Return to Work and Sport Following Tibial Tubercle Anteromedialization

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Background

- Tibial tubercle anteromedialization (AMZ) is a commonly performed procedure for patients with patellofemoral instability or patellofemoral osteochondral disease.

- While prior studies have demonstrated that this form of osteotomy produces generally good outcomes, the time needed to return to work and return to sport remains unclear.
Objective

The purpose of this study was to quantify the results of AMZ with respect to return to work and return to sport.
Methods

• Patients who had undergone AMZ for either patellofemoral instability or isolated osteochondral defect with a minimum follow-up time of 1 year were identified.

• Patients less than 18 years of age were excluded.

• Patients were asked to complete a series of patient reported outcomes surveys including:
  – Visual Analog Scale for pain (VAS)
  – Kujala anterior knee pain scale
  – Short-Form Knee Injury and Osteoarthritis Outcome Score (KOOS Jr)
Results

- 109 patients were included in this study (72.3% female)
- Mean age of 30.74 +/- 9.90 years at the time of surgery
- Mean follow-up duration was 3.40 +/- 1.97 years
- 64 patients (58.7%) underwent AMZ for patellofemoral instability and 45 patients (41.3%) underwent AMZ as part of their treatment for isolated focal osteochondral lesions
- In addition to the AMZ:
  - 32 patients (29.4%) had concomitant autologous chondrocyte implantation
  - 3 patients (2.8%) had osteochondral allograft implantation
  - 2 patients (1.8%) had osteochondral autograft transfer
  - 39 patients (35.8%) had MPFL reconstruction
  - 26 patients (23.9%) had chondroplasty
  - 4 patients (3.7%) underwent microfracture
Results

• Of the 109 total patients, 23 patients (21.1%) had additional ipsilateral knee surgery during the follow up period
  – 9 hardware removals
  – 5 irrigation and debridements
  – 5 cartilage procedures (including chondroplasty and osteochondral allograft)
  – 2 meniscus procedures
  – 1 manipulation under anesthesia
  – 1 total knee arthroplasty

• Three patients had more than one additional ipsilateral knee surgery
Results

• Among all patients, there was a significant decrease in VAS pain score at the time of follow-up compared to preoperative VAS (7.09 +/- 2.02 versus 2.04 +/- 2.47, p < 0.001)

• Mean Kujala score at time of follow-up was 81.78 +/- 16.41

• Mean KOOS Jr. at time of follow-up was 82.46 +/- 15.66
Results

- What is the mean length of time before return to work following tibial tubercle anteromedialization?
  - 104 patients (95.4%) returned to work following AMZ
  - Mean time to return to work was 2.96 +/- 3.33 months (median 2 months, range 0.25 to 24 months)
  - Patients with a physically demanding job took significantly longer to return to work compared to those with a sedentary job (mean 4.99 +/- 5.33 months versus 2.25 +/- 1.81 months, median 3 months versus 2 months, 95% CI [0.60, 4.89], p = 0.014)
Results

- When including only patients who did not require additional ipsilateral surgery during the follow-up period, those with a physically demanding job took significantly longer to return to work (mean 4.54 +/- 4.08 months versus 2.00 +/- 1.22 months, median 3 months versus 2 months, 95% CI [0.66, 4.42], p = .011)
What is the rate of return to sport following tibial tubercle anteromedialization?

- Of the 90 patients who were involved in a sport prior to injury, 64 patients (71.1%) had returned to sport at some level at the time of most recent follow-up.

- Among the patients who were able to return to sport following surgery, there was no significant difference between mean pre-injury Tegner activity level and follow-up Tegner activity level (4.97 +/- 2.06 versus 4.71 +/- 1.95, 95% CI [-0.13, 0.64], p = 0.188).

- Of those who had returned to sport, mean time to return to sport was 9.21 +/- 5.46 months (range 1-24 months).

- There was no difference in time to return to sport between patients who underwent AMZ for patellar instability compared to those treated for patellofemoral osteochondral lesions (8.36 +/- 5.55 months versus 10.10 +/- 5.34 months, p = 0.212).
Conclusions

• At a minimum follow-up time of 1 year, patients who underwent AMZ were found to have a return to sport rate of 71% with a mean time of 9.21 months to return to athletic activity.

• Over 95% of AMZ patients had returned to work by one year after the procedure.

• Patients required an average of 3 months to return to work, although those with physically demanding jobs required slightly more time.

• Data from the current study is useful in setting expectations for patients undergoing tibial tubercle anteromedialization for patellofemoral instability or patellofemoral osteochondral disease.
THANK YOU