

Effect of *Chuna* (Shoulder Traction) Treatment on Frozen Shoulder During Korean Medical Treatment

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[Abstract]

Objectives : Through an analysis of the previous studies, It is estimated that *Chuna*(shoulder traction) is effective in reducing the pain and increasing motion range of shoulder joint of the patient. So this study is to investigate the effects of *Chuna*(shoulder traction) on frozen shoulder.

Methods : After treated with acupuncture and electro stimulating therapy, the subjects were measured list of measurement. And then treated with *Chuna*(shoulder traction) therapy, the subjects were measured list of measurement again. All treatment was performed by the same doctor who is a highly qualified about *Chuna*(shoulder traction). *Chuna*(shoulder traction) treatment takes 15 minutes. Three kind of *Chuna*(shoulder traction) therapy were performed for 5 minutes each. Depending on the degree of the subject's pain, treatment strength was adjusted.

Results :

- *Chuna* simultaneous treatment group, shoulder joint range of flexion, extension, abduction, adduction, external rotation and internal rotation movement improved statistically significant.
- *Chuna* simultaneous and acupuncture treatment group, visual analogue scale(VAS) scores of two groups decreased statistically significant.

Conclusions : The result suggests that *Chuna*(shoulder traction) can be effective to recover range of motion and reduce pain on patients with frozen shoulder.

Key words :
 Frozen shoulder;
Chuna;
 Shoulder traction;
 Korean medicine

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I. Introduction

In the joints of the human body, the shoulder joint has the widest range of motion¹⁾. It is supplemented by strong muscles and many ligaments because the scapula and many articular capsule has available in this space²⁾. Commonly known that the shoulder pain shows high frequency next to low back pain, and causes many problems in human daily life³⁾.

Osipgyeon, frozen shoulder and adhesive capsulitis are synonymous. It means certain diseases that accompanied by limitation of motion of the shoulder joints. It is difficult to describes the cause of this disease⁴⁾. Among the musculoskeletal degenerative diseases, frozen shoulder can appear before and after 50 years old by unknown cause, and the pain is progressed in the shoulder joint and is accompanied by severe limitation of motion⁵⁾. The pain and movement disorders in the shoulder can cause a lot of trouble in daily life. Commonly, the pain and joint movement limitation progressed after 3~4 month from the onset, the later 3~4 month pain can be reduced, the last 3~4 month joint movement can slowly recovered. Patients are generally recovered naturally, but not all the patients, and some of the patients pain and joint movement limitation can remained rest of the life⁶⁾.

The general treatments of frozen shoulder are hot pack, transcutaneous electrical nerve stimulation (TENS), interferential current therapy(ICT), ultra sound therapy, active joint movement, passive expansion exercise and a lot of kinds of exercise. The most important part of the treatments is restoration of the range of motion by the stretching.

Chuna manual medicine is one of the oriental medical treatments. It is changed unbalanced state of musculoskeletal conditions for balanced⁷⁾. Among them, the shoulder traction treatments apply to shoulder. By the pulling force of the muscle, adhesion and spasms soft tissue are relieved. This action is effective for pain relief, muscle function recovery, blood circulation improvement. And it is available for joint displacement, muscle injury,

stiffness and numbness. In clinical, the shoulder traction treatments used in musculoskeletal disorders such as impingement syndrome, frozen shoulder and periarthritits of shoulder⁸⁾.

In previous studies for muscle function, the effect of the various treatments such as acupuncture static stretching, muscle energy techniques(MET) and massage therapy was demonstrated^{9,10)}.

Chuna is also applied to a variety of shoulder disorders¹¹⁻¹⁴⁾. Through an analysis of the previous studies, It is estimated that *Chuna*(shoulder traction) is effective in reducing the pain and increasing motion range of shoulder joint of the patient. Study on the effect of *Chuna* therapy for frozen shoulder is not enough. Thus, we are performed *Chuna*(shoulder traction) for frozen shoulder patients, results were statistically significant. So we report it.

II. Subject and method

A. Subject

The research involved 21 patients who visited the acupuncture & moxibustion department at Semyeong University Hospital of Oriental Medicine for frozen shoulder treatment from November 1, 2013, to April 30, 2014. They were diagnosed with frozen shoulder and had no abnormalities with the X-ray examination. Purpose of the study, procedures and adverse reactions were explained enough to participants and all participants agreed to voluntarily participated.

