Higher BMI Predicts Additional Surgery in the Setting of ACL Reconstruction

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Introduction

- Large-scale population studies have demonstrated that underweight subjects are protected from knee injuries in general, whereas overweight subjects have a much higher incidence of knee injuries.

- This suggests that overweight patients are subject to greater mechanical loads at the time of injury, resulting in a higher incidence of internal derangement.
The prevalence of meniscal and chondral lesions at the time of ACL reconstruction increases the rate of progression of osteoarthritis in these patients.

- Greater pain and worse functional scores

A paucity of data exists as to whether higher BMI leads to additional surgical procedures performed at the time of ACL reconstruction.
The authors hypothesized that the rate of concomitant procedures for internal derangement at the time of ACL reconstruction would increase with increasing BMI.
Methods

• ACS-NSQIP database was queried for the years 2005-2015 for patients undergoing ACL reconstruction, CPT 29888.

• Demographic and comorbid conditions were collected.

• Internal derangement: any CPT code for treatment of a meniscus tear, chondral lesion, or loose body removal.

• Surgeries for multi-ligamentous knee injuries were excluded.
Results

- A total of 11,403 patients undergoing ACL reconstruction were identified.

- 41.9% of patients had an associated CPT code for internal derangement.

- The most commonly performed concomitant procedures included CPT 29881 arthroscopy with meniscectomy (medial or lateral) at 52.6%, CPT 29882 arthroscopy with meniscal repair at 18.8%, and CPT 29880 arthroscopy with meniscectomy (medial and lateral) at 15.1%

- The incidence of a concomitant CPT code for an articular cartilage procedure or loose body removal was far less common than that for meniscus procedures at 10.7% versus 89.3%, respectively
Results

• As BMI increased, there was a corresponding increase in the odds of additional surgery.

• Compared to patients with a BMI of 18.5–24.9, those with a BMI 25–29.9 had an odds ratio (OR) of 1.112, BMI 30–34.9 had an OR of 1.137, BMI 35–39.9 had an OR of 1.249, and those ≥ 40 had an OR of 1.442 for additional surgery (p < 0.001).

• Specifically, for every 1.0 increase in BMI, the risk of additional surgery increased by 1.6% (p < 0.001)
Study Limitations

1. Inherent database flaws including errors in reporting, inability to capture all patients, and dependent on accurate coding of procedures.

2. Time passed between injury and subsequent surgery was not reported.

3. Distinguishing between primary and revision ACL reconstruction was not possible.
Conclusions

- Patients with elevated BMI were much more likely to require additional surgery in the setting of primary ACL reconstruction.

- This risk correlates with increasing BMI.

- As patients elect to undergo ACL reconstruction, surgeons must critically evaluate and prepare for the potential need for additional procedures.
References


