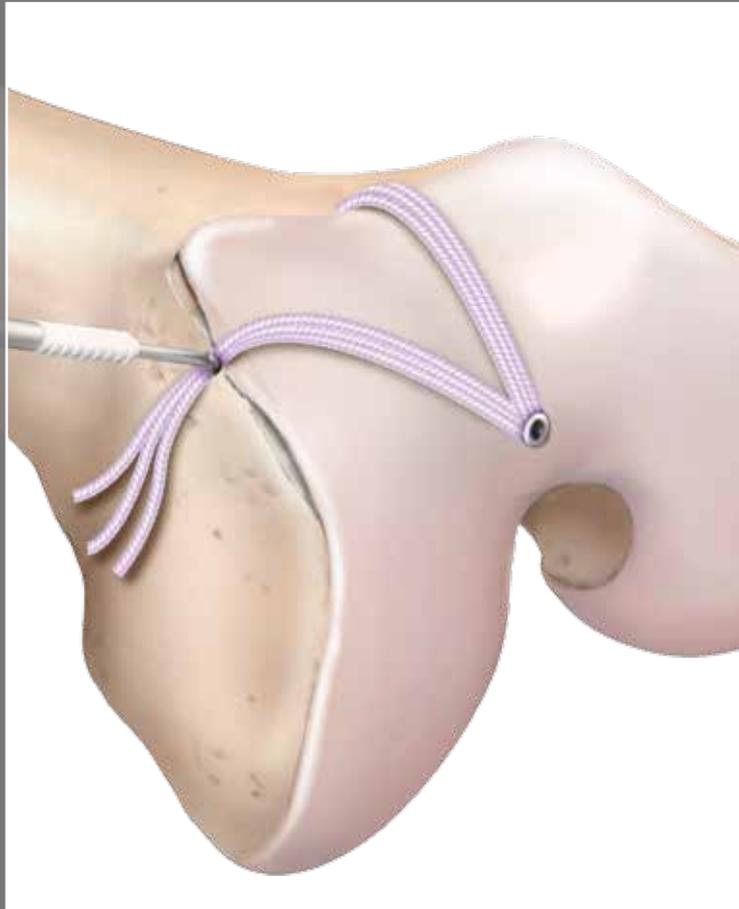




Deepening Trochleoplasty

Surgical Technique



Deepening Trochleoplasty

One of the most frequent causes for patellofemoral dysfunction is habitual patella dislocation or subluxation. This technique guide shows one method of how to solve structural causes of patella instability by doing a deepening trochleoplasty.¹

Positive-apprehension flexion greater than 40° and a positive J-sign at flexion greater than 30°, as well as the examiner's inability to manually keep the patella in a central position during flexion, are indications for trochleoplasty. Radiologically, a trochlea with a massive bump, causing it to "hop" during extension/flexion and a convex trochlea also indicate the need for trochleoplasty. Should there still be doubt about the trochlea's faulty morphology, and more precisely its extent, a diagnostic knee arthroscopy prior to surgery can give clarity.

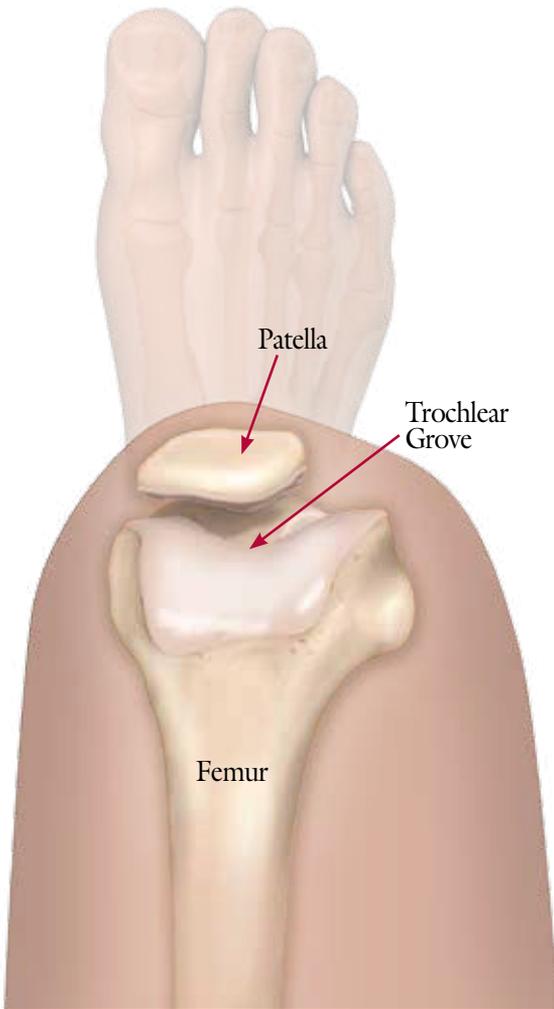


Figure 1: The trochlea and patella with its congruency as static factor for patellofemoral stability