B. Selection criteria

Contributors should satisfy the following conditions.

- a. Pain lasting more than 1 month
- b. Restrictions on the movement of the shoulder
- c. No other disease showed up on the X-ray, except for osteoporosis
- d. No history of Surgical Treatment or surgery

C. Exclusion criteria

- a. Calcification or arthritis disease showed up on the X-ray
- b. Mental disorders, immune disorders or related drug takers
- c. Suspected cervical nerve disease by physical examination
- d. The pregnant
- e. Patients with skin infections
- f. Other patient that doctor determines not suitable for this study

D. Method

After treated with acupuncture and electro stimulating therapy(Hanil Korea, 10 Hz 15 minutes), the subjects were measured list of measurement. Physical therapy and medicine treatment were not simultaneous.

The selected acupuncture points are *Gyeong(LI₁₅)* · *Gyeonglyo(TE₁₄)* · *Cheonjong(SI₁₁)* and sore spot in supraspinatus, infraspinatus and rhomboid muscle (Dondbang Korea 0.3 × 40 mm). It was chosen with reference to the Acupuncture and Moxibustion textbook.

And then treated with *Chuna*(shoulder traction) therapy, the subjects were measured list of measurement again. All treatment was performed by the same doctor. Who is a highly qualified about *Chuna* (shoulder traction). *Chuna*(shoulder traction) treatment takes 15 minutes. The follows were performed for 5 minutes each. Depending on the degree of the subject's pain, treatment strength was adjusted.

1. Supine scapulohumeral joint traction

Participants lies supine position. Doctor stands on the affected side of the patient's. Main hand is positioned affected side distal upper arm of the patient. Auxiliary hand placed in front of the shoulder. After a fixed shoulder, traction from the inner to outer side of the upper arm(Fig. 1).



Fig. 1. Supine scapulohumeral joint traction

2. Supine sternoclavicular joint traction

Participants lies supine position. Doctor stands on the affected side of the patient's. Main hand is positioned affected side sternoclavicular joint of the patient. Auxiliary hand placed in elbow. Main hand traction sternoclavicular joint from the inner to outer side. Auxiliary hand assist to the movement(Fig. 2).



Fig. 2. Supine sternoclavicular joint traction

3. Lateral recumbent scapulothoracic joint rolling

Participants lies lateral recumbent position. The affected side arms behind his back. Doctor stands on the affected side of the patient's. Main hand is positioned affected side scapular of the patient. The fingers fumble for the inside of the shoulder blade. Using both hands, rotate the blade to the outside

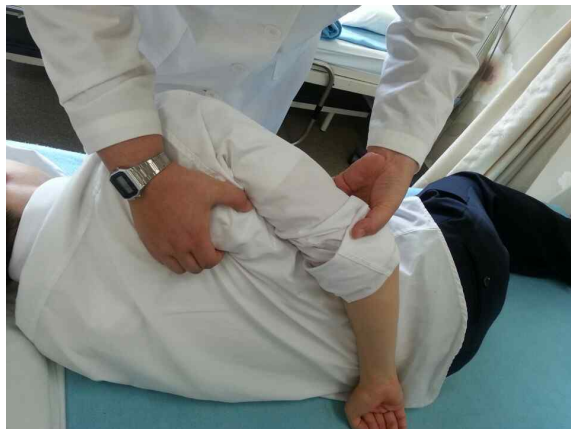


Fig. 3. Supine sternoclavicular joint traction

(Fig. 3).

E. Evaluation items

Participants taken acupuncture treatment and *Chuna* subsequently. Evaluation were performed three times for all items, just before treatment, after acupuncture treatment and after *Chuna* treatment. Evaluation items are as follows.

1. Passive motion range of the shoulder joint

Participants lies supine position. Doctor moves the shoulder joint to abduction, adduction, external rotation and internal rotation for measuring movement angle of shoulder joint. And then participants lies lateral recumbent position. Doctor moves the shoulder joint to flexion extension and measure for movement angle of shoulder joint again. When participants are beginning to feel the pain, the angle was measured. Measurements were repeated three times, and the average value was decided.

