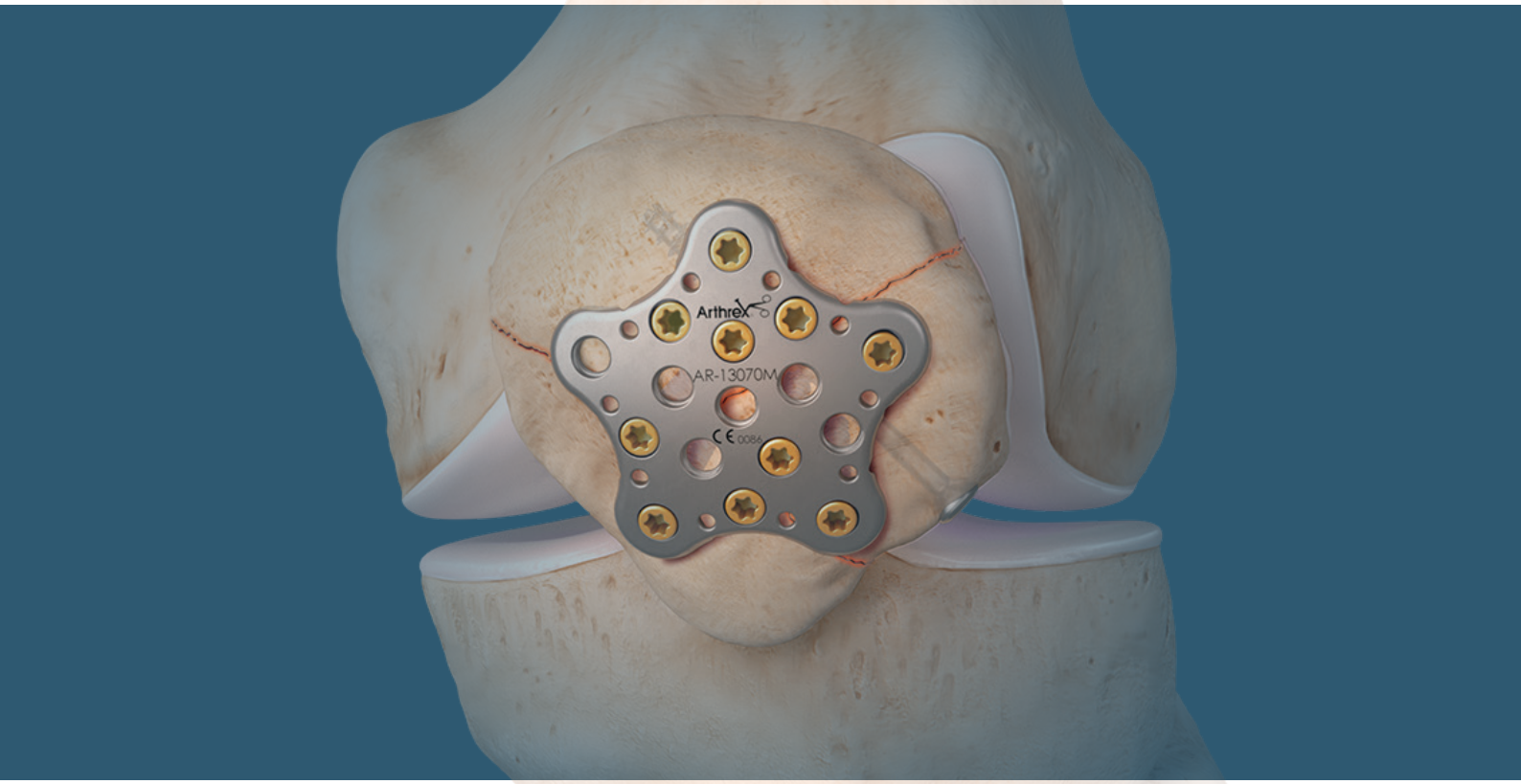
Patella SuturePlate™ II Fracture Management

Surgical Technique



Introduction

Patella fractures represent approximately 1% of all fractures[1] and present a variety of fracture 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.[2] The amount of comminution, degree of osteoporosis, and the 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.[1]

References

1. 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
2. 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

Design and Application

To address various types of fractures, the system offers three different types of plates in different sizes. All plates are made of titanium, and have a low-profile thickness of 1.6 mm with screws sitting flush on the plate. Suture holes in the plate provide soft-tissue reattachment or ligament bracing.

