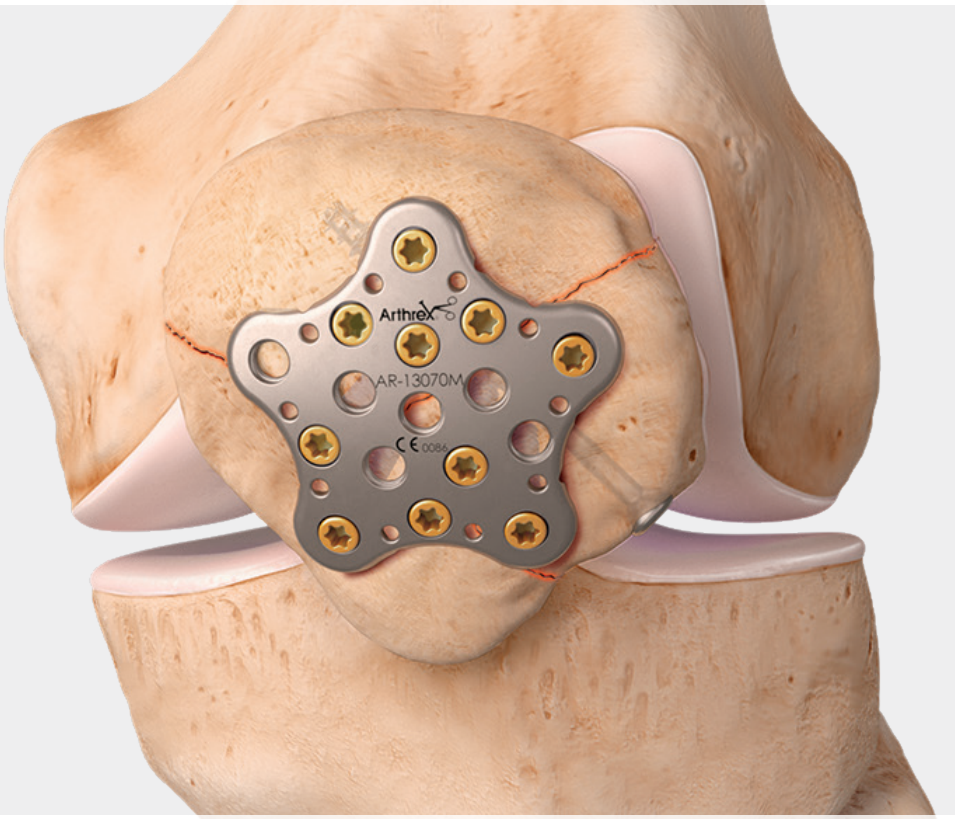
Patella SuturePlate™ II Fracture Management

Surgical Technique



Arthrex®

Introduction

Patella fractures present a variety of patterns, which can make osteosynthesis challenging. These fractures are the most common cause of disruption of the extensor mechanism and can result from direct, indirect, or combined trauma.[1] The amount of comminution, degree of osteoporosis, and natural forces across the patella create obstacles for reduction and adequate stabilization. Studies have shown significantly higher patellar stability and osteosynthesis rates with locked plates.[2]

Design and Application

The Patella SuturePlate™ II system features 3 plate designs with multiple sizes to address a variety of fracture patterns. The 1.6 mm thick titanium plates include suture holes to allow for soft-tissue reattachment and ligament bracing.

