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

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## Background

- Patellar instability is a common knee injury, especially among adolescents
- Patellar instability involves malalignment of the patella within the patellar groove.
- Following surgical intervention, there is a 12 to 30% risk of reoccurrence of patellar instability
- Tibial tubercle osteotomy (TTO) is a surgical procedure used to correct the malignment of the patella through the medialization of the tibial tubercle
- Femoral nerve stimulation (FNS) is an intraoperative technique that stimulates the quadriceps muscle to provide dynamic tracking of the patella, and thus more accurate tracking and translation

## Purpose

- The purpose of this study is to elucidate the differences in patellar redislocation rates following TTO in pediatric patients who received FNS versus those who did not

## Methods

- This was a retrospective case series review of treatment outcomes of pediatric patients diagnosed with patellar instability who underwent TTO by two orthopaedic surgeons from January 1st 2010 to December 31st 2019
- Inclusion: 7-18 years old at the time of surgery, diagnosis of patellar instability, surgically treated at Children's Hospital Colorado
- Exclusion: No diagnosis of recurrent patellar instability, not surgically treated for recurrent patellar instability, previous surgery on the ipsilateral knee
- Patient records were reviewed to obtain the following:
  - Demographic data including age at surgery, sex, race/ethnicity, height, weight, and BMI at date of surgery.
  - Clinical data including date of clinical visits, symptom presentation, use of activity modification, analgesia, physical therapy and bracing, clinical exam data
  - Surgical data including date of surgery, surgeon, surgical intervention, intra-operative findings, translation distance
- Outcome measures were determined by post-operative clinical exam data and patient-reported outcomes

## Results

| CHARACTERISTICS OF PATIENT POPULATION | N=43 |
|---|---|
| AGE AT SURGERY | 15.85 ± 1.56 |
| BMI AT TIME OF SURGERY | 26 ± 6.23 |
| FEMALE (%) | 32 (74.4%) |
| MALE (%) | 11 (25.6%) |

| SURGICAL DATA | N=46 | | |
|---|---|---|---|
| | YES | NO | |
| RECEIVED FNS | 32 (69.6%) | 14 (30.4%) | |
| OVERALL TRANSLATION | 12.1 mm | 10.7 mm | P=0.16 |
| Post-Op Instability Events | 5 | 1 | P=0.65 |

## Discussion

- There was no significant difference in post-operative instability events in patients who received FNS versus those who did not receive FNS
- Many factors can influence rates of redislocation post-operatively such as activity modification, compliance with physical therapy and bracing, activity level, and other dynamic patient characteristics

## Implications

- Recurrent patellar dislocation despite surgical intervention is a common issue that increases financial cost for the patient
- Surgical interventions must be improved upon to reduce risk of reoccurrence of patellar instability

## Disclosures

- None