Meniscus Repair Versus Debridement for Meniscal Tears in Pediatric Patients – Predictors for Treatment Based on Demographics

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OBJECTIVES

Pediatric and adolescent patients with meniscus tears have a relatively high rate of healing after meniscus repair – up to greater than 80% in the literature. Despite this fact, many pediatric patients undergo meniscus debridement for meniscus tear treatment.

The purpose of this study was to investigate the demographic factors predictive of whether a pediatric patient would receive a meniscal repair or a meniscal debridement for their meniscal tear in the state of California from 2008-2016.

METHODS

- With IRB approval, conducted retrospective database review of all California statewide ambulatory surgeries for meniscal tear < 18 years of age 2008-2016.
- Included patients identified with principal diagnosis of a meniscal tear and a principal procedure code a debridement or repair.
- Reviewed surgery type, age at surgery, gender, race/ethnicity, insurance type, whether meniscal tear acute or old injury, whether treated at children's hospital, patient county of residence, and year of service.
- Logistic regression performed on 13,906 patients to assess effect of demographics on predicting surgery type.

Hospitals Designated As Orthopaedic Children's Centers

- **Designations Based off Hospitals Present in Subject Population**
- **Bakersfield Memorial, Children's Hospital at Mission, at Oakland, and at Central CA, Children's Hospital of LA and Orange County, Loma Linda Children's Hospital, Children's Recovery Center of Northern CA, Earl and Loraine Miller Children's Hospital, Healthbridge Children's Hospital, Rady's Children Hospital, Shriners Hospitals for Children Northern CA and LA, Stanford, Sutter Medical Center in Sacramento, UC Davis, UC Irvine, UCSF, Valley Children's Hospital**

RESULTS

- Several variables were statistically significant in predicting surgery type in the logistic regression model.
  - <u>Increased odds of receiving a repair over debridement</u>
    - Acute injury
    - Private Insurance
    - Surgery at Children's Hospital
    - Surgery Performed at More Recent Date
  - <u>Decreased odds of receiving a repair over debridement</u>
    - Increasing Age
    - Hispanic or Latino
    - Female
    - Rural Counties (7/58)
- Following were not significant in predicting whether patient had meniscal repair or debridement:
  - Medi-Cal insurance
  - Non-Hispanic White, African American, Asian

Demographic Variable (% Surgical Type)	Debridement (N = 11,561)	Repair (N = 2,345)
Average Age at Surgery	**15.2 years**	**14.9 years**
Males	**7150 (82.94%)**	**1471 (17.06%)**
Females	**4411 (83.46%)**	**874 (16.54%)**
Hispanic or Latino	**4797 (85.83%)**	**792 (14.17%)**
Non-Hispanic White	**4288 (80.74%)**	**1023 (19.26%)**
African American	**823 (82.80%)**	**171 (17.20%)**
Asian	**481 (82.08%)**	**105 (17.92%)**
Other	**1172 (82.19%)**	**254 (17.81%)**
Children's Hospital	**1909 (79.05%)**	**506 (20.95%)**
Non-Children's Hospital	**9652 (84.00%)**	**1839 (16.00%)**

Logistic Regression Variable	Odds Ratio	p-value*
Year of Surgery	**1.04**	**8.96E-06***
Age at Surgery	**0.94**	**8.24E-09***
Gender –Female vs Male	**0.92**	**0.04***
Nature of Injury – Acute vs Old	**1.37**	**5.75E-11***
Race/Ethnicity – Group vs Other	**0.81**	**0.01***
Hispanic or Latino	**1.10**	**0.13**
Non-Hispanic White	**0.96**	**0.72**
African American	**0.90**	**0.43**
Asian		
Insurance – Group vs Other		
Private Insurance	**1.20**	**0.04***
Medi-Cal	**1.00**	**0.66**
Hospital Type – Children's vs Non-Children's	**1.39**	**2.03E-06***
significance level at p<0.05		

DISCUSSION & CONCLUSIONS

- There is increasing evidence that pediatric patients have successful outcomes after meniscal repair surgery. However, the results of this study demonstrate that the majority of pediatric patients with meniscus tears undergo a meniscal debridement rather that a repair.
- Treatment at a Children's Hospital, private insurance, and a short time frame between injury and surgery were positive predictors of having a repair over debridement.
- These results may help inform patients, families, and referring physicians about what type of treatment a patient may receive for a meniscus tear, based on their demographic profile.

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