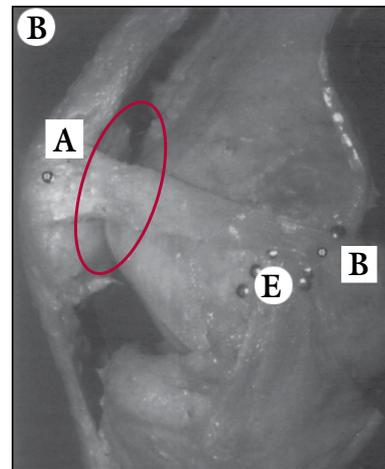


Figure 2: The medial patellofemoral ligament as a passive factor for patellofemoral stability

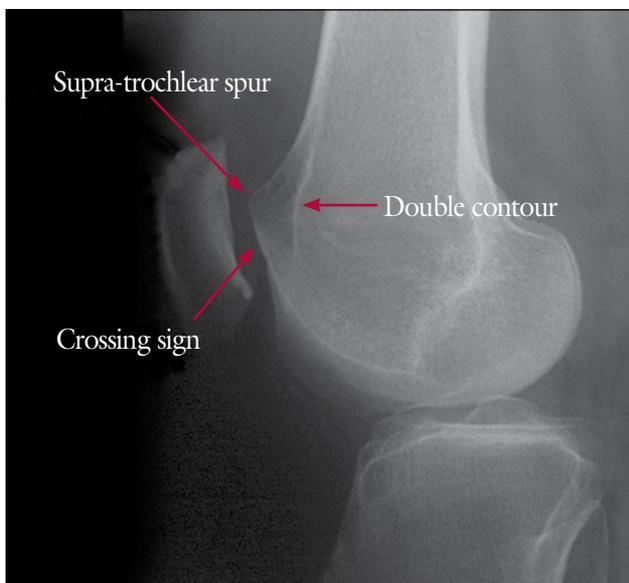


Figure 3: X-ray detection of typical indication for trochleoplasty

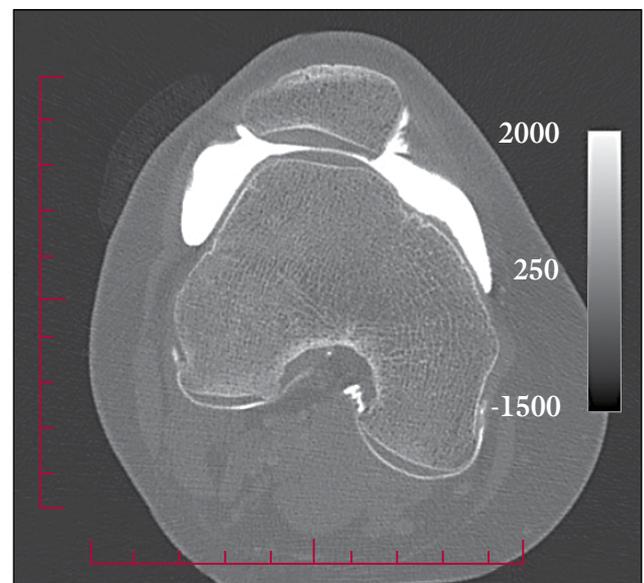
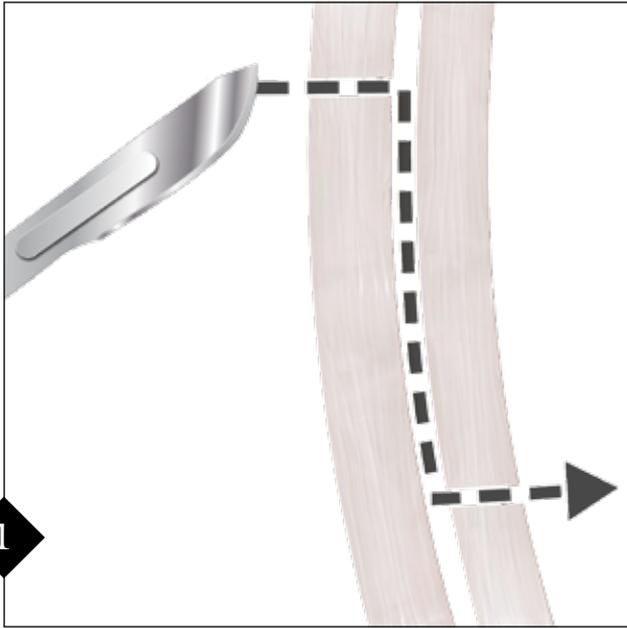


