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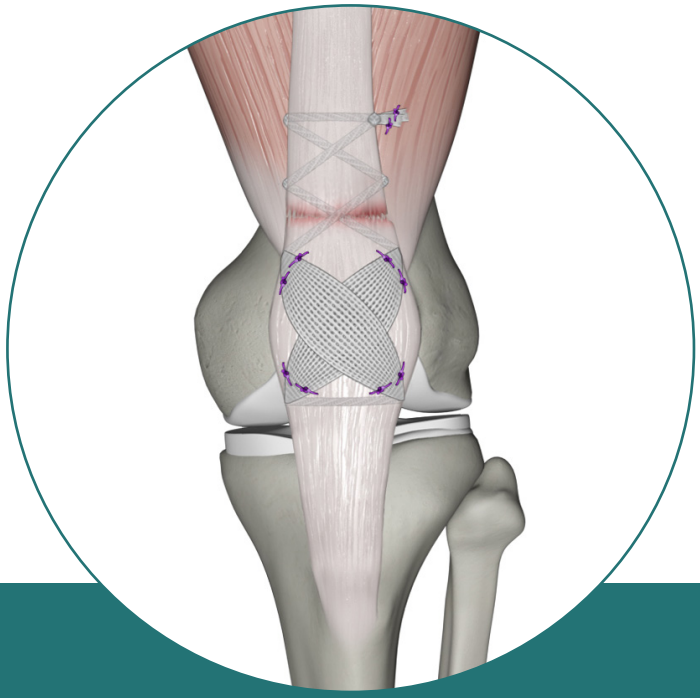
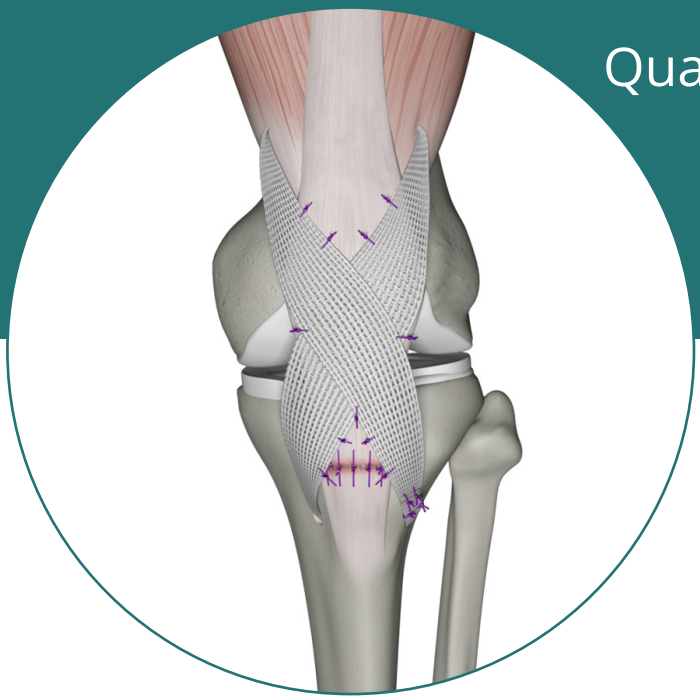


Poly-Tape for Extensor Mechanism

Quadriceps Tendon Reconstruction
Patellar Tendon Reconstruction

Surgical Technique Manual



CE 2797

Poly-Tape for Quadriceps and Patellar Tendon Reconstruction

Introduction

The **30 mm Poly-Tape** is indicated for patients requiring soft tissue approximation, including **quadriceps** and **patellar tendon** reconstructions.

Both recommended techniques require:
- a 30 mm wide by 800 mm long **Poly-Tape** implant with an open weave polyester structure;
- a 20 cm rigid probe and a 20 cm malleable probe, either of which may be used at the discretion of the surgeon.

In addition, the patellar tendon reconstruction technique requires a 4.5 mm diameter drill bit with a plain shank, not supplied by Xiros.