Arrow Plate
Transverse fractures

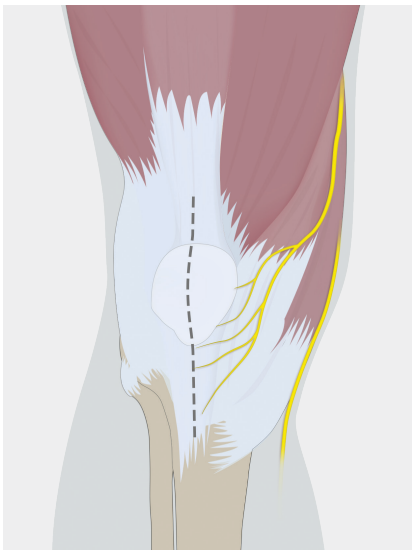
Star Plate
Comminuted fractures

Star Plate for Pole Fractures
Detached and comminuted distal patella pole

Patient Positioning and Surgical Approach

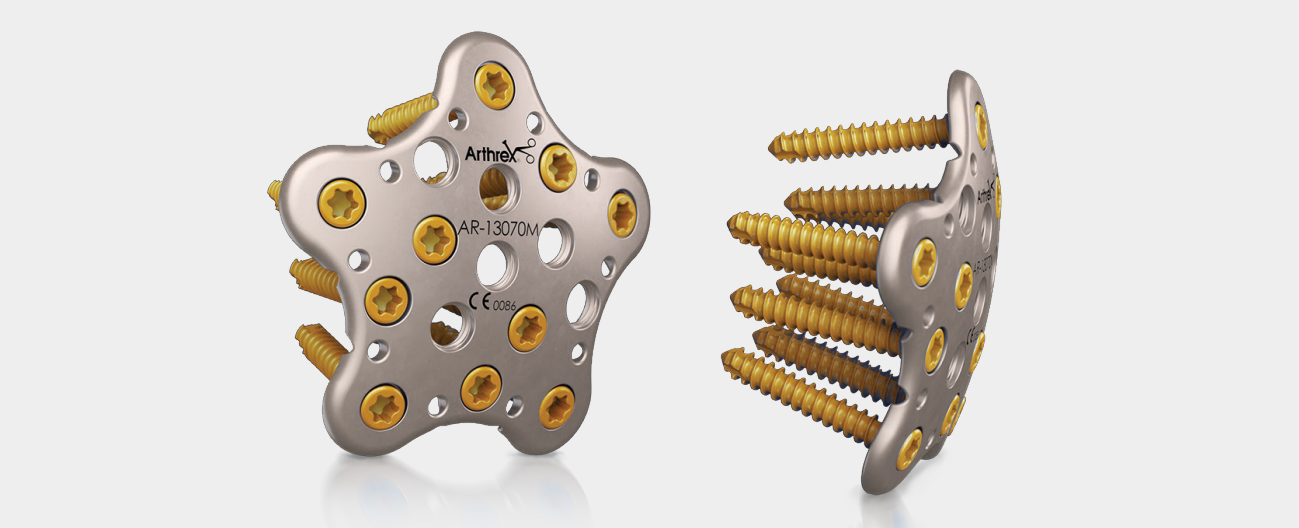
Patient Positioning
The patient is in supine position with the operated leg prepped and draped.

Surgical Approach
An anterior approach to the knee using a longitudinal midline surgical incision is standard. For simple fracture patterns, the dorsal cortical edges are used 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, which preserves the major blood supply of the patella coming infermedially. For complete visualization of the articular surface, the arthrotomy can be extended to allow a 90-degree 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.



