

Titanium Volar Distal Radius Plating System

Surgical Technique



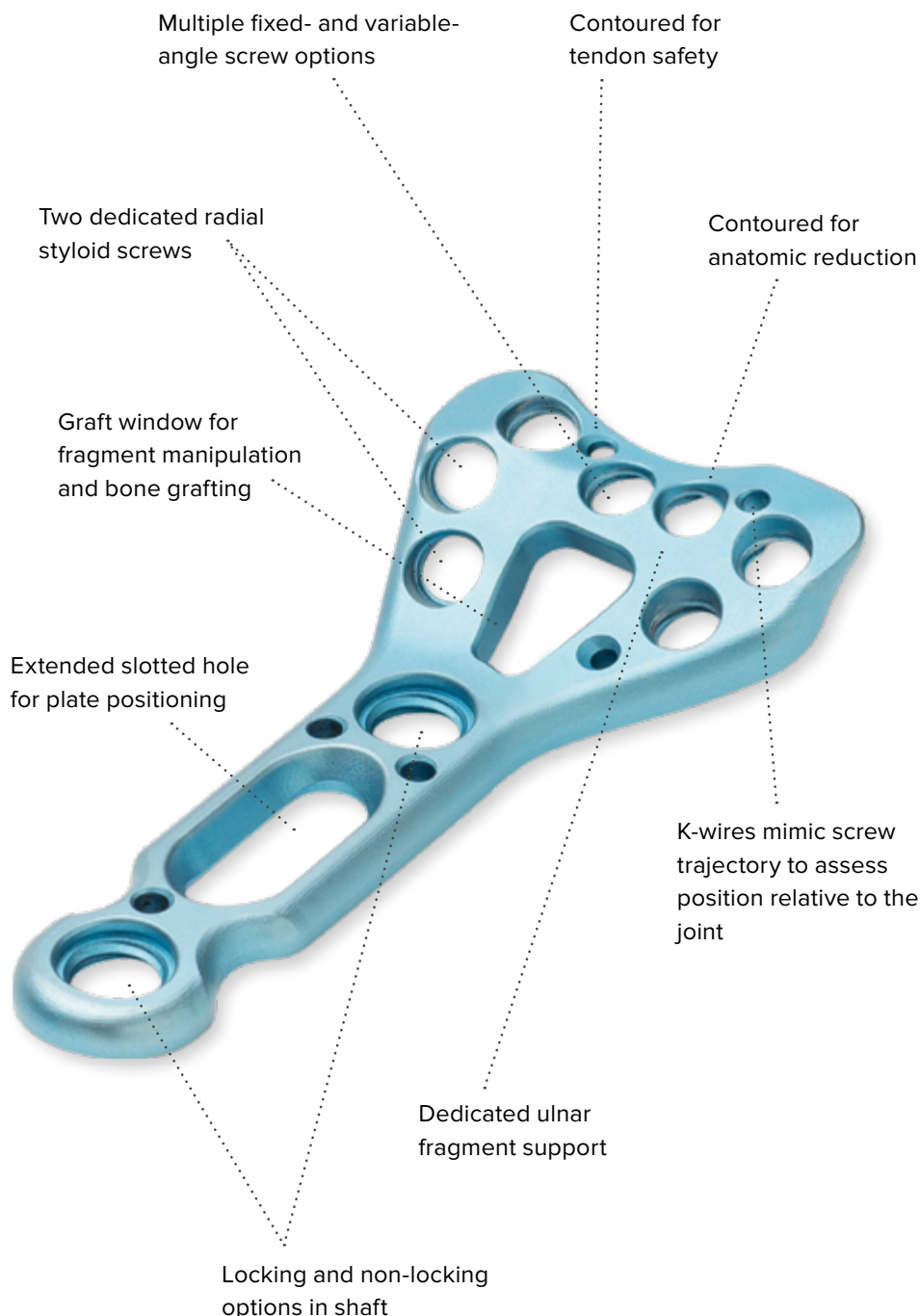
Arthrex® 

Wrist Plating System

The titanium volar distal radius plating system provides a comprehensive solution for distal radius fracture management. A comprehensive offering of volar plates are available in narrow, standard, and wide, as well as in multiple shaft lengths. A variety of screw fixation options, aiming guides, and instrumentation allows for

customization according to surgeon preference and complexity of the fracture. The wrist plating system is developed to provide the solution to your distal radius fixation needs.

Features of the Volar Distal Radius Plate



Wrist Plating System

Indications

The wrist plating system is designed for fixation of intra-articular and extra-articular fractures, osteotomies, as well as nonunions and malunions of the distal radius.

Advantages

Anatomic

Plates are developed to fit the anatomy and contours of the distal radius for a low profile repair and anatomic reduction of the fracture.

Comprehensive

In addition to a comprehensive plate selection, multiple screw options are available, including fixed-angle locking, variable-angle locking, and non-locking options.

Options

Fracture patterns create unique challenges and the variety of fixation options included allow multiple solutions for even the more complex fracture patterns.

Straightforward Instrumentation

The modular set layout allows for easy identification of appropriate instruments and reduces confusion in the OR. Proper screw length is verified at a glance with the graduated screw caddy, reducing the time needed to measure screws by hand.



