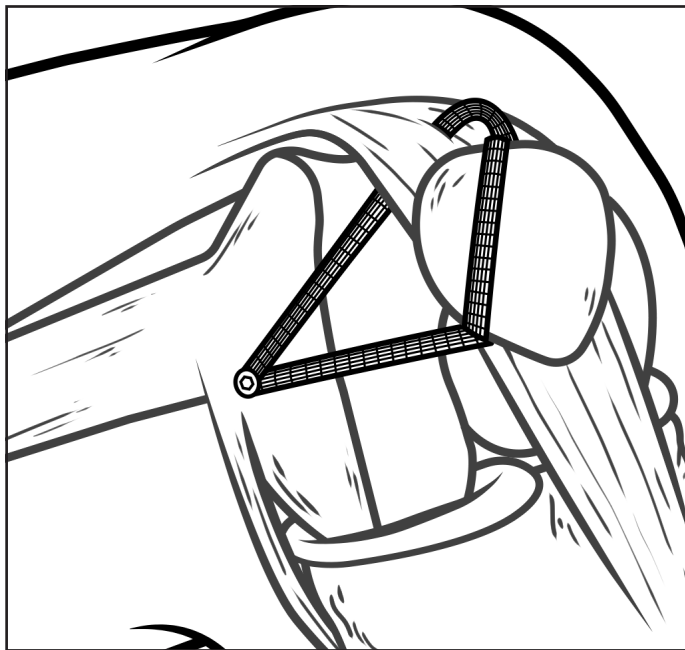


Surgical Approaches to: MPFL

Surgical technique for medial patellofemoral ligament reconstruction using the Infinity-Lock™ 5 mm tape

Author: Mr. Danny Acton, Altnagelvin Hospital, Derry, Kingsbridge Northwest, Ballykelly, Galway Clinic, Doughiska



Introduction

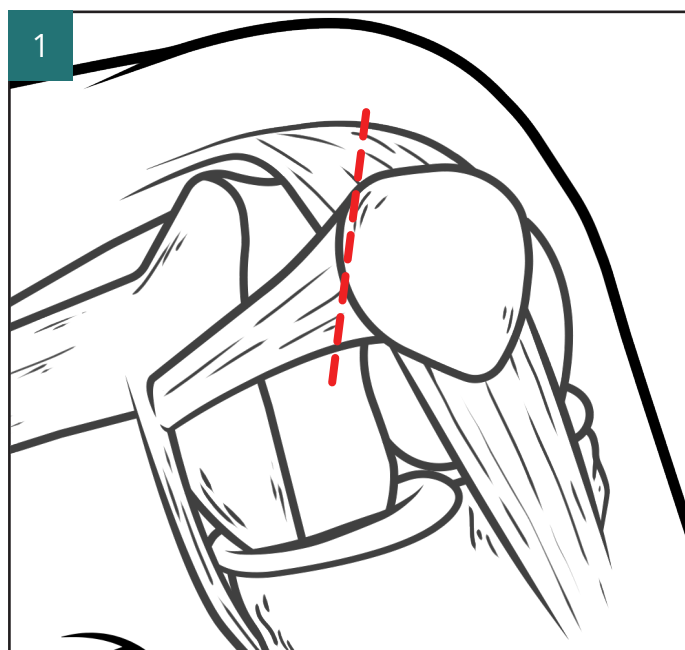
Recurrent patella instability can become a significant physical and mental impairment for young people and can continue despite best efforts at physiotherapy rehabilitation. Medial patellofemoral reconstruction has proven to be an effective method of reducing patella dislocation and anatomical dissections have confirmed a femoral attachment in the region between the adductor tubercle and medial epicondyle. It fans forwards attaching to the medial border of the patella and the quadriceps tendon. This information has spawned multiple variations in surgical reconstruction consistent with the myriad of interventions that have been employed over the years.

We have developed a technique using Infinity-Lock™ 5 mm tape (Xiros) that negates the need for hamstring harvest and reduces the risk to the extensor mechanism as a result of patella fracture.

