

# Frozen Shoulder: Differential Acupuncture Therapy with Point ST-38

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*Abstract;* In most of the painful chronic movement disorders of the shoulder it is necessary to treat for a longer period. In daily practice there are only rare cases with acute resolution of symptoms. According to new original Chinese and Ceylonese acupuncture literature, Stomach 38 (Tiaokou) is named as a distal point in acute conditions of frozen shoulder. This point is situated on the Stomach meridian which intersects with the Large Intestine meridian crossing the shoulder. This connection is known as *Yang Ming* in the ancient Chinese literature. Using the point ST-38 (Tiaokou) in clinical treatment, 85 percent of patients in this series between 20 and 72 years suffering from frozen shoulder were promptly cured. These results show that ST-38 (Tiaokou) is one of the most important distal points in treating shoulder diseases, it should be used before attempting any other treatment. The response of homolateral deep insertion of the needle (producing a "chi" sensation) follows the rule of "all-or-nothing" and gives us an important hint on how to treat further. Non-responders to needling may present problems, these can only be solved by a longer period of treatment or by surgery.

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**P**ATIENTS presenting shoulder pain and restricted arm movement are seen quite often in the general practice. These patients also report intense pain at night. It is rare that treatment with modern anti-rheumatic drugs will alleviate their conditions for more than a short time. Intra-articular injection of cortisol does not yield satisfactory results in many patients, as shown by longer follow-up periods. Some physicians prefer non-invasive manipulation of the shoulder in general anesthesia (brisement force), which often results in an exacerbation of the primary condition. Surgery is recommended only in such cases resistant to any other form of treatment.

## *Clinical Findings.*

Painful restriction of shoulder and arm movement is characterized by sudden or insidiously increasing pain on the affected side. More prominent in many cases is the restriction of the active abduction and elevation between 60 and 120 degrees; in less severe cases pain is diminished when the patient continues to elevate his arm beyond the point of maximal pain. A characteristic symptom is shoulder pain during night time. In chronically

affected and older patients restriction of arm movement results in a progressive shrinkage of the joint capsule; thereby totally restricting any movements in the shoulder joint.

In long-standing cases the continuous abuse of analgesics and hypnotic drugs may lead to severe mental problems and to serious impairment of social and professional functioning.

### *Diagnosis.*

Motility of the shoulder joint is examined by active and passive movement of the arm. Increasing pain while abducting the arm against a resistance differentiates the frozen shoulder syndrome from any other cervico-brachial syndromes. Impairment of neurological function is to be excluded by intact tendon jerks and unaffected sensitivity.

It is sometimes possible to locate the lesion by palpation, e.g., in the intertubercular sulcus, the subdeltoid bursa or the major tubercle.

On x-ray examination one may find calcification of the tendon, and early signs of arthrosis. In the majority of cases x-rays will show no abnormality whatsoever.

### *Etiology.*

In the frozen shoulder syndrome the basic pathological process is constituted by a degeneration of the soft tissues surrounding the joint. Underlying conditions leading to degeneration usually comprise either a tendopathy (of the supraspinatus or infraspinatus tendon) or a tendovaginitis (e.g., long tendon of biceps muscle) or an aseptic necrosis of the coracoid apophysis, or a bursitis (e.g., subdeltoid burse), or a calcification of the joint capsule or a secondary arthrosis deformans (Table 1).

### *Pathogenesis.*

Mechanical rupture of soft tissue constitutes the initial lesion, followed by degeneration (necrosis, fatty degeneration, collagenous degeneration accompanied by swelling) and fibrosis. Sometimes calcium is deposited in such sterile alkaline necrosis.

By increased pressure of the soft tissue under the acromion, inflammatory and fibrotic thickening leads to painful restriction of arm movements. Immobilization for four to six weeks sometimes results in regression of the swelling of the joint capsule. Calcification also tends to disappear in such cases.

### *Differential Diagnosis.*

It is necessary to differentiate between several other causes of shoulder pain (Table 2).

## **Material and Methods**

In the present study the main objective was to obtain an increased range of movement and pain relief using acupuncture. With this in view at the beginning, the acupuncture point ST-38 (Tiaokou) was used to investigate its effect on shoulder disorders. In traditional Chinese acupuncture this point is a specific point for frozen shoulder. The stomach meridian and the large intestine meridian are the so-called Yang Ming meridians, whose vital energy runs across the shoulder.

