Isolated Posteromedial Meniscus Root Repair: Clinical Presentation, Surgical Techniques, and Clinical Outcomes

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Background
The meniscal roots are critical for maintaining knee stability, functional load distribution, and proper knee kinematics. Despite most reports of meniscal root injuries in older patients with degenerative knees, these injuries also occur in pediatric and adolescent patients (as many as 2% of meniscal injuries involve the root attachments). Given the limited literature on outcomes in children and adolescents, this video discusses patient characteristics; tear visualization via MRI and arthroscopy; surgical technique; postoperative management, including return to sports activity; and complication/revision surgery rates for isolated posteromedial meniscus root (PMMR) repair in children aged 15 years or younger.
Methods
A retrospective record review identified pediatric and adolescent patients (<15 years) who underwent isolated PMMR repair at a single urban tertiary care orthopaedic hospital. Between February 1, 2016, and November 10, 2022, eight patients aged 11 to 14 years underwent isolated PMMR repair. Preoperative MRI was evaluated for meniscal extrusion by a fellowship-trained musculoskeletal radiologist. Primary outcomes included return to sports activity and revision surgery rates.
Results
This case series includes eight adolescent patients with a median age of 12.6 years and an interquartile range of 1.8 years. All patients sustained an isolated PMMR tear during athletic activity. On initial presentation, all the patients reported knee pain, five patients (62.5%) reported knee swelling, and three patients (37.5%) reported mechanical symptoms (knee instability, buckling, or locking). All the patients were diagnosed with a PMMR tear on preoperative MRIs, with direct visualization and confirmation of the tear arthroscopically. Two patients (25%) had with meniscal extrusion. All the patients were treated via transosseous suture repair, resulting in a 100% rate of return to sports activity at pre-injury levels at a median time of 5.1 months postoperatively. One patient required revision surgery 2 years after isolated PMMR repair because of a 4-mm tear near the previously placed luggage tag suture. After revision and repair, the root and the posterior horn demonstrated good stability. The patient healed well and had returned to playing gymnastics at a follow-up of 6 months.
Conclusion
This video, which includes the largest report on isolated PMMR tears in pediatric and adolescent patients, suggests that transosseous suture repair for the management of pediatric PMMR tears results in favorable short-term outcomes, with all subjects in the cohort returning to sports activity.