Remnant-Preserving Outside-In Anterior Cruciate Ligament Reconstruction Using Posterior Transseptal Portal

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This video shows the surgical method for remnant-preserving anterior cruciate ligament (ACL) reconstruction via an outside-in technique with a posterior transseptal portal. For the transseptal outside-in technique, the femoral tunnel is made using a 30° arthroscope through the transseptal portal. A femoral guide set is inserted through the anterolateral portal, and the tip of the guide hook is pointed toward the proximal corner of the ACL remnant.

For tunneling on the femoral side, outside-in retro-reaming is performed with the use of a retrograde cutter via the posterior transseptal portal. For tunneling on the tibial side, antegrade reaming is performed. For the graft, four-stranded hamstring autograft is used. Lastly, an adjustable-loop device and suture tie are used for fixation on the femoral side, and a biocomposite screw and a post-tie are used for fixation on the tibial side. Suspensory fixation is used for femoral fixation; however, technical difficulties, such as incomplete seating, flipping failure, jamming inside the femoral canal or the iliotibial band, and pulling to the outside of the skin or to the joint, may occur. Therefore, we prefer the flipping method for suspensory fixation. Soft-tissue débridement around the guidewire must be performed before fixation. The femoral tunnel exit must be exposed to prevent button-related complications. Acquisition of a certain view is most important. A supporting tie is used to add fixation between the graft suture and the adjustable-loop device.

Preoperatively, arthroscopic examination was performed through the anteromedial and anterolateral portals. Posteromedial and posterolateral portals were made via a trans-illumination technique. The posteromedial and posterolateral compartment was connected through the transseptal portal. A small anterosuperior portion of the posterior septum was excised with the use of a shaver. After establishing the transseptal portal, the ACL femoral footprint with the remnant of the ACL was directly viewed through the transseptal portal. A guide tip for the femoral tunnel was placed via the anterolateral portal at the proximal corner of the direct fiber with the use of a retrograde cutting system. The tip of the guide hook was pointed toward the posterosuperior corner of the ACL remnant. Retrograde reaming was performed with the use of a retrograde cutter to make the femoral tunnel a length of approximately 30 mm. Soft-tissue débridement around the guidewire was performed to expose the femoral tunnel clearly. The tibial tunnel was prepared with the remnant ACL preserved by localizing the tibial footprint of the ACL.

The graft was prepared using auto-semitendinosus and gracilis muscle tendons. The autograft was passed through the tunnel. A suspensory device was completely seated via arthroscopy and an additional supporting tie. The autograft was then fixed on the tibial side with the use of an interference screw and post-tie fixation.