Derotational Medial Closing Wedge DFO, TTO, and MQTFL Reconstruction for Recurrent Patellar Instability

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Background:
Patellar instability is a dynamic condition characterized by recurrent dislocation of the patella from its normal position in the knee joint. Myriad predisposing characteristics may contribute to this pathology including trochlear dysplasia, patella alta, rotational deformities of the tibia and femur, medial patellofemoral complex insufficiency, lateral retinacular tightness, generalized ligamentous laxity, and dynamic muscular imbalances. When nonoperative management fails, understanding the contributing factors underlying a specific patient's pathology allows for targeted surgical treatment including soft tissue, bony, or combined procedures.

Purpose:
This video overview and case presentation demonstrates a combined derotational, closing wedge distal femur osteotomy with distalizing and anteromedializing tibial tubercle osteotomy and MQTFL reconstruction.

Methods:
The anatomy, pathogenesis, diagnosis, and treatment options for patellar instability are reviewed. A case of a 21-year-old male with a history of chronic patellar instability with increased femoral anteversion, valgus alignment of the lower limb, patella alta, elevated tibial tubercle trochlear groove distance, and medial patellofemoral complex insufficiency is presented. He had sustained hundreds of patellar dislocation events causing severe pain and disability. After a thorough discussion of risks, benefits and prognosis, the patient elected to proceed with distal femur and tibial tubercle osteotomies with MQTFL reconstruction to improve his functional status.

Results:
The femoral osteotomy successfully produced varus and derotated the distal femur while the tibial osteotomy distalized, anteriorized, and medialized the tibial tubercle. MQTFL reconstruction and lateral retinacular release addressed soft tissue contribution to this patient's patellar instability.

Conclusion:
Identifying and addressing contributing anatomic factors is crucial in cases of severe patellar instability. Careful preoperative planning and patient specific instrumentation maximize precision and reproducibility of complex, multipart procedures including soft tissue components and multiple osteotomies.