The point ST-38 (Tiaokou) is located 5 cun distal to ST-36 (Tsusanli) and one finger width lateral to the anterior border of the tibia. This acupuncture point is situated in relation to the motor point of the anterior tibialis muscle, and there is a large concentration of deep pressor receptors at this location.

A filiform needle was inserted on the same side as the painful shoulder about 3-5 cm deep and stimulated until "dequi" was felt. The result of this stimulation on the shoulder was evaluated within one minute. The maximum time of needle retention was 20 minutes. If the results were considered insufficient, the ST-38 point of the other leg was needed in the same way.

If the results of the first sitting failed to give complete and permanent relief, at the following sessions other points, such as LI-4, LI-11, LI-15, and SI-14 were used and the results subsequently evaluated.

Thirty-four patients with peri-arthritis were included in this study. Twelve patients had an

**Table 3.**  
Results of acupuncture with point Stomach 38 (Tiaokou) in Frozen Shoulder according to severity and stage of illness.

Type	No. of Patients	IMPROVEMENT			
		Excellent	Very Good	Satisfactory	No Results
Acute	12 35.3%	7	4	1	0
Chronic	20 58.8%	6	11	2 (1x OP)	1
Complete Stiffness	2 5.9%	0	1	0	1 (OP)
	34 100%	13 29 (85.3%)	16	3 5 (14.7%)	2

**Table 4.**  
Acupuncture therapy results with point Stomach 38 (Tiaokou) in Frozen Shoulder according to duration of illness.

Duration	No. of Patients	IMPROVEMENT			
		Excellent	Very Good	Satisfactory	No Result
1 day—1 week	8	5	2	1	0
1-4 weeks	6	2	3	0	0
1 month—1 year	13	4	7	2 (1x OP)	1 (OP)
longer— 1 year	8	2	4	0	1
	34	13 38.2%	16 47.1%	3 8.8%	2 5.9%

**Table 1.**  
Types of Frozen Shoulder.

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1. Supraspinatus Syndrome
a) acute
b) chronic
2. Tendovaginitis of Biceps
3. Bursitis Calcarea
4. Complete Stiffness of Shoulder

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**Table 2.**  
Differential Diagnosis of Painful Movement Disorders of Shoulder.

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1. Frozen Shoulder
2. Cervico-Brachial Syndrome
3. Costo-Clavicular Syndrome
4. Tumors of Shoulder-Girdle

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acute condition, 20 patients were in a chronic stage, and in two cases the movement of the shoulder was fully inhibited (frozen shoulder). Two thirds of the patients were women, the average age was 47 years.

### Results

In the first group, 13 patients (38.2%) on whom ST-38 (Tiaokou) was used, obtained a complete and permanent cure in one sitting. Both acute and chronic cases fell into this group (Table 3).

In the second group of 16 patients (47.1%), which included chronic periarthritides cases, after two or three sittings good results were obtained which, however, were not permanent or led to a full recovery in every case.

In the third group there were 3 patients (8.8%), in which there was satisfactory improvement during the time of treatment, but no permanent or long lasting effect could be obtained. In this group an average of 7 to 8 sessions were required to obtain these results.

In a fourth group of 2 patients (5.9%), no significant improvement was obtained even with repeated acupuncture. No patients became worse with this therapy.

The first two groups could be classified as successful, with therapeutic results due to the needling of point ST-38 (Tiaokou). When there was no immediate improvement to ST-38, the use of other ancillary points, local and distal, did not result in any immediate improvement either.

The attainment of an immediate cure was unrelated to the duration of the disease (Table 4). Unsatisfactory results were more often obtained in long standing cases. Where the signs and symptoms were mild, chances of immediate improvement — as compared to severe cases — were three times as good. In the 20-to-39-year age group, the percentage of improvement was twice that of patients over 60 years of age.

### Discussion

These results indicate that acupuncture therapy carried out as described, is a very effective method of attaining immediate results in a large majority of cases. The usual practice of drug therapy in this disease can be discarded through the use of acupuncture, with a consequent absence of gastrointestinal symptoms. What is more, acupuncture in comparison to drug therapy, will yield a better response.

Where prolonged acupuncture treatment has to be carried out, it can be combined with exercise mobilization therapy of the shoulder in order to discourage fibrosis of the shoulder. In cases where acupuncture fails, surgery may be contemplated.

This work shows that the point ST-38 (Tiaokou) