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CORR Insights®: Does the Utilization of Allograft Tissue in Medial Patellofemoral Ligament Reconstruction in Pediatric and Adolescent Patients Restore Patellar Stability?

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Where Are We Now?

In their study, Drs. Hohn and Pandya explored the use of allograft tissue for medial patellofemoral ligament (MPFL) reconstruc-

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tion in a cohort of 25 pediatric and adolescent patients. Eight percent developed recurrent instability at an average of 2 years after surgery. Despite being a retrospective study without a control group, the authors provide an important contribution to what we know about patellofemoral instability surgery, as posing this question in a purely pediatric population is novel, and lays the groundwork for future critical investigation.

Recently, Weinberger and colleagues [8] performed a meta-analysis of observational studies comparing clinical outcomes in adult patients following MPFL reconstruction with autograft versus allograft. Although they observed greater improvement in Kujala scores among patients who received autograft reconstructions, they noted no difference in the frequency of recurrent patellofemoral instability between groups (5.7% for

autograft, 6.7% for allograft) [8]. This was evident despite the inclusion of all allograft processing techniques (including irradiation) which, if anything, would bias those results in favor of using autograft as allograft irradiation can lead to structural compromise [2].

With regard to ligament reconstructions in young athletes in general, it has been well documented that the use of allograft tissue for primary ACL reconstruction in young athletes is associated with an increased risk of graft rupture [3, 4, 7]. However, given the dissimilarities between the ACL and the MPFL in terms of anatomy and function, it may not be appropriate to apply findings from the ACL literature to those patients undergoing MPFL reconstruction. The ACL is a stout, intraarticular structure that provides knee stability throughout all ranges of knee flexion, and has a tensile strength of 2160 N [9]. By contrast, the MPFL is a thin, extraarticular structure with a tensile strength of 208 N, which acts as a checkrein only in early knee flexion, until osseous patellofemoral congruity

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takes over at 30° of flexion [1, 5]. At present, we lack high-level comparative studies specific to the MPFL upon which we may draw meaningful data in order to counsel our pediatric and adolescent patients and their families regarding graft choice for MPFL reconstruction.

Where Do We Need To Go?

Given the unique nature of the MPFL and our noted inability to apply concepts from other ligament reconstructions, it is important to compare the outcomes (including rates of recurrent instability, Kujala scores, and pediatric-validated knee, activity, and quality of life patient-reported outcome measures) of MPFL reconstruction using autograft to those of allograft using prospective study designs. It will be important to account for diagnosed connective tissue disorders, as well as subtle ligamentous laxity, as generalized joint laxity may be more common in patients with patellofemoral instability than in controls [6] and could be the underlying reason for the lack of definitive superiority of autograft MPFL reconstruction in this demographic. Answering this question will allow those who treat pediatric and adolescent patellofemoral instability to guide their patients and families with greater

confidence when faced with this disconcerting condition and its treatment.

How Do We Get There?

The ideal study design for determining the efficacy of allograft tissue when compared to autograft for MPFL reconstruction would be a randomized controlled trial. Given the clinical equipoise of redislocation rates in adults noted in the study by Weinberger and colleagues [8], and the similar clinical success in children reported by the authors of the current study, it would seem ethical to perform such a study. However, given the substantial resources required to perform randomized controlled trials, it would seem appropriate in the interim to compile and analyze existing multicenter registry data (ideally, data that were prospectively collected), in order to garner sufficient statistical power to control for relevant confounding variables. For the time being, the results from the study by Drs. Hohn and Pandya, taken together with the findings in adults by Weinberger and colleagues [8], suggest that allograft tissue remains a reasonable option for MPFL reconstruction in children and adolescents, particularly in those with connective tissue disease or generalized ligamentous laxity.

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