A la Carte Approach to Complex Patellofemoral Instability: Thin-Flap Trochleoplasty, Distalizing TTO, MQTFL Reconstruction, Lateral Retinacular Lengthening

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Background:

Patella dislocations account for 3% of all knee injuries, with the highest incidence in the 2nd decade of life. Risk factors include age <18 years, open physes, elevated tibial tubercle trochlear distance (TT-TG), patella alta and trochlear dysplasia. Patients with two and three risk factors have recurrence rates of 30-60% and 70-79%, respectively, underscoring the importance of physical exam and radiographic evaluation. Surgical treatment algorithms should target the pathologic anatomy.

Purpose:

This video overview and case presentation demonstrates an algorithmic approach to treating patellofemoral instability with a thin-flap trochleoplasty, distalizing tibial tubercle osteotomy (TTO), medial quadriceps tendon femoral ligament (MQTFL) reconstruction, and lateral retinacular lengthening (LRL).

Methods:

The anatomy, pathogenesis, diagnosis, and treatment options for recurrent patellofemoral dislocation are reviewed. A case of a 16-year-old female with a history of recurrent patellar dislocations, exam noteworthy for J-sign and 3Q lateral patellar translation, and imaging demonstrating a 150 degree sulcus angle, 1.5 CDI, 26mm TT-TG, and high-grade trochlear dysplasia is presented. After a thorough discussion of risks, benefits and prognosis, the patient elected to proceed with distalizing TTO, thin-flap trochleoplasty, and MQTFL reconstruction with, to address her patella alta, trochlear dysplasia, and MPFL tear, respectively.

Results:

The trochlear groove and patella were anatomically restored and medial and lateral soft tissue procedures improved trochlear tracking. Post-operatively, the re-alignment was maintained both clinically and radiographically.

Conclusion:

An A la Carte approach to treating complex patellofemoral instability is a viable surgical option for patients with recurrent dislocations and anatomical pathology predisposing to instability and maltracking. This treatment algorithm systematically normalizes radiographic parameters and offers improved stability with good functional results. Adherence to post-operative rehabilitation is crucial for optimal outcomes.