The Effect of Glenoid Defect Size on The Morphological Change of The Grafted Coracoid After Latarjet Procedure

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INTRODUCTION:

There are some reports describing that bone graft osteolysis occurs after Latarjet procedure. Assuming that osteolysis is due to stress shielding, it should be more prominent in cases with smaller glenoid bone loss. However, there have been no reports investigating how the glenoid defect size would affect the morphological changes of the grafted coracoid.

METHODS:

To clarify the effect of glenoid defect size on morphological changes of the grafted coracoid after Latarjet procedure.

Methods: Thirty-seven consecutive patients with clinical evidence of recurrent anterior dislocation of the shoulder underwent Latarjet procedure in our institute and related hospitals between2009 and 2020. Of these, 29 patients (26 male and 3 female patients) who met the following inclusion criteria were retrospectively reviewed: 1) unilateral dislocation, 2) CT scans of bilateral shoulders were obtained 3 months, 1 year, and 2 years after surgery, 3) a minimum follow-up of 2 year. The mean age at the time of surgery was 32 years, and the mean follow-up was 27 months. The patients were divided into 2 groups: the large defect group with a glenoid bone loss ≥ 20% (13 patients) and the small defect group < 20% (16 patients). Bone graft union or osteolysis was evaluated in the CT images. The size (length, width, and thickness) of the bone graft and the articular surface area of the glenoid were measured by ImageJ (NIH, Bethesda).

RESULTS:

One patient showed an incomplete union. Relative to the uninvolved side, the surface area in the large defect group decreased from 105 ± 7% (3 months postop), to 102 ± 11% (1 year postop) and 98 ± 9% (2 years postop), whereas in the small defect group, it decreased from 125 ± 21% to 110 ± 12% and 105 ± 12%, respectively. The %decrease in the small defect group was significantly greater than that in the large defect group (P = 0. 0412). Bone graft osteolysis 2 years after surgery in the large and small defect groups was observed to be 100%, 100% at the base of the coracoid process and 23%, 50%, respectively at the tip of the coracoid process. The length of the bone graft in both groups significantly decreased from mean 21.0 mm, 20.1 mm to mean 17.3 mm, 15.6 mm, respectively (P = 0.0205, P = 0.0409).

DISCUSSION AND CONCLUSION:

The smaller the glenoid defect, the greater the amount of bone resorption of the grafted coracoid. This makes the final glenoid surface area closer to the uninvolved side regardless of the glenoid defect size.