Arrow Plate
Transverse fractures

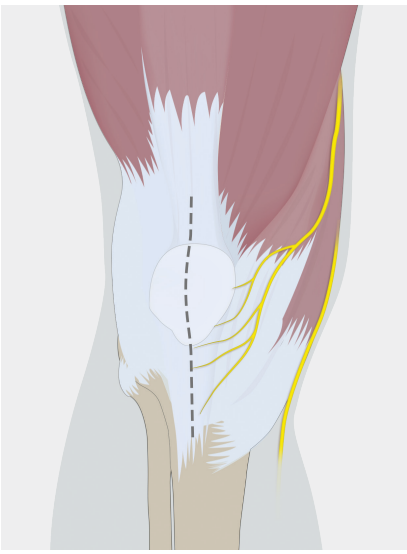
Star Plate
Comminuted fractures

Star Plate for Pole Fractures
Detached and comminuted distal patellar pole

Patient Positioning and Surgical Approach

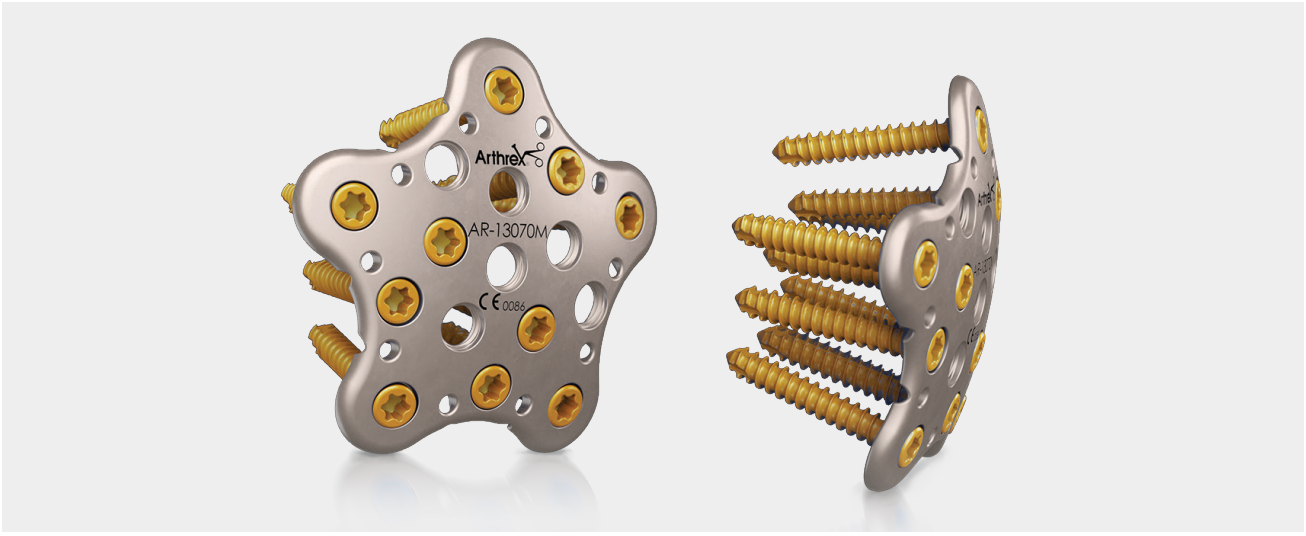
Patient Positioning
Position the patient in the supine position, with the affected leg prepped and draped.

Surgical Approach
An anterior approach to the knee using a longitudinal midline incision is standard. For simple fracture patterns, use the dorsal cortical edges to guide reduction of the articular surface. In more complex cases, anterior comminution of the patella may limit cortical reads for reduction. In this scenario, palpation or direct visualization of the articular surface may be required to assure proper reduction. To provide proper access to the articular surface, a lateral arthrotomy is preferred. This preserves the major inferomedial blood supply to the patella. For complete visualization of the articular surface, extend the arthrotomy to allow a 90° eversion of the patella. After fixation of the patella, any traumatic or surgical insult to the retinaculum should be repaired to provide additional strength to the extensor mechanism repair.



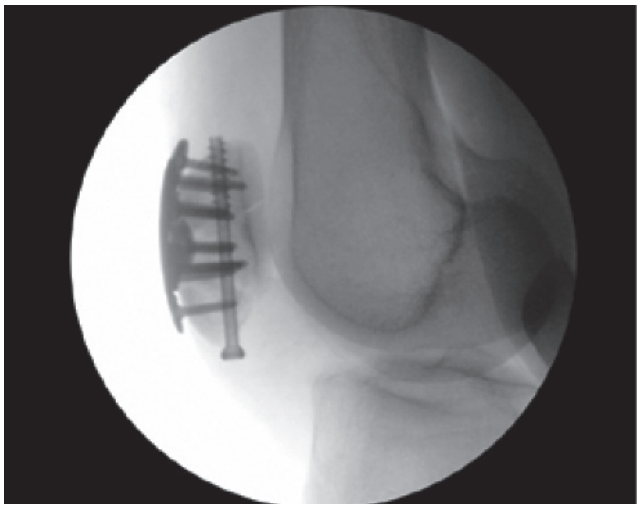
Patella SuturePlate™ II Star Plate

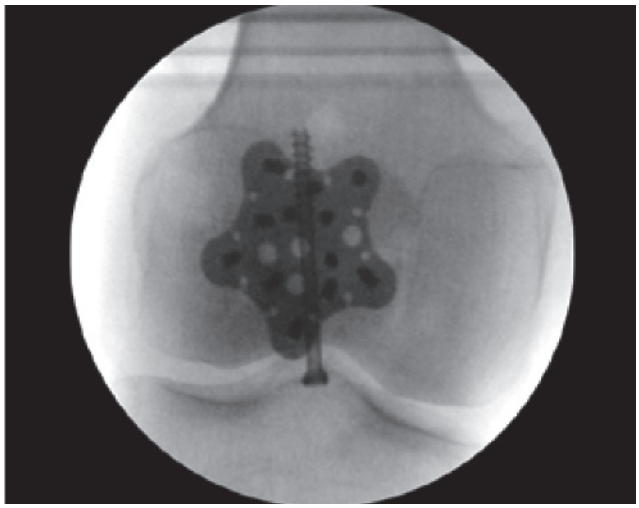
Plate Features



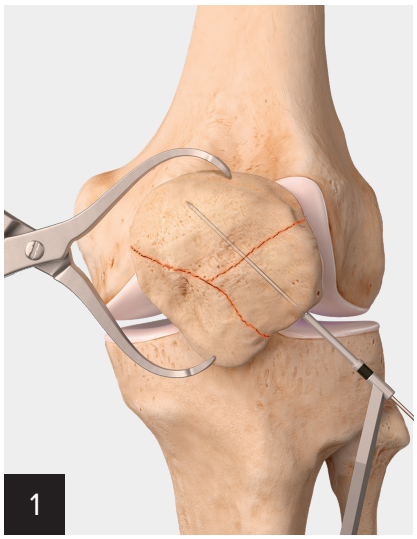
The Patella SuturePlate II titanium locking plate is compatible with all 3.0 mm titanium screws, including KreuLock™ variable-angle locking (VAL) screws, standard VAL screws, and nonlocking screws. Suture holes in the plate provide soft-tissue reattachment or ligament bracing. In addition to the plate, QuickFix™ 4.0 mm cannulated screws can be used to apply compression through certain fragments.

