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An Oblique Transposition Quadricepsplasty Provides Excellent Outcomes for the Treatment of Type IV (Obligatory, Flexion-Range) Patellar Dislocation

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UT Southwestern Medical Center

Disclosures

- Henry B. Ellis, M.D.
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Introduction

- **Flexion-range patellar dislocation is a challenging condition**
  - **Requires quadriceps lengthening and often additional reconstructive procedures**

Purpose

Evaluate outcomes following an oblique transposition quadricepsplasty for the treatment of congenital, flexion-range patellar dislocation.

Lateral Fixed Patellar Dislocation

Methods

- Retrospective review of patients treated by 2 pediatric sports medicine surgeons between 2015 and 2023.

- Inclusion criteria
  - Treated with an oblique transposition quadricepsplasty for type IV (congenital, flexion-range) patellar dislocation
  - Minimum of 2-year follow up

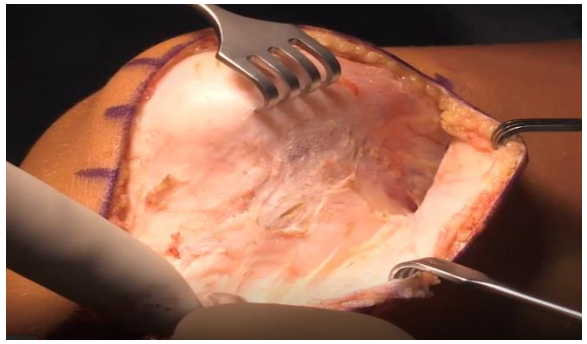
- Collected physical exam, operative, complications data and patient reported outcomes from the Kujala questionnaire.

Procedure

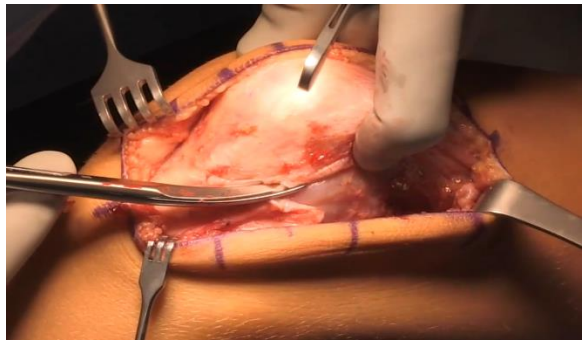
- All patients received an oblique, distal-medial to proximal-lateral quadricepsplasty.[1]
  - Repaired in a transposed position at 90° of flexion.
  - Simultaneously received
    - Extensile lateral release
    - Vastus medialis lateral advancement over the quadriceps and patella

- A medial patellofemoral ligament reconstruction (MPFLR) and/or distal realignment (tibial tubercle or patellar tendon medialization) was utilized in select patients.

Procedure

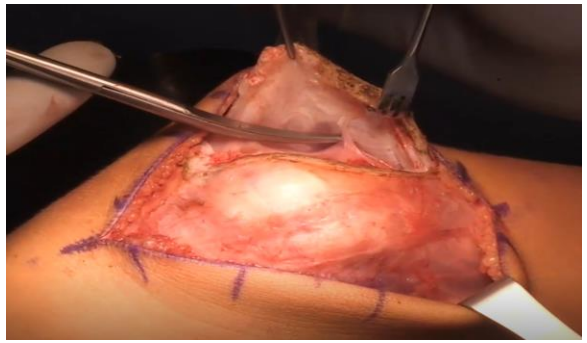


1. Dissection for lateral capsule release



2. Lateral capsule release

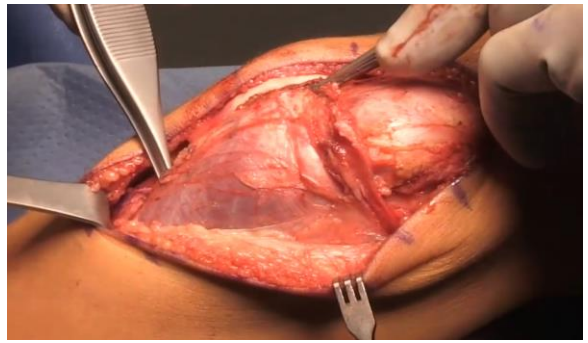
3. Continuation of lateral release up to vastus lateralis



4. Elevation of vastus medialis oblique (VMO) flap and medial capsule release

5. Marking of oblique quadricepsplasty (distal-medial to proximal-lateral)

6. Transposition of oblique quadricepsplasty



7. VMO flap oversewn and medial capsulorraphy

Results

Demographics

- 32 knees (29 patients) treated with an oblique transposition quadricepsplasty for type IV patellar dislocation were evaluated at 4.7 years post-operatively (2 – 10.4 years).
- Mean age 11.4 years (1 - 17 years)
- 17 (53.1%) were female
- 5 knees (5 patients) (15.6%) had associated syndromic diagnoses
  - DiGeorge syndrome, Larsen syndrome, Trisomy 21, and undifferentiated chromosomal disorders

Results (continued)

Preoperative Characteristics

- Mean range of motion arc 133.4° (60° - 157°)
- 7 (21.9%) knees had preoperative extensor lag
  - Average 17.4° (5° - 30°)
- 30 (93.8%) knees had high-grade trochlear dysplasia
  - 23 (76.7%) Type C
  - 7 (23.3%) Type D
- 6 (18.8%) knees demonstrated a patellar cartilage lesion
- 2 (6.3%) knees demonstrated a trochlear or lateral condylar cartilage lesion

Results (continued)

Surgery

- **14 (43.8%) knees were treated with concurrent MPFLR**
- **9 (28.1%) were treated with distal realignment**
- **24 (75%) had additional concurrent surgery (e.g., guided growth implant removal)**
  - **2 (6.3%) received concurrent lateral femoral osteochondral allografts**

Results (continued)

Final Follow Up

- 32 (100%) knees reported a stable, anterior patella
  - 6 (18.8%) reported an average extensor lag of 9.2° (5° - 25°)
- Compared to preoperative
  - Range of motion arc remained high: 123.4° ± 34.2° to 133.4° ± 18.8° (p = 0.038)
  - Patient-reported outcomes scores trended toward significance:
    - Kujala: 68.1 ± 12.6 vs. 82.5 ± 15.0 (p = 0.099)
- Complications
  - 1 (3.1%) Clavien-Dindo (CD) type III complication (reoperation for arthrofibrosis in a case with concurrent osteochondral allograft)
  - 1 (3.1%) CD type II complication (superficial wound dehiscence)
- No differences in patellar stability, re-operation, range of motion, extensor lag, or patient-reported outcomes measures in patients treated with isolated oblique quadricepsplasty compared to those receiving additional MPFLR or distal realignment

Discussion

- **Oblique transposition quadricepsplasty resulted in 100% patellar stability at intermediate-term follow up with low reoperation rates in this challenging type IV patellar dislocation population.**

- **Reliable improvement in patient-reported outcomes and range of motion was achieved with no demonstrated benefit of concurrent MPFLR or distal realignment.**

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References

1. *Martin B, Cherkashin A, Tulchin-Francis K, Samchukov M, Birch J. Treatment of Femoral Lengthening- related Knee Stiffness With a Novel Quadricepsplasty. Journal of pediatric orthopedics. 06/01 2013;33:446-52.*