

## CASE REPORT

## Manual Acupuncture Using the Wide Rotation Method in Treating Adhesive Capsulitis

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### Abstract

Adhesive capsulitis (AC), is one of the disorders commonly encountered in clinical practice which caused great disability in performing daily activities. The cause of AC is unknown, but its pathogenesis involves shoulder joint capsule synovial tissue inflammation that produces pain and the formation of fibrotic tissue. The forming of fibrotic tissue causes the shrinkage of joint space and limitation in the shoulder range of motion (ROM). Many modalities of treatment had been used to treat AC, but there has been no consensus regarding the best treatment. Acupuncture had been used in the treatment of AC and showed good results, especially in reducing pain and improving ROM. This paper showcased the effects of manual acupuncture using the wide rotation stimulation method, a rarely used technique that has never been published before, in the treatment of AC. In this case report, the wide rotation stimulation method showed great results in reducing pain and improving ROM.

**Key words:** acupuncture; frozen shoulder; adhesive capsulitis.

## Akupunktur Manual Menggunakan Metode Rotasi Busur dalam Penanganan Adhesive Capsulitis

### Abstrak

Adhesive capsulitis (AC) merupakan penyakit yang sering ditemukan dalam praktik klinis dan menimbulkan gangguan yang besar terhadap kemampuan menjalankan aktivitas sehari-hari. Penyebab AC belum diketahui, tetapi patogenesisnya mencakup peradangan jaringan sinovial di kapsul sendi bahu yang menimbulkan nyeri dan pembentukan jaringan fibrotik. Jaringan fibrotik yang terbentuk mengakibatkan penyempitan celah sendi dan penurunan range of motion (ROM) sendi bahu. Berbagai terapi telah digunakan untuk menangani AC, tetapi belum ada konsensus yang menyatakan terapi terbaik. Akupunktur telah banyak digunakan dalam penanganan AC dan menunjukkan hasil yang baik, terutama dalam menurunkan nyeri dan memperbaiki ROM. Tulisan ini menunjukkan efek akupunktur manual menggunakan metode rotasi busur, suatu metode yang jarang digunakan dan belum pernah dipublikasikan sebelumnya dalam penanganan AC. Dalam laporan kasus ini, metode rotasi busur menunjukkan hasil yang sangat baik dalam menurunkan nyeri dan memperbaiki ROM.

**Kata kunci:** akupunktur; frozen shoulder; adhesive capsulitis.

## Introduction

Adhesive capsulitis (AC); commonly known as frozen shoulder; is defined by the American Shoulder and Elbow Society as a condition of uncertain etiology characterized by significant restriction of both active and passive shoulder motion that occurs in the absence of a known intrinsic shoulder disorder.<sup>1</sup> AC occurred in 2-5% of general population; mainly affecting women 40-60 years of age. This number increases up to 20% in diabetic population. AC is a self-limiting disorder; although in some cases the sequelae can be permanent.<sup>2</sup>

AC affects the shoulder joint capsule and develops within a few months to two years. The progression of AC can be categorized into four stages; with each stage typically lasting a few months. The first stage (painful) was characterized by pain in active and passive shoulder motion. The second stage (freezing) was characterized by night pain and progressive loss of shoulder range of motion (ROM). The third stage (frozen) presents with minimum pain but severely limited shoulder ROM. In the fourth stage (thawing); there was a gradual improvement in pain and shoulder ROM. Plain radiographs are generally normal in AC patients.<sup>3</sup>

There has been no consensus on the treatment of AC. Treatments were divided into non-surgical (NSAIDs; intra-articular injections; physiotherapy; etc.) and surgical (arthroscopic/open release).<sup>2</sup> Besides conventional treatments; acupuncture has also been used in the management of AC. Acupuncture is done by inserting a thin needle into certain areas of the human body and then stimulating the needle in order to elicit neurohumoral responses of the human body. Several studies have shown that acupuncture is effective in the treatment of AC; mainly in reducing pain and improving shoulder ROM.<sup>4,5</sup>

This case report presents a case of AC treated using acupuncture with wide rotation needle stimulation; a mechanical stimulation modality of acupuncture that has never been published before.

