**TITLE:** Tibial tubercle osteotomy for patellofemoral instability in an active-duty military cohort: A retrospective review with 7-year average follow-up

**AUTHORS:** Liang Zhou MD, Christian Cruz MD, Zack Johnson MD, Craig Bottoni MD

**PRESENTOR:** Liang Zhou MD

**INSTITUTION:** Tripler Army Medical Center, Honolulu, Hawaii

**INTRODUCTION:** Management of patellofemoral instability poses a complex challenge for military orthopedists, whose active duty patient population is inherently at a higher risk, given their occupational profile. Surgical intervention may be indicated in patients who fail a prolonged course of non-operative management to help facilitate a return to high-demand activities. The purpose of this study was to evaluate the mid to long-term results of a patellar stabilization technique for the treatment of recurrent lateral patellar instability in an active duty and dependent cohort, with a focus on recurrent instability rate, subjective outcomes, and retention within the military.

**METHODS:** We performed a retrospective review of a consecutive series of 74 active duty military and dependent patients who underwent a tibial tubercle osteotomy between 2000 and 2017 at a single military medical center. All cases were performed by a single sports medicine fellowship-trained orthopaedic surgeon at our institution, and included an Elmslie-Trillat tubercle osteotomy with arthroscopic medial imbrication of the retinaculum and an open lateral retinacular release. Patients were included if they had recurrent lateral patellar instability failing a course of non-operative management. Exclusion criteria were concurrent cruciate ligament or meniscal injuries, open physes, and pre-existing patellofemoral arthritis. Data on patient demographics and active duty status were reviewed. Clinical evaluation at follow-up included subjective knee scores, post-operative pain scores, rate of recurrent instability, and rate of revision surgery at 1-17 year follow-up.

**RESULTS:** A total of 74 patients (79 knees) met our inclusion criteria, including 44 male and 35 female knees, with 5 patients having bilateral procedures performed. The mean age at surgery was 26.0 years (range, 15 – 41), and the mean follow-up duration was 7.5 years (SD 5.6). The average post-operative SANE score was 73.1 (SD 18.3), while the average pain score was 2.9 (SD 2.2). A total of 6 patients (8.1%) experienced an episode of recurrent instability, with 4 patients experiencing multiple episodes. One patient underwent revision surgery. Fifty-nine patients (74.7%) experienced no decrease in activity level compared to pre-injury. Eleven of the 64 active-duty patients (17.2%) underwent a medical board for separation from the military as a result of their knee.

**DISCUSSION/CONCLUSION:** We demonstrate that in a predominantly active-duty military population, surgical management of lateral patellar instability yields low rate of recurrent instability and revision surgery in patients unresponsive to non-operative management. At mid-term follow-up, our patients maintained a high level of functional demand and had a low attrition rate from active duty status.