2. Measurement of shoulder pain

Pain levels were measured using by visual analogue scale(VAS). Measure graduated from 0 to 10 was used. It signify that phase 0 is no pain and 10 is most severe stage. Participants were directly point the degree of their pain.

F. Statistics

The data were analyzed by SPSS/ 12.0 for Windows program. Paired *t*-*t* test used for comparison before and after treatment. *T*-test has been used for comparison acupuncture treatment with *Chuna* and acupuncture combined treatment. For posteriori statistical verification, Duncan's multiple range test has been used.

III. Result

A. Distributions of gender and age

Distributions are 21 people that is composed of 6(28.6 %) man and 15(71.4 %) woman. By age, 30's is 1 people(4.8 %), 40s and 50's are 8 people(38.0 %) both, 60's is 4 people(19.0 %). 40's and 50's are the most percentage(Table 1).

Table 1. Distributions of Gender and Age

Age	Male	Female	Total
21~30	0	0	0
31~40	0	1	1
41~50	1	7	8
51~60	3	5	8
60 ~	2	2	4
Total	6	15	21

B. Comparison of flexion angle

In analysis of flexion angle change, acupuncture group had changed 104.5±9.8 to 107.4±9.1. It is not statistical significance change. *Chuna* simultaneous

Table 2. Flexion Angle Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	104.5±9.8	104.5±9.8
After	107.4±9.1	131.2±8.6

treatment group had changed 104.5 ± 9.8 to 131.2 ± 8.6 ($p=0.04$). It is statistical significance change (Table 2).

C. Comparison of extension angle

In analysis of extension angle change, acupuncture group had changed 39.2 ± 3.0 to 38.4 ± 4.1 . It is not statistical significance change. *Chuna* simultaneous treatment group had changed 39.2 ± 3.0 to 47.7 ± 2.4 ($p=0.02$). It is statistical significance change (Table 3).

Table 3. Extension Angle Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	39.2 ± 3.0	39.2 ± 3.0
After	38.4 ± 4.1	47.7 ± 2.4

D. Comparison of adduction angle

In analysis of adduction angle change, acupuncture group had changed 25.1 ± 1.7 to 26.2 ± 4.7 . It is not statistical significance change. *Chuna* simultaneous treatment group had changed 25.1 ± 1.7 to 30.3 ± 0.4 ($p=0.02$). It is statistical significance change (Table 4).

Table 4. Adduction Angle Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	25.1 ± 1.7	25.1 ± 1.7
After	26.2 ± 4.7	30.3 ± 0.4

E. Comparison of abduction angle

In analysis of abduction angle change, acupuncture group had changed 80.4 ± 0.7 to 80.9 ± 2.2 . It is not

Table 5. Abduction Angle Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	80.4 ± 0.7	80.4 ± 0.7
After	80.9 ± 2.2	87.3 ± 3.4

statistical significance change. *Chuna* simultaneous treatment group had changed 80.4 ± 0.7 to 87.3 ± 3.4 ($p=0.01$). It is statistical significance change (Table 5).

F. Comparison of pronation angle

In analysis of pronation angle change, acupuncture group had changed 27.8 ± 4.9 to 28.3 ± 2.6 . It is not statistical significance change. *Chuna* simultaneous treatment group had changed 27.8 ± 4.9 to 45.2 ± 1.4 ($p=0.01$). It is statistical significance change (Table 6).

Table 6. Pronation Angle Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	27.8 ± 4.9	27.8 ± 4.9
After	28.3 ± 2.6	45.2 ± 1.4

G. Comparison of supination angle

In analysis of supination angle change, acupuncture group had changed 80.4 ± 0.7 to 80.9 ± 2.2 . It is not statistical significance change. *Chuna* simultaneous treatment group had changed 80.4 ± 0.7 to 87.3 ± 3.4 ($p=0.03$). It is statistical significance change (Table 7).