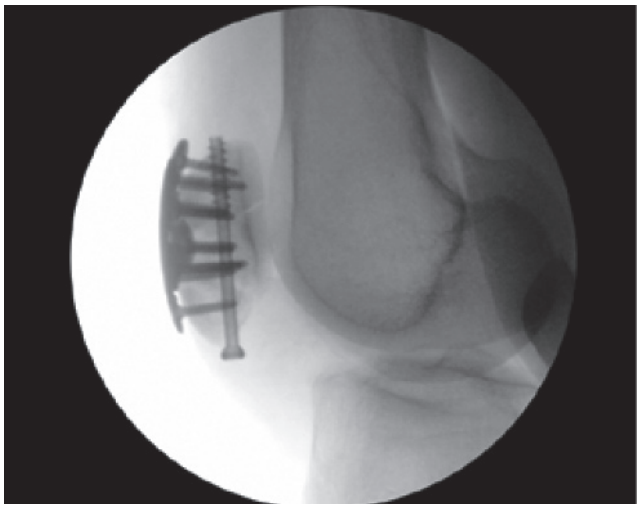
Patella SuturePlate™ II Star Plate

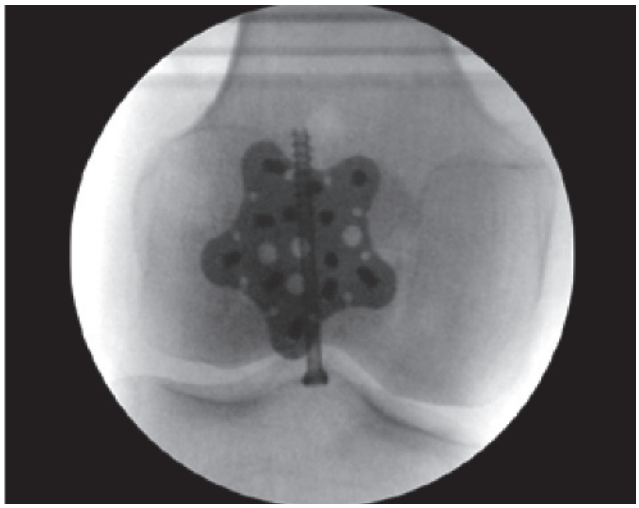
Plate Features



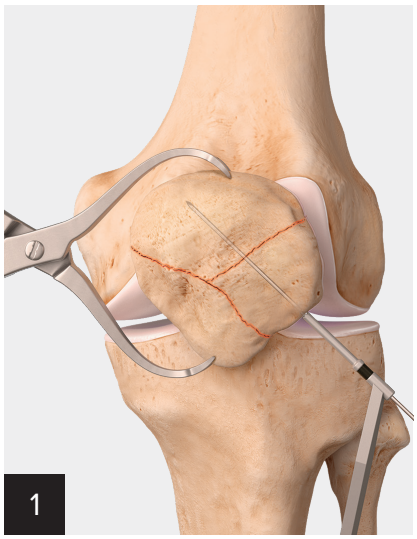
The Patella SuturePlate II titanium locking plate is used with 3.0 mm variable-angle locking (VAL) screws. Suture holes in the plate provide soft-tissue reattachment or ligament bracing. In addition to the plate, QuickFix™ 4.0 mm cannulated screws can be used to apply compression through certain fragments.

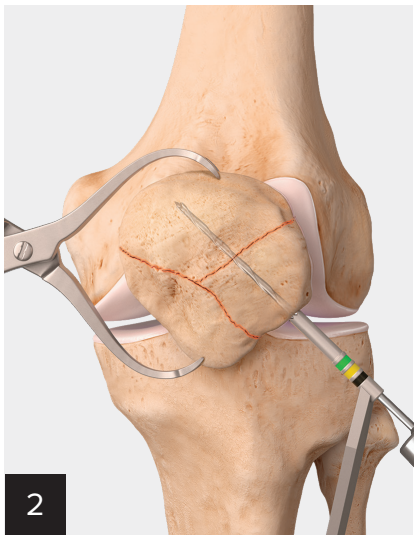
Radiological Images of the Patella SuturePlate II Star Plate

