

INTRODUCTION

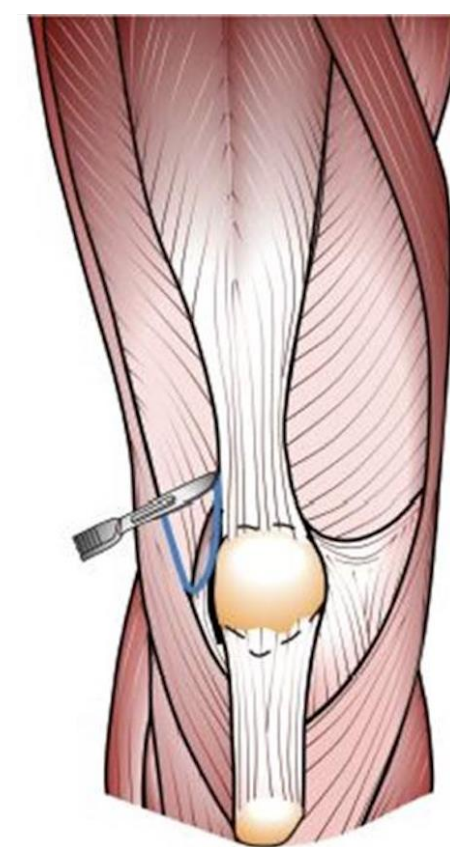
- A small subset of patients with patellofemoral instability are obligatory or fixed dislocators.
- In obligatory dislocation, the patella dislocates spontaneously with every cycle of knee flexion or extension. In fixed dislocation, the patella remains laterally dislocated and is irreducible.
- Purpose:** To retrospectively review patients with fixed or obligatory patellar dislocation who underwent quadricepsplasty. We describe our fractional approach to quadriceps lengthening and our surgical results.

METHODS

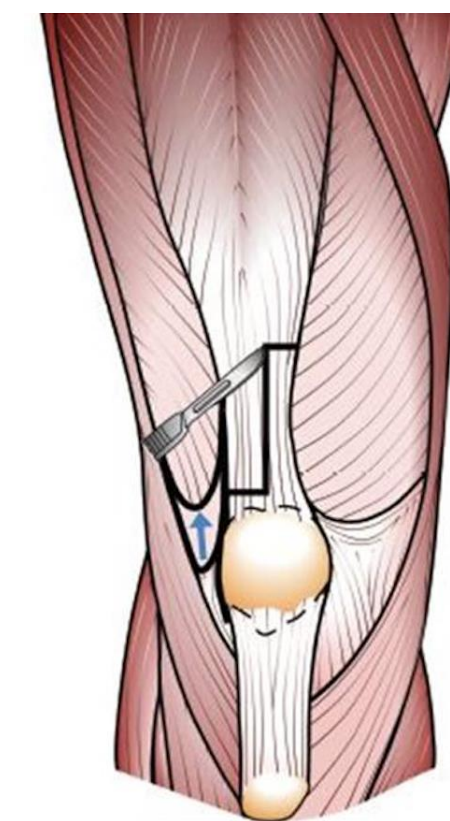
- All operative records of medial patellofemoral (MPFL) reconstructions performed by a single surgeon from 2008 to 2018 were retrieved using CPT codes.
- Of 299 MPFL reconstructions, 19 patients (22 knees) also underwent quadricepsplasty.
- Operative details, associated diagnoses, and follow-up complications were collected for each knee.

TECHNIQUE

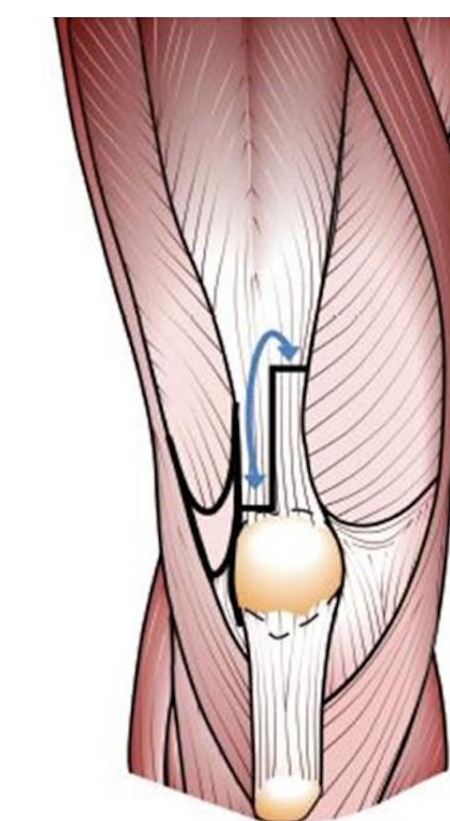
Figure 1. Z-lengthening quadricepsplasty



1. Lateral release is performed distal to the joint line. This is followed by extensive release of the distal vastus lateralis tendon and separation of the vastus lateralis tendon from the patella and adjacent rectus femoris tendon.



2. Z cut of the rectus femoris and vastus intermedius tendon. The proximal cut of the "Z" is made medially to laterally, and the distal is performed laterally to medially.



3. Lengthening of the rectus tendon is performed while knee is flexed to 60°. Then the previously detached vastus lateralis tendon is reattached to the proximal portion of the lengthened rectus tendon.

RESULTS

Table 1. Baseline characteristics of 22 knees with quadricepsplasty

Baseline Characteristics		N knees (%)	Median (range)
Age (years)			11.8 (5.4 - 17.3)
Sex	Male	9 (41%)	
	Female	13 (59%)	
Type of dislocator	Obligatory	17 (77%)	
	Fixed	5 (23%)	
Associated syndromic diagnosis	Nail-patella	3 (14%)	
	Rubinstein-Taybi	3 (14%)	
	Down syndrome	1 (5%)	
	Ehlers-Danlos	1 (5%)	
No syndromic diagnosis		14 (64%)	
Surgical technique	Z lengthening	14 (64%)	
	Vastus lateralis lengthening	8 (36%)	
Time to follow-up (years)			2.2 (0.1 - 8.0)

- 4 knees (18%) with subsequent patellofemoral dislocation.
 - 1 knee (5%) underwent second surgery.
 - No reports of infection or extensor mechanism failure.



1. Patient with Rubinstein-Taybi syndrome and bilateral MPFL reconstruction presented with left obligatory dislocation and required a repeat MPFL reconstruction with tibial tubercle osteotomy six years after the initial surgery.
2. Patient with 2 dislocation events associated with trauma 6 months postoperatively and is currently scheduled to undergo a second surgery.
3. Patient with bilateral MPFL reconstruction and presented with subsequent obligatory right patellar dislocation 1 year post-operatively, with plans for possible operative repair.
4. The fourth patient presented with a subluxation event after falling on her knee nine months postoperatively, but improved clinically without any surgical intervention.

CONCLUSIONS

- Reports on quadricepsplasty to treat patellar instability in the pediatric population are rare.
- Four of the 22 knees presented in this case series presented with subsequent instability, one of which has undergone second surgery.
- No second surgeries were indicated for infection or extensor mechanism weakness or contracture.
- Z lengthening quadricepsplasty can be used in conjunction with MPFL reconstruction for patients with obligatory or fixed patellar dislocation.

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