



Case Report

Korean Medical Treatment Including Miniscalpel Acupuncture for Patients After Rotator Cuff Tear Surgery: A Report of Two Cases



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ABSTRACT

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This study aimed to report the effect of Korean medical treatment including miniscalpel acupuncture on 2 patients who underwent surgery for rotator cuff tear. They were treated for almost 4 weeks at the Department of Acupuncture and Moxibustion, Dong-Eui University Korean Medicine Hospital. Visual analog scale (VAS), and range of movement (ROM) were used to evaluate treatment effects. In both patients, shoulder pain and restriction of shoulder joint movement improved after miniscalpel acupuncture treatment. In Case 1, shoulder pain decreased from a VAS score 8 to a VAS score 3, and ROM of the shoulder improved from flexion 100° to 160°, extension 10° to 30°, abduction 90° to 130°, adduction 10° to 40°, internal rotation 10° to 50°, and external rotation 10° to 50°. In Case 2, shoulder pain, which was rated a VAS score 8 at first-visit, disappeared, and ROM of the shoulder recovered to normal range. These results suggest miniscalpel acupuncture may contribute to the recovery process after rotator cuff tear surgery.

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Introduction

The rotator cuff consists of four muscles; the supraspinatus, infraspinatus, subscapularis, and teres minor. The humeral head is covered by muscles, which rotate the arm and stabilize the humeral head in the joint [1].

Rotator cuff tear (RCT) is a common injury that is responsible for 50% of shoulder joint pain, and usually occurs in individuals aged 40 years or more. Most patients have a history of traumatic damage or repetitive overuse of the muscles [2]. RCT symptoms are shoulder pain and restriction of movement of the shoulder joint. The pain worsens in the night time, and active movement is restricted, whereas passive movement is normal [1]. There are conservative and surgical treatments for RCT.

Surgical treatment is considered for RCT either when there has been no improvement after 3-6 months using conservative treatment, or depending on the degree of the tear and motion

disorder. After surgical treatment, management with braces and rehabilitation is required for several months to restore normal shoulder function. In addition, shoulder pain and joint stiffness are often reported despite successful surgery [3,4]. The studies of surgical methods which focus on the better clinical outcome and a low re-rupture rate have been reported. However, treatment for patients with complications such as shoulder pain and joint stiffness after RCT surgery is insufficient [5,6].

In Korean medical treatment, various treatments such as herbal medicine, acupuncture, pharmacopuncture, and moxibustion, have been reported in patients after RCT surgery [3,7]. However, reports on miniscalpel acupuncture are scarce.

It has been reported that miniscalpel acupuncture has a better outcome on musculoskeletal pain compared with regular acupuncture treatment [6,7]. It can recover the original kinetic state, and promote blood circulation to the lesion by peeling the chronically damaged soft tissue of the muscles, tendon sheath, and

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ligament [10].

Here, we report the clinical effects of miniscalpel acupuncture, acupuncture and herbal medicine in 2 patients who visited the Department of Acupuncture and Moxibustion, Dong-Eui University Korean Medicine Hospital for shoulder pain and range of movement (ROM) restriction after RCT surgery.

Case Report

Subjects

There were 2 patients who were admitted to the Department of Acupuncture and Moxibustion, Dong-Eui University Korean Medicine Hospital on October 22, 2018 and were discharged on November 17, 2018 after RCT surgery. The patients received miniscalpel acupuncture 4 times, and they also received herbal medicine, and regular acupuncture throughout their hospital stay. This study is a retrospective chart review and approved for exemption from deliberation by the Institutional Review Board (IRB) of Dong-Eui University Korean Medicine Hospital (IRB No.: 2019-03).

Treatment methods

Miniscalpelacupuncture

Prior to treatment, the patients were provided with comprehensive information about the procedure, and patients who agreed to the procedure were treated with miniscalpel acupuncture. Following the first treatment, subsequent treatment sessions were conducted at intervals of 5-8 days. The treatment interval was adjusted according to the patients' symptoms and conditions.