We would like to thank **Mr. A. D. Toms**, Consultant Orthopaedic Surgeon, Royal Devon and Exeter Hospital, Exeter, UK, and **Mr. S. H. White**, Consultant Orthopaedic Surgeon, Robert Jones and Agnes Hunt Orthopaedic Hospital, Shropshire, UK, for their work in developing this technique.[1]

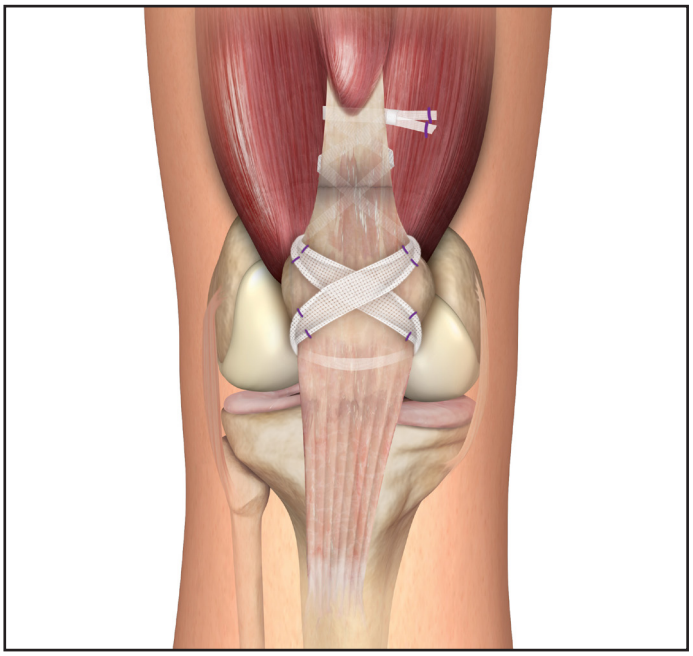
[1] **Toms AD, Smith A, White SH.** Analysis of the Leeds-Keio ligament for extensor mechanism repair: favourable mechanical and functional outcome. *Knee. 2003;10(2):131-134.*

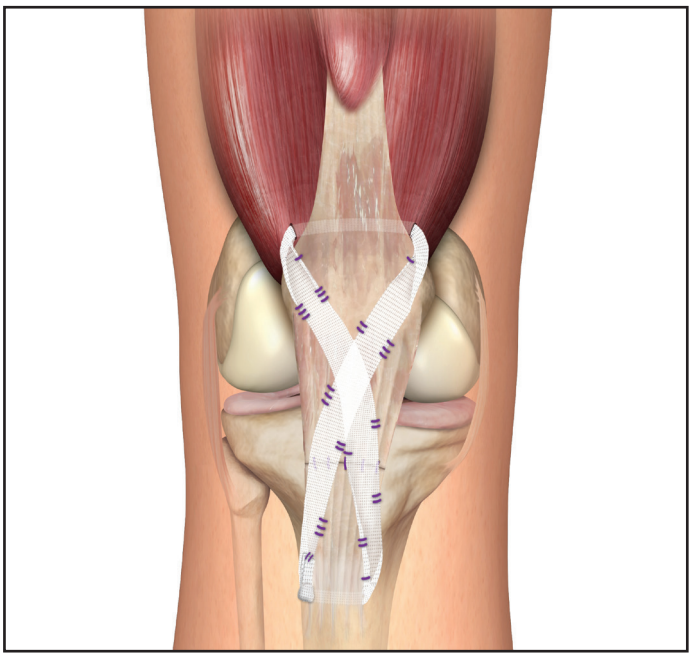
Indications

Contraindications to surgery include:

The **30 mm Poly-Tape** should not be used in the following patients:

- Patients with a known hypersensitivity to implant materials. If the patient is suspected of having any foreign body sensitivity, appropriate tests should be made prior to implantation.
- Patients with infections or any structural or pathological condition of the bone or soft tissue that would be expected to impair healing or secure fixation.
- Patients unable or unwilling to restrict activities to prescribed levels or follow a rehabilitation programme during the healing period.
- Patients where eventual removal of the device is anticipated since **Poly-Tapes** integrate well with soft tissue.
- Skeletally immature patients, as the **Poly-Tape** will not elongate with growth.
- Patients with no patella.





Product Overview

Implant

The **Poly-Tape** recommended for quadriceps and patellar tendon repairs is the 30 mm wide by 800 mm long prosthesis. It is an open weave polyester structure, designed to act as a scaffold for soft tissue ingrowth.

Advantages of the **Poly-Tape** prosthesis:

- Provides excellent intrinsic strength and allows early mobilisation
- Use of metalwork and wire cerclage is unnecessary; the associated high complication rate and problems of secondary removal are thus avoided
- Prosthesis carries none of the risks or availability problems of allograft
- No donor site morbidity as encountered with autograft
- Straightforward technique with a low complication rate.