Patients are listed for this procedure due to on-going instability despite comprehensive physiotherapy rehabilitation and training. Radiographs and MRI are used to measure patella height ratios, classify trochlear dysplasia and measure tibial tuberosity distance to trochlear groove (TTTG). Caton Deschamps ratio > 1.4 , skeletal immaturity, severe trochlear dysplasia and TTTG > 20 mm are relative contraindications to this technique.

In theatre at induction of anaesthesia, patients are administered antibiotics. A tourniquet is applied and the leg is supported at 90 degrees flexion on a foot rest but free to go through a full range of motion. Examination under anaesthetic includes gauging lateral displacement in extension and 30 degrees of flexion, excluding significant tilt and lateral compression syndrome and checking cruciate and collateral ligament integrity.

Surgical Technique

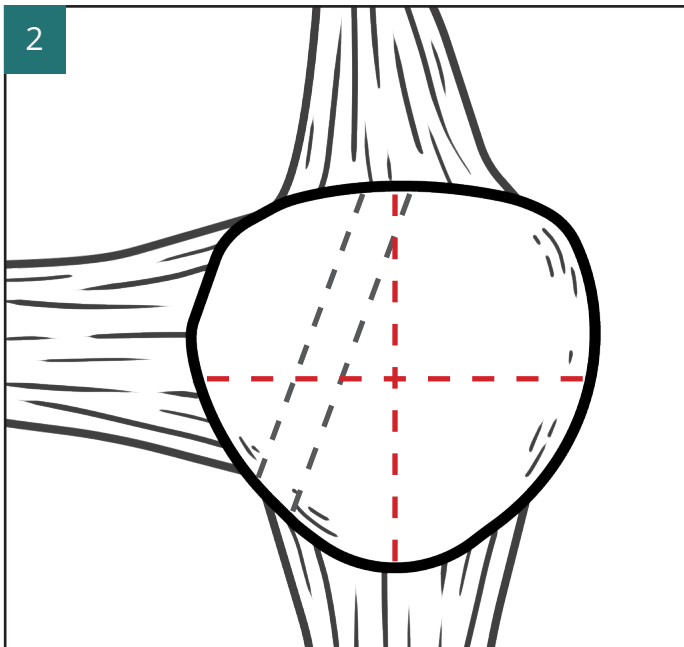


The surgeon stands on the opposite side of the table to facilitate dissection of the medial side of the knee and image intensifier access to the limb.

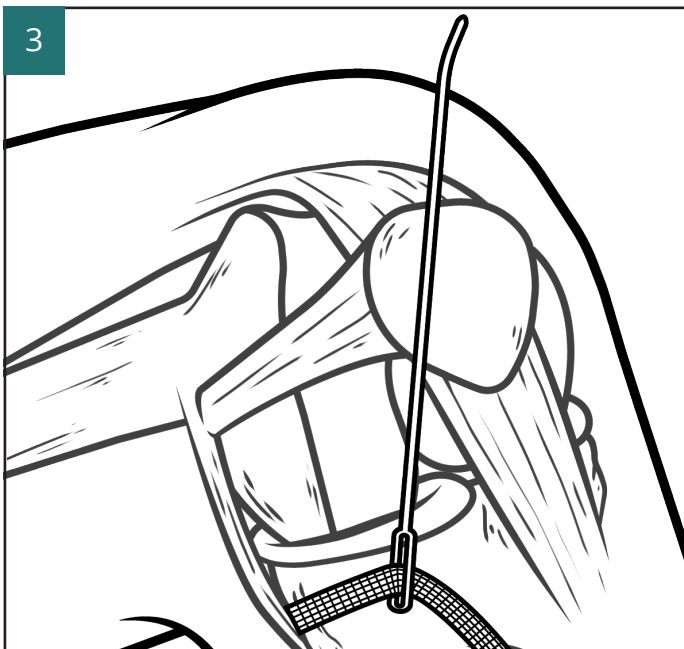
The knee is kept at 90 degrees of flexion. An oblique incision is made over the distal medial point of the patella running proximally towards the middle of the proximal border to the centre of the quadriceps tendon.