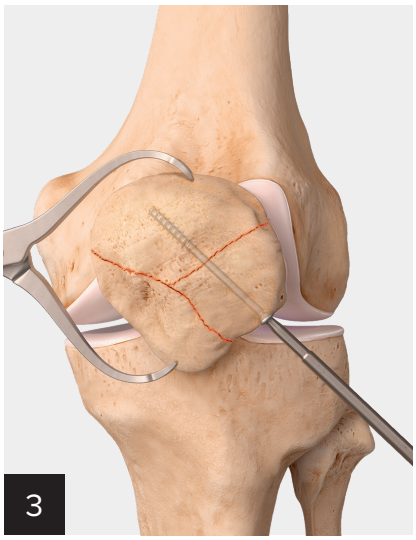




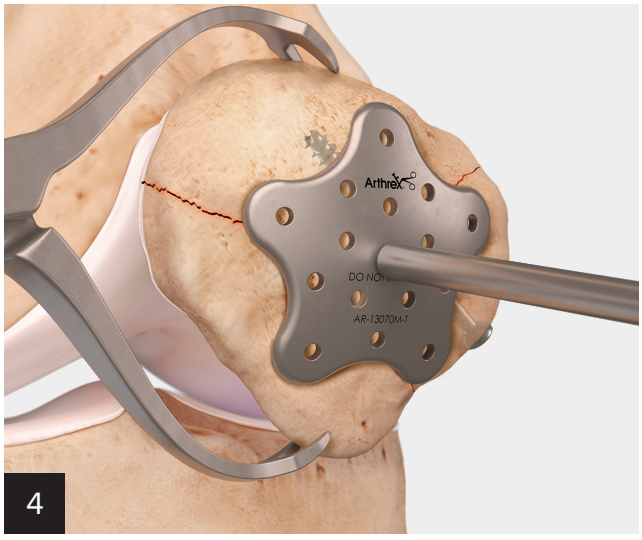
Star Plate Surgical Technique



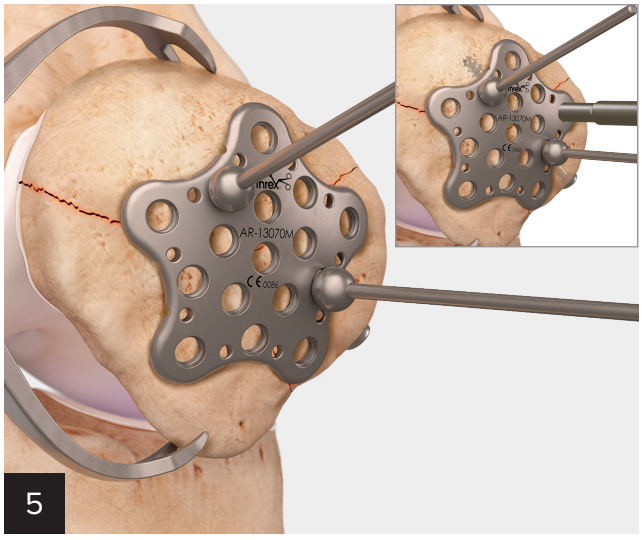




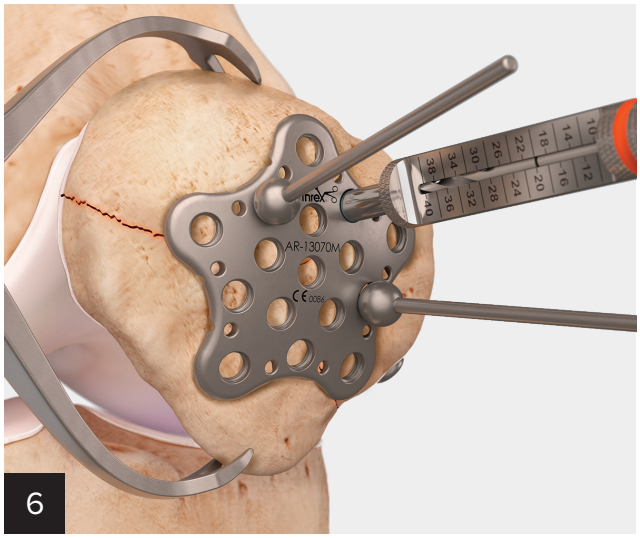
Reduce the bone fragments to the anatomic position using large Weber clamps, small tenaculums, or a patella-positioning clamp. A QuickFix™ 4.0 mm cannulated screw can be used to apply compression through certain fragments. Use a drill guide for a 1.35 mm guidewire with trocar tip. Identify the desired 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.



Use the trial plates with a positioning handle to determine the correct plate size and position. Fluoroscopy of the trial can help define the sizing of the implant. After trialing, open the corresponding sterile implant.

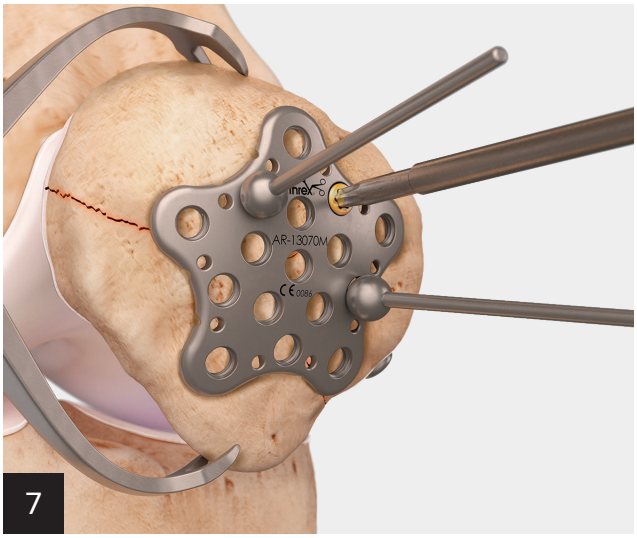


Threaded BB-Taks help to temporarily fix the plate onto the bone. Additionally, locking bending guides can be used to create a more flush fit.

