

# High Prevalence of Meniscus Tears in Adolescents with Recurrent Patellofemoral Instability

Connor Thomas Wright<sup>1</sup>, Kristen N Reikersdorfer<sup>2</sup>, Sofia Federico, Nikolaos K Paschos<sup>3</sup>

<sup>1</sup>University of Michigan Medical School, <sup>2</sup>Harvard Medical School, <sup>3</sup>Massachusetts General Hospital

**INTRODUCTION:** Patellofemoral instability (PFI) is one of the most common knee conditions within the adolescent population. While associated meniscus pathology has been reported in other knee injuries, there is paucity in the literature about the presence of meniscus injuries in patients with patellofemoral instability. The purpose of this study is to determine the incidence and characteristics of meniscus tears in adolescent patients with PFI.

**METHODS:** This retrospective study identified patients with recurrent patellofemoral instability that underwent medial patellofemoral ligament (MPFL) reconstruction and were under 18 years of age at the time of surgery. The primary outcome was the presence of a meniscus tear using clinical and imaging criteria on MRI with the gold standard being the diagnostic arthroscopy. Additional outcome data included the location and topography of each meniscus tear. Subgroup analysis was performed, which separated patients into acute (fewer than 12 weeks from initial injury to surgery) and delayed (greater than 12 weeks from initial injury to surgery) groups in an effort to determine the time point at which these meniscus tears were occurring.

**RESULTS:** Meniscus tears were identified in 24 of 80 knees (30%). Of these tears, an isolated lateral meniscus tear was present in 14 knees (58.3%), and isolated medial meniscus tear was present in 8 knees (33.3%). Tears of both medial and lateral menisci occurred in 2 knees (8.3%) ( $p=0.01$ ). The tears occurred most frequently in the periphery of the meniscus (21, 77.8%) compared with the white-white region (6, 22.2%),  $p=0.0026$ . The most frequent pattern of tear was meniscocapsular separation (20, 74.1%), compared with radial (5, 18.5%), oblique (1, 3.7%), and complex (1, 3.7%) tears ( $p<0.001$ ). The subgroup analysis (25 acute, 55 delayed) determined no statistical significance in the frequency of meniscus pathology in the acute (11, 44.0%), as compared to the delayed group (13, 23.6%),  $p=0.1127$ .

**DISCUSSION AND CONCLUSION:** Meniscus tears occur with notable frequency in adolescents with PFI, with pathology most frequently including lateral tears and those in the meniscal periphery. Therefore, surgeons must perform a diligent diagnostic arthroscopy at the time of MPFL reconstruction to avoid undiagnosed meniscus pathology in adolescents with PFI. Further, increased time from injury to MPFL reconstruction was not found to be associated with increased rates of meniscal pathology, indicating that these meniscal tears may occur at the time of initial MPFL injury, rather than being attributable to increased post-injury instability.