To prevent infection, the practitioner wore sterilized gloves and a mask, and the treatment area was sterilized with betadine. The miniscalpel acupuncture points were: LI14, LI15, LI16, TE14, TE15, SI10, SI12, SI13, GB21, LU01, LU02 and tender points of the rotator cuff. The procedure was performed in the recumbent position. Sterilized, disposable miniscalpels (0.5 mm × 50 mm; DongBang Acupuncture Inc., Korea) were used. The miniscalpel was inserted parallel to the nearby muscle and ligaments, at a depth of 20-40 mm, and the adhered soft tissue was peeled and the miniscalpel pulled out. After the procedure, the patient was informed about possible side effects such as temporary discomfort, hemorrhage, dizziness, cold sweat, and palpitation. The miniscalpel acupuncture was performed by a Korean medicine doctor with over 2 years of clinical practice (Table 1).

Acupuncture

Acupuncture was performed once every day during the hospital stay, and the needle retention time was approximately 30 minutes. Sterilized, disposable needles (0.25 mm × 40 mm; DongBang Acupuncture Inc., Korea) were used. The acupuncture points were: Shinkwan (Dong's acupuncture), ST40 of the normal side, and LI11, SI03, TE03 of the affected side.

Herbal medicine treatment

Seokyung decoction was prescribed to both patients from October 22. In Case 1, the medicine was changed to Kaegyeol-seokyung decoction on October 24 and maintained until discharge day on November 17. In Case 2, Seokyung decoction was maintained during the hospital stay. The medicine was taken 3 times a day (Table 2).

Evaluation methods

Visual analogscale (VAS)

VAS was used to evaluate the intensity of subjective pain. The patient's level of pain was assessed on a scale of 0 to 10 using a 10 cm measuring instrument. 0 represented no pain, and 10 represented the worst pain imaginable. VAS was used to evaluate the patient at the first-visit and every day after miniscalpel acupuncture was performed for a total of 5 times.

ROM

Active ROM of the right shoulder joint was measured. The angles were measured by moving flexion, extension, abduction, adduction, external rotation, and internal rotation, to the maximum extent. Evaluation was performed at the first-visit and every day after miniscalpel acupuncture, for a total of 5 times.

Case 1

Patient

Song00, F/61

Chief complaint

Right shoulder pain and ROM restriction

Onset

February 2018

Past history

Left RCT, calcific tendinitis- 2012 op.

Present illness

Shoulder pain occurred whilst playing tennis in February 2018. The patient did not receive medical treatment and rested at home for 2 months. As the pain worsened, the patient sought medical treatment at a local hospital and was diagnosed with RCT using magnetic resonance imaging (MRI). The patient received a steroid injection in her right arm and she underwent physical therapy for 3 months, but showed no improvement in symptoms. On August 10, the patient underwent arthroscopic surgery at a local hospital. After the surgery, shoulder pain and ROM restriction persisted despite rehabilitation. On August 24, the patient was admitted to local Korean medicine hospital, and was treated with herbal medicine, acupuncture, and rehabilitation for a month, without significant improvement. She visited the Department of Acupuncture and Moxibustion, Dong-Eui University Korean Medicine Hospital on October 22, 2018.

Symptoms of first-visit

The pain, which was rated as a VAS score 4, occurred around the rotator cuff, in a stable state. The pain increased to a VAS score 8 when the right arm was pressed, flexed, abducted and raised above the head, and when the arm was rotated internally and moved backward (ROM: flexion 100°, extension 10°, abduction 90°, adduction 10°, internal rotation 10°, external rotation 10°).

Radiological findings

The MRI of the patient's shoulder was taken on August 7, 2018 at a local hospital. The finding was a partial tear of the supraspinatus and infraspinatus (Fig. 1).

Treatment progress

The shoulder pain, which was a VAS score 4 in a stable state, disappeared after the 3rd miniscalpel acupuncture treatment.

