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CORR Insights®: Time-dependent Changes After Latissimus Dorsi Transfer: Tenodesis or Tendon Transfer?

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Where Are We Now?

The management of massive irreparable rotator cuff tears in young active patients remains a challenge. Reverse total shoulder arthroplasty has demonstrated reliable improvements in both pain and function in more elderly or less active patients,

but its use in younger patients is controversial. Transfer of the latissimus dorsi tendon to the greater tuberosity in the fashion of L'Episcopo [9] for this problem was first proposed by Gerber [4] and multiple series have been published through the years with generally good results [1, 5, 11] with respect to improvements both in pain and function. Electromyogram and nerve conduction studies reveal dynamic functioning of the transferred muscle in both forward elevation and external rotation [6, 8]. Because of the rarity of this problem, most studies contain relatively few patients and most of the world's published experience derives from just a few centers. Although most patients have benefitted from this procedure, mixed results have been reported [7, 13] and only some prognostic indicators have been identified to help guide treatment recommendations.

It is generally accepted that an intact subscapularis tendon is required for this tendon transfer to be successful [5]. Other factors that may influence results include fatty infiltration of the teres minor [3], gender [2], and revision status [10, 14, 15]. Confusion remains as to the identification of the ideal patient for this relatively extensive procedure. When is a patient better suited for partial repair of these massive rotator cuff tears, a procedure associated with much less morbidity? This procedure is not indicated in cases of anterosuperior escape and its use in patients who cannot elevate to shoulder level may not be as beneficial as it is in those patients who demonstrate active elevation above the horizontal preoperatively. Despite a recent systematic review [12], the ideal patient for this procedure is not clearly defined primarily because of the relatively small number of patients in the literature.

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Where Do We Need To Go?

This current study by Ersen et al. poses the question as to whether observed

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improvement in shoulder function in the early postoperative period with latissimus dorsi transfer will be permanent or will deteriorate in the midterm. The authors evaluated 11 transfers for an average of 33 months (range, 12–62 months) and demonstrated an initial improvement in pain, Constant Score, and acromiohumeral distance, all of which showed some deterioration by final followup. They concluded that the tenodesis effect loses its strength with time and that progression of arthropathy should be expected in the future. Although all of their patients were still improved compared to their preoperative status, the authors were concerned that some patients would eventually require reverse total shoulder arthroplasty. Although a total of 50 patients with massive cuff tears were treated by the senior author during this study period, only 11 patients were offered latissimus dorsi transfer. The remaining patients were treated with either reverse prosthesis or debridement and partial repair depending on age and activity level. Gerber and colleagues [5] recently published his long-term results in 44 patients with a minimum of 10 years followup. This group had overall good results with lasting improvement in pain and function. Significant increase in arthrosis was also reported indicating that the results of this procedure may deteriorate with

time [5]. What we really need to know is how long this transfer lasts and if later conversion to reverse prosthesis will be successful. Identification of the ideal patient for this procedure is most critical to the wider adoption of this procedure.

How Do We Get There?

The paper by Ersen and colleagues is small and the loss of improvements were subtle in this patient group, but the study is one of the first to document change in effect during time for this muscle transfer. Even if this transfer proves to be temporary in some patients, the introduction of the reverse prosthesis offers an additional option in their future management. The results of this study should make the surgeon aware that future surgery may be required in these patients as the effects of latissimus dorsi transfer may deteriorate in the future.

Identification of the ideal patient for latissimus dorsi transfer remains the greatest challenge in this arena. Because of the rarity of this problem, the solution lies in prospective multicenter studies which would allow the surgeon to understand the importance of variables in pathoanatomy, clinical presentation, and symptoms. Leadership by the centers in the United States and Europe with the best experience

with this procedure could help minimize variation in technique and patient selection and allow the collection of truly meaningful data. Refinement in surgical technique has occurred with limitation in size of incisions, the addition of reinforcing grafts, and adjustments in insertion location but more work is necessary to optimize the function of the transferred tendon. There is certainly a place for this procedure in the armamentarium of the orthopaedic surgeon and future studies such as these will help to define the role of latissimus dorsi transfer in the management of these challenging patients.

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