The fascia is elevated to expose the quadriceps tendon, the patella and medial retinaculum.

One centimetre of medial retinaculum is released from the distal medial border of the patella preserving capsular and synovial attachment.



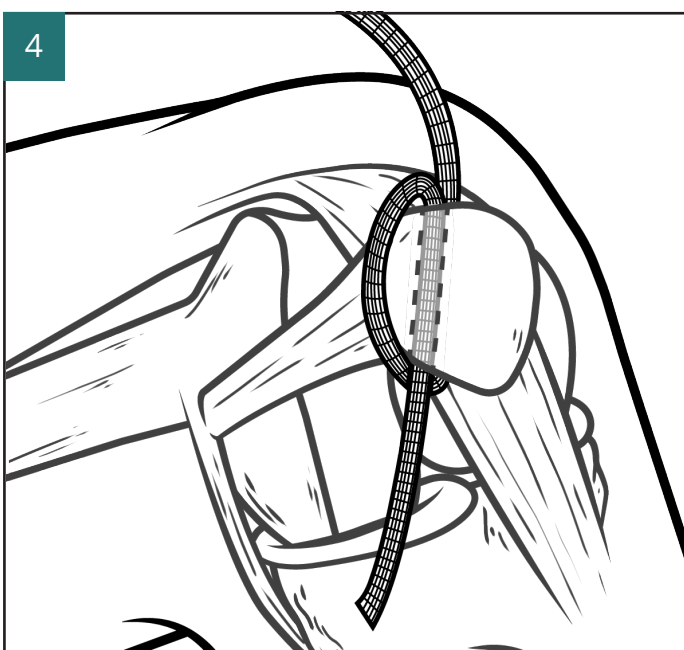
An oblique 4.5 mm drill hole is created aiming proximally for the middle of the proximal border of the patella and is completed without penetrating the tendon.



A malleable probe (Xiros) is passed along this tunnel.

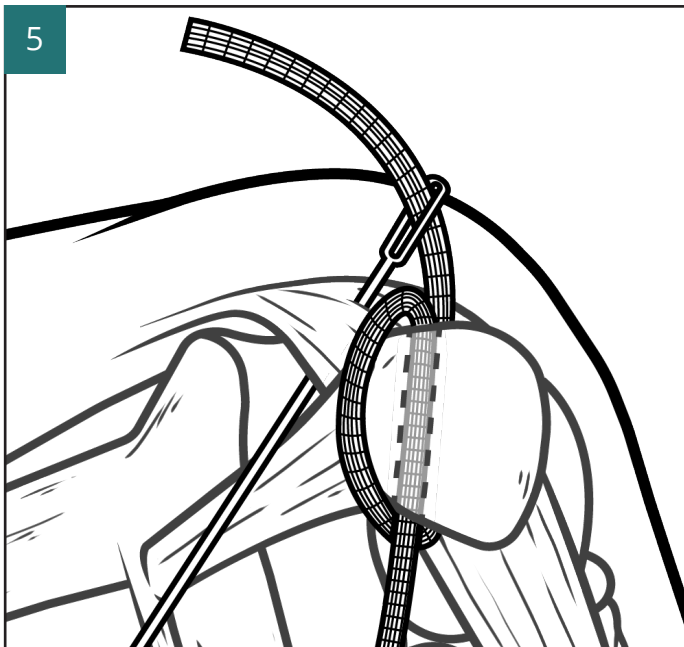
A 20-30 degree bend can be made 2-3 cm from the end of the probe to help direct it anteriorly through the quadriceps tendon on exit from the patellar tunnel.

The Infinity-Lock 5 mm tape can be threaded through the aperture in the probe and then drawn along the tunnel and out through the quadriceps tendon.



