TRENDS IN PEDIATRIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A REVIEW OF SURGEON FELLOWSHIP, GEOGRAPHY, AND MENISCUS SURGERY IN THE ABOS PART 2 DATABASE

Henry B. Ellis, Jr., MD1, Curtis VandenBerg, MD2, Jennifer Beck, MD3, Andrew Pennock, MD4, Aristides I. Cruz, Jr., MD, MBA5, Luke Gauthier, MD6, Frank Gerow, MD7, Theodore J. Ganley, MD8, Kerwyn Jones, MD9, Meagan J. Sabatino, BA10, Kevin Shea, MD11

1Texas Scottish Rite Hospital for Children, Dallas, TX, USA, 2Children's Hospital Los Angeles, Los Angeles, CA, USA, 3Orthopaedic Institute For Children, Los Angeles, CA, USA, 4Rady Children's Hospital, Rancho Santa Fe, CA, USA, 5Hasbro Children's Hospital, East Providence, RI, USA, 6Memorial University, USA, 7Texas Children's Hospital, USA, 8The Children's Hospital of Philadelphia, Philadelphia, PA, USA, 9Akron Children's Hospital, Akron, OH, USA, 10Texas Scottish Rite Hospital/Pediatric Sports Medicine, Frisco, TX, USA, 11Stanford, Stanford, CA, USA

INTRODUCTION:
An increased rate of pediatric and adolescent patients undergoing ACL reconstruction has clearly been established, and now considered one of the most common arthroscopic procedures performed in youth patients. Little knowledge exists on whether these trends truly represent an increase in ACL injury, identification, or surgical management. Trends, including surgeon training, meniscus treatment, or geographic differences, have not been reported. The purpose of this study was to review data from ACL reconstructions performed in patients under the age of 17 years, that were submitted to the American Board of Orthopaedic Surgeons (ABOS) Part 2 examination, with a goal of evaluating national treatment trends over a 16-year period.

METHODS:
A query to the ABOS SCRIBE database was submitted for all ACL reconstructions performed in patients less than 17 years old between 2002 and 2016. The query was designed to search for CPT procedure codes submitted by each applicant. Query data included geographic region, fellowship training of the applicant, age and sex of the patients, and associated procedures. Each case had an associated applicant number, and thus, the total number of ACL reconstructions performed by each surgeon during board collection was provided. Trends were reviewed for the aggregate data and a Mann-Whitney test was used for comparison of data between 2002–2009 (Early-ACL) and 2010-2016 (Recent-ACL) groups.

RESULTS:
Since 2002, there has been a 2.6% increase in pediatric ACL reconstructions performed by candidates applying for Part 2 of the ABOS examination. Additionally, a 193% increase in dual pediatric and sports medicine fellowship trained candidates performing pediatric ACL reconstruction since 2010 was seen. A majority of pediatric ACL procedures were performed by sports medicine trained surgeons (75.9%). During this time period, a total of 362 (or 8.3%) of pediatric ACL procedures were performed by surgeons with neither sports medicine nor pediatric orthopaedic fellowship training. Following 2009, a 44% increase in pediatric ACL reconstructions performed was noted (Figure 1A). Additionally, an increase in reconstructions performed in female patients compared to males was noted (Figure 1B). A majority of pediatric ACL reconstructions did not require additional meniscal treatment, however, meniscus repair was more likely to be performed after 2009 (p=0.0012). The number of meniscal repair procedures reported in the setting of ACL reconstruction generally increased over the study period. In 2002, 24% of ACL reconstructions required a meniscal repair compared to 41% in 2016 (Figure 1C). A majority of these repairs were performed by surgeons with sports medicine fellowship training.

Geographic trends reported are based on patients <16 per available census records (Figure 1D). Geographic variation exists with the highest rates of pediatric ACL reconstructions occurring in the South (4.62 per million) and Midwest (4.07 per million) in comparison to the Southeast (1.85 per million).
per million). When adjusting for population size per year, each region saw a significant increase in reported ACL surgeries from the Early-ACL to the Recent-ACL timeframe (p=0.005). The largest increases in surgeries reported between Early-ACL and Recent-ACL were seen in the Southeast (68% increase), Midwest (50% increase) and Southwest (47% increase).

Of all the providers who performed surgery, 74% submitted only 1-2 cases from 2002-2016, with 26% of providers performing more than 55% of all of the pediatric ACL reconstruction cases. More than 75% of all cases were performed by sports medicine fellowship trained surgeons. However, a large change was seen in dual sports and pediatric trained surgeon case volumes over this time period, with these surgeons performing 7.5 times more surgeries from 2010 to 2016 (Recent-ACL) when compared to 2002-2009 (Early-ACL).

CONCLUSION:
Since 2009, pediatric ACL reconstructions are more likely to be female and are more likely to undergo a meniscal repair. Geographic variation is noticeable, with more surgeries reported to be performed in the South. Dual pediatric and sports medicine fellowship trained candidates performing ACL reconstruction have significantly increased over time, although those surgeons who are only sports medicine fellowship trained continue to perform the bulk of ACL reconstructions in young patients.

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