

Editorial Commentary: Anatomic or Not, the Tunnel Will Get Wider!



Musa Uğur Mermerkaya, M.D., Kadir Büyükdoğan, M.D., Ömer Serdar Hakyemez, M.D.,
Murat Birinci, M.D., and Cem Coşkun Avcı, M.D.

Abstract: In our experience, arthroscopic tunnel widening is one of the major complications after anterior cruciate ligament (ACL) reconstruction. Even though this complication doesn't require an acute correction or intervention, patients with failed ACL reconstruction along with tunnel widening may need a 2-stage revision in which we have to fill the gap in the tunnels first. Otherwise, this tunnel widening after ACL reconstruction doesn't affect the clinical outcomes of the primary surgery and it won't affect the success of the surgery in the aspects of clinical and functional outcomes.

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Anterior cruciate ligament (ACL) reconstruction is one of the surgical procedures for functional anteroposterior instability of the knee that happens after ACL tear. This procedure has its own complications, but one of the most important is tibial and femoral bone tunnel widening. This complication is not that much related to surgical technique; instead, the fixation devices used in the surgery, such as metal screws, biodegradable screws, or endobutton, affect the rate of tunnel widening.¹⁻⁴ Even though this is a common complication of this surgery, it has been shown in various studies that tunnel widening, regardless of the surgical technique used in the surgery, does not affect the clinical outcomes after the surgery.⁵⁻⁹

Several studies have been performed on this topic. In 1999, Clatworthy et al.⁹ researched the effect of graft selection on the tunnel widening. In their study, they compared hamstring tendon autograft and bone–patellar tendon–bone (BPTB) autograft for ACL reconstruction and the effect of this selection on the tunnel widening. They found that using hamstring tendons as an autograft for ACL reconstruction resulted in statistically significantly more tunnel widening that

BPTB patellar tendon autograft. In this study, they also found out that tunnel widening after ACL reconstruction doesn't cause instability and is not related to poorer functional and clinical outcomes after the surgery. In their study in 2018, DeFroda et al.⁷ investigated the effect of graft tensioning on the tunnel widening ACL reconstruction along with graft selection. Similar to the previous study, they found that using hamstring tendons as an autograft for ACL reconstruction resulted in more tunnel widening than BPTB autograft. In this study, they also found that the initial graft tensioning while fixing the graft in the operation doesn't affect the tunnel widening after the surgery.

An area of investigation for possible causes of tunnel widening is graft fixation methods during the operation. Mayr et al.⁶ investigated the effect of tibial tunnel's fixation method on the tunnel widening. They compared interference screw fixation with adjustable loop endobutton fixation and they found that using an interference screw for graft fixation resulted in greater tunnel widening than fixation with endobutton. A similar study was performed by Mermerkaya et al.¹⁰ for the femoral tunnel fixation. The authors compared biodegradable interference screw with endobutton in femoral tunnel fixation. The results were similar with the study that was performed by Mayr et al.⁶ Femoral tunnel widening was greater after fixation had been performed with biodegradable interference screws. A study on interference screws that was performed by Lind et al.⁸ has shown that using a hydroxiapatite/poly lactate interference screw for graft fixation causes less tunnel widening than using a metal screw.

Medipol University (M.U.M, O.S.H., M.B., C.C.A.); and Koç University (K.B.)

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In 2010 Marchant et al.¹¹ provided the information that computed tomography has the best intra- and interobserver reliability for evaluating the bone tunnels compared with radiographs and magnetic resonance imaging. In the light of this information, using computed tomography for tunnel widening after ACL reconstruction would be the wisest option.

In their study “Comparison of Postoperative Tunnel Widening After Hamstring Anterior Cruciate Ligament Reconstructions Between Anatomic and Non-anatomic Femoral Tunnels,” Choi, Lee, Park, and Victoroff¹² studied the effect of femoral tunnel positioning on femoral tunnel widening after ACL reconstruction. They found that using nonanatomic-placed tunnels doesn’t have a significant effect on either tunnel widening or clinical outcomes after ACL reconstruction. Based on this information, it is safe to say if we have a failed tunnel placement during the ACL reconstruction, that won’t result in a greater tunnel widening.

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