Figure 4: CT detection of typical indication for trochleoplasty



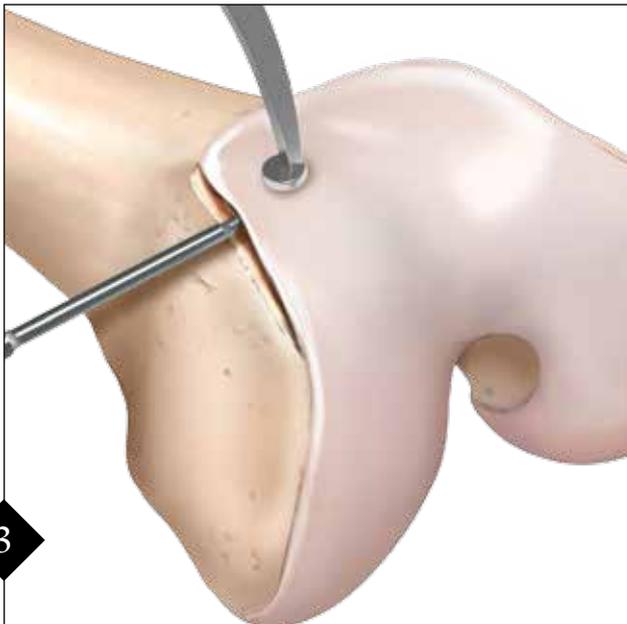
1

Sharply separate the two lateral retinacular layers from each other. Create a Z-plasty to enable the possibility of reclosing the lateral structures in an elongated way at the end of the trochleoplasty. The lateral capsule is opened and the patella retracted medially to fully expose the trochlea.



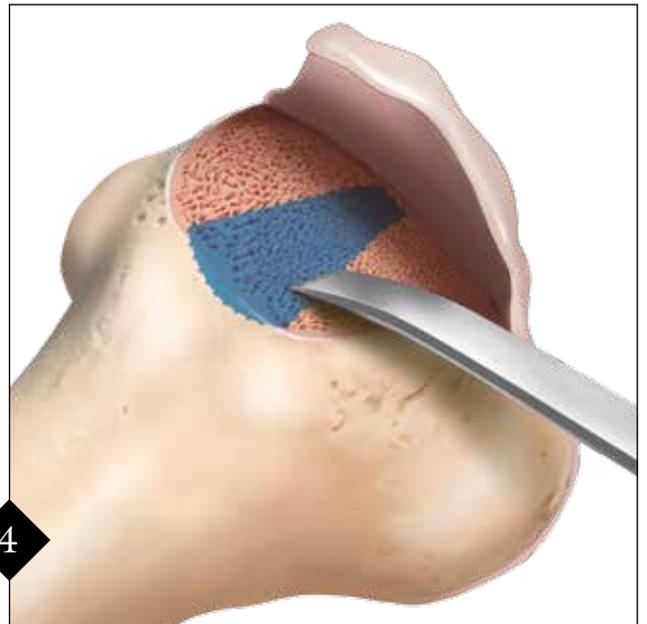
2

Using a scalpel, the proximal and lateral periosteum is separated/incised from the synovium and detached with a periosteal elevator. Using a curved osteotome, the proximal trochlear cartilage flap is detached, while the proximolateral part is detached using a curved chisel, leaving 1–3 mm of adherent subchondral bone. The cartilage flap is carefully chiseled off the lateral femoral condyle in one piece from proximal to distal, until the proximal 5 mm of the flap is mobilized.