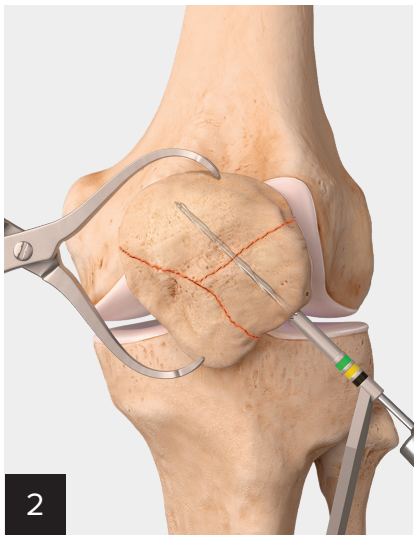
Radiological Images of the Patella SuturePlate II Star Plate

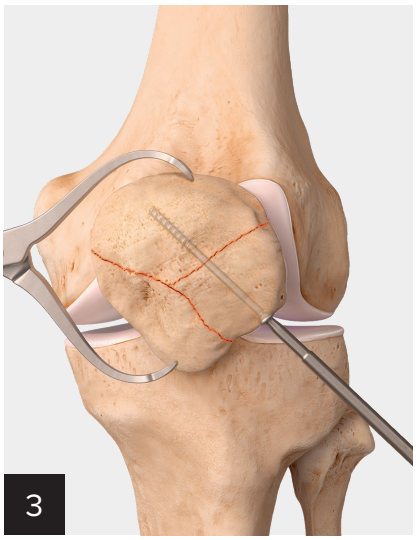




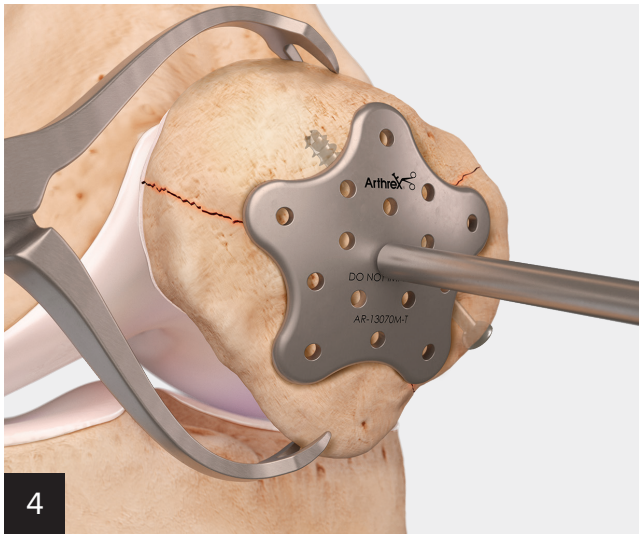
Star Plate Surgical Technique



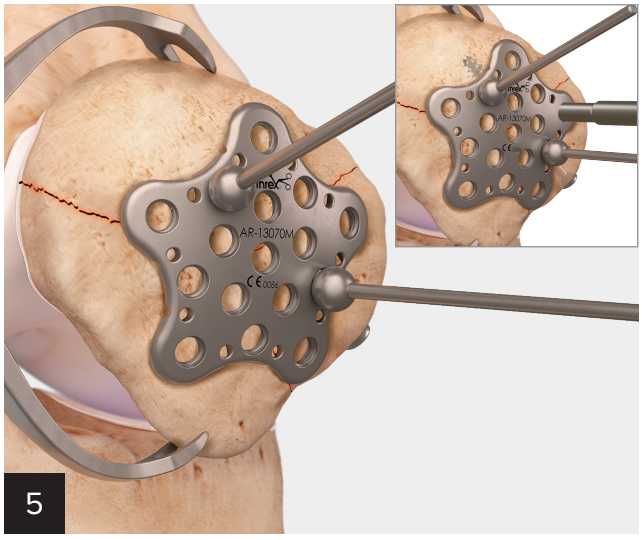




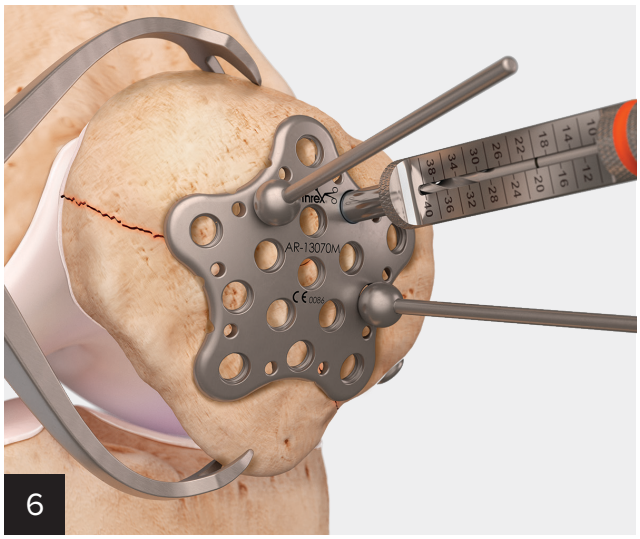
Anatomically reduce the bone fragments using large Weber clamps, small tenaculums, provisional K-wires, or Snap-Off Compression FT pins. QuickFix™ 4.0 mm cannulated screws can be used to apply compression through certain fragments. Use a drill guide to place a 1.35 mm guidewire. Identify the desired screw length using the 4.0 mm cannulated depth gauge. Use the drill guide to overdrill the 1.35 mm guidewire with a cannulated 2.6 mm drill bit and insert a 4.0 mm cannulated screw.