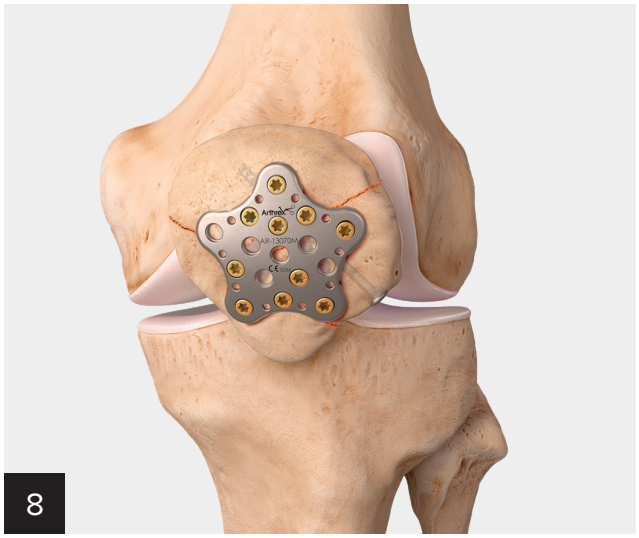


Screw a drill/depth guide into the locking holes before drilling. Screw length is determined by referencing the laser line on the 2.0 mm drill bit at the scale on the drill/depth guide.

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



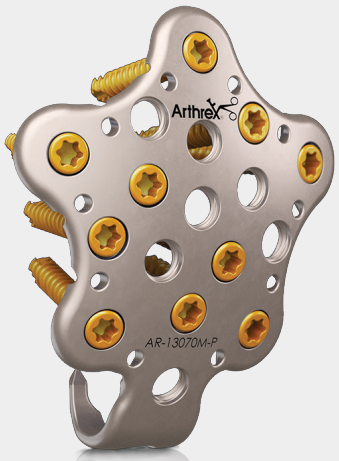
Insert and lock the 3.0 mm VAL screws into the patella fracture plate. Fix the locking screws with a T10 hexalobe driver and a driver handle.



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

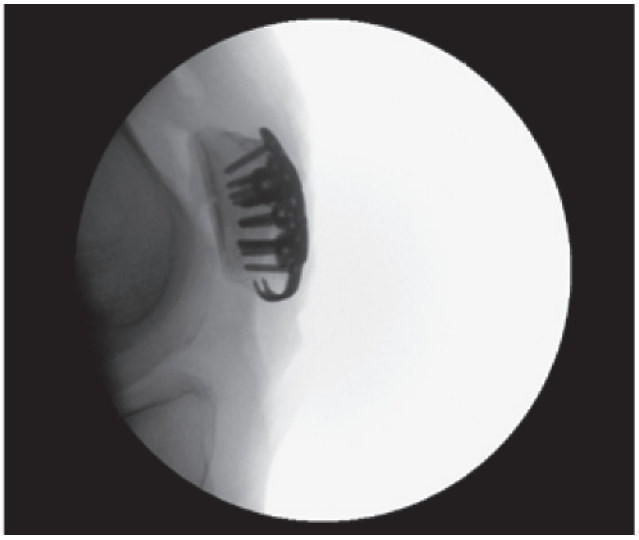
Patella SuturePlate™ II Star Plate for Pole Fractures

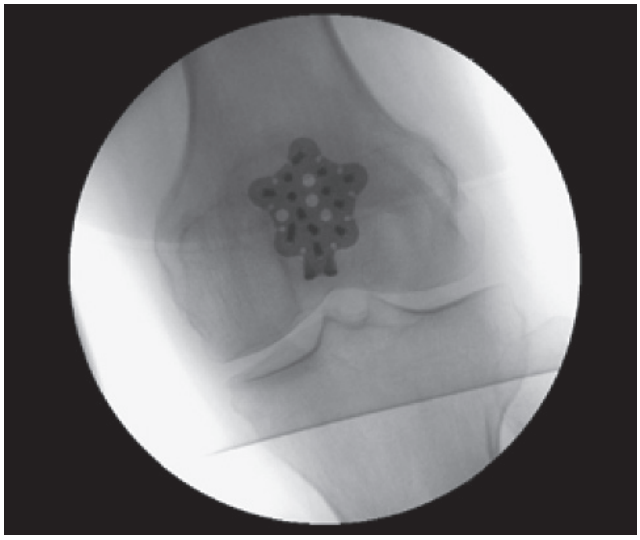
Plate Features



The Patella SuturePlate II titanium locking plate is used with 3.0 mm 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. Among patellar fractures treated surgically, approximately 20% involve the inferior patellar pole.[1]