The length should then be adjusted to have a third still distal to the patella.

The probe should then be passed again from distal to proximal trying to avoid penetrating the first limb of tape and the longer length pulled through again creating a loop that can be pulled tight.



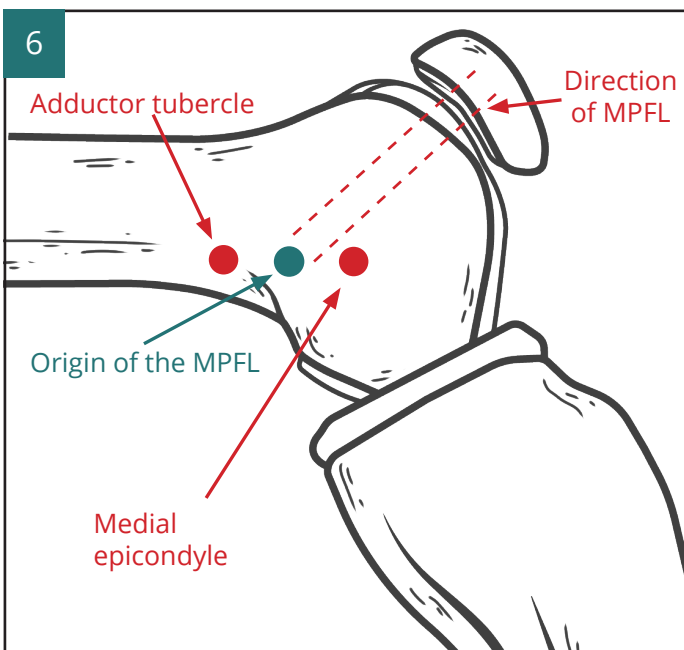
The more proximal length can then be passed under the quadriceps tendon towards the vastus medialis obliquus muscle again using the malleable probe. Attention can then be directed towards the medial epicondyle.

An 8 cm longitudinal incision is placed anterior to the epicondyle.

An incision through the fascia over the VMO identifies the layer of the MPFL.

Dissection of this with scissors towards the patella allows the Infinity-Lock 5 mm tape to be retrieved using artery forceps.

The space between the epicondyle and the adductor tubercle can be exposed by sharp dissection.

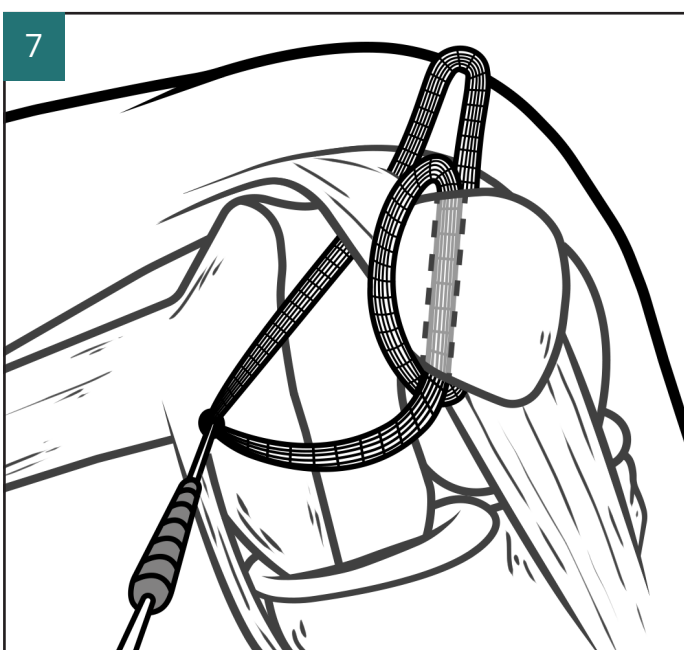


Next the Schöttle point should be identified with image intensifier and a Beath pin placed in the medial femoral condyle.