Plate with variable-angle guide



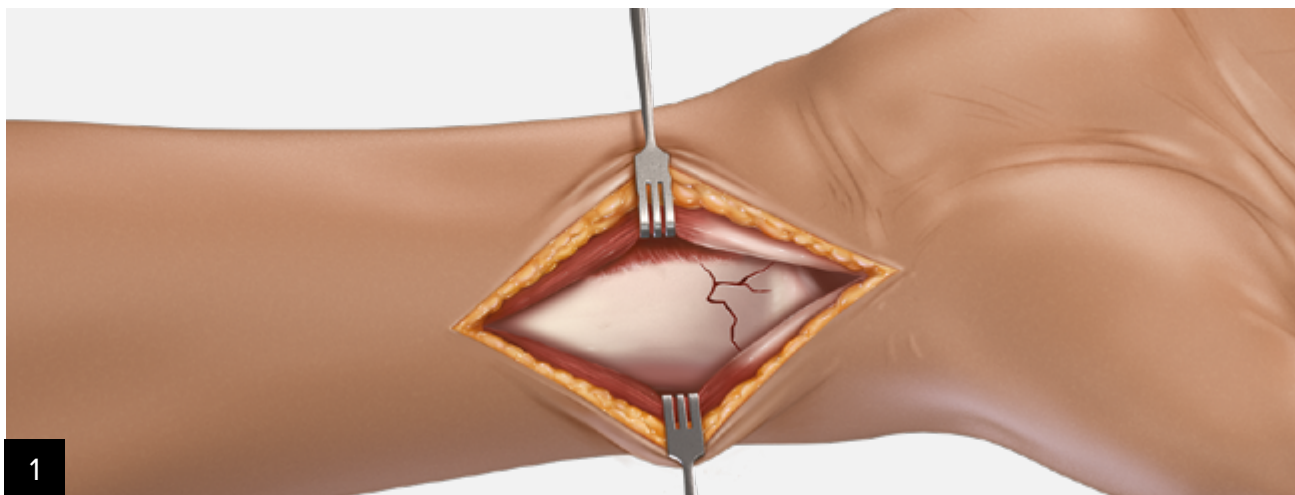
Plate with PEEK aiming guide



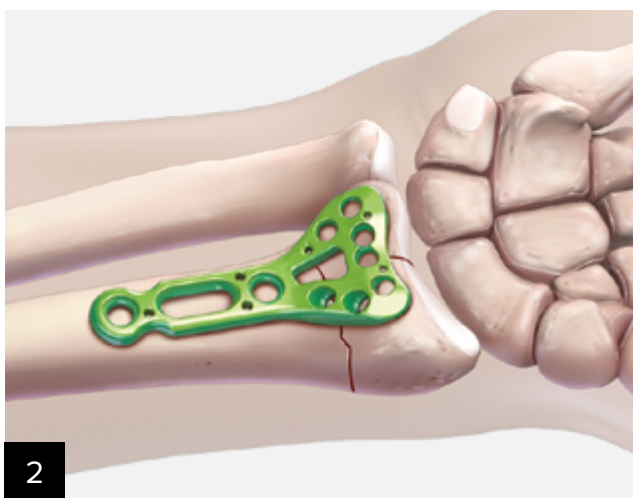
Optional torque-limiting handle for use with 2.4 mm VAL locking screws



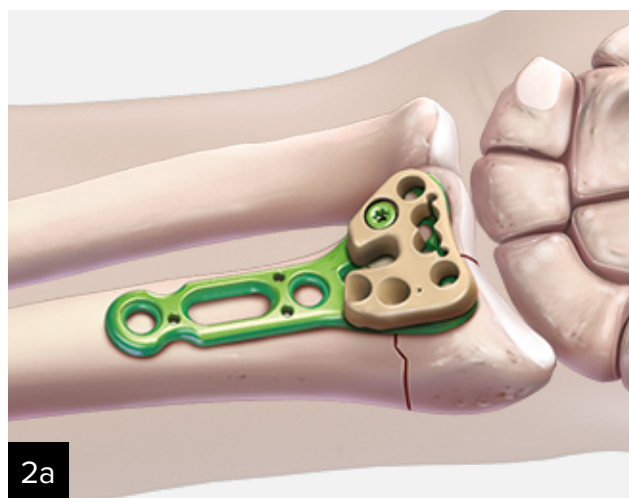
Plate with drill sleeves



The patient's forearm is supinated to expose the surgical site. To assist with exposure, a towel or bump may be placed under the wrist, placing it in extension. Make a longitudinal incision approximately 6-8cm in length just radial to the flexor carpi radialis (FCR) tendon to protect against injury to the palmar cutaneous branch of the median nerve. Open the tendon sheath, protect the radial artery, and retract the tendon ulnarly. Identify the flexor pollicis longus and retract it ulnarly to protect the median nerve. Identify the pronator quadratus by its transverse fibers and release it radially to ulnarly to expose the fracture site.

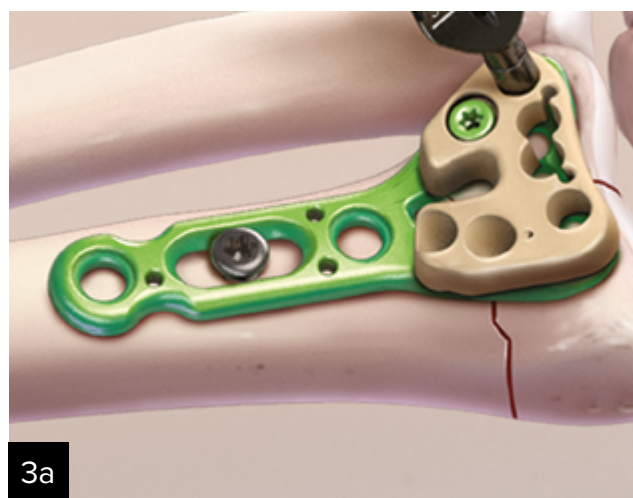
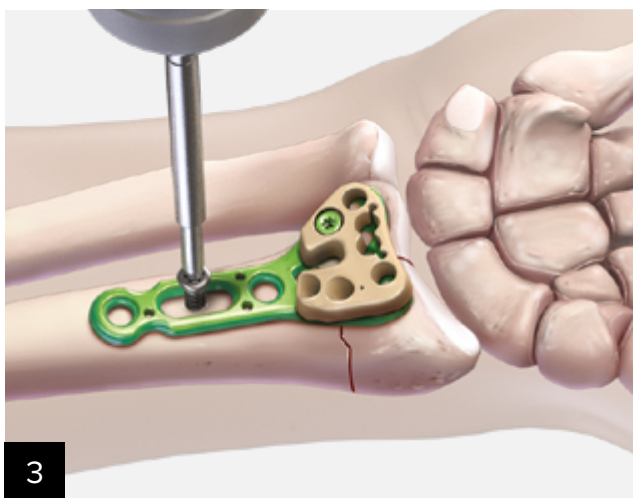


Reduce the fracture manually and evaluate it under fluoroscopy. Release the brachioradialis subperiosteally from its radial and distal insertion as needed to facilitate reduction of the fracture site. Transstyloid K-wires may be used for provisional fixation of the fracture. The plate is designed to sit along the distal aspect of the radius to support the volar articular fracture fragments. The plate sits just proximal to the watershed line to minimize tendon irritation.