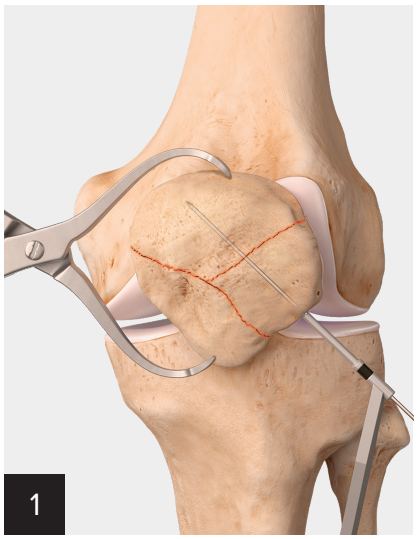
Radiological Image of the Patella SuturePlate II With Pole Plate

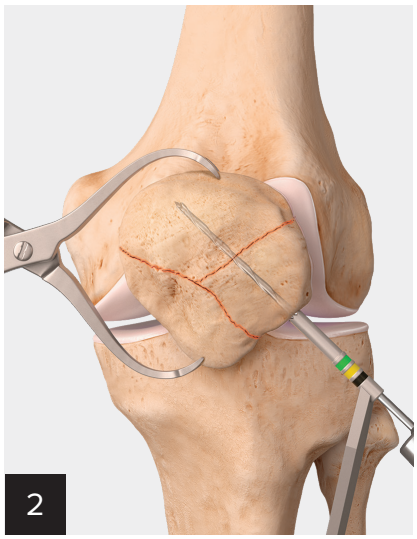


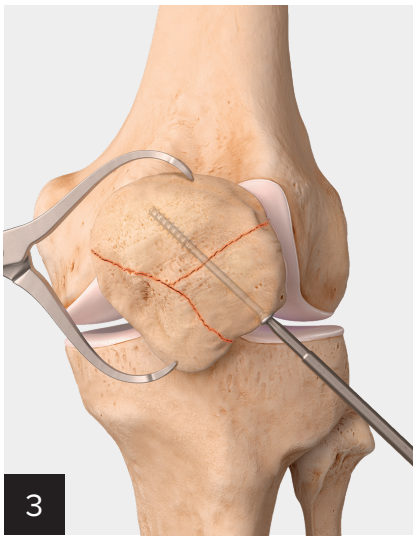


Reference

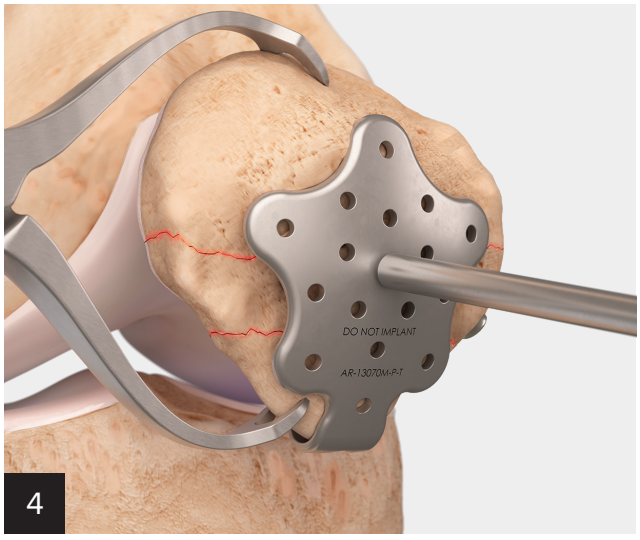
1. Egol K, Howard D, Monroy A, Crespo A, Tejwani N, Davidovitch R. Patella fracture fixation with suture and wire: you reap what you sew. *Iowa Orthop J*. 2014;34:63-67.