Table 7. Supination Angle Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	25.3 ± 3.5	25.3 ± 3.5
After	26.1 ± 2.9	39.1 ± 1.2

H. Comparison of VAS

In analysis of supination VAS change, acupuncture group had changed 4.47 ± 0.8 to 3.35 ± 0.9 ($p=0.04$). It is statistical significance change. *Chuna* simultaneous treatment group had changed 4.47 ± 0.8 to 2.13 ± 1.0 ($p=0.02$). It is statistical significance change (Table 8).

Table 8. VAS Change

	Acupuncture	<i>Chuna</i> simultaneous treatment
Before	4.47±0.8	4.47±0.8
After	3.35±0.9	2.13±0.7

IV. Discussion

The clinical characteristics of frozen shoulder is pain and Limited range of motion¹⁵⁾. The duration of treatment is from weeks up to several months. Sometimes symptoms disappear spontaneously. In some cases, shoulder joint movement is restricted permanently. Thus, the initial treatment is important¹⁶⁾. Its primarily purpose is recovery of range of motion. To it, treatments such as acupuncture, pharmacopuncture, cupping drug therapy and *Chuna* are performed.

Frozen shoulder was mentioned in *Huang Di Nei Jing*. Peculiar pathologicla product(*Dam-eum*) and negative energy like wind(*Pung*) cold(*Han*) and wet (*Seup*) are cause of frozen shoulder in Korean medicine¹⁷⁾.

In western medicine, several authorities has various views on the definition and cause of frozen shoulder.

Codman described frozen shoulder that common diseases which can cause shoulder pain and disability, and first used the term frozen shoulder officially¹⁸⁾. After he used that term, the shoulder joint diseases are generally diagnosed as frozen shoulder, but some say that it is not the disease which can diagnose medically but the symptoms which use as informally¹⁹⁾.

Conventry said that frozen shoulder is diagnosed only severely limited motion range of shoulder joint. Nevaizer classified the progress of frozen shoulder into 4 grades, the adhesive capsulitis is can clearly checked the contraction of joint membrane by arthrography, painful stiff shoulder is cannot checked it²⁰⁾.

Among many muscles, ligaments, and joints, coracoacromial ligaments and coracoid process build the coraco acromial arch, which locates just upper

parts of rotator cuff, and it has bursa which can buffer the friction. If supinate your shoulder joint, rotator cuff is wedged between great tubercle and coraco-acromial arch so it can cause damage and consistent damages can cause degeneration of ligaments. Hammon reported that this can cause frozen shoulder²¹⁾, paker also reported the degeneration of rotator cuff, bursa, biceps tendon, other tissues is the cause of frozen shoulder, and it creates swelling, fibrosis, round cell infiltration, which limits the motion ranges²²⁾.

For relief of symptoms, treatments such as analgesics, muscle relaxants, various physical therapy and exercise therapy are performed²³⁻²⁵⁾.

When in normally position, each part of the human body can be performed unique features. External power used in *Chuna* is return the position of part of the body²⁶⁾. It have been assumed that these principles help reduce the pain and recover range of motion of patients with frozen shoulder.

In previous studies show that traction therapy is effective to increase the movable range of the shoulder joint. *Chuna* also increase the range of motion in the shoulder joint. *Chuna* therapy for patients with frozen shoulder has a significance in two respects. One is expanding coverage of *Chuna* therapy and the other is relief of symptoms. But this study has limitations. First of all, number of participants was small and a long-term treatment was not done. Many people are involved and long-term studies should be made in future. And various measuring tools for effect of treatments are lacking. If utilizing digital infrared thermal imaging (DITI) and so on, this study would have been get further objective result.

V. Conclusion

Evaluated shoulder range of motion, and the degree of pain after acupuncture and *Chuna* simultaneous therapy, we have the following conclusions.

1. Acupuncture and *Chuna* treatment are effective in restore range of motion of shoulder joint and reducing pain.
2. After acupuncture treatment, range of flexion, abduction, adduction, external rotation and internal rotation increased. range of extension decreased within the error range.
3. *Chuna* simultaneous treatment group, shoulder joint range of flexion, extension, abduction, adduction, external rotation and internal rotation movement improved statistically significant.
4. *Chuna* simultaneous and acupuncture treatment group, Both groups VAS scores decreased statistically significant.

Chuna(shoulder traction) can be effective to recover range of motion and reduce pain on patients with frozen shoulder.

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