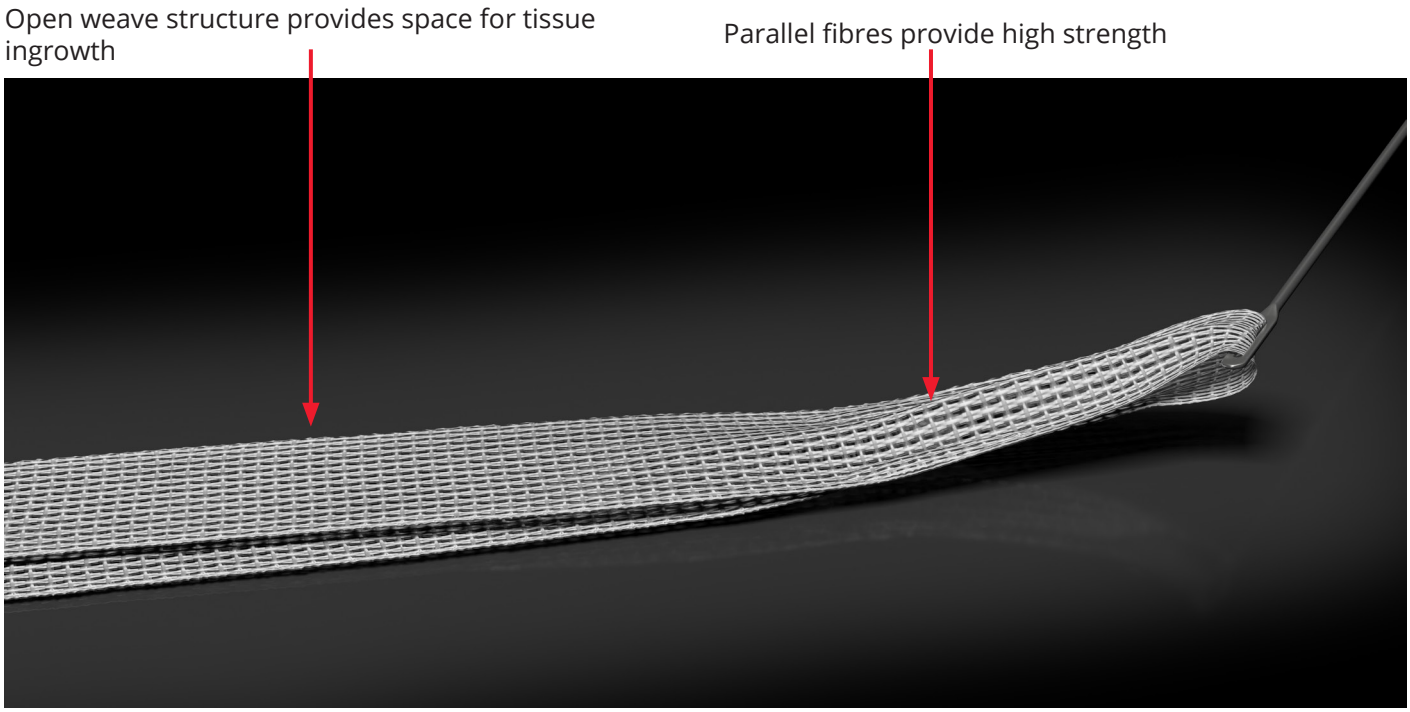
Instrumentation

The following single use instruments are required for **Quadriceps tendon reconstruction**:

- 20 cm malleable probe and rigid probe with eye for passing the **Poly-Tape** through soft tissue.

The following single use instruments are required for **Patellar tendon reconstruction**:

- 20 cm malleable probe and rigid probe with eye for passing the **Poly-Tape** through soft tissue.
- 4.5 mm diameter drill bit (plain shank)



Quadriceps Tendon Reconstruction Surgical Technique

Preparation and Inspection

The patient is positioned supine with the knee supported appropriately. A side support and sandbag are useful to facilitate knee positioning. The leg is prepared and draped using aseptic technique.

