

## **Securing the Root: Meniscal Root Repair With Ripstop and Cannulated Drilling**

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Meniscal root injuries are a subset of meniscal injuries that recently have been the focus of much attention. Meniscal root injuries are defined as radial tears within 1 cm of the root insertion or a direct bone or soft-tissue avulsion of the meniscal root from the tibia. These are substantial injuries because meniscal root integrity is a prerequisite for normal meniscal biomechanics. The meniscal roots contain supplemental fibers that improve the strength and stiffness of the meniscal attachment. Injury to the posterior meniscus attachment is associated with meniscal extrusion and an inability to convert axial loads into hoop stresses, which contributes to accelerated degenerative changes in the knee. The importance of this injury is further highlighted in biomechanical studies, which demonstrate no difference in peak tibiofemoral contact pressures after total medial meniscectomy or posterior meniscus root tear.

Current treatment options for patients with a meniscal root injury include nonsurgical treatment, partial meniscectomy, or meniscal root repair. Nonsurgical treatment fails to restore normal joint biomechanics and, therefore, typically is reserved for patients who are poor surgical candidates, older patients, and patients with substantial articular cartilage degeneration. Historically, partial or complete meniscectomy frequently was used in the surgical management of meniscal root tears; however, better understanding of the function of the meniscal root has led to a shift away from this treatment option. The current paradigm suggests that the meniscal root should be repaired to afford symptomatic relief and prevent the progression of articular cartilage injury, if possible.

Current meniscal root repair methods include treatment options that use suture anchors offering direct fixation in the tibial plateau and transtibial tunnel techniques with suture repair. Overall, both techniques are associated with improved patient outcomes; however, the suture anchor technique is considered more technically challenging because an accessory posterior portal may be required.

This video shows a variant of a transtibial tunnel pull-out repair featuring a meniscal root ripstop repair with cannulated drilling. Previous transosseous techniques with the use of various suture configurations, including a combination of simple stitches, a modified Kessler stitch, a Mason-Allen stitch, a horizontal mattress stitch, or a loop stitch, have been described. The technique shown in this video is a ripstop repair configuration in which an inverted horizontal mattress suture is placed anterior to two meniscal repair cinch stitches. Placing the inverted horizontal mattress stitch anterior to the cinch reinforces the two posterior repair stitches. The two cinch sutures pull not only on the meniscal tissue but against the ripstop inverted mattress, which affords greater repair strength. This technique offers utility in patients with poor tissue quality because the horizontal mattress ripstop configuration minimizes the likelihood of suture pull through.