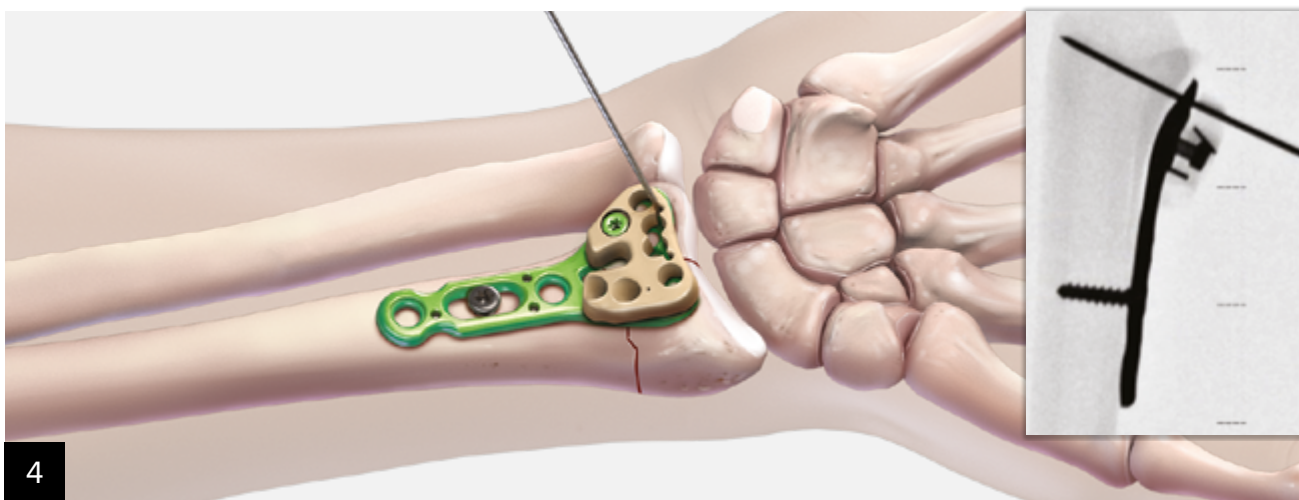


Once the appropriately sized plate is selected, attach the corresponding PEEK aiming guide using the set screw. This may be done prior to plate placement for ease of attachment on the back table prior to insertion.

Optional: The plate's position can be temporarily secured at this time by using a threaded or non-threaded BB-Tak in the shaft of the plate. The BB-Tak allows for a fast, temporary fixation and can be placed through any proximal shaft K-wire hole or proximal shaft screw hole.

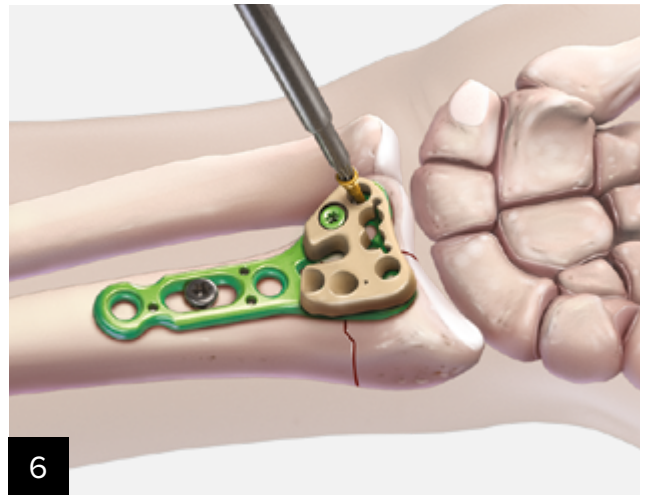
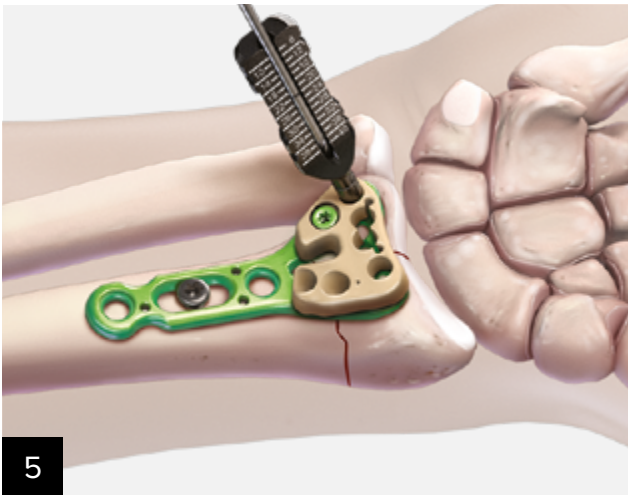


Using the 2.5mm drill bit and drill guide, drill and place a 3.5mm non-locking cortical LPS screw through the slot in the plate shaft. The position of the plate relative to the articular surface can subsequently be fine-tuned by loosening and sliding the plate proximally or distally, if necessary.



Screw depth is measured using the 3.5mm sliding depth guide. K-wire holes in the distal aspect of the plate accept 1.35mm or 0.054" K-wires, which can be used to assess distal-proximal placement of the plate. If the K-wires are proximal to the joint surface, all fixed-angle screws will be proximal to the joint surface as well.

Verify K-wire placement using multiple fluoroscopic views to verify that the fixed-angle trajectory is proximal to the articular surface. If these distal K-wires are not in the joint, the fixed-angle screws will not be either. If adjustments are necessary, remove the K-wire and loosen the 3.5mm non-locking screw in the shaft slot to adjust proximally or distally as needed. Repeat insertion of distal K-wires until satisfactory placement is achieved.