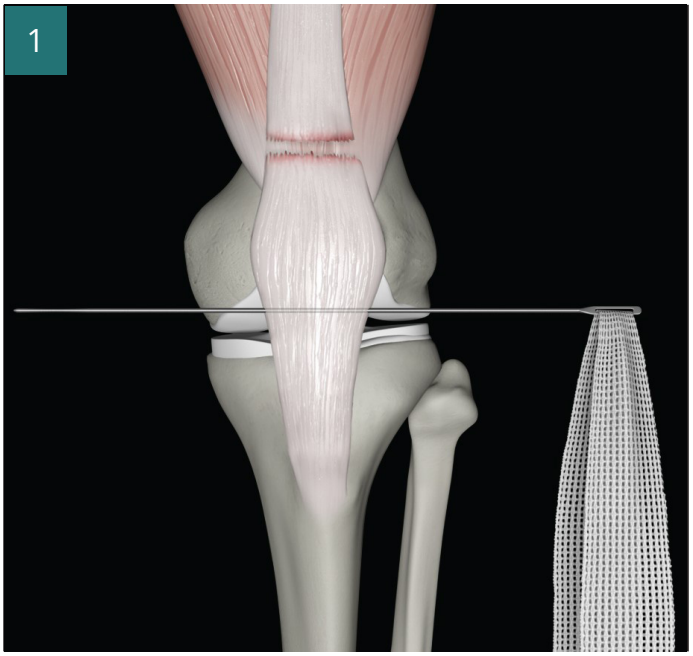
Recommended Approach

A midline approach is recommended. Adequate exposure is essential and should provide sufficient access for the proximal and distal placement of the prosthesis. The ends of the tendon are identified as well as any additional pathology.

NOTE: It is necessary particularly in chronic cases to free up any adhesions involving the quadriceps mechanism. This will facilitate optimal postoperative rehabilitation.

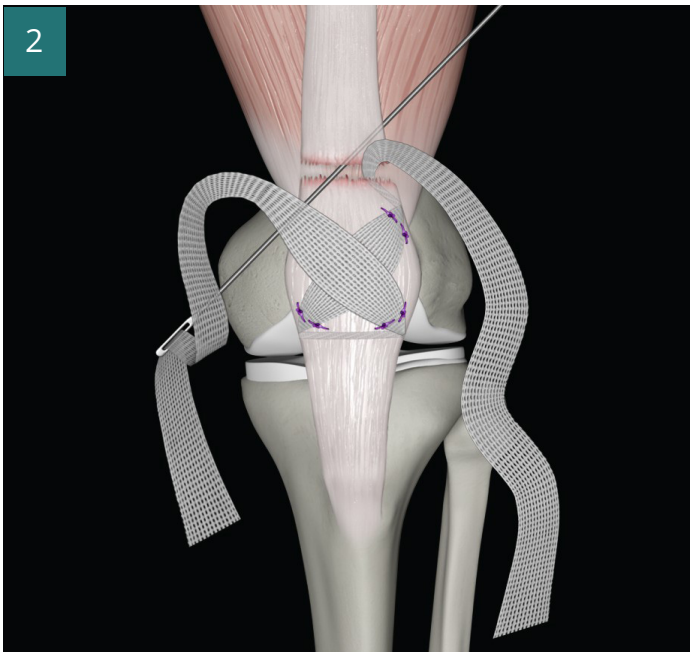
Surgical Technique

Quadriceps Tendon Reconstruction using 30 mm Poly-Tape



The **Poly-Tape** is threaded through the eyelet of the selected probe. The probe is used to pass the **Poly-Tape** transversely through the proximal end of the patellar tendon, just distal to the patella. In order to avoid abrasion of the prosthesis it should be passed through the mid substance of the patellar tendon.

Both ends are then taken proximally crossing anterior to the patella, ensuring it is laid flat.

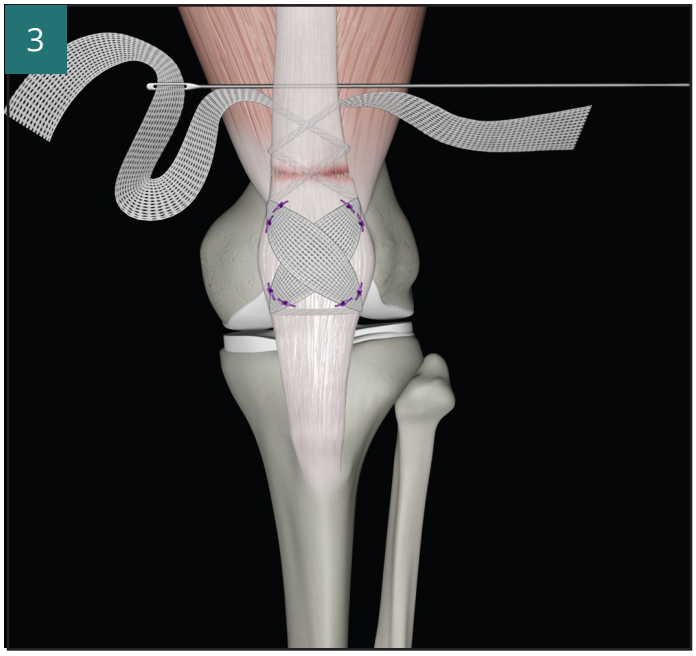


The ends of the ruptured tendon are approximated.