Using fluoroscopic imagery, determine the correct plate size and position with the trail plate sizer and positioning handle. After trialing, open the corresponding sterile implant.

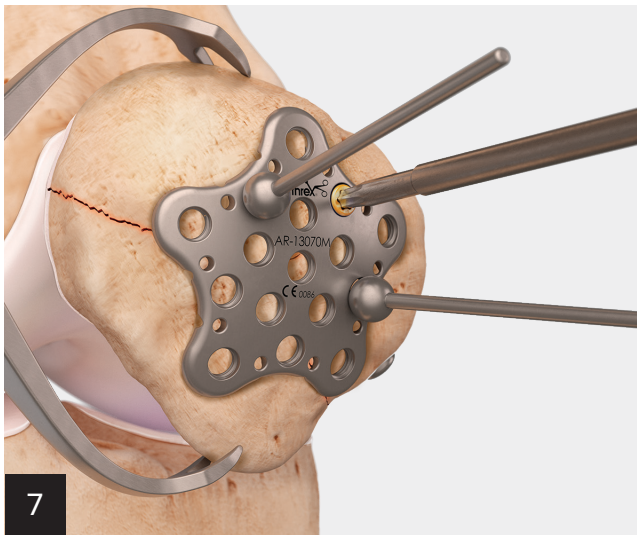


Threaded BB-Taks help to temporarily fix the plate onto the bone.

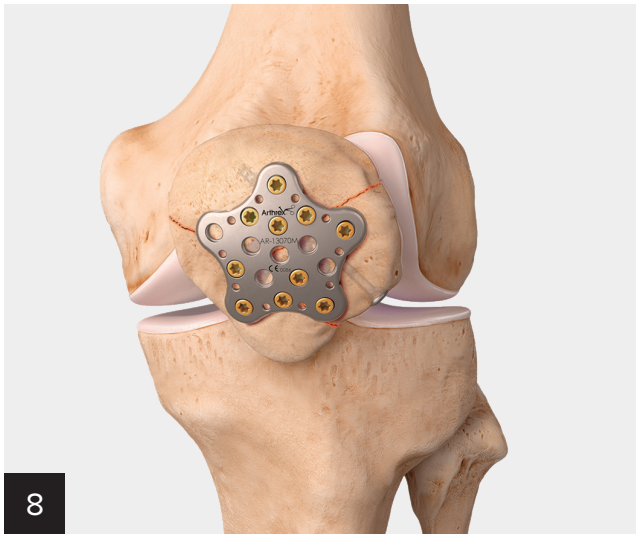


Screw a drill/depth guide into the locking holes before drilling. Screw length is determined by referencing the laser line on the 2.0 mm drill bit at the scale on the drill/depth guide.

Note: A standard depth gauge can also be used to verify the correct screw length.