Table 1. Miniscalpel Acupuncture Details Based on the STRICTA 2010 Checklist [11].

Item	Detail
1. Acupuncture rationale	1a) Style of acupuncture - Miniscalpel acupuncture
	1b) Reasoning for treatment provided, based on historical context, literature sources, and/or consensus methods, with references where appropriate - Textbook [10,14] - Clinical experience - Consensus by the experts in acupuncture
	1c) Extent to which treatment was varied - Fixed points plus optional points according to symptoms
2. Details of needling	2a) Number of needle insertions per subject per session (mean and range where relevant) - From 11 to 15
	2b) Names (or location if no standard name) of points used (uni/bilateral) - LI14, LI15, LI16, TE14, TE15, SI10, SI12, SI13, GB21, LU01, LU02 and tender points of the rotator cuff (Affected side)
	2c) Depth of insertion, based on a specified unit of measurement, or on a particular tissue level - From 20 to 40 mm
	2d) Response sought (e.g., de qi or muscle twitch response) - 'De qi' sensation
	2e) Needle stimulation (e.g., manual, electrical) - Manual stimulation: peeling off the adhesion of soft tissue by needling.
	2f) Needle retention time - No retention time
	2g) Needle type (diameter, length, and manufacturer or material) - Sterilized, disposable miniscalpels (0.5 mm × 50 mm; DongBang Acupuncture Inc., Korea)
3. Treatment regimen	3a) Number of treatment sessions - Four treatment sessions
	3b) Frequency and duration of treatment sessions - Once weekly for 4 weeks, 20 minutes for each session
4. Other components of treatment	4a) Details of other interventions administered to the acupuncture group (e.g., moxibustion, cupping, herbs, exercises, lifestyle advice) - Acupuncture - Herbal medicine treatment
	4b) Setting and context of treatment, including instructions to practitioners, and information and explanations to patients - How to procedure - Possible response after the treatment
5. Practitioner background	5a) Description of participating acupuncturists (qualification or professional affiliation, years in acupuncture practice, other relevant experience) - Korean medicine doctor with over 2 years of clinical practice
6. Control or comparator interventions	6a) Rationale for the control or comparator in the context of the research question, with sources that justify this choice - No control or comparator interventions
	6b) Precise description of the control or comparator. If sham acupuncture or any other type of acupuncture-like control is used, provide details as for items 1 to 3 above - No control or comparator interventions

Table 2. Composition of Herbal Medicine.

Prescription	Composition
Seokyeong decoction	Curcuma Longae Rhizoma 8g, Puerariae Radix · Atractylodis Rhizoma Alba · Angelicae Gigantis Radix · Paeoniae Radix Alba · Kalopanax Cortex 4g, Zingiberis Rhizoma Crudus 3g, Glycyrrhizae Radix · Osterici Radix 2g
Kaegyeol-Seokyeong decoction	Pinelliae Rhizoma · Atractylodis Rhizoma Alba · Cnidii Rhizoma · Angelicae Gigantis Radix · Osterici Radix · Cyperi Rhizoma · Citri Pericarpium · Arisaematis Rhizoma · Linderae Radix · Zingiberis Rhizoma Crudus · Perillafrutescens 4 g, Cinnamomi Ramulus · Glycyrrhizae Radix 2 g

Table 3. Progress in the Treatment of Case 1.

	Oct 22	Oct 26	Oct 31	Nov 7	Nov 15
VAS (stable)	4	3	2	0	0
VAS (motion)	8	4	3	3	3
ROM					
Flexion	100	100	120	150	160
Extension	10	10	10	30	30
Abduction	90	90	100	130	130
Adduction	10	10	10	40	40
External rotation	10	10	30	30	50
Internal rotation	10	10	10	30	50

ROM, range of movement; VAS, visual analog scale.