The probe is used to pass the **Poly-Tape** through the distal end of the quadriceps tendon.

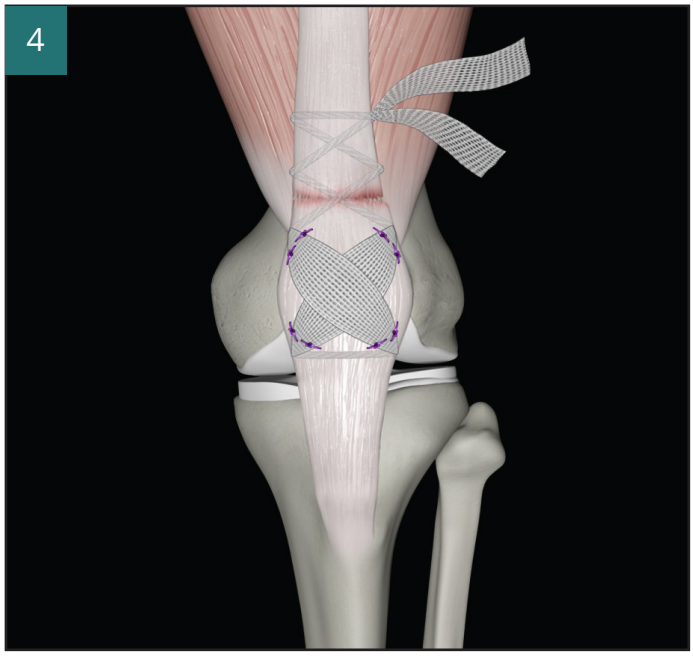
The tension is carefully adjusted to remove any slackness from the **Poly-Tape** where it enters and exits the tissue.

Small tacking sutures are used to stabilise the **Poly-Tape** at soft tissue entry and exit points.



The probe is used to weave the **Poly-Tape** through the proximal end of the quadriceps tendon and musculature in a Bunnell fashion.

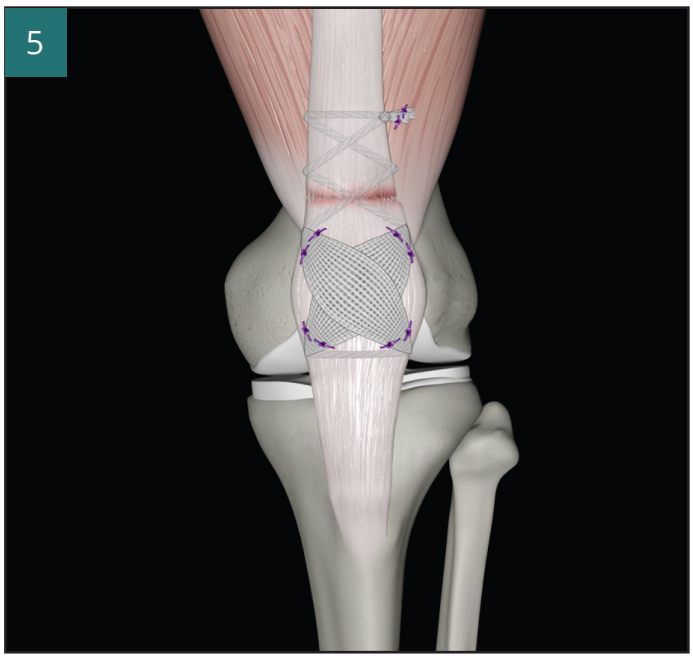
The tension is carefully adjusted to draw the quadriceps mechanism together and remove any slackness from the **Poly-Tape** where it enters and exits the tissue in the proximal tendon stump.



The range of motion and tissue tension is assessed. If this is satisfactory, the proximal ends of the **Poly-Tape** are knotted. Each surplus end of the **Poly-Tape** is cut with scissors at right angles to its length. This will minimise the generation of loose fibres. A short tail is left when cutting each end.

IMPORTANT

- Any loose fibres created when trimming the **Poly-Tape** to length must be carefully removed from the incision site.
- After trimming to length it may be necessary to restrain the cut ends by stitching them back to the **Poly-Tape**.



A fibrous tissue envelope is recruited from surrounding tissue and closed over the prosthesis with small tacking sutures. This is vital to ensure the knot is covered with, and remains buried in, tissue. This also encourages fibrous ingrowth, reduces abrasion to the graft, and distances the prosthesis from the superficial wound.

Patellar Tendon Reconstruction Surgical Technique

Preparation and Inspection

The patient is positioned supine. A side support and sandbag are useful to facilitate knee positioning. The leg is prepared and draped using aseptic technique.

