08001-S) may be connected to the most ulnar or most radial distal screw holes of the Acu-Loc 2 VDR Plate (silver) to extend fixation to distal volar fragments.

This technique describes two different configurations: the Avulsion Hook Plate below the Acu-Loc 2 VDR Plate and the Avulsion Hook Plate on top of the Acu-Loc 2 VDR Plate. In both configurations, either the 2.3 mm Locking Variable Angle Screws (30-23XX) or the 2.3 mm Nontoggling Cortical Screws (CO-N23XX) can be used to fix the plates together and to the radius.

Warning: When using a 2.3 mm Variable Angle Screw to secure a hook plate in the distal row of the Acu-Loc 2 VDR Plate, it may only be used as a fixed angle screw due to the risk of entering the articular surface. Thus, the 2.0 mm Locking Drill Guide 4–32 mm (80-0249) or Drill Guide/Depth Gauge for 2.0 mm Drill (MS-DG23) with the Acu-Loc 2 VDR Targeting Guide (80-06XX) must be used to direct the fixed trajectory of the Variable Angle Screw.

Tip: The plate can be introduced into the wound using small clamps or the 2.0 mm Locking Drill Guide 4–32 mm (80-0249).



Avulsion Hook Plate Technique for Fixing Small Volar Rim Fragments [continued]

Figure 1

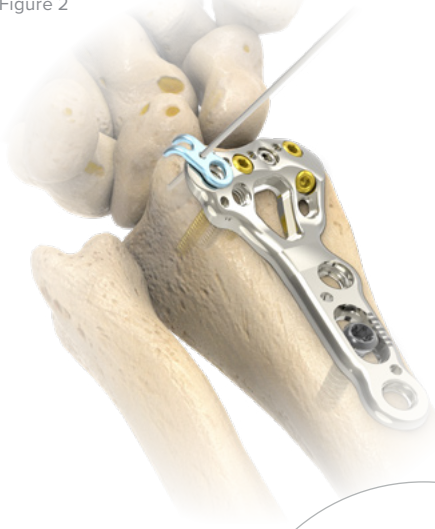


Avulsion Hook Plate Technique – Over Distal VDR Plate

1 Once the fracture is reduced, the Acu-Loc 2 VDR Plate is positioned on the distal radius and placement is confirmed using fluoroscopy. The plate should not be attached at this point. After drilling, the plate is placed.

2 Insert either the 2.0mm Locking Drill Guide 4–32 mm (80-0249) or Drill Guide/Depth Gauge for 2.0 mm Drill (MS-DG23) with the Acu-Loc 2 VDR Targeting Guide (80-06XX) into the ulnar or radial distal screw hole of the VDR plate, and drill using the 2.0 mm Quick Release Drill (80-0318).

Figure 2



3 Remove drill guide and targeting guide, if using. Position the hook plate on top of the VDR plate such that the screw holes are aligned and measure the screw length with the 2.3 mm Screw Depth Gauge 6–46 mm (80-1356).

Note: In order to stabilize the plate, a .035" x 5.75" K-wire (WS-0906ST) may be inserted through both the hook plate K-wire hole and one of the VDR Plate ulnar suture holes. Additionally, a .054" x 6" K-wire (WS-1406ST) may be inserted through the tines of the hook plate.

Warning: Placement of the Avulsion Hook Plate is limited to the most ulnar or most radial distal hole of the Acu-Loc 2 VDR plate, to minimize risk of tendon irritation.

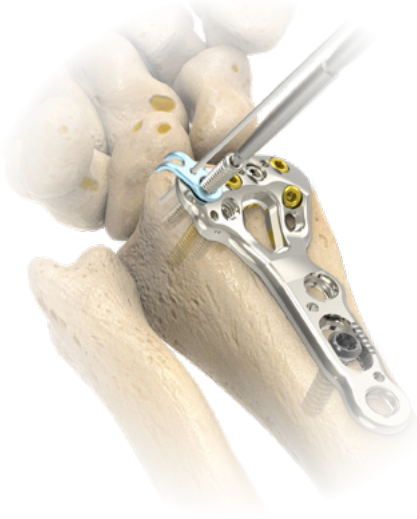
Warning: Reduce the gap between hook plate and VDR plate during plate placement and provisional fixation to ensure the VA screw can lock into both plates. Check resulting rotational stability after inserting the screw through both plates.