Once proper plate placement is achieved and verified under fluoroscopy, place the drop-in drill guide into the PEEK aiming guide and drill the 1.7mm graduated drill bit through to the second cortex. The depth measurement can be read off the laser line of the graduated drill bit.

A measuring probe is also included in the set to measure after drilling for a more controlled measurement, if desired.

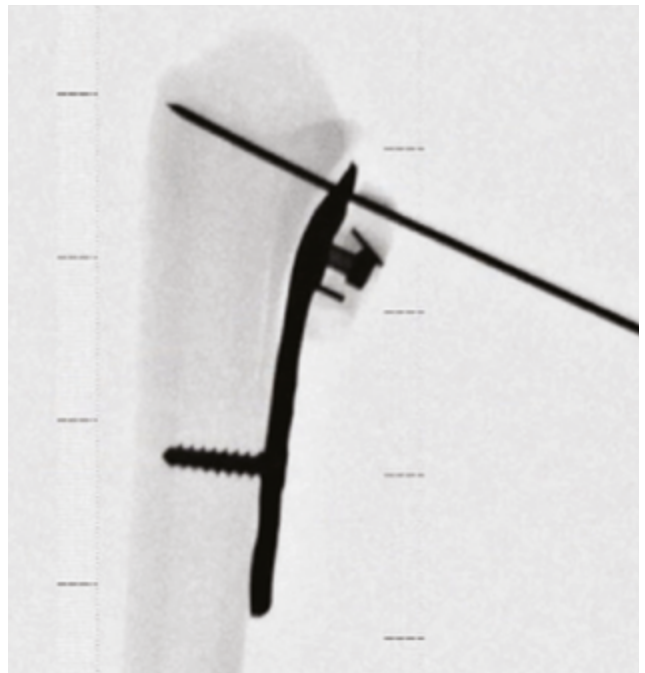
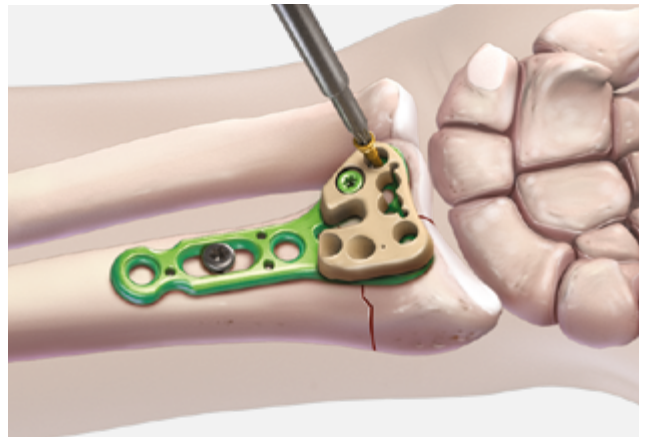
Once the appropriate screw length is selected, choose either a 2.4mm locking VAL screw, non-locking cortical LPS screw, or smooth shaft VAL near cortex screw. The screw can be advanced with the appropriate T8 driver through the PEEK aiming guide. The screw will seat firmly into the plate when fully seated.

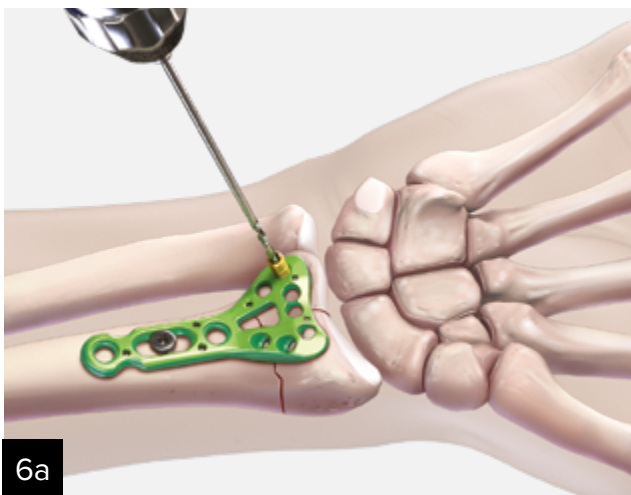
Do not overtighten screws. Stop once screw is seated and resistance is met. An optional torque-limiting driver can be used for final screw tightening if desired.

Confirm proper placement of screw with fluoroscopic imaging.

Note: Gold 2.4mm VAL screws are used for both fixed-angle and variable-angle locking constructs.

Repeat steps 5 and 6 to fill the remaining head holes as needed with the appropriately sized screws.





Additional Screw Aiming Options

Several alternative aiming options are available.

