Clinical Article

Clinical outcomes after arthroscopic rotator cuff repair

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Abstract

Background: Despite the fact that a few studies have reported good results following arthroscopic rotator cuff repair, other studies have raised concern regarding the biomechanical strength and integrity of arthroscopic rotator cuff repair. The purpose of this study was to independently evaluate the clinical results after arthroscopic rotator cuff repair.

Methods: We performed an independent retrospective review of 42 consecutive patients who underwent arthroscopic decompression and rotator cuff repair between 01 October 2002 and 30 November 2006. Indications for surgery were pain and decreased shoulder function that did not respond to conservative treatment. Complete data were available for a minimum of 12 months postoperatively.

The patients were evaluated both pre-operatively and at follow-up using a Visual Analogue Pain Score (VAS), the American Shoulder and Elbow Surgeon's (ASES) Outcome Score and clinical examination. Their ranges of motion as well as muscle strength were evaluated.

Results: The ASES and VAS scores, range of motion and muscle strength were significantly improved after arthroscopic rotator cuff repair.

Conclusion: Arthroscopic rotator cuff repair can reliably improve both shoulder pain and function, regardless of tear size. Future arthroscopic results may be improved with a double row suture technique and improved instrumentation and anchors. We are engaged in a follow-up study to ultrasonically evaluate the structural integrity of the arthroscopic rotator cuff repairs at a minimum of one year post-surgery.

Introduction

Many good results have been reported after open rotator cuff repair since Codman published his first clinical report in 1911.[1-4] Today many shoulder surgeons are capable of performing total arthroscopic rotator cuff repairs utilising recent advances and modern equipment.[5,6] Outcome data is inconsistent among different studies.[7,8] The purpose of this study was to evaluate clinical outcomes after arthroscopic rotator cuff repairs and to correlate these with tear size.

Materials and methods

Subjects

We performed a retrospective review of 46 consecutive patients who underwent arthroscopic decompression and rotator cuff repair between 01 October 2002 and 30 November 2006. Three patients were lost to follow-up and one died. There were 19 men and 23 women. The mean age was 57 years. Indications for surgery were pain and decreased shoulder function that did not respond to

conservative treatment. Complete data were available for a minimum of 12 months after surgery.

Outcome assessment

The patients were evaluated both pre-operatively and at follow-up using a Visual Analogue Pain Score (VAS) and the American Shoulder and Elbow Surgeon's (ASES) Outcome Score.[9] Forty-one of the patients were available for clinical examination and their ASES, VAS scores, range of motion as well as muscle strength were evaluated. All patients were asked whether they would undergo the procedure again.

Surgical technique

The patients were operated in the beach chair position. Standard posterior and anterior portals were used. The lateral portal was created to match the rotator cuff tear. The subacromial bursa was excised and the rotator cuff was mobilised with a probe. The medial retraction as well as the length of the tear was measured from anterior to posterior by use of an instrument of known length. A routine acromioplasty was performed. A biceps tenotomy was performed if the long head of biceps was subluxed, dislocated or severely degenerated. An excision of the acromio-clavicular joint was performed if the patient's symptoms justified the procedure.

Arthroscopic rotator cuff repair can reliably improve both shoulder pain and function, regardless of tear size

The greater tuberosity was prepared and the mobilised rotator cuff was fixed to the greater tuberosity using suture anchors. The number of sutures and anchors used was dependent on the size of the tear. The anchors were placed on the lateral aspect of the tuberosity to cover the footprint area and maximise the surface area and healing potential. We mostly used a single row technique for this series. Since 2007 we have been using a double row suturing technique in tears larger than 3 cm.

Table I: Pre- and post-operative ASES and VAS scores

Rotator cuff tear size	1-3 cm	3-5 cm	5+ cm
Number of patients	20	19	3
ASES			
• pre-op	44	27	24
• post-op	94	89	81
VAS			
• pre-op	8	8	8
• post-op	1	1	1

Table II: Pre- and post-operative range of motion and muscle strength

Rotator cuff tear size	1-3 cm	3-5 cm	5+ cm
Number of patients	20	19	3
Range of motion			
Forward elevation			
• pre-op	107º	36º	95º
• post-op	170º	45º	160º
External rotation			
• pre-op	33º	85º	30º
• post-op	44º	150º	40º
Average power graded out of 5			
External rotation			
• pre-op	3.5	3.1	2
• post-op	5	4.7	3.5

Results

Overall, the patients experienced a significant improvement in their ASES and VAS scores *(Table I)*. There were no significant differences between the different tear sizes. The strength and range of motion also improved significantly postoperatively *(Table II)*. Most of the patients indicated that they would be willing to have the same surgery again.

Discussion

The objective of arthroscopic rotator cuff repair is to relieve pain and improve function. Despite the fact that a number of studies have reported good outcomes after arthroscopic rotator cuff repair, there are studies that have raised concern regarding the high failure rates and biomechanical strength of the arthroscopic repairs. The aim of this study was to show that the clinical results of arthroscopic rotator cuff repair are comparable to open cuff repair. Patients with small to medium tears (1-3 cm) do well after arthroscopic repair. Patients with massive tears had significant residual weakness of external rotation and forward elevation. We are currently busy with a follow-up study where an experienced ultrasonographer evaluates the structural integrity of the arthroscopic rotator cuff repairs with ultrasound at a minimum of one year post-surgery.

Conclusion

Arthroscopic rotator cuff repair can reliably improve both shoulder pain and function, regardless of tear size. Future arthroscopic results may be improved with a double row suture technique, improved instrumentation and anchors.

This article was submitted to an ethical committee for approval. The content of this article is the sole work of the authors. No benefits of any form have been derived from any commercial party related directly or indirectly to the subject of this article.

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