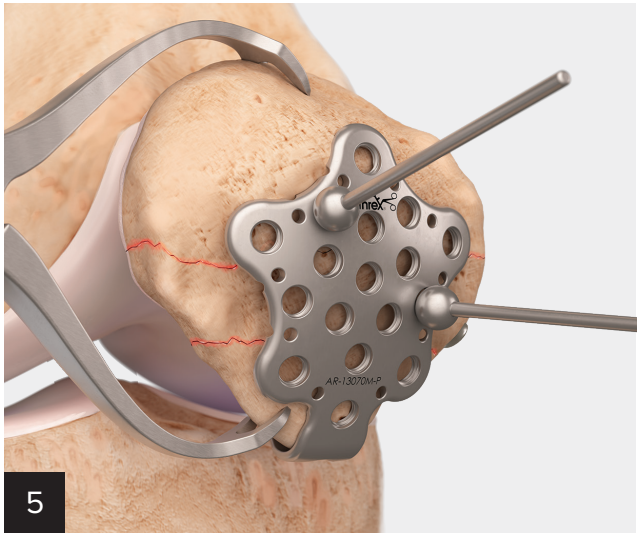




Reduce the bone fragments to the anatomic position using large Weber clamps, small tenaculums, or a patella positioning clamp. A QuickFix™ 4.0 mm cannulated screw can be used to apply compression through certain fragments. Use a drill guide for a 1.35 mm guidewire with trocar tip. Identify the desired 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.

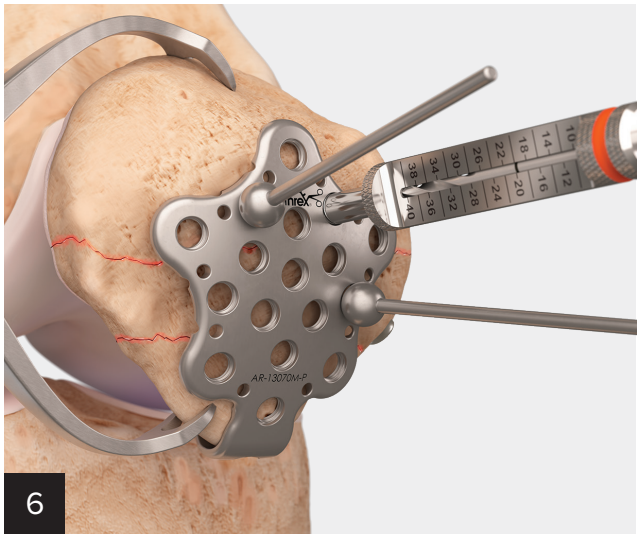


After identification of the distal pole, perform a double incision of the patellar ligament. Using a positioning handle, position the trial of the patella SuturePlate™ II for pole fractures onto the anterior patella surface, addressing the fracture fragments and including the distal pole. Fluoroscopy of the trial can help define the sizing of the implant. After trialling, open the corresponding sterile implant.



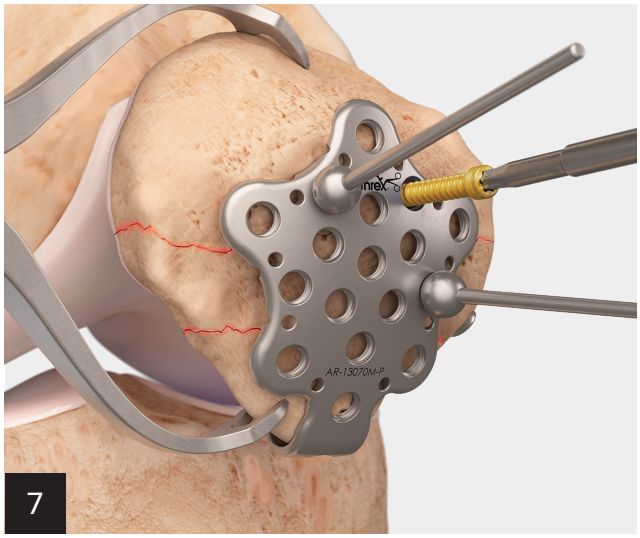
For correct positioning, attach the hook to the distal pole using the double incision of the patellar ligament and place the plate on the anterior cortex of the patella. In addition, the locking bending guide can be used to bend the plate. Threaded BB-Taks may help to temporarily fix the plate onto the 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.