The two strands of Infinity-Lock 5 mm tape can be marked at the level of the guide wire before assessing isometry through a full range of movement.

If confirmed the position should be marked with diathermy and the Beath pin can be passed right through to the lateral side.

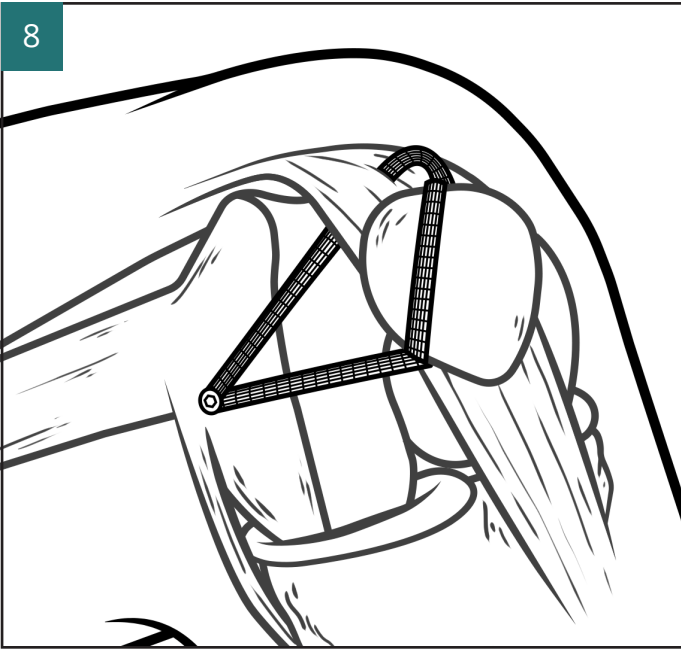
I then drill a 5 mm x 20 mm femoral tunnel and then use the Beath pin for placement of a pull through Ethibond suture.



The Ethibond is used to draw the Infinity-Lock 5 mm tape into the femoral tunnel where it is fixed by inserting a Slik Fix PEEK CF screw.

It is critical to control tension of the Infinity-Lock 5 mm tape as it is secured in the femoral tunnel.

There should be enough room under the tape for a forcep to fit under it.



The knee should be cycled through full range of movement to confirm satisfactory equal tension of the construct and the amount of possible lateral displacement assessed in extension and 30 degree flexion to be compared with the pre-operative check.

With higher grade trochlear dysplasia 25% lateral displacement even after reconstruction of MPFL can be found.

The fascial layers should be repaired to cover the tape during wound closure.

Post-op Instructions

I do not recommend immobilization. Some patients have severe apprehension so a hinged knee brace that allows 0-30 degrees of flexion may help. It is important to focus on quadriceps recruitment. Pre-habilitation will help with this and if it is slow electrical muscle stimulation can help. I encourage full weight bearing with crutches and concentration on a normal gait pattern.

Key Implants and Consumables

- Infinity-Lock Tape 5 mm x 400 mm
- 20 cm Malleable Probe
- Slik Fix PEEK CF screw 7 mm (8 mm in reduced quality bone stock)
- 4.2 mm (or 4.5 mm) drill
- Beath pin with eye
- 5 mm cannulated drill with pin tip

Xiros
Xiros
Parcus/Anika
Parcus/Anika
Parcus/Anika
Stryker

Illustration and design: Adam Steel
Technique visualisation: Matthew Lynch-Wong

The views expressed in this document reflect the experience and opinion of the surgeon and do not necessarily reflect those of Xiros.

Xiros™
Springfield House, Whitehouse Lane, Yeadon, Leeds LS19 7UE
T. +44 (0) 113 238 7202
E. enquiries@xiros.co.uk

Xiros Limited, registered in England No. 1664824
All rights reserved. © Xiros™ 2023. Worldwide patents and patents pending. Xiros and Infinity-Lock are trademarks of Xiros. Xiros products and their indications are subject to regional variations. To confirm the current status in your region/ country please contact enquiries@xiros.co.uk