



Extensor Mechanism Clinical Summary

Compilation of publications for Primary Patellar and Quadriceps Tendon Repair using Poly-Tape

Introduction

Data from multiple publications suggest that **Poly-Tape** for the repair of the extensor mechanism provides good functional outcome.

Publications

Jain et al, 2018

- Data were collected retrospectively on 47 patient (49 knees) who underwent acute extensor mechanism reconstruction using Xiros **Poly-Tape** (30 mm x 800 mm).
- Among 37 patients (38 knees), 21 underwent Patellar tendon repair and 17 had Quadriceps tendon repair.
- Four patients died due to unrelated causes, 6 patients were lost to follow up.
- Three complications were reported, one patient underwent revision repair for re-rupture patellar tendon following a fall; one patient had a reoperation for lateral patellar release; one patient was diagnosed with calcific deposits on ultrasound.
- Scores showed significant improvement compared to pre-operative scores.
- The authors conclude that **Poly-Tape** provides good functional outcomes with a success rate of >90% enabling early rehabilitation and early return to normal function.

Table 1. Pre-operative and post-operative functional scores in 37 patients who underwent acute extensor mechanism reconstruction.

Functional Scores	Pre-operative score	Post-operative score	Range Post-operative
Lysholm Score	38.79	82.61	(51-100)
Knee Society Score	45.25	86.02	(58-100)
Knee Function Score	45.71	88.84	(50-100)
Kujala Patella Score	36.25	78.40	(47-100)

Khojaly et al, 2019

- Retrospective review of 16 patients with Patellar and Quadriceps Tendon rupture using Xiros **Poly-Tape** (30 mm x 800 mm).
- The outcome scores were satisfactory.
- No complications were reported.
- The authors concluded that, **Poly-Tape** provides excellent intrinsic strength and allows early mobilisation. They were able to show that, using their surgical technique, improved range of motion, lowered the incident of extension lag and resulted in satisfactory Oxford knee score.

Kailash et al, 2011

- A study of 24 patients (28 knees) who underwent acute repair for quadriceps and patellar tendon rupture using the Xiros **Poly-Tape** (30 mm x 800 mm). Four patients had bilateral quadriceps tendon rupture.
- 4 patients (6 knees) were lost in follow up.
- Four complications were reported. One patient had patella fracture secondary to fall. Two patients had bilateral ruptures secondary to falls. One patient had ectopic bone formation.
- High functional KOOS and Tegner Lysholm Knee scores (≥ 80) were found in the majority of patients (16/20).
- Immobilisation was not required following surgery and patients were encouraged to fully weight bear.

Barrow et al, 2008

- Chronic (> 6 weeks) knee extensor mechanism repairs using the Xiros **Poly-Tape** (20 mm x 800 mm), 11 patients (12 knees).
- Among 12 knees, 67% patellar tendons, 33 quadriceps tendon.
- Average delay before surgery: 36 months (range: 6 weeks - 20 years).
- Hamstring tendons harvested and used to augment **Poly-Tape** in 4 cases.
- Full weight bearing by 6 weeks.
- Lysholm II scores improved from 27.4 to 76.8 (all patients very satisfied with overall outcome).



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Table 2. Lysholm Score pre- and post-op

Case	Pre-op Lysholm II Score	Post-op Lysholm II Score
1	31	58
2	17	92
3	31	88
4	17	65
5	55	76
6	17	95
7	17	81
8	17	71
9	20	90
10	26	91
11	60	94
Average	27.4	76.8

Conclusions

- Data suggest that the **Poly-Tape** is an effective device for the reconstruction of patellar and quadriceps tendons following rupture.
- Functional scores including Lysholm score, Knee society score, Knee function score and Kujala patella score showed statistically significant improvements compared to preoperative scores.
- This technique permits immediate mobilisation and full weight bearing of the limb.
- On-going data collection is required to confirm clinical performance and safety throughout the expected lifetime of the device.

Earlier Poly-Tapes have also been used successfully for extensor mechanism repair

Fujikawa et al., 1994

- Data were collected and reviewed on 18 patients (19 knees) from 25 performed operations who had the extensor mechanism repaired using a tubular Leeds-Keio™ device.
- No patients required immobilisation of the knee following their operation and the average period to return to normal activities without a walking aid was 10.3 weeks.
- The average range of knee movement was 147.6 degrees (Table 3), four of the patients could squat fully in the Japanese style.
- There were no cases of infection, persistent joint effusion or re-rupture of the extensor mechanism.
- Eight patients complained of patellar crepitus and three of these had mild pain during normal activities.
- The authors reported the main advantages were the simple operative technique, no need for immobilisation and faster rehabilitation.

Table 3. Range of movement (degrees) in 19 knees after repair of the extensor apparatus

Case	Extension	Flexion	Case	Extension	Flexion
1	0	160	10	8	145
2	0	160	11	0	140
3	0	160	12	0	145
4	8	140	13	0	145
5	0	150	14	0	145
6	0	150	15	0	145
7	0	140	16	0	145
8	7	150	17	0	140
9	0	160	18(L)	0	145
			18(R)	0	140
			Mean	1.2	147.6



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Study Citations

Jain N, Nzzinga Tawa, Dhammapal Bhamare, William Hage, Matthew Dawson, Syed Mannan, Mike Orr, Biju Sankar, Ramasubramanian Dharmarajan. A Retrospective Outcome Study of the Reconstruction of the ruptured Extensor Mechanism. BOA Annual Congress 2018. Birmingham.

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Fujikawa K, Ohtani T, Matsumoto H, Seedhom BB. Reconstruction of the Extensor Apparatus of the knee with the Leeds-Keio Ligament. The Journal of Bone and Joint Surgery Br. 76(2): 200-203, 1994.

Kailash K, Guhan B, Lee A. Repair of extensor mechanism of knee using Leeds-Keio™ ligament. Orthopaedic proceedings, 93-B(SUPP I), 1 (2011). Accessed 26 June 2019. Retrieved from https://online.boneandjoint.org.uk/doi/abs/10.1302/0301-620X.93BSUPP_I.0930001b

Barrow MS, Ferguson M, Rogan IM. Chronic Knee Extensor Mechanism Repairs using the Leeds-Keio™ Ligament. Division of Orthopaedic Surgery University of the Witwatersrand (2008).