EFFECT OF FEMORAL NERVE STIMULATION ON PATELLAR REDISLOCATION RATES AFTER TIBIAL TUBERCLE OSTEOTOMY IN PEDIATRIC PATIENTS

Purpose of the Study: Tibial tubercle osteotomy (TTO) is a surgical procedure that involves medial translation of the tibial tubercle to correct malalignment of the patella in patients with patellar instability. Determining the appropriate amount of translation is difficult because the anesthetized patient cannot produce the dynamic forces involved in patellofemoral tracking. Femoral nerve stimulation (FNS) is a technique that can be used intra-operatively to stimulate the quadriceps muscle and assess tracking of the patella to determine the distance needed for translation. This study aims to elucidate the differences in patellar dislocation rates after TTO in pediatric patients who received FNS versus those who did not.

Methods: This was a retrospective case series review that included patients aged 7-18 diagnosed with patellar instability who underwent a TTO at Children's Hospital Colorado locations by two orthopaedic surgeons from 1/2010-12/2019. Charts were reviewed for height, weight, BMI, surgical intervention(s), types of anesthesia used, pre- and post-operative clinical exam data, and patient-reported episodes of instability. Patients were divided into two cohorts, those who received FNS and those who did not. Post-operative recurrence of instability using patient data and clinical exam data were compared between these two groups.

Results: A total of 43 pediatric patients met our inclusion criteria with 46 unique knees operated on. The average patient age at the time of surgery was 15.85 years old. Thirty-two of the patients were female (74.4%) Of the 46 knees, thirty-two received intraoperative FNS (69.6%). Average BMI of those who received FNS is 25.6, while those who did not is 30.1 ($p=0.08$). Of those who received FNS, 5 unique post-operative instability events were reported compared to 1 instability event in those who did not receive FNS ($p=0.65$). Overall translation in the FNS group was 12.1 mm compared to 10.7 mm in the no FNS group ($p=0.16$).

Conclusion: There was no significant difference in dislocation rates between patients who received FNS compared to patients who did not receive FNS.