Figure 3

Avulsion Hook Plate Technique for Fixing Small Volar Rim Fragments [continued]

Figure 4



5 If using a 2.3 mm Locking Variable Angle screw, insert through both plates using the 1.5 mm Hex Driver Tip, Locking Groove (80-0728), and the optional orange Torque Limiting Driver (80-1008).

6 If using a 2.3 mm Nontoggling Cortical Screw, insert through both plates using the 1.5 mm Hex Driver Tip, Locking Groove (80-0728), the 2.3 mm Screw Sleeve, Locking Tab (80-0727), and the silver Cruciform Driver Handle (MS-2210).

Figure 5



7 Check the interface between the plates for rotational stability. If the stability is inadequate consider transitioning to the suture or k-wire methods (see Page 2).

Tip: The use of a small bone tamp may be helpful to gently tap and push the tines of the hook plate onto the fracture fragment.

Note: Once the hook plate has been secured in the distal row of the VDR Plate, the targeting guide cannot be fixed to the VDR Plate to guide the trajectory of the other distal screws. Instead, use the 2.0 mm Locking Drill Guide 4–32 mm (80-0249) if the hook plate has already been fixed to the VDR Plate.

Tip: The plate can be introduced into the wound using small clamps or the 2.0 mm Locking Drill Guide 4–32 mm (80-0249).

8 All other distal and proximal screw holes are filled per the standard Acu-Loc 2 VDR technique.

Avulsion Hook Plate Technique for Fixing Small Volar Rim Fragments [continued]

Figure 1



Avulsion Hook Plate Technique - Under VDR Distal Plate

1 Prior to applying the Acu-Loc 2 VDR Plate to the distal radius, place the 0.8 mm Avulsion Hook Plate (7005-08001-S) such that the hooks effectively buttress the volar fragment.

Tip: To guide the placement of the hook plate on the fragment, a .054" x 6" K-wire (WS-1406ST) may be inserted into the fragment, and the hook plate slid such that the k-wire fits between the hook plate tines. In order to further stabilize the plate, a .035" x 5.75" K-wire (WS-0906ST) may be inserted through the hook plate k-wire hole.

2 Place the Acu-Loc 2 VDR Standard Plate over the hook plate such that the intended screw holes align. The hook plate may be aligned with either the most ulnar or most radial hole of the VDR Plate.

Warning: Placement of the Avulsion Hook Plate is limited to the most ulnar or most radial distal hole of the Acu-Loc 2 VDR plate, to minimize risk of tendon irritation.

Figure 2



3 If a .035" k-wire was inserted through the k-wire hole in the hook plate during provisional fixation, it may be fed through one of the two distal ulnar suture holes on the Acu-Loc 2 VDR Plate to ensure alignment between the screw holes of both plates.

Avulsion Hook Plate Technique for Fixing Small Volar Rim Fragments [continued]



Figure 3

4 To fix the VDR Plate and the hook plate, drill through the overlapping screw holes using the 2.0 mm Quick Release Drill (80-0318) with the 2.0 mm Locking Drill Guide 4–32 mm and Screw Depth Gauge 6–46 mm (80-1356).

Warning: Reduce the gap between hook plate and VDR plate during plate placement and provisional fixation to ensure VA screw can lock into both plates. Check resulting rotational stability after inserting the screw through both plates.

Figure 4



5 If using a Locking Variable Angle Screw, insert through both plates using the 1.5 mm Hex Driver Tip, Locking Groove (80-0728) and the orange Torque Limiting Driver (80-1008).

6 If using a Nontoggling Cortical Screw, insert through both plates using the 1.5 mm Hex Driver Tip, Locking Groove (80-0728), the 2.3 mm Screw Sleeve, optional Locking Tab (80-0727), and the silver Cruciform Driver Handle (MS-2210).

Figure 5



7 Check the interface between the plates for rotational stability. If the stability is inadequate consider transitioning to the suture or k-wire methods (see Page 2).

8 All other distal and proximal screw holes are filled per the standard Acu-Loc 2 VDR technique.

Tip: The use of a small bone tamp may be helpful to gently tap and push the tines of the hook plate onto the fracture fragment.



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