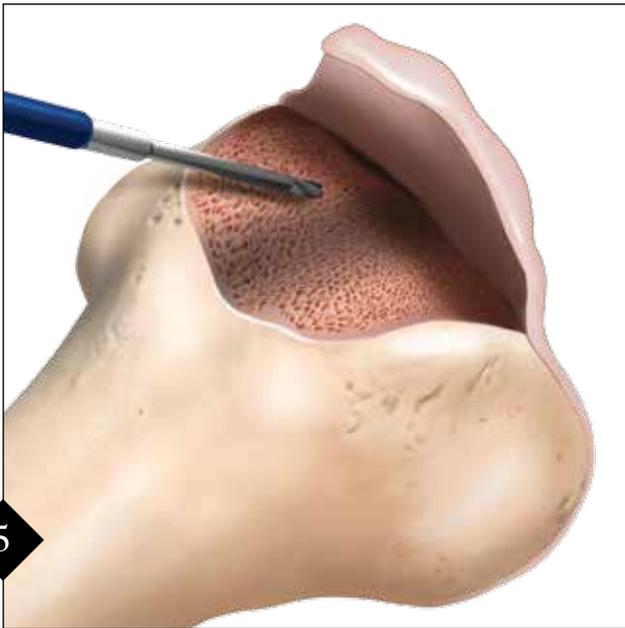
3

Assemble the RetroConstruction™ Drill Guide with the single use drill sleeve, the 3 or 5 mm Offset Marking Hook and the 2.9 mm Burr. Take the RetroConstruction handle in your guidance hand. Forward the Burr through the sleeve until it reaches the depth stop. Now the cutting thread of the Burr is right below the marking hook disk. The chondral layer is released from lateral to medial. Stop distally when the natural trochlea (or the notch) is reached.



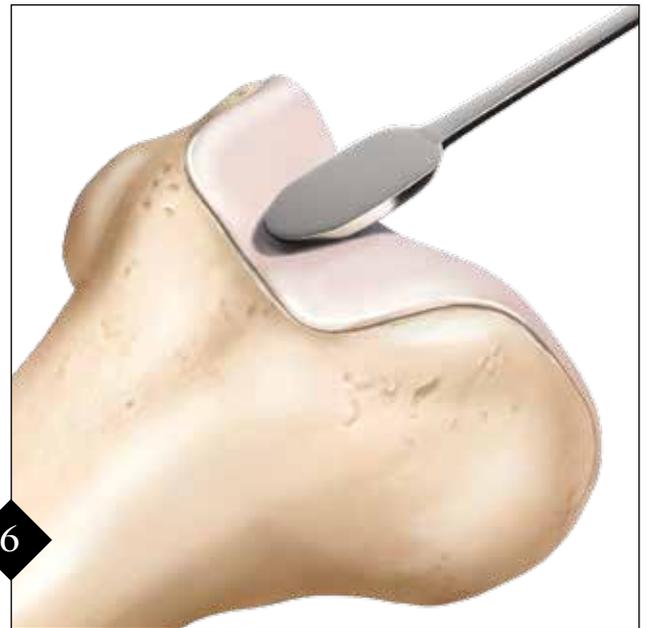
4

Determine the new direction of the trochlea groove from proximal to distal with a serration and create it with a curved osteotome.



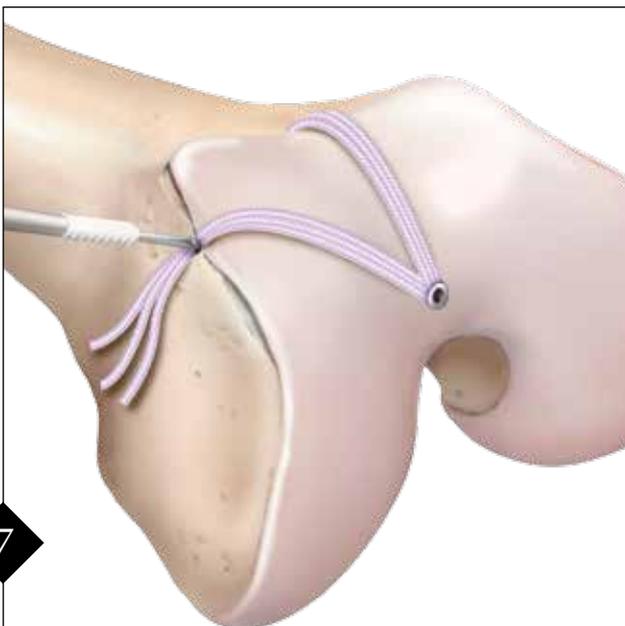
5

By using the RetroConstruction™ Drill Guide, the drill sleeve and the Burr (without the offset hook), the subchondral modeling is performed. In this step the proximal bump is reduced down to the level of the distal diaphysis. Additionally, the subchondral bone under the cartilage layer is thinned out with the same tool in order to facilitate the modeling and readapting of the flap.