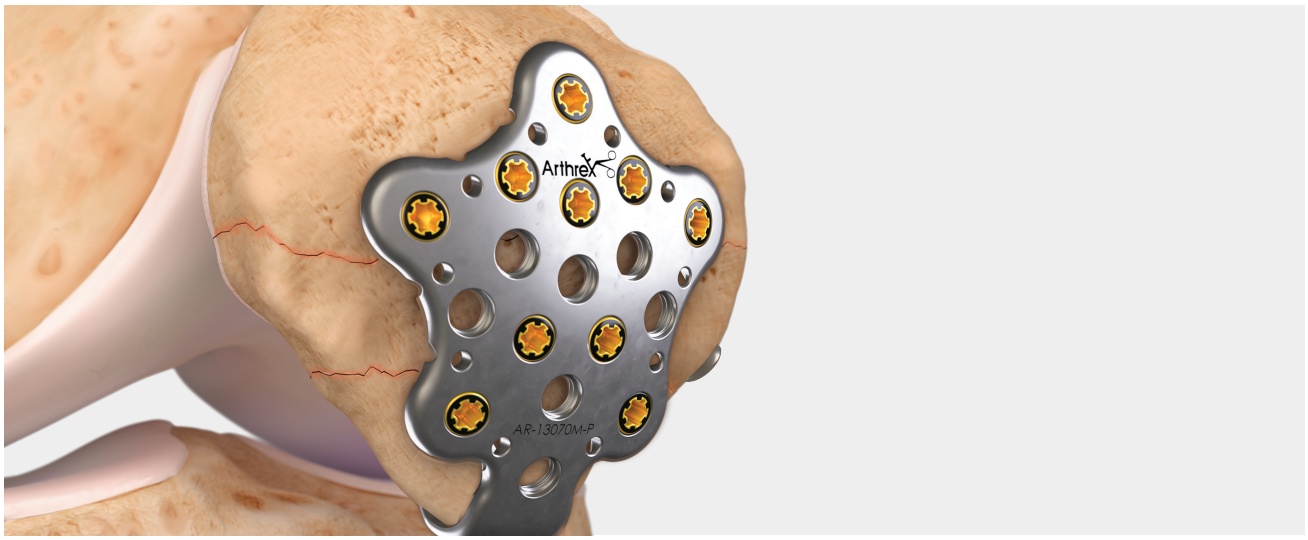
Insert 3.0 mm VAL or regular VAL screws into the plate using a T10 hexalobe driver and driver handle.



Screws must not enter the articulating surface of the patella. Screw heads should sit flush with the plate.

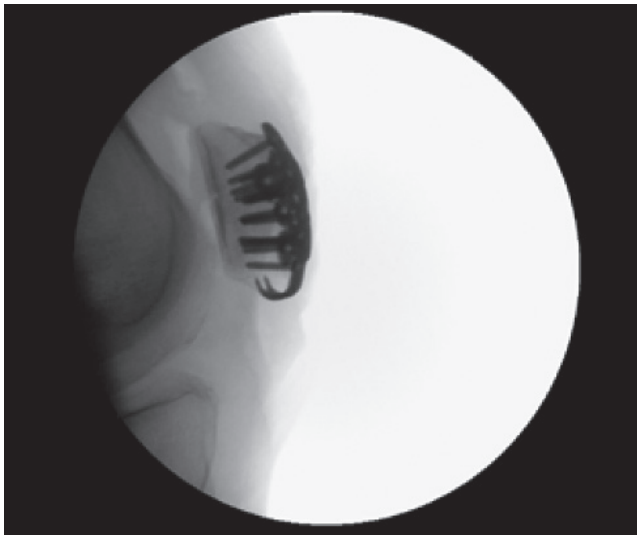
Patella SuturePlate™ II Star Plate for Pole Fractures

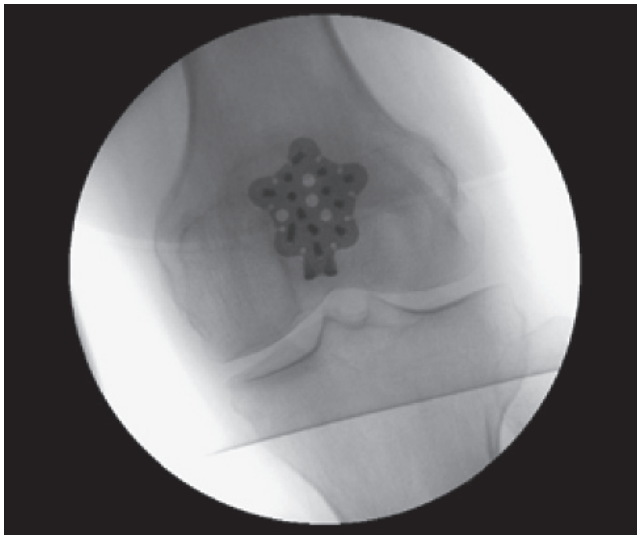
Plate Features



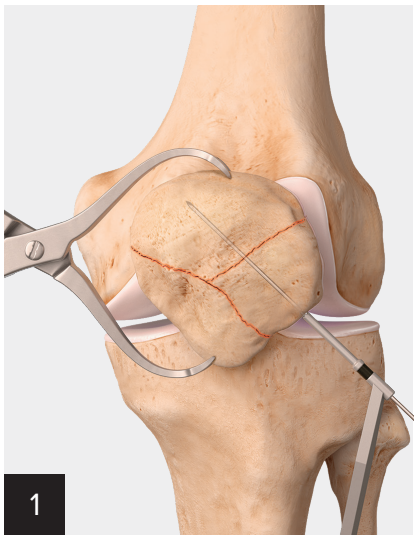
The Patella SuturePlate II titanium locking plate is used with 3.0 mm KreuLock™ and standard VAL screws. Suture holes in the plate provide soft-tissue reattachment or ligament bracing. In addition to the plate, QuickFix™ 4.0 mm cannulated screws can be used to apply compression through certain fragments. The pole plate can be used in certain fracture patterns in which the distal pole is displaced. Approximately 20% of patellar fractures treated surgically involve the inferior patellar pole.[3]