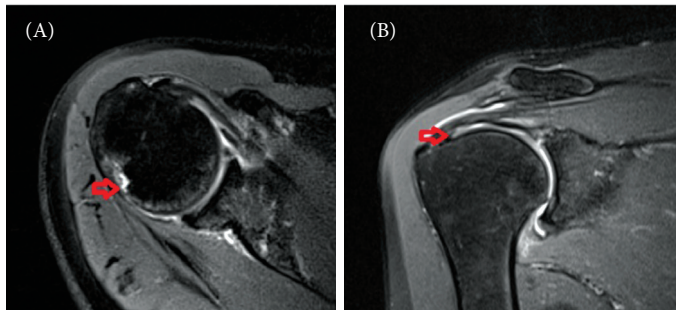


Fig. 1. Shoulder MRI of Case 1. (A) Axial, (B) Coronal. MRI, magnetic resonance imaging.

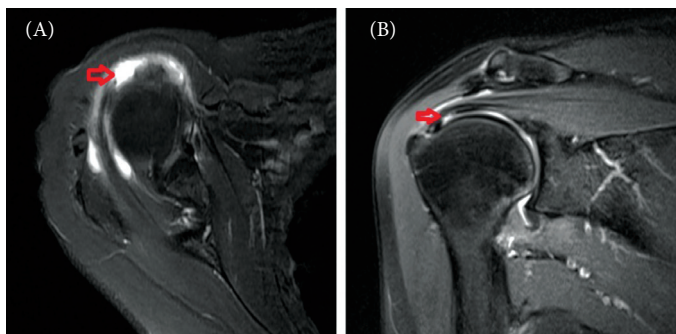


Fig. 2. Shoulder MRI of Case 2. (A) Axial, (B) coronal. MRI, magnetic resonance imaging.

Furthermore, pain on movement of the arm decreased from a VAS score 8 to a VAS score 3, and shoulder ROM improved (Table 3), so it became possible for her arm to flex, abduct and raise above the head, and rotate internally and move backward.

Case 2

Patient

Yu 00, F/61

Chief complaint

Right shoulder pain and ROM restriction

Onset

December 2017

Past history

Non specific

Present illness

Shoulder pain occurred during exercising in December 2017. The patient did not receive medical treatment and the pain persisted. On April 2018, the patient was diagnosed with RCT using an MRI at a local hospital, and underwent arthroscopic surgery. However, the ROM of the shoulder joint worsened whilst wearing the shoulder brace. The patient received rehabilitation for 5 months, but no significant improvement was seen. She visited the Department of Acupuncture and Moxibustion, Dong-Eui

University Korean Medicine Hospital on October 22, 2018.

Symptoms of first-visit

The pain which was rated as a VAS score 2, occurred around the greater tuberosity of the humerus, acromion, and acromioclavicular joint in a stable state. Pain increased to a VAS score 8 whilst exercising to the maximum range of the shoulder (ROM: flexion 100°, extension 30°, abduction 90°, adduction 40°, internal rotation 40°, external rotation 40°).

Radiological findings

An MRI of the shoulder was taken on April 26, 2018 at a local hospital. The findings were a full-thickness tear with a Grade 1 retraction of the supraspinatus, mid to posterior portion, and a low-grade articular surface partial-thickness tear of the infraspinatus, inferior portion (Fig. 2).

Treatment progress

Shoulder pain, which was rated as a VAS score 2 in the stable state and a VAS score 8 during shoulder movement at the first-visit, disappeared. In addition, shoulder ROM improved from flexion 100° to 170°, extension 30° to 45°, abduction 90° to 150°, adduction 40° to 40°, internal rotation 40° to 90°, and external rotation 40° to 70° (Table 4). After the treatment, the patient had normal function of the shoulder.

