Anatomic Double-Bundle Anterior Cruciate Ligament Reconstruction Was Superior to Conventional Single-Bundle Reconstruction


Main outcome measures: Subjective outcomes were measured with use of the Lysholm score (0 to 100; <65 = poor and >90 = excellent) and the International Knee Documentation Committee (IKDC) subjective score. Objective outcomes were the side-to-side difference for anteroposterior stability as measured with the KT-1000 arthrometer, the pivot-shift test for rotational stability (category 0 indicated the best result), and the IKDC objective score.

Main results: The anatomic double-bundle reconstruction was associated with better results than the conventional single-bundle technique for the Lysholm score, anteroposterior stability, and the IKDC objective score; the groups did not differ with regard to subjective IKDC score (Table). Compared with the anatomic single-bundle technique, the anatomic double-bundle had better results for anteroposterior and rotational stability (Table). The anatomic single-bundle reconstruction was better than the conventional single-bundle reconstruction for anteroposterior and rotational stability (Table).

Conclusion: In patients having ACL reconstruction, the anatomic double-bundle technique was superior to both the conventional and anatomic single-bundle techniques for restoring anteroposterior and rotational stability. The double-bundle technique also had better results than the conventional technique on the Lysholm score and the IKDC objective score.

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Disclosure: The authors stated that "the differences [between the techniques] are small and may not be clinically relevant." The mean KT-1000 side-to-side data for the three groups were 2.0, 1.6, and 1.2 mm. When we consider that up to a 3-mm side-to-side difference is considered a significant result after ACL reconstruction, the differences between these groups are probably not clinically meaningful. Similarly, the IKDC scores for the three groups were 90.2, 90.6, and 90.1, with a difference between the highest and lowest groups of 1.9; the difference between the lowest and highest mean Lysholm score for the three groups was 2.1. Given that the minimal detectable change for the Lysholm scale is 8.9 and the minimal clinically important difference for the IKDC score is 16.7, these differences are probably not clinically meaningful.

The downside of anatomic double-bundle ACL reconstruction includes a learning curve, increased surgical time, and increased complexity of revision surgery, if required. In view of the similar outcomes for the three groups, anatomic double-bundle reconstruction for primary reconstruction is not warranted on the basis of these data.

Commentary

The trial by Hussein and colleagues compared three methods of ACL reconstruction. All procedures were performed by the first author, which limits generalizability to the orthopaedic community at large.

The authors stated that "the differences [between the techniques] are small and may not be clinically relevant." The mean KT-1000 side-to-side data for the three groups were 2.0, 1.6, and 1.2 mm. When we consider that up to a 3-mm side-to-side difference is considered a significant result after ACL reconstruction, the differences between these groups are probably not clinically meaningful. Similarly, the IKDC scores for the three groups were 90.2, 90.6, and 90.1, with a difference between the highest and lowest groups of 1.9; the difference between the lowest and highest mean Lysholm score for the three groups was 2.1. Given that the minimal detectable change for the Lysholm scale is 8.9 and the minimal clinically important difference for the IKDC score is 16.7, these differences are probably not clinically meaningful.

Lastly, while there was a significant difference in the postoperative pivot shift between the groups, this was found mainly between 0 (normal) and 1+ (pivot glide), as well as between 1+ and 2+ (pivot shift). These differences can be difficult to discern and have not been demonstrated to be reliable or valid.

The downside of anatomic double-bundle ACL reconstruction includes a learning curve, increased surgical time, and increased complexity of revision surgery, if required. In view of the similar outcomes for the three groups, anatomic double-bundle reconstruction for primary reconstruction is not warranted on the basis of these data.

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References


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