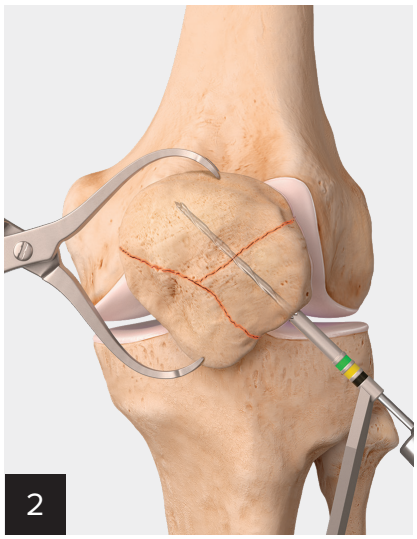
Radiological Image of the Patella SuturePlate II for Pole Fractures

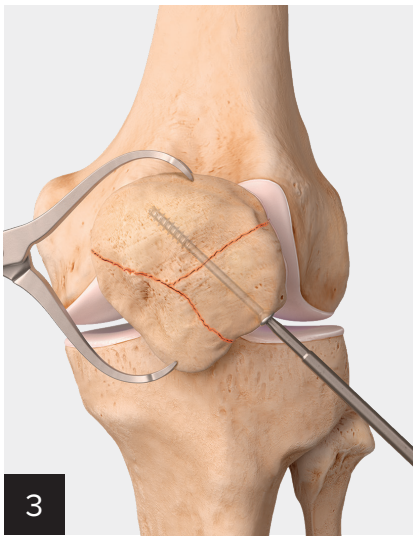




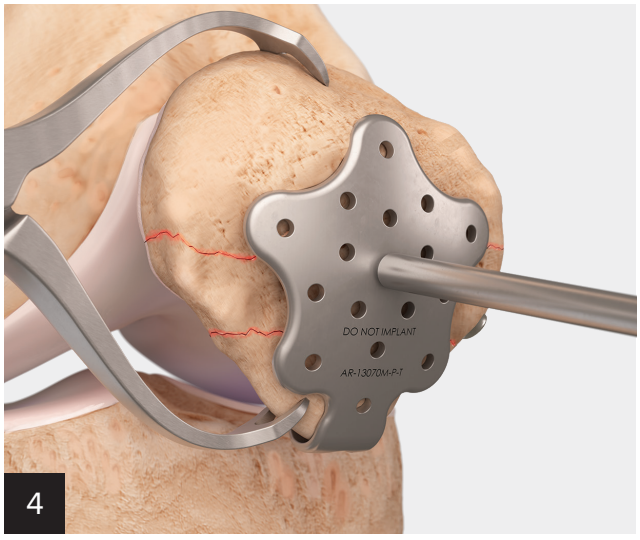
Star Plate for Pole Fractures Surgical Technique



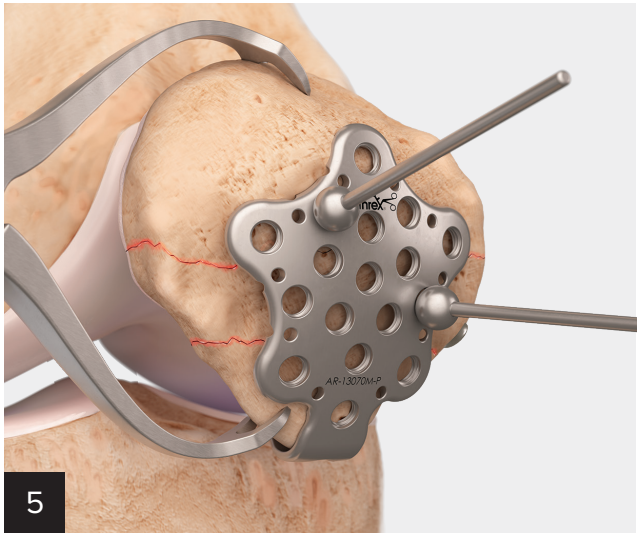




Anatomically reduce the bone fragments using large Weber clamps, small tenaculums, provisional K-wires, or Snap-Off Compression FT pins. QuickFix™ 4.0 mm cannulated screws can be used to apply compression through certain fragments. Use a drill guide to place a 1.35 mm guidewire. Identify the desired screw length using the 4.0 mm cannulated depth gauge. Use the drill guide to overdrill the 1.35 mm guidewire with a cannulated 2.6 mm drill bit and insert a 4.0 mm cannulated screw.

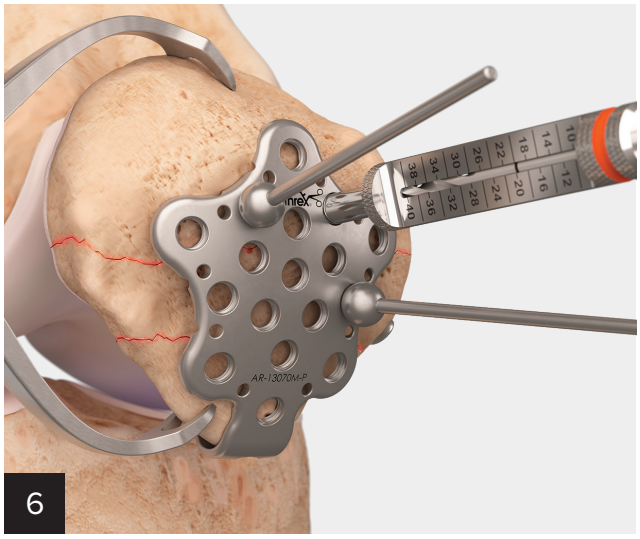


Use the pole fracture trial and positioning handle to confirm appropriate plate size and placement. Fluoroscopy should also be used for final confirmation. Next, open the corrresponding sterile implant.



