

Editorial Commentary: Multiple-Strand Hamstring Autografts for Anterior Cruciate Ligament Reconstruction: If Graft Diameter Is at Least 8 Millimeters, Bigger May Not Be Better



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Abstract: Anterior cruciate ligament graft diameter is of concern to every orthopaedic surgeon who's ever performed an anterior cruciate ligament reconstruction. The current standard is to obtain a graft of at least 8 mm in diameter. The 5-bundle construct is an option to increase the graft diameter in the situation in which a smaller diameter 4-strand hamstring autograft is encountered. The question is whether bigger is better once one obtains an 8-mm diameter graft.

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This anterior cruciate ligament (ACL) graft diameter is TOO SMALL, so maybe I should convert to a 5-strand hamstring autograft. In the article by Krishna, Chan, Lokaiah, Chinnasamy, Goyal, Wang and Singh, "Five-Strand Versus Four-Strand Hamstring Autografts in Anterior Cruciate Ligament Reconstruction—A Prospective Randomized Controlled Study,"¹ the authors demonstrate that bigger is not better. The authors performed a prospective, randomized study to compare the outcomes between a 4-strand and a 5-strand hamstring autograft. In my experience, it is very interesting to compare those outcomes because a 5-stranded hamstring autograft has a theoretical advantage to increase graft diameter. A previous biomechanical and clinical study has shown larger graft diameter, greater than 8 mm, would be preferable to obtain better graft survival and stability compared with a smaller graft diameter.² Although there were improvements in all outcome measures postoperatively regardless of the number of graft strands, comparing the study and control groups, the authors found there were no significant differences in all subjective and objective

outcome measures except the Knee injury and Osteoarthritis Outcome Score symptoms score. The authors referenced studies in the paper stating that a graft greater than 8 mm in diameter has a greater success rate.^{3,4} However, in this study, 25% of the 5-strand group and 72% of the 4-strand group had diameters less than 8 mm. Also, 2 patients in the 5-strand group who developed complete graft tears were excluded from the final analysis.

There are multiple surgical options available to surgeons performing ACL reconstructions—autograft versus allograft, hamstring versus quadriceps versus patellar tendons. When using hamstring tendons, one big concern for all of us is graft diameter. Sometimes we can preoperatively predict that the final graft size may be too small based on patient sex, weight, and height.⁵ Preoperative magnetic resonance imaging measurements of the hamstring tendons may be beneficial as well.⁶ My bigger concern is in the situation in which intraoperatively, the 4-strand hamstring graft does not measure 8 mm in diameter. Options at that point include a change in the configuration of the graft into more bundles or to make a hybrid graft using an allograft. My preference for performing ACL reconstructions with hamstring autograft encompasses an all inside adjustable loop technique with suspensory femoral and tibial cortical fixation.⁷ This affords me the flexibility to convert a 4-strand graft into a 5-strand graft as necessary to achieve a final diameter equal to or greater than 8 mm. Despite the results of this present

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study, for now, I will continue to use 5-strand hamstring autografts as the intraoperative situation deems appropriate.

“Practice does not make perfect. Only perfect practice makes perfect.”—Vince Lombardi

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