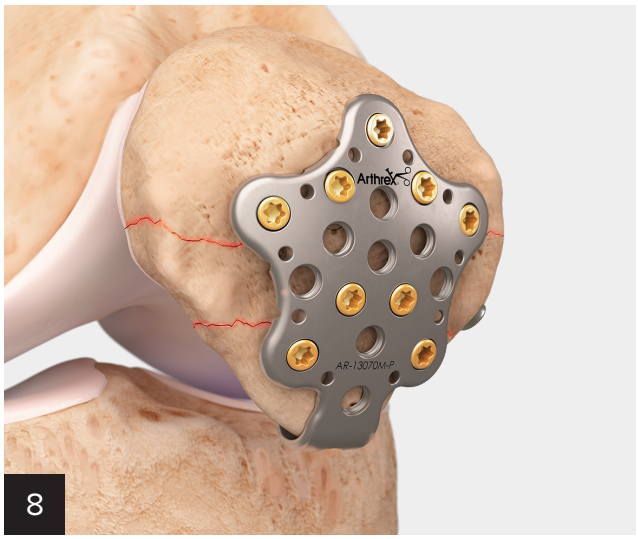
A drill/depth guide is screwed into the locking holes before drilling. Make sure that there is no K-wire or screw in the drilling path. Screw length is determined by referencing the laser line on the 2.0 mm drill bit at the scale on the drill/depth guide.

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

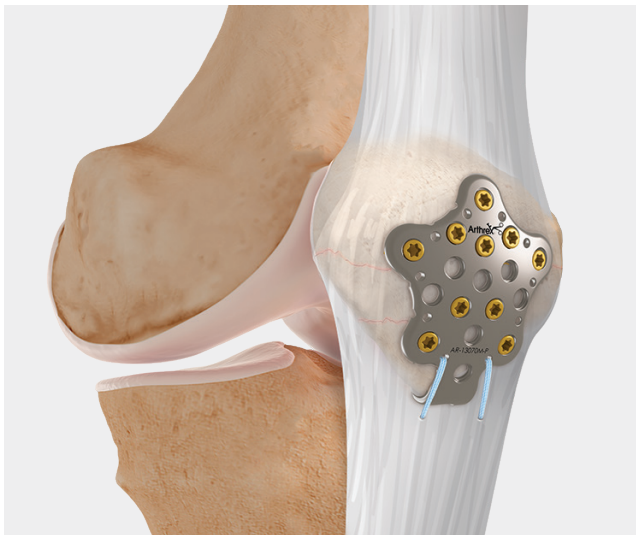


Insert and lock the 3.0 mm VAL screws into the patella pole fracture plate. Fix the locking screws with a T10 hexalobe driver and a driver handle.

Note: Screws must not be placed into the fracture lines.



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 also 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 3 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, pole fracture, small	AR-**13070S-P-T**
Patella SuturePlate II Trial Star, pole fracture, medium	AR-**13070M-P-T**
Patella SuturePlate II Trial Star, pole fracture, large	AR-**13070L-P-T**

Ordering Information (Cont.)

Screws

Product Description	Item Number
VAL Screw, Ti, 3 mm × 10 mm-40 mm, qty. 4	AR-**8933V-10 – 40**
Compression Screws	
QuickFix™ Screw, cannulated shaft, cancellous, titanium, 4 mm × 40 mm	AR-**8740-40PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 42 mm	AR-**8740-42PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 44 mm	AR-**8740-44PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 46 mm	AR-**8740-46PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 48 mm	AR-**8740-48PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 50 mm	AR-**8740-50PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 52 mm	AR-**8740-52PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 54 mm	AR-**8740-54PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 56 mm	AR-**8740-56PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 58 mm	AR-**8740-58PTS**
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 60 mm	AR-**8740-60PTS**
Optional (not included in the screw caddy)	
QuickFix Screw, cannulated shaft, cancellous, titanium, 4 mm × 28 mm-38 mm	AR-**8740-28PTS – 38PTS**

Instruments 3 mm System

Product Description	Item Number
Patella Repositioning Clamp	AR-**13055**
Positioning Handle	AR-**14024**
Bending Guide, locking, 3 mm	AR-**8950-09**
TRIM-IT™ Depth Gauge, small	AR-**4166**
Driver for 3 mm Locking Screws, T10 hexalobe	AR-**8944DH**
Drill Bit, 2 mm	AR-**8944-22**
Drill Guide, locking, threaded, 3 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, with trocar tip, Ø 1.35 mm	AR-**8737-01**
Depth Guide, cannulated, 4 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 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.