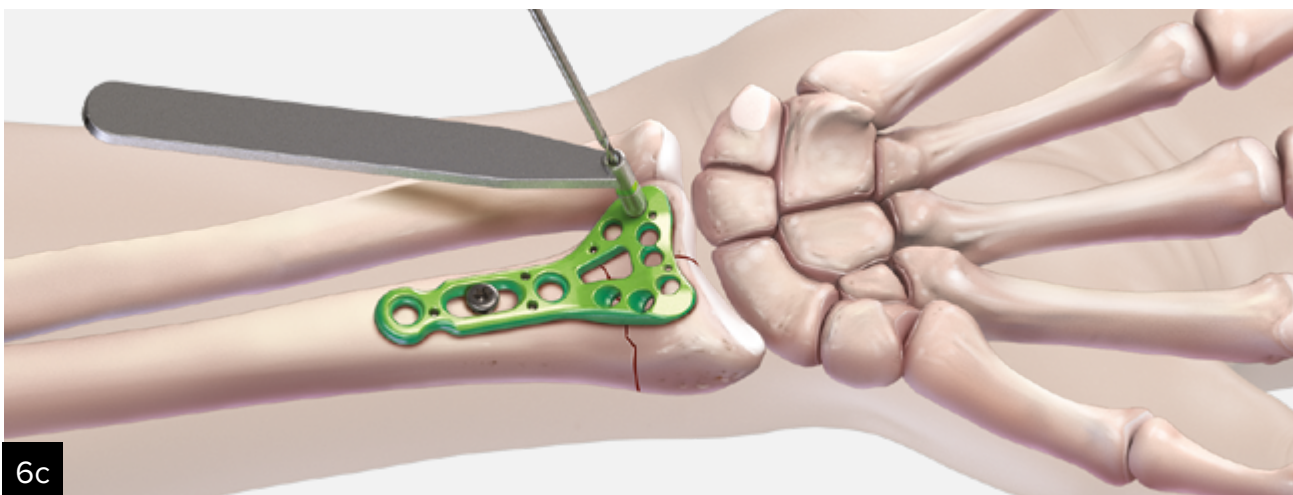
1.7mm Drill Sleeve Option

Individual 1.7mm drill sleeves can be loaded into each screw hole to provide a fast-drilling option. The 1.7mm drill bit can be placed through the center of the drill sleeves and offer the same fixed-angle trajectory as the PEEK aiming guide. Once the drill has advanced through both cortices, the sleeve must be removed and screw depth measured with the appropriate sliding depth guide.



Threaded Locking Drill Guide Option

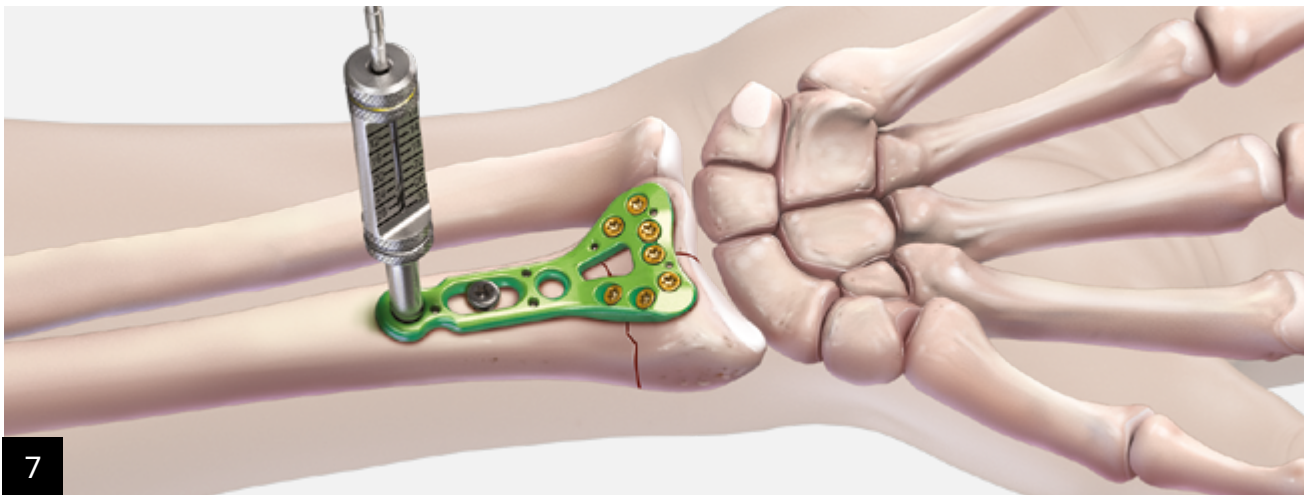
A standard threaded drill guide is also available for the head and is graduated to the laser-marked 1.7mm drill bit. If desired, the measuring probe can be used after drilling to obtain a more controlled and precise measurement.



Variable-Angle Drill Guide Option

A 2.4mm variable-angle drill guide is available which allows a 20° cone of variability for each screw option in the head of the plate. The 2.4mm variable-angle drill guide is pressed firmly into the plate hole and a positive stop is felt at the maximum angulation. The 2.4mm gold VAL locking screws provide locking fixation when using the VAL guide, as well as fixed-angle locking constructs.

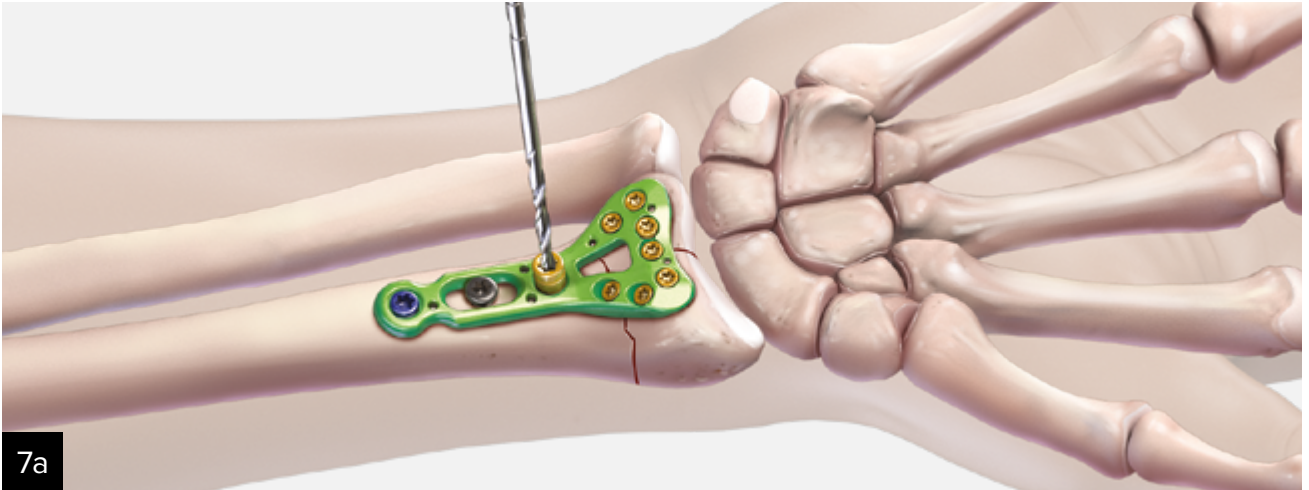
After drilling both cortices, remove the guide and measure the screw depth with the appropriate sliding depth guide.



