Arthroscopic Xenograft-Augmented Labral Repair for Shoulder Instability with Soft-Tissue Deficiency

Background: Recurrent anterior shoulder instability is often treated with soft-tissue repair, yet outcomes are suboptimal when capsulolabral tissue is attenuated (e.g., after multiple dislocations, prior surgery, or connective-tissue disorders). Autograft reinforcement adds morbidity and may be limited by tissue quality; allografts can vary in quality. A bioresorbable xenograft collagen–PLLA scaffold may provide load-sharing and a biologic matrix for healing.

Objectives: To describe an arthroscopic technique for xenograft-augmented anteroinferior labral repair and report early feasibility in the setting of soft-tissue deficiency.

Methods: In lateral decubitus, standard posterior viewing and anterosuperior/anteroinferior working portals are established. After diagnostic arthroscopy, the glenoid rim is lightly decorticated and the labrum mobilized. A pilot suture is placed through the anteroinferior labrum. A collagen–PLLA scaffold is folded to approximate native labral thickness and shuttled into the joint to span ~5 to 3 o'clock (right shoulder frame). Two to three single-loaded all-suture anchors secure the scaffold beneath the labrum to the glenoid; sutures are tied to re-create the labral bumper and restore tension to the anterior band of the inferior glenohumeral ligament (IGHL). Stability is confirmed arthroscopically through full motion and excess scaffold is trimmed.

Results: In the index application, the construct conformed to the glenoid, restored anterior restraint on probing, and maintained concentric reduction without residual anteroinferior translation intraoperatively. The early postoperative course was uncomplicated, with clinical stability and no unusual reactivity observed.

Conclusion/Clinical Relevance: Xenograft-augmented labral repair is a feasible option when native capsulolabral tissue or conventional autograft/allograft solutions are inadequate. The resorbable collagen scaffold offers immediate mechanical support and a matrix for biologic integration while avoiding donor-site morbidity. Prospective biomechanical testing and clinical series are warranted to define indications, optimize graft sizing/tensioning, and evaluate durability once the scaffold resorbs.