## Case Illustration

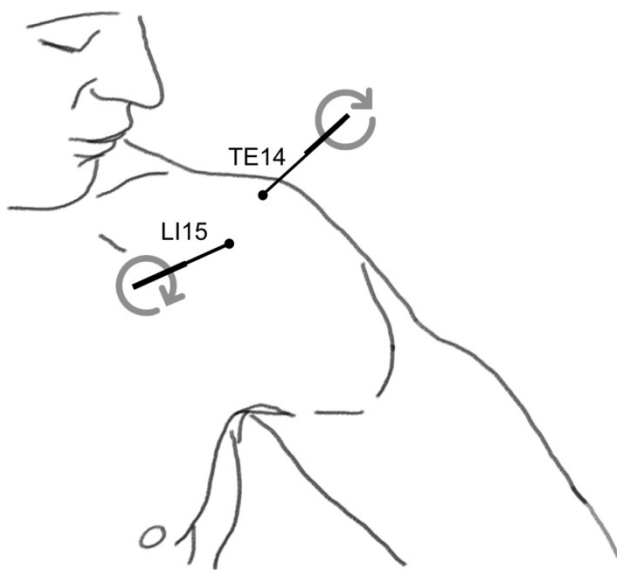
A 60-year-old woman came to the author with the chief complaint of a painful left shoulder and a limitation of shoulder movement that hindered her from doing daily activities since four months ago. The pain worsened progressively and for the past month the patient also experienced severe night pains on her left shoulder that disturbed her sleep. The limitation of her shoulder ROM also worsened gradually in the past month. The patient reported a visual analog scale (VAS) score of 6 for her pain. The

patient was diagnosed as having diabetes mellitus two years ago and was prescribed metformin and acarbose; which the patient had been taking regularly up to the time of consultation. The patient was unable to recall any event of injury to her shoulder. Similar symptoms were experienced by the patient two years ago; for which the patient underwent two series of physiotherapy to no avail. The patient reported that the previous symptoms disappeared on its own after more than a year.

Physical examination revealed a reduction of active and passive ROM with pain at the end of each shoulder movement. Of the shoulder ROM; anterior flexion was reduced to 120°; abduction was reduced to 90°; external rotation was reduced to 45°; and internal rotation was reduced to as high as the fourth lumbar vertebrae. Radiographs of the patient's left shoulder showed no abnormalities and her blood sugar level was 123 mg/dL at the time of examination.

The patient agreed to undergo the acupuncture procedure and the treatment was performed twice a week for 12 sessions; with the duration of 20 minutes per session. During each session; two acupuncture points were selected on the left shoulder: LI15 and TE14. A 40mm x 0.25mm filiform needle was punctured into each point until two-thirds of the needle was inserted into the tissue; both needles were then stimulated by rotating them in a wide circular angle without pulling the needle out of the tissue (Figure 1). During stimulation; the patient experienced a powerful needling sensation (*deqi*). After the stimulation; the needle was left for 20 minutes and then removed.

At the end of each session; the patient experienced improvements in her pain and shoulder ROM. The improvements lasted for about a day before the symptoms worsened again. After the second session; there were gradual improvements in pain and shoulder ROM after each session. After the fourth session; the patient no longer experienced night pains. After the seventh session; the patient no longer experienced pain in her left shoulder; while slight pain is still experienced at the end of the shoulder motion. The treatment was completed for 12 sessions. At the end of the treatment; there were significant improvements in the pain and shoulder ROM. The VAS score was reduced from 6 to 3. The anterior flexion improved from 120° to 170°; abduction improved from 90° to 170°; and internal rotation improved from as high as the fourth lumbar vertebrae to as high as the second lumbar vertebrae. The internal rotation remained at 45°. The patient was pleased and reported that she could perform her daily activities better.



**Figure 1. Schematic Figure of the Wide Rotation Stimulation Method on the LI15 and TE14 Acupuncture Points**

### Discussion

While acupuncture has been proven to be able to reduce pain and improve ROM in AC patients; the result of previous studies showed that significant improvements happened after about 3 months of therapy.<sup>4,5</sup> In this case; gradual improvements happened as soon as the third session and by the end of the 12 session (one and a half month after the start of therapy); a significant improvement in pain and shoulder range of motion was achieved. This difference might be able to be attributed to the stimulation method used.

The wide rotation stimulation method used in this case has never been published before; therefore no studies had been done to explain the mechanism with which this stimulation method could cause improvements in AC. The main difference of the wide rotation stimulation method and other stimulation method commonly used was in the width of its rotation angle. Several studies showed that deeper needle penetration; larger needle stimulation amplitude; and greater needling sensation elicited during stimulation correlates positively with analgetic effects of acupuncture and the movement of fibroblasts to the needling location. This effect was attributed to a greater degree of connective tissue stretch caused by such methods.<sup>6-8</sup> The wide rotation stimulation method used in this case was done with a deep needle penetration; large stimulation amplitude; and elicit a powerful needling sensation which might explain how this method of stimulation produces better effect in the treatment of AC.

Other studies also showed that tissue stretch caused by acupuncture needle stimulation reduces

local transforming growth factor  $\beta 1$  level and increase the release of adenosine; which reduces inflammation and pain and prevents the formation of fibrotic tissue. This might help to explain how the local needling at the shoulder area; in this case in the LI15 and TE14 acupuncture points; could improve the symptoms of AC.<sup>9,10</sup>

### Conclusion

In this case report; acupuncture using the wide rotation stimulation method is effective in improving the pain and shoulder ROM in AC. The effect achieved through this method is greater than that of other acupuncture methods commonly used. Further studies are required in order to ascertain the reproducibility of this method's effectiveness and to explain the mechanism that caused the improvements.

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