Final Shaft Fixation

Once the distal screws are placed to stabilize the fracture fragments, thread the 3.5mm threaded drill guide for the 3.5mm locking screws into the remaining locking shaft holes.

To obtain appropriate screw length, drill bicortically, measure screw depth using the graduated 2.5mm drill bit, or use the appropriate sliding depth guide.



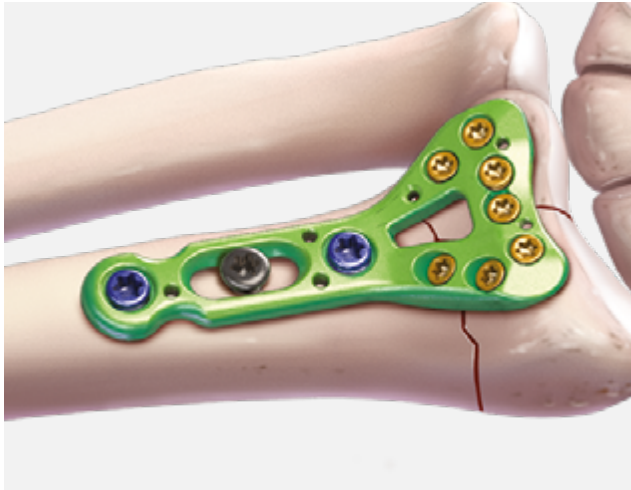
2.5mm Drill Sleeves

In addition to the threaded 3.5mm locking drill guide, individual 2.5mm drill sleeves are available for the 3.5mm locking screws as well. These can be screwed into the appropriate locking shaft holes and drilled with the 2.5mm drill bit.

The 2.5mm drill sleeves are removed with the T15 driver and screw depth is measured with the appropriate sliding depth guide.



Once all screws have been placed, verify appropriate fracture reduction, screw placement, and length with multiple fluoroscopic views. Additional views such as tilt AP, tilt lateral, 45° pronated, and 45° supinated can help verify the proper placement of the screws.

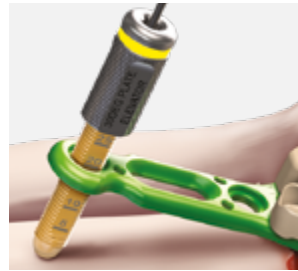
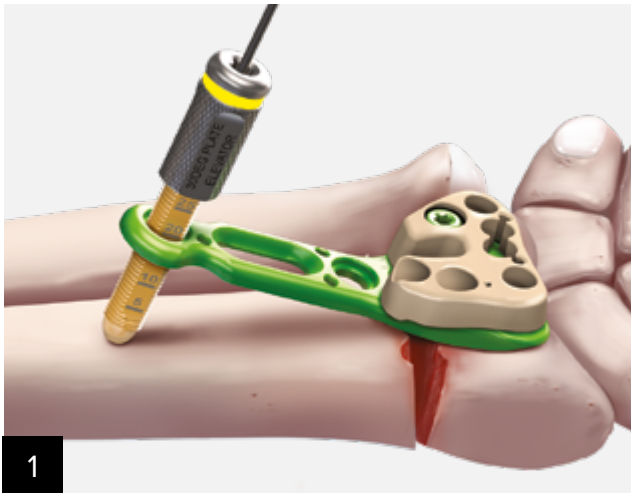


Final fixation with screw trajectory

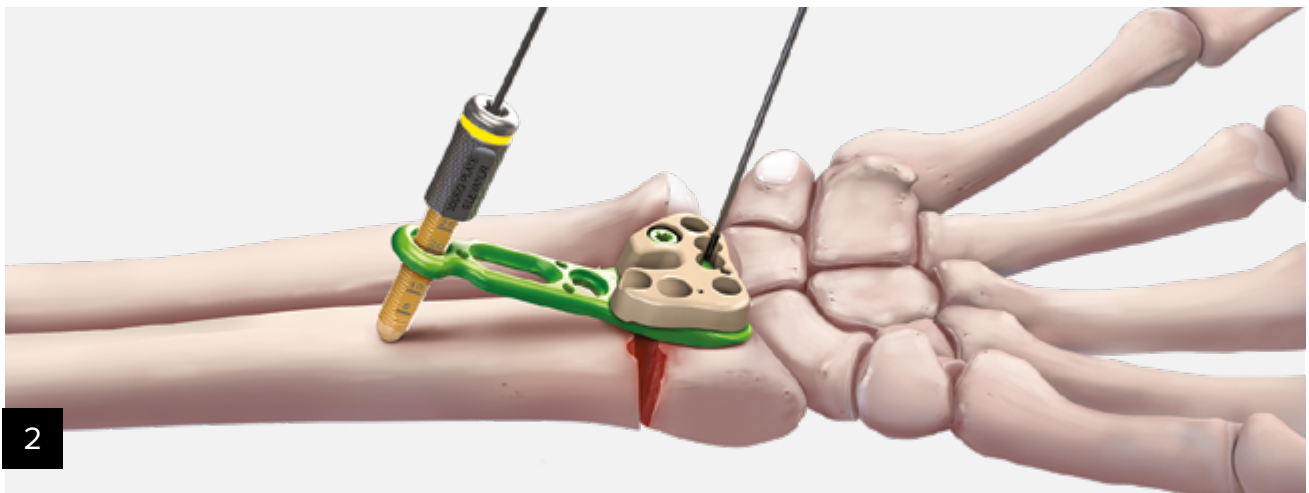
Alternative Technique: Fracture Reduction

The threaded plate elevator can be used as an alternative fracture reduction tool for dorsally displaced fractures or for use in corrective osteotomies. The plate elevator threads into the second proximal locking hole in the shaft of the plate and is used to raise the plate until the head of the plate is flush with the dorsally displaced distal fracture fragments.

Once the plate shaft is brought back flush to the radial shaft, the measurements on the plate elevator shaft indicate the degree of volar correction obtained while reducing the fracture or performing the corrective osteotomy. Up to 30° of volar tilt correction is possible.