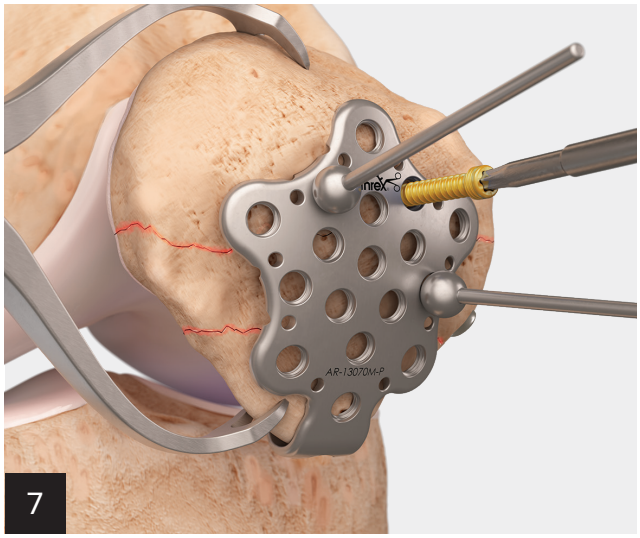
To ensure correct positioning, attach the hook to the distal pole using the double incision of the patellar ligament and place the plate on the anterior cortex of the patella. Threaded BB-Taks may help to temporarily fix the plate onto the bone.

Note: The hooks of the plate can be used to reduce the fracture. The hooks need to be carefully placed at the distal pole. Aggressive impaction of hooks can cause secondary dislocations or additional fractures of the distal pole.

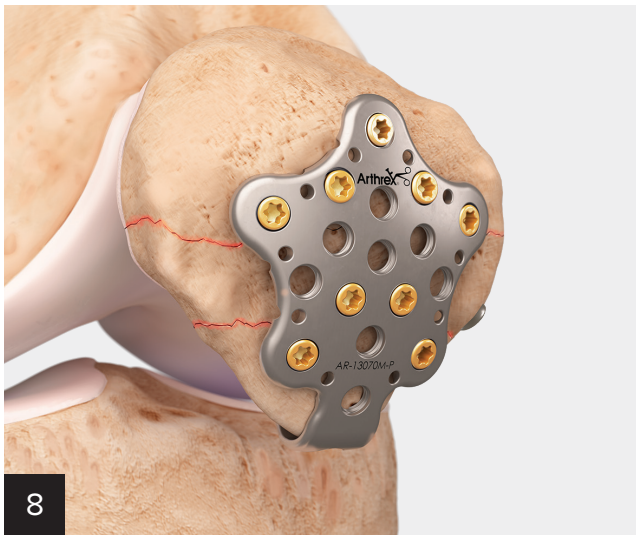


Screw a drill/depth guide into the locking holes before drilling. Make sure that there is no K-wire or screw in the drilling path. Screw length is determined by referencing the laser line on the 2.0 mm drill bit at the scale on the drill/depth guide.

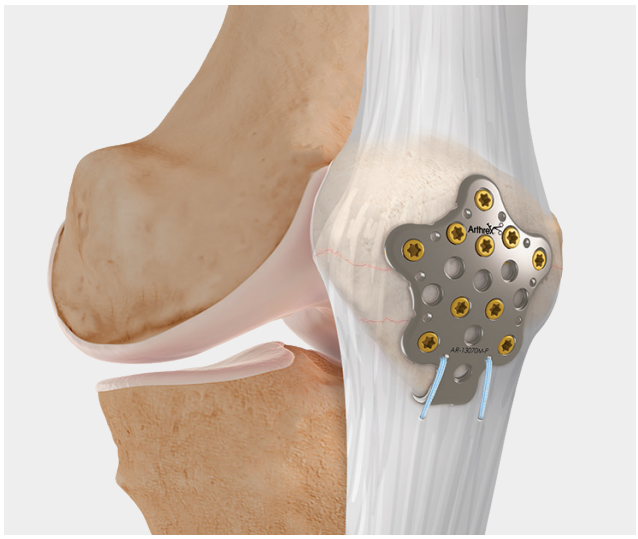
Note: A standard depth gauge can also be used to verify the correct screw length.



Insert 3.0 mm VAL or regular VAL screws into the plate using a T10 hexalobe driver and driver handle.



Screws should not enter the articulating surface of the patella. Screw heads should sit flush with the plate.



Additional Stabilization
In addition to plating the patella, FiberTape® cerclage can be used for additional stabilization depending on fracture pattern.