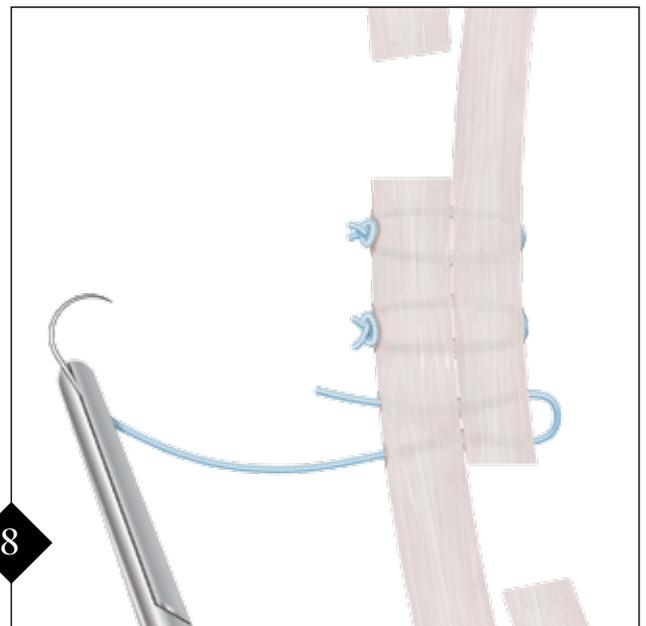
6

With care and a blunt instrument, recontour the chondral layer into the new groove.



7

Fix the chondral layer onto the bone with three parallel Vicryl #2 sutures and three 3 mm x 3.5 mm PushLock® suture anchors. Start by placing one PushLock at the distal end of the groove. Guide the #2 sutures through the groove towards proximal and place another PushLock proximal to the chondral border, while the flap is gently pressed into the new groove with a blunt instrument. Finally, fix the suture “V” at the lateral side with a third PushLock at the highest point of the lateral condyle.



8

Reclose the lateral retinaculum by stitching the two released layers together. To lower patellofemoral contact pressure, a lateral lengthening can be achieved by a widened Z-plasty. In order to give a final stability to the patella close to extension, an anatomic MPFL reconstruction is required since a physiological shape of the trochlea cannot stabilize the patella close to extension where there is no bony guidance.

Deepening Trochleoplasty System

Instruments

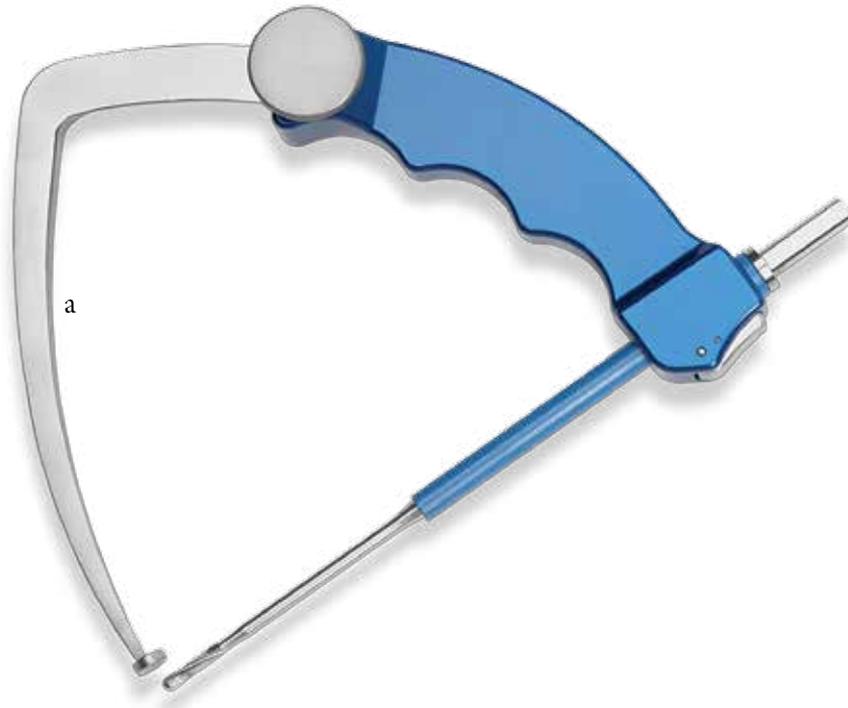
Marking Hook for Trochleoplasty, 3 mm Offset (a)	AR-1510TP-03
Marking Hook for Trochleoplasty, 5 mm Offset	AR-1510TP-05

Additional Instrumentation

BioComposite PushLock Suture Anchor, 3.5 x 19.5 mm	AR-1926BC
Punch, for 3.5 mm PushLock	AR-1926P
RetroConstruction Drill Guide	AR-1510H

Disposables (AR-300-B301S)

Drill Sleeve for Trochleoplasty, inner \varnothing 4.5 mm
Burr, straight, 2.9 mm x 162 mm



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This description of technique 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 judgment 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.



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