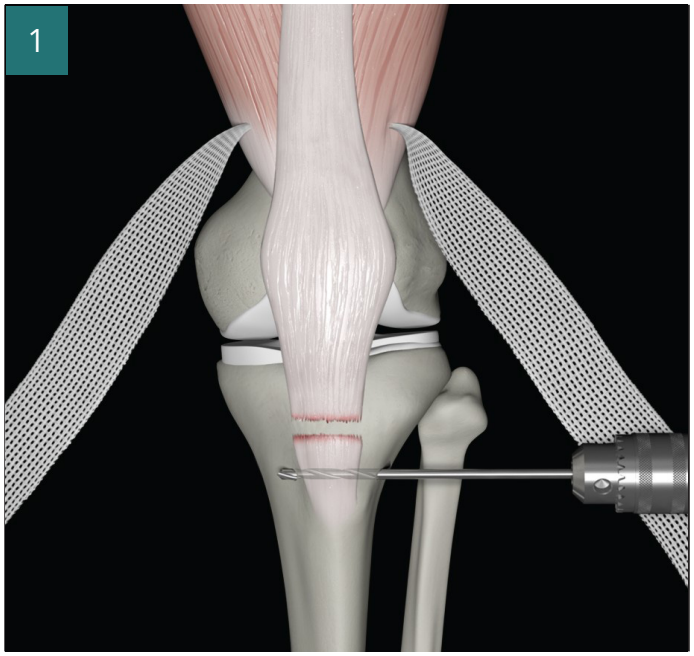
Recommended Approach

A midline approach is recommended. Adequate exposure is essential and should provide sufficient access for the proximal and distal placement of the prosthesis. The ends of the tendon are identified as well as any additional pathology.

NOTE: It is necessary particularly in chronic cases to free up any adhesions involving the quadriceps mechanism. This will facilitate optimal postoperative rehabilitation.

Surgical Technique

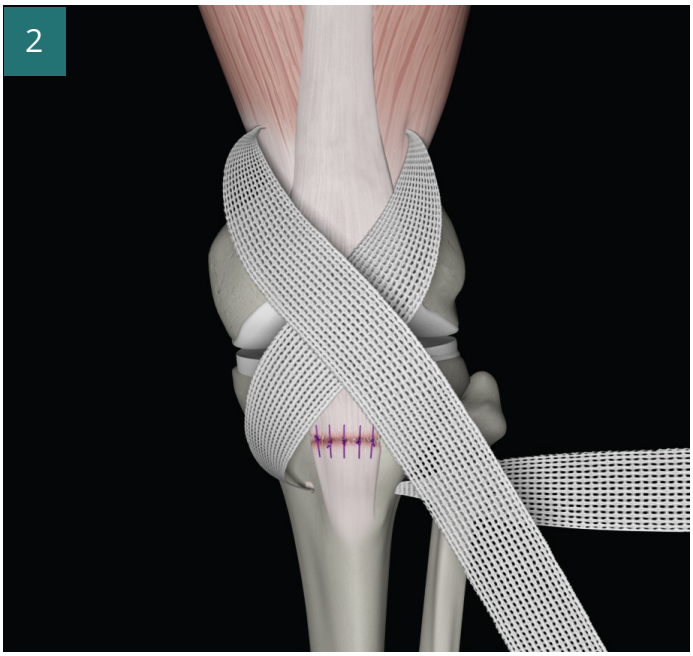
Patellar Tendon Reconstruction using 30 mm Poly-Tape



A transverse bone tunnel is positioned at the level of the tibial tuberosity. A 4.5 mm diameter drill bit is used to make the tunnel from the lateral side to the medial.

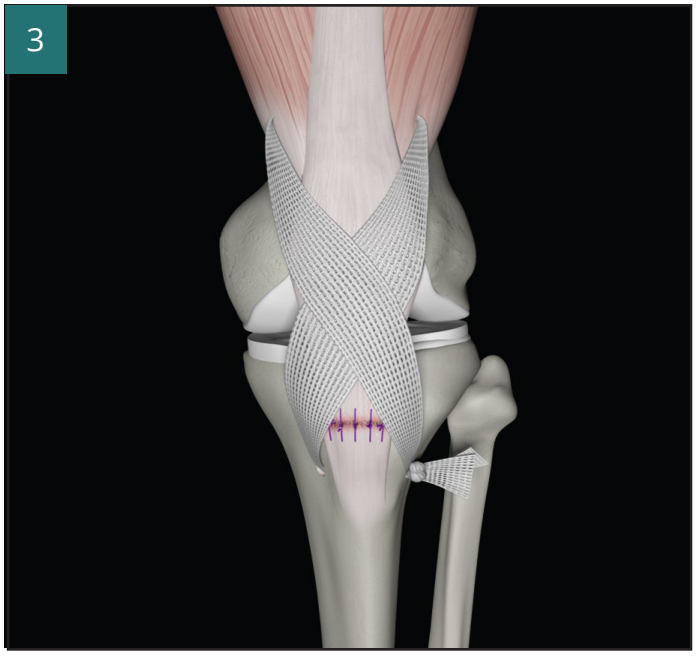
NOTE: Where possible, round the tunnel edges to prevent abrasion of the **Poly-Tape**.