Discussion

The aim of RCT surgery is to stabilize the shoulder joint by placing the humeral head in the center of the joint, thereby facilitating the restoration of normal function to the shoulder. The larger the tear size, the more difficult it is to manage symptoms with conservative treatment. In addition, over time, the tear size increases and tissue regression often occurs. Even after the surgical procedure, it is often difficult to move, and pain is experienced [12] so appropriate rehabilitation after surgery is needed. Approximately 6 months of rehabilitation is recommended to restore normal function to the shoulder. Korean medical treatment may improve the efficiency of rehabilitation and help restore function to the shoulder.

The postoperative rehabilitation protocol for RCT is divided into 3 stages. The goal of Stage 1 is to control pain using a shoulder brace and medication for approximately 6 weeks, according to the severity of the tear, and to recover the shoulder ROM with 140° flexion, 40° external rotation, and 60° abduction by passive joint movement. The aim of Stage 2 (6-12 weeks after surgery) is to remove the shoulder brace, and to improve the shoulder ROM to 160° flexion, 60° external rotation and 90° abduction with active assistance, or when active joint movement is performed. At Stage 3 (4-6 months after surgery), the aim is restoring ROM to the same degree as the contralateral side, and strengthening the rotator cuff with passive joint motion, active assistance, and active joint motion, without shoulder joint pain or tenderness [2,13].

The patients in this study were at Stage 3 of the postoperative rehabilitation protocol for RCT. However, both patients complained of ROM limitation and shoulder pain, and despite continuous rehabilitation treatment, neither patient had passed Stage 1 of the postoperative rehabilitation protocol.

Miniscalpel acupuncture alleviates dysfunction by exfoliating adhesion and scarring between soft tissues. In addition, pain can be controlled by removing tension and pressure on the lesion tissue. Also, it has the advantage of improving circulation of the blood to the lesion tissue, and thus the speed of recovery at the site of treatment [14,15]. In this study, the miniscalpel acupuncture points were the internal and external portions of the infraspinous region of scapula, where the rotator cuff originates, and the tender points of the supraspinous fossa, TE14, TE15, SI10, SI12, SI13 and GB21. The anterior, middle and posterior parts of the deltoid near the humerus, where the rotation cuff is inserted, LI14, LI15 and LI16 were treated. In addition, LU01 and LU02 were used to treat the anterior tender points of the pectoralis major, pectoralis minor, and subclavicular region.

In Case 1, the shoulder pain, which was a VAS score 4 in a stable state, disappeared, and pain during movement of the arm decreased from a VAS score 8 to a VAS score 3. Furthermore, shoulder ROM improved from flexion 100° to 160°, extension 10° to 30°, abduction 90° to 130°, adduction 10° to 40°, internal rotation 10° to 50°, and external rotation 10° to 50°. The patient complained of severe shoulder pain and ROM limitations when the right arm was internally rotated, it was impossible to position her arms

Table 4. Progress in the Treatment of Case 2.

	Oct 22	Oct 26	Oct 31	Nov 7	Nov 15
VAS (stable)	2	2	0	0	0
VAS (motion)	8	6	3	2	0
ROM					
Flexion	100	100	150	170	170
Extension	30	30	30	45	45
Abduction	90	90	140	150	150
Adduction	40	40	40	40	40
External rotation	40	40	70	70	90
Internal rotation	40	40	70	70	70

ROM, range of movement; VAS, visual analog scale.

backward. After the treatment, it became possible for her to grasp both hands behind her back. In Case 2, shoulder pain, which was rated as a VAS score 2 in the stable state and a VAS score 8 during shoulder movement at the first-visit, disappeared, and shoulder ROM recovered from flexion 100°, extension 30°, abduction 90°, adduction 40°, internal rotation 40°, and external rotation 40° to the normal range after treatment.

In this study, Korean medical treatment including miniscalpel acupuncture may have had positive clinical effects on pain relief and recovery of shoulder ROM after RCT surgery. However, because we observed only 2 cases in this study, the conclusion of this study cannot be generalized. Further, this study had some limitations, one of which was that other assessment tools had to be used to measure shoulder disability, such as shoulder pain and disability index, for more systemic evaluation in addition to VAS and ROM. Another limitation is that there was no control group in this study, and therefore comparison with other treatment tools could not be done. In the future, systematically-designed large scale randomized controlled trials should be conducted to study the effects of miniscalpel acupuncture after RCT surgery.

