

A Prospective Randomized Study Of Anatomical Double-Bundle ACL Reconstruction Using Hamstring Versus Anatomical Rectangular Tunnel Reconstruction Using Bone-Patellar Tendon-Bone Graft

Yasuyuki Ishibashi, MD, JAPAN
Eiichi Tsuda, MD, JAPAN
Yuji Yamamoto, MD, JAPAN
Shugo Maeda, MD, JAPAN

Department of Orthopaedic Surgery
Hirosaki, Aomori, JAPAN

Summary:

Our prospective randomized study shows that anatomical double-bundle ACL reconstruction using hamstring and anatomical rectangular tunnel ACL reconstruction using BTB achieve almost the same results, and that there are no adverse effects by BTB, such as anterior knee pain.

Abstract:

Objective:

Recently, more anatomical ACL reconstructions have been recommended to improve results of reconstruction. The purpose of this study was to compare clinical results of anatomical double-bundle (DB) ACL reconstruction using hamstring tendons (HT) and those of anatomical rectangular tunnel (RT) ACL reconstruction using bone-patellar tendon-bone autograft (BTB).

Methods:

One hundred and eighty-nine knees received primary ACL reconstruction from 2007 to 2009 in our institute. Of these, DB-ACL reconstruction or RT-ACL reconstruction were randomly performed in skeletally mature cases. One hundred and fifty-six cases were followed more than two-years and included in this study. These patients were clinically evaluated preoperatively, and at 3, 6, 9 months, 1 and 2 years after ACL reconstruction. Clinical evaluations were KT-1000 arthrometer, Lachman test, Pivot shift test, quadriceps and hamstring strength (Cybex). At final follow-up, Tegner activity score, Lysholm score and Knee injury and Osteoarthritis Outcome Score (KOOS) were also evaluated.

Results:
Both DB-ACL reconstruction and RT-ACL reconstruction similarly improved knee laxity compared to before reconstruction. At 2 years after reconstruction, side-to side differences of KT-1000 arthrometer were 0.9 ± 1.0 mm and 0.8 ± 1.1 mm respectively. Regarding muscle strength, average quadriceps strength in the RT-ACL reconstruction group in early stages (within 9 months) was weaker, but there were no significant differences at one year or later. There were no significant difference among Lysholm, Tegner activity score and KOOS at final follow-up.

Conclusion:

Our data suggest that both DB- and RT-ACL reconstruction achieve almost the same results. Although we hypothesized that ACL reconstruction with BTB has more knee symptoms, such as anterior knee pain and kneeling pain, especially in female patients, these adverse effects were not detected by KOOS.