The **Poly-Tape** is threaded through the eyelet of the selected probe. The probe is used to pass the **Poly-Tape** transversely through the distal quadriceps tendon at its patellar insertion.



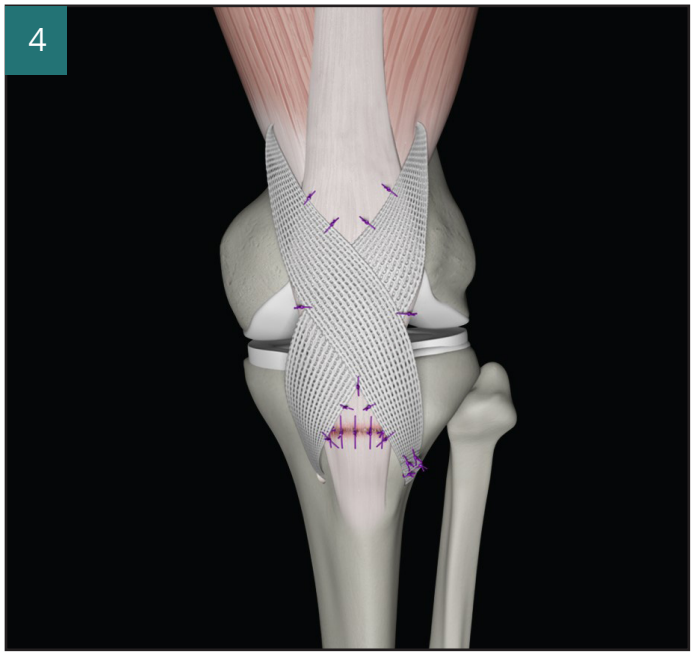
The **Poly-Tape** is brought distally, crossing over itself on the anterior aspect of the patella. The medial end of the **Poly-Tape** is passed through the bone tunnel.

The ends of the **Poly-Tape** are pulled tight with the knee in 20° of flexion. The tape is then secured with stay sutures to allow the range of motion and tissue tension to be assessed.



If the range of motion and tissue tension is satisfactory then both ends of the **Poly-Tape** are either secured to the lateral tibial metaphysis using two bone staples under cover of the tibialis anterior muscle or tied in a knot.

Each surplus end of the **Poly-Tape** is cut with scissors at right angles to its length. This will minimise the generation of loose fibres. A short tail is left when cutting each end.



IMPORTANT

- Any loose fibres created when trimming the **Poly-Tape** to length must be carefully removed from the incision site.
- After trimming to length it may be necessary to restrain the cut ends by stitching them back to the **Poly-Tape**.
- Where possible, ensure the knot is buried in tissue.

The remnants of the ruptured tendon are sutured over the **Poly-Tape**, to encourage fibrous ingrowth and distance the prosthesis from the superficial wound.

Postoperative Management

The rehabilitation programmes shown provide only an outline of the prescribed regimes. **For a full description refer to the documents entitled: "30 mm Poly-Tape** for Quadriceps Tendon Reconstruction - Rehabilitation Programme" (LAB 378) and, **"30 mm Poly-Tape** for Patellar Tendon Reconstruction - Rehabilitation Programme" (LAB 379).

Any rehabilitation programme should be supervised by a specialist physiotherapist. All mobilisation and exercises should be performed within the pain free range of movement.

As in any implant surgery, satisfactory wound healing is of paramount importance.

The patient should be warned not to exceed the prescribed activity levels or to overload the repair before complete healing has occurred.

These rehabilitation programmes were developed in conjunction with **Ian Horsley** MSc, MCSP, Clinical Lead Physiotherapist, English Institute of Sport (EIS) North West, of BackinAction Physiotherapy and Sports Injury Clinic, Wakefield, UK.