Conflicts of Interest

The authors have no conflicts of interest to declare.

References

- [1] Robert K, Sinder MD. Essentials of Musculoskeletal Care, 3rd ed. Seoul (Korea): Hanwoori; 1999. p. 114-116. [in Korean].
- [2] Kim HS, Heo WY, Hyun MK, Kim JS, Gang IA. Four Case of Partial Tear of Supraspinatus Tendon Treated by Acupotomy Combined Oriental Medical Treatments. *Acupunct* 2014;31:167-176. [in Korean].
- [3] Jeong JY, Kim JH, Song CH, Jang KJ, Kim CH, Yoon HM. 1 Case of Shoulder Pain Treated with Oriental Treatment Including Pharmacopuncture in Rotator Cuff Surgery. *J Korean Acupunct Moxib Soc* 2012;29:119-125. [in Korean].
- [4] Roh SM, Jeong JH, Moon ES, Song EG. Common Orthopedics disease 62. Seoul (Korea): Koonja; 2002. p. 120-122. [in Korean].
- [5] Ko SH, Shin SM, Choi YJ, Cha JR, Park HC. The Use of Arthroscopic UU Stich for Rotator Cuff Tear and Clinical Results. *Clin Shoulder Elbow* 2011;14:67-72. [in Korean].
- [6] Seo JB, Bang SC. Short-term Complications after large and massive Rotator Cuff Tear Surgery. Seoul (Korea): Korean Shoulder and Elbow Society; 2006. 86 p. [in Korean].
- [7] Kim YH, Hwang MH, Kim JS, Lee HJ, Lee YK. Three Case Reports of Patients Treated with Korean Medicine after Rotator Cuff Repair. *Acupunct* 2017;34:39-48.
- [8] Ma C, Wu S, Li G, Xiao X, Mai M, Yan T. Comparison of miniscalpel-needle release, acupuncture needling, and stretching exercise to trigger point in myofascial pain syndrome. *Clin J Pain* 2010;26:251-257.
- [9] Jun SA, Lee JH, Gong HM, Chung YJ, Kim JR, Park CA et al. The Effects of Miniscalpel Acupuncture on Cervicogenic Headache: A report of three cases. *Acupunct* 2017;34:131-138.
- [10] Korean Acupuncture & Moxibustion Society Textbook Compilation Committee. *Acupuncture Medicine*, 4th ed. Seoul (Korea): Hanmi Medicine Publish Company; 2016. p. 173-180. [in Korean].
- [11] MacPherson H, Altman DG, Hammerschlag R, Youping L, Taixiang W, White A et al. Revised Standards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA): extending the CONSORT statement. *PLoS Med* 2010;7:e1000261.
- [12] Lee GE, Kim YI, Jo KS, Han SH, Kim MK, Min BG et al. Forty-One Cases of Rotator Cuff Injuries Treated by Complex Korean Medicine Treatment: A Retrospective Review. *J Korean Med Rehabil* 2018;28:81-87. [in Korean].
- [13] Brotzman B, Wilk KE. *Clinical Orthopedic Rehabilitation*. Seoul (Korea): Hanmi Medical; 2005. p. 168-178. [in Korean].
- [14] Kang CS, Yang HM. *Clinical Miniscalpel Acupuncture Medicine*. Seoul (Korea): Dawoo; 2003. p. 95-105. [in Korean].
- [15] Kim JI, Kim HS, Park GN, Jeon JH, Kim JH, Kim YI. Miniscalpel Needle Therapy with Integrative Korean Medical Treatment for Carpal Tunnel or Tarsal Tunnel Syndrome: Case Series of Three Patients. *Acupunct* 2017;34:139-152.