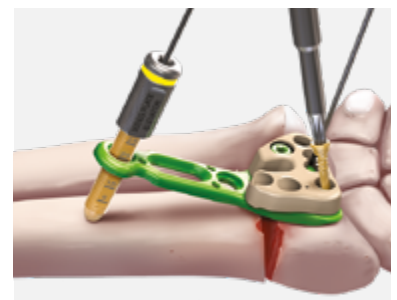


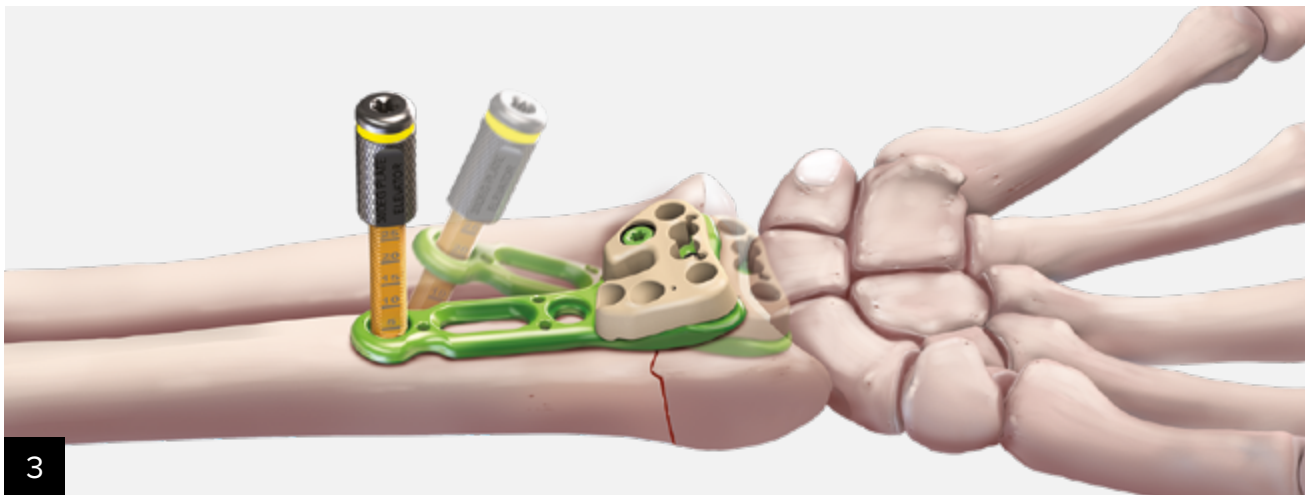
The plate elevator can be threaded by hand until the desired height is achieved or the T15 driver can be used. The plate elevator is also cannulated to accept a 1.35mm K-wire to aid in stabilizing the plate once desired height is achieved.



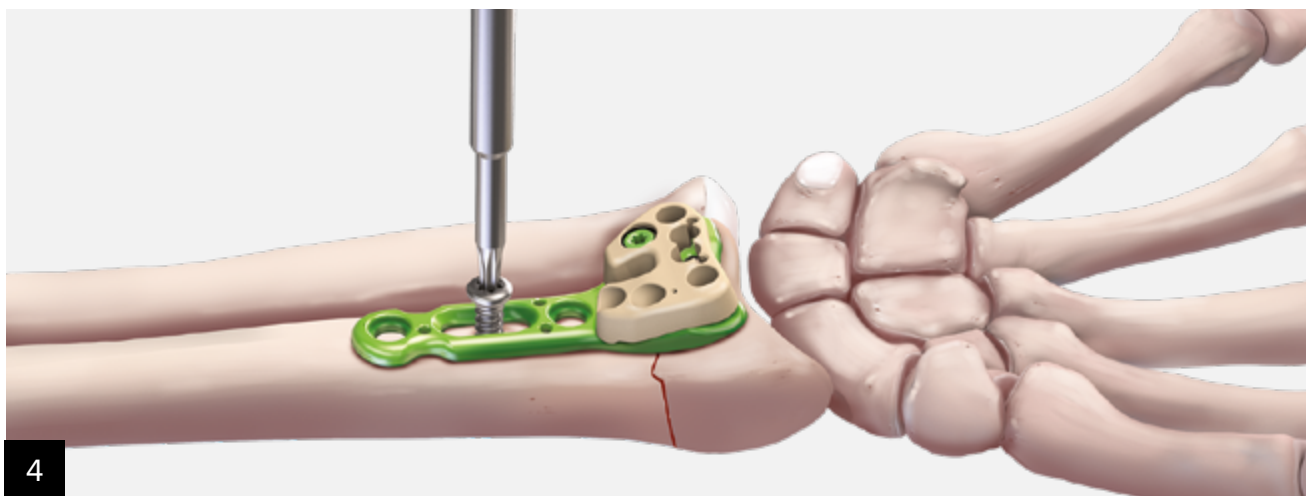
Once the plate has been lifted and is flush with the dorsally displaced fracture fragments, the distal K-wire holes can be used to assess screw placement in relation to the joint surface as described previously.

The 2.4mm locking screws can then be placed into the plate using the methods described previously.





Once the 2.4mm locking screws are placed distally, the K-wire can be removed from the elevator, if used, and the elevator unthreaded. The plate is then brought back to the radial shaft and reduction of the distal fracture fragments is achieved.



Once the reduction is obtained, the 3.5mm non-locking screw can be placed into the slotted shaft of the plate to reduce the plate to the radial shaft. 3.5mm locking screws can then be added to the remaining shaft holes for final fixation.

Assess final plate placement, screw positions, and satisfactory reduction under X-ray imaging prior to closing.

