

Remnant Preserving ACL Reconstruction: How To Preserve The ACL Remnant Maximally?

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There is still some controversy regarding the best anterior cruciate ligament (ACL) reconstruction method. We encountered a relatively thick and abundant ACL remnant bridging between the femur and tibia or between the posterior cruciate ligament and tibia in some cases. In a standard ACL reconstruction, ACL remnant is debrided to create correct femoral and tibial tunnels placement. But it has been reported that preserving the remnant of ACL original bundle might provide stability of the knee joint, promote graft healing and preserving proprioception.

Good results have been reported after remnant preserving ACL reconstruction using a trans-tibial technique. Recently, it has been proven that transtibial approach may contribute to non-anatomic placement of the femoral tunnel. Therefore trans-portal technique became popular to create an anatomical femoral tunnel. However, this technique is difficult to preserve the proximal portion of remnant. Outside-in femoral tunnel procedure seems to be a more reliable and is a precise way to achieve an anatomic ACL reconstruction and preserving ACL remnant.

It is difficult to observe the posterior portion of ACL femoral attachment using an anteromedial (AM) or anterolateral (AL) portal without removing the ACL remnant. The posterior portion of direct insertion of femoral ACL footprint is clearly identified by direct arthroscopic visualization through the posterolateral (PL) portal with 70° arthroscope or using the posterior trans-septal portal with 300° arthroscope. Anatomical femoral tunnel of AM bundle can be created using outside-in technique with FlipCutter reamer (Arthrex). A single bundle ACL reconstruction is performed with a quadrupled hamstring auto-graft.

Sometimes it is difficult to make tibial tunnel at anatomic position with preservation of remnant at tibial insertion. The “C”-shaped tibial ACL insertion is visualized by approaching posterior to the remnant. Tibial tunnel is then made inside of the “C”-shaped tibial insertion with preservation of ACL tibia remnant.

The purpose of this presentation is to demonstrate the two surgical techniques of single bundle ACL reconstruction with preservation of remnant bundle using 1) PL portal with 70° arthroscope and 2) Posterior trans-septal portal with 300° arthroscope to make femoral tunnel at anatomic position with minimal damage to the ACL remnant.