Quadriceps Tendon Reconstruction

Weeks 0-1

- The patient may fully weight bear using crutches for stability (3 point gait moving towards reciprocal gait).
- A brace or splint is used to allow the patient to mobilise between physiotherapy sessions.
- The rehabilitation programme is commenced.

Weeks 1-3

- Rehabilitation is continued with increasing repetitions and pool work is commenced.
- Sutures are typically removed at this stage.

Weeks 3-6

- Rehabilitation is continued with increasing range of knee flexion.
- Balance exercises and static cycling are commenced.

Weeks 6-12

- The brace is discarded when full terminal knee extension control is achieved.
- Crutches are discarded when the patient has a reciprocal gait pattern.
- Rowing machine/stepper/cross trainer are commenced with low resistance.

Week 12 Onwards

- Resistance to exercises is increased (avoid leg extension machine).
- On agreement with the physiotherapist, functional training and return to activity is allowed.

Postoperative Management

Patellar Tendon Reconstruction

Weeks 0-1

- The patient may fully weight bear using crutches for stability (3 point gait moving towards reciprocal gait).
- A brace or splint is used to allow the patient to mobilise between physiotherapy sessions.
- The rehabilitation programme is commenced with active extension. Do not aggressively push flexion.

Weeks 1-3

- Rehabilitation is continued with increasing repetitions and static cycling and pool work are commenced.
- Crutches are discarded when the patient has a reciprocal gait pattern.
- The brace is discarded when full terminal knee extension control is achieved.
- Sutures are typically removed at this stage.

Weeks 3-6

- Balance exercises and proprioceptive training are commenced.

Weeks 6-12

- Elliptical trainer and functional training are commenced.

Week 12 onwards

- Jog-walk and jog-run exercises are commenced.
- On agreement with the physiotherapist, return to activity is allowed.

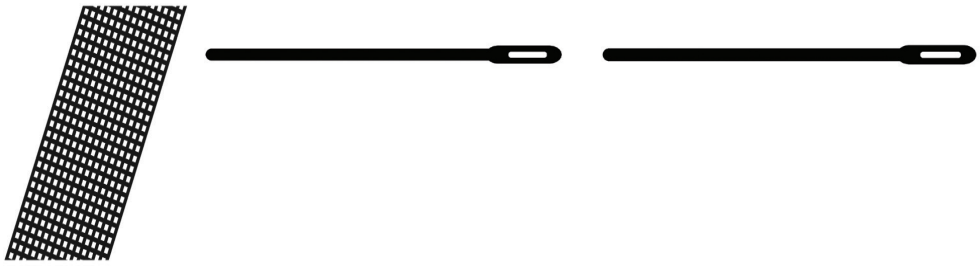
Ordering Information

Quadriceps Tendon Reconstruction:

102-1083 Poly-Tape, 30 mm x 800 mm (supplied sterile)

202-3026 Malleable probe with eye, stainless steel, 20 cm (supplied sterile)

202-3023 Rigid probe with eye, stainless steel, 20 cm (supplied sterile)

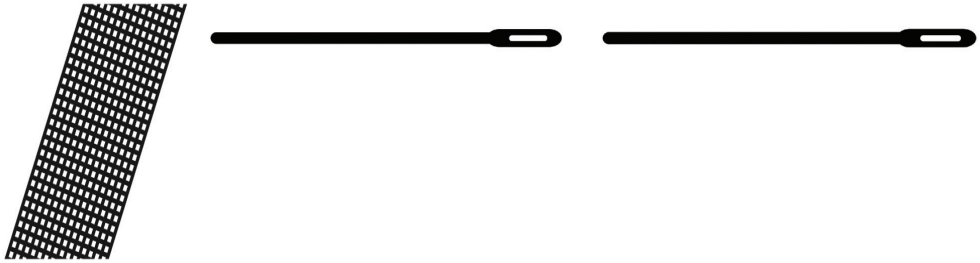


Patellar Tendon Reconstruction*:

102-1083 Poly-Tape, 30 mm x 800 mm (supplied sterile)

202-3026 Malleable probe with eye, stainless steel, 20 cm (supplied sterile)

202-3023 Rigid probe with eye, stainless steel, 20 cm (supplied sterile)



* The recommended technique also requires a Drill bit, plain shank to fit Jacobs Chuck, 4.5 mm diameter, not supplied by Xiros.

Please refer to the Instructions for Use leaflet packaged with the **Poly-Tape** for essential information about **Poly-Tape**s, including Use, Sterility, Indications, Contraindications, Warnings and Precautions, Potential Adverse Effects and Storage. Additional copies may be obtained from the Xiros™ Sales Department, or downloaded from www.xiros.co.uk

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