Ordering Information

Wrist Plating System (AR-8916S) Includes

Product Description	Item Number
Wrist plating system case	AR-8916C

Aiming Guides

Product Description	Item Number
Aiming guide, narrow, right	AR-8916-03
Aiming guide, narrow, left	AR-8916-04
Aiming guide, standard, right	AR-8916-01
Aiming guide, standard, left	AR-8916-02
Aiming guide, wide, right	AR-8916-20
Aiming guide, wide, left	AR-8916-15

Instrumentation for 2.4mm VAL and Cortical Screws

Product Description	Item Number
Drill bit, 1.7mm, graduated	AR-8916-14-RU
Drill guide, 2.4 mm, VAL for DRP	AR-8916-21
Drill guide, 2.4 mm, for DRP	AR-8916-09
Drill guide, threaded, 2.4mm x 40mm	AR-8950-04
Drill sleeve, 1.7mm, nubbin	AR-8916-18
Measuring probe drill guide, 2.4mm	AR-8916-08
Depth guide, 2.4mm screws	AR-13120G-2
Drive shaft, T8 hexalobe	AR-8916-27
Screwdriver, T8 hexalobe, solid	AR-8916-22

Instrumentation for 3.5mm Locking and Cortical Screws

Product Description	Item Number
Drill guide, threaded, 3.5mm x 30mm	AR-8916-07
Drill sleeve, 2.5mm, nubbin	AR-8963-06
Drill bit, 2.5mm, calibrated	AR-8916-06-RU
Plate elevator, threaded, 3.5mm x 30°	AR-8916-12
Depth guide, 2.7, 3.5 and 4 mm screws	AR-8943-15
Drive shaft, T15 hexalobe, solid	AR-8941DH
Screwdriver, T15 hexalobe	AR-8943-10

General Instrumentation

Product Description	Item Number
Plate bending iron, distal radius	AR-8916-10
Palm handle, quick coupling	AR-8916-25
Ratcheting handle, quick coupling, cannulated	AR-8950RH
Screw holding sleeve, 2mm/2.4mm	AR-8920H
Screw holding sleeve for 2.7, 3.5 and 4mm screws	AR-8943-11
Freer elevator	AR-8943-19
Sharp hook	AR-8943-21
Hohmann retractor, 8mm x 16cm	AR-13210
Hohmann retractor, 15mm	AR-8943-22
Screw holding forceps, self-retaining	AR-8941F
Drill guide, 2.5mm/1.7mm	AR-8916-23
Bone reduction forceps with teeth	AR-4160FT
Periosteal elevator, 6mm, curved blade	AR-8943-20
Lobster claw	AR-8943-23

Trials for Sterile Plates

Trial for volar distal radius plate, narrow, right, 5-hole	AR-8916VNR-05T
Trial for volar distal radius plate, narrow, left, 5-hole	AR-8916VNL-05T
Trial for volar distal radius plate, standard, right, 5-hole	AR-8916VSR-05T
Trial for volar distal radius plate, standard, left, 5-hole	AR-8916VSL-05T
Trial for volar distal radius plate, wide, right, 5-hole	AR-8916VWR-05T
Trial for volar distal radius plate, wide, left, 5-hole	AR-8916VWL-05T
Trial for volar distal radius plate, standard, right, 9-hole	AR-8916VSR-09T
Trial for volar distal radius plate, standard, left, 9-hole	AR-8916VSL-09T

Ordering Information

Optional

Product Description	Item Number
Torque limiting screwdriver for 2.4mm locking screws	AR-8916TL-01
Drill guide, 2.4mm, VAL for DRP	AR-8916-21

Implants

Product Description	Item Number
Plates	
Volar distal radius plate, narrow, right, 3-hole Volar distal radius plate, narrow, left, 3-hole	AR-8916VNR-03 AR-8916VNL-03
Volar distal radius plate, narrow, right, 5-hole Volar distal radius plate, narrow, left, 5-hole	AR-8916VNR-05 AR-8916VNL-05
Volar distal radius plate, narrow, right, 7-hole, sterile Volar distal radius plate, narrow, left, 7-hole, sterile	AR-8916VNR-07S* AR-8916VNL-07S*
Volar distal radius plate, standard, right, 3-hole Volar distal radius plate, standard, left, 3-hole	AR-8916VSR-03 AR-8916VSL-03
Volar distal radius plate, standard, right, 5-hole Volar distal radius plate, standard, left, 5-hole	AR-8916VSR-05 AR-8916VSL-05
Volar distal radius plate, standard, right, 7-hole, sterile Volar distal radius plate, standard, left, 7-hole, sterile	AR-8916VSR-07S* AR-8916VSL-07S*
Volar distal radius plate, standard, right, 9-hole, sterile Volar distal radius plate, standard, left, 9-hole, sterile	AR-8916VSR-09S* AR-8916VSL-09S*
Volar distal radius plate, wide, right, 3-hole Volar distal radius plate, wide, left, 3-hole	AR-8916VWR-03 AR-8916VWL-03
Volar distal radius plate, wide, right, 5-hole Volar distal radius plate, wide, left, 5-hole	AR-8916VWR-05 AR-8916VWL-05
Volar distal radius plate, wide, right, 7-hole, sterile Volar distal radius plate, wide, left, 7-hole, sterile	AR-8916VWR-07S* AR-8916VWL-07S*
2.4mm Screws	
VAL screw, titanium, locking, 2.4mm x 8-34mm (2mm increments) VAL near cortex screw, titanium, locking, 2.4mm x 8-34mm (2mm increments) 2.4mm cortex screw, 2.4mm x 8-34mm, titanium	AR-8724V-08 to -34 AR-8916VNC-08 to -34 AR-8916CX24-08 to -34
3.5mm Screws	
Low profile locking DRP screw, titanium, 3.5mm x 10-20mm (2mm increments) Low profile cortical DRP screw, titanium, 3.5mm x 10-14mm (1mm increments) Low profile cortical DRP screw, titanium, 3.5mm x 16-20mm (2mm increments)	AR-8735L-10 to -20 AR-8735-10 to -14 AR-8735-16 to -20

»Please note that all implants above are also available in sterile.
All sterile item numbers end with an additional "S" if not stated otherwise

*Only available in sterile

Disposables

Product Description	Item Number
Guide wire with trocar tip, 1.35mm	AR-8943-01
BB-Tak, 1.6mm	AR-13226

»Please note that all disposables are also available in sterile. All sterile item numbers end with an additional "S" if not stated otherwise.



This description of technique, including any post-op protocol, is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgement in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use.

View U.S. patent information at www.arthrex.com/corporate/virtual-patent-marking

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