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Outcome of Arthroscopic Rotator Cuff Repair with Muscle Advancement for Large to Massive Rotator Cuff Tear

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Summary:
Arthroscopic rotator cuff repair assisted by mini-open supraspinatus and infraspinatus muscle advancement reduced the failure rate for the large to massive rotator cuff tear.

Abstract:
INTRODUCTION
For small- to medium-sized rotator cuff tear (RCT), many authors report good to excellent clinical outcomes as well as high anatomical healing rates after arthroscopic rotator cuff repair (ARCR). However, high failure rates after ARCR were often reported for large to massive RCT. Since prior reports have shown a direct correlation between the postoperative clinical outcome and anatomic healing of the RCT, reduction of the failure rate after ARCR might be crucial to achieve the excellent outcome of the ARCR. We therefore performed ARCR combined with mini-open supraspinatus (SSP) and infraspinatus (ISP) muscle advancement for large to massive rotator cuff tear to decrease the tension on the repair site with the aim of reduction of the failure rate. In the current study, we evaluated the short clinical outcomes and anatomical healing rate after ARCR combined with muscle advancement.

METHODS
Between April 2008 and March 2012, 34 patients diagnosed as large to massive RCT were included in the current study. Of these patients, 17 patients were underwent transosseous equivalent ARCR with muscle advancement (study group) and 17 were underwent transosseous equivalent ARCR only (control group). ARCR combined with muscle advancement was performed as follows; 4 cm transverse skin incision was created along the medial border of the scapular spine for the muscle advancement. Trapezius was detached from the spine, and the SSP and ISP muscle belly was released from the scapular body. The medial fascial continuity between rhomboideus and SSP and ISP muscles were retained carefully beyond the medial border of the scapula. By this procedure, the tendon stumps can be advanced for 2 to 3 cm. The arthroscopic suprascapular nerve release was added in this procedure. The transosseous equivalent ARCR was performed conventionally in every patients. The pre- and post-operative Constant scores were assessed for the clinical outcomes for each group. Furthermore, the cuff integrity was assessed by post-operative MRI, and each failure rate was calculated.

RESULTS
Although there was statistically significant improvement for the mean Constant score from 43.4 preoperatively to 71.1 postoperatively in the study group and from 42.4 preoperatively to 78.1 postoperatively in the control group, there was no significant difference between these two groups. As the cuff integrity, the failure rates in the study group were significantly lower than in the control group (23.5% and 52.9%, respectively). There were statistically significant difference between these groups ($p<0.05$).

DISCUSSION & CONCLUSION

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The ARCR with SSP and ISP muscle advancement was useful to reduce the failure rate of the ARCR for large to massive rotator cuff tear in our study group. More large numbers of patients will be needed to declare the effectiveness of this technique.