Clinical and social predictors of surgical treatment for ACL injuries

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Disclosures

Tanaka

- Consultant for DePuy/Mitek
- Consultant for VeryWell Health
- Consultant for Healthy Sleep
- CMO, Core2U
- Research funding from AANA
- Research funding from FujiFilm
- NIH 1R01AR079442
- NIH 1R01AR081344

Background

- Anterior cruciate ligament (ACL) injuries are one of the most common knee injuries sustained during sports (1,2)
- Over 250,000 ACL reconstructions are performed in the United States per year (3)
- While surgery is often indicated for younger patients, surgical indications in the adult patient are determined based on patient preference, level of functional disability and their desire to return to cutting and pivoting sports

Objective

- The purpose of this study was to report on the clinical and social predictors of patients undergoing surgical vs nonsurgical treatment for ACL injury, and to compare differences between male and female patients

Methods

- Patient who were evaluated for ACL injury at our institution were identified
- Those who subsequently underwent surgery were compared to those who did not.
- Clinical factors collected included the following:
    - Sex
    - Age
    - BMI
    - Charlson Comorbidity Index (CCI)
    - Smoking status
- Social factors collected included the following:
    - Race
    - English-speaking
    - Educational level
    - Insurance type
    - Marital status

Methods

- Functional disability was determined by preoperative PROMs scores
  - KOOS-PS
  - PROMIS PF
- Descriptive statistics were used to report on the surgical and nonsurgical cohorts with subgroup analysis by sex
- Odds ratios were calculated to determine predictors of surgery, with a subgroup analysis of patients over 30 years of age
- Multivariate analysis was performed to determine the relationships between clinical and social factors and KOOS-PS and PROMIS PF scores

Results

- 3656 patients were included in this study
- 1734 females (mean age 34.7y) and 1922 males (mean age 32.8y) were identified with a diagnosis of ACL tear,
- 53.8% of females and 53.4% of males went on to surgery (p=0.84).
- KOOS PS and PROMIS PS did not show a relationship with future surgical intervention
- KOOS PS and PROMIS PS were lower in females, those with increased BMI, and lower educational levels

Results

- In all patients:
  - CCI (OR 0.867, p<0.001) and current smoking status (OR 0.70, p=0.06) were associated with lower rates of surgical treatment
  - Medicare status (OR 0.54, p=0.04) and having subsidized insurance (OR 0.47, p<0.001) were also associated with lower rates of surgical treatment
- In patients over the age of 30:
  - Females were more likely than males to undergo surgical treatment (OR 1.36, p=0.04)
  - CCI (OR 0.89, p=0.07), current smoking status (OR 0.43, p=0.06) and subsidized insurance (OR 0.60, p=0.06) negatively affected rates of surgery in this group.

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Results

Predictors of Surgical Treatment, By Age Group

Patient Characteristic	Patients Age > 30		Patients Age ≤ 30	
	Odds Ratio for Surgery	P-value	Odds Ratio for Surgery	P-value
Average Age	0.98	P=.04	0.99	P=.76
BMI	0.96	P=.01	1.001	P=.95
Charlson/Age Adj	0.89	P=.07	1.08	P=.65
Female vs Male	1.36	P=.04	1.16	P=.36
Race: White	Ref		Ref	
Black	0.69	P=.39	0.70	P=.32
Asian	0.79	P=.38	0.77	P=.31
Other	0.80	P=.47	0.89	P=.68
Hispanic vs Non-Hispanic	0.79	P=.49	1.27	P=.43
English Speaking vs Not	0.54	P=.24	0.88	P=.79
Education: Grad School	Ref		Ref	
Completed College	0.92	P=.67	0.98	P=.94
Some College	1.56	P=.27	0.88	P=.68
Completed High School	0.89	P=.73	1.28	P=.43
Less than HS / Other	0.80	P=.36	0.95	P=.87
Insurance: Commercial	Ref		Ref	
Medicare	0.44	P=.13	NA	NA
Subsidized	0.60	P=.06	0.26	P<.001
Marital Status: Alone	0.89	P=.47	1.21	P=.53
Smoking: Current	0.43	P=.06	0.55	P=.19
Former	0.91	P=.63	1.25	P=.68
Never	Ref		Ref	
Other/Unknown	1.61	P=.13	1.07	P=.81
KOOS Physical Function[a]	0.99	P=.63	0.99	P=.18
PROMIS[a]	1.002	P=.85	0.99	P=.65

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Conclusions

- In our cohort, comorbidity index, smoking status and insurance status were found to negatively influence surgical treatment of ACL injury

- In patients aged >30y, females were more likely to undergo surgical treatment than males

- Additionally, our study identified lower PROMs scores associated with ACL injury in females, those with increased BMI, and lower educational levels

- Further studies are needed to understand the social and clinical factors that can influence variability in functional disability and decisions to proceed with surgical treatment in patients with ACL injuries

References

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Thank you