Note: Over-reinforcing the retinaculum by sutures may compromise the blood supply of the patella.

Ordering Information

Implants for 3.0 mm System

Product Description	Item Number
Patella SuturePlate™ II Arrow, sterile	AR-**13070A-S**
Patella SuturePlate II Star, small, sterile	AR-**13070S-S**
Patella SuturePlate II Star, medium, sterile	AR-**13070M-S**
Patella SuturePlate II Star, large, sterile	AR-**13070L-S**
Patella SuturePlate II Star Plate Pole Fracture, small, sterile	AR-**13070S-P-S**
Patella SuturePlate II Star Plate Pole Fracture, medium, sterile	AR-**13070M-P-S**
Patella SuturePlate II Star Plate Pole Fracture, large, sterile	AR-**13070L-P-S**

Implant Trials

Product Description	Item Number
Patella SuturePlate II Trial Arrow	AR-**13070A-T**
Patella SuturePlate II Trial Star, small	AR-**13070S-T**
Patella SuturePlate II Trial Star, medium	AR-**13070M-T**
Patella SuturePlate II Trial Star, large	AR-**13070L-T**
Patella SuturePlate II Trial Star Plate Pole Fracture, small	AR-**13070S-P-T**
Patella SuturePlate II Trial Star Plate Pole Fracture, medium	AR-**13070M-P-T**
Patella SuturePlate II Trial Star Plate Pole Fracture, large	AR-**13070L-P-T**

Screws

Product Description	Item Number
KreuLock™ Compression Screw, Ti, 3.0 mm × 12 mm-40 mm (2.0 mm increments)	AR-**8933VCL-12 - 40**
KreuLock Compression Screw, hybrid, VAL, Ti, 3.0 mm × 12 mm-60 mm (2.0 mm increments)	AR-**8933HVCL-12 - 60**
VAL Screw, Ti, 3.0 mm × 10 mm-40 mm, qty. 4	AR-**8933V-10 – 40**
Compression Screws	
QuickFix™ Screw, cannulated shaft, cancellous, Ti, 4 mm × 40 mm	AR-**8740-40PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 42 mm	AR-**8740-42PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 44 mm	AR-**8740-44PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 46 mm	AR-**8740-46PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 48 mm	AR-**8740-48PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 50 mm	AR-**8740-50PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 52 mm	AR-**8740-52PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 54 mm	AR-**8740-54PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 56 mm	AR-**8740-56PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 58 mm	AR-**8740-58PTS**
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 60 mm	AR-**8740-60PTS**
Optional (not included in screw caddy)	
QuickFix Screw, cannulated shaft, cancellous, Ti, 4 mm × 28 mm-38 mm	AR-**8740-28PTS – 38PTS**

Instruments for 3.0 mm System

Product Description	Item Number
Patella Repositioning Clamp	AR-**13055**
Positioning Handle	AR-**14024**
Bending Guide, locking, 3.0 mm	AR-**8950-09**
TRIM-IT™ Depth Gauge, small	AR-**4166**
Driver for 3.0 mm Locking Screws, T10 hexalobe	AR-**8944DH**
Drill Bit, 2.0 mm	AR-**8944-22**
Drill Guide, locking, threaded, 3.0 mm	AR-**8950-07**
Handle QC, ratcheting, cannulated	AR-**8950RH**
Weber Clamp	AR-**8943-24**
Bone Reduction Forceps, curved, pointed, qty. 2	AR-**8943-07**

Instruments (for QuickFix Screws)

Product Description	Item Number
Guidewire, w/ trocar tip, Ø 1.35 mm	AR-**8737-01**
Depth Guide, cannulated, 4.0 mm	AR-**8737-10**
Drill Guide, 2.6 mm/1.35 mm	AR-**8943-03**
Drill Bit, cannulated, 2.6 mm, qty. 2	AR-**8943-02**
Driver Shaft, for QuickFix screws, cannulated, T15 hexalobe	AR-**8943-12**
Holding Sleeve, for 2.7, 3.5 and 4.0 mm screws	AR-**8943-11**

Disposables

Product Description	Item Number
K-Wire, 1.6 mm × 150 mm	AR-**14016**
BB-Tak, threaded	AR-**13226T**
BB-Tak	AR-**13226**

Products advertised in this brochure/surgical technique guide may not be available in all countries. For information on availability, please contact Arthrex Customer Service or your local Arthrex representative.

References

1. Pengas IP, Assiotis A, Khan W, Spalding T. Adult native knee extensor mechanism ruptures. *Injury.* 2016;47(10):2065-2070. doi:10.1016/j.injury.2016.06.032
2. Müller EC, Frosch KH. Functional outcomes of revision osteosynthesis after failure of surgical treatment of patellar fractures. *J Knee Surg.* 2021;34(1):80-86. doi:10.1055/s-0039-1692673
3. Egol K, Howard D, Monroy A, Crespo A, Tejwani N, Davidovitch R. Patella fracture fixation with suture and wire: you reap what you sew. *Iowa Orthop J.* 2014;34:63-67.

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