KEY PROCEDURES

ARTHROSCOPIC, IMPLANT-FREE BONE-GRAFTING FOR SHOULDER INSTABILITY WITH GLENOID BONE LOSS

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Published outcomes of this procedure can be found at: *Am J Sports Med.* 2016 May;44(5):1137-45, and *Am J Sports Med.* 2017 Oct;45(12):2849-57.

Investigation performed at the Vienna Shoulder & Sports Clinic, Vienna, Austria

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Abstract

Background: Anterior shoulder instability is commonly associated with injuries to the labrocapsular structures of the glenohumeral joint and with osseous glenoid defects of varying degree. If the bone defect exceeds a clinically relevant threshold, mere soft-tissue repairs result in high rates of recurrent instability and the glenoid needs to be reconstructed with osseous augmentation.

The most popular techniques for glenoid reconstruction include variations of coracoid transfer or bone-block procedures; however, these procedures are not free from risks and complications, which are often related to the method of fixation¹.

An alternative to the widely used coracoid transfer variations or bone-block procedures is anatomic implant-free glenoid reconstruction with a J-shaped iliac-crest bone graft. After press-fit fixation, the graft undergoes a physiological remodeling process resulting in the restoration of native scapular neck morphology. Although not as widely known, the open J-bone-graft procedure has been successfully used for the treatment of glenoid bone loss for nearly 3 decades²⁻⁴. The arthroscopic J-bone-graft technique represents an innovative advancement of the open procedure. Early to midterm follow-up of the arthroscopic J-bone-graft technique has revealed excellent clinical results¹.

Description: The major steps of the procedure, which are demonstrated in the present video article, include (1) detachment of the labrocapsular ligamentous complex and preparation of the anterior aspect of the glenoid, (2) establishment of a deep anterior-inferior portal and splitting of the subscapularis tendon, (3) introduction of the “waterslide,” (4) osteotomy at the scapular neck 30° relative to the glenoid surface and trial impaction, (5 and 6) harvesting and preparation of a J-shaped bicortical iliac-crest bone graft, (7) press-fit impaction of the bone graft in the prepared osteotomy over the “waterslide,” and (8) capsuloligamentous repair over the graft.

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Alternatives: Coracoid transfer (Latarjet-Bristow), iliac-crest bone-grafting, and distal tibial allograft.

Rationale: Although widely in use, nonanatomic coracoid transfer procedures or bone-block techniques relying on hardware fixation are associated with specific complications, including nonunion, osteolysis, coracoid fractures, hardware complications, and difficult revision¹.

Many of these disadvantages can be avoided by the use of anatomic implant-free glenoid reconstruction with a J-shaped iliac-crest bone graft. After press-fit fixation, the graft undergoes a physiological remodeling process that follows the law of bone adaptation to mechanical stresses described by Wolff, which ultimately results in the restoration of a nearly native anterior scapular neck morphology⁴. The open version of this technique has been successfully used for over 3 decades. The arthroscopic, minimally invasive variation of the J-bone-graft technique presented in this video article represents a further advancement of the anatomic nature of the procedure.

Expected Outcomes: The arthroscopic implant-free J-bone-graft technique is an alternative to other procedures widely used for the treatment of anterior glenoid bone defects. The main advantage of this technique is the avoidance of severe complications that arise from the nonanatomic reconstruction and fixation methods found with other procedures¹. Early to midterm follow-up of the arthroscopic J-bone-graft technique has revealed excellent clinical results, and the traditional open technique has been in use successfully for over 3 decades²⁻⁵. Previous patients have been able to return to a variety of occupational and athletic activities including overhead, throwing, and contact sports. Return to daily living and to moderate athletic activities is usually possible within 3 months. Return to competition is allowed after 6 months²⁻⁵.

Important Tips:

- Avoid intraoperative graft fractures by applying strictly axial force during impaction.
- Reduce the risk of glenoid fractures by performing an oblique osteotomy at an angle of 20° to 30° and 5 mm medial to the glenoid surface.
- The postoperative physiological remodeling process determines ultimate graft fixation and glenohumeral stability. Keep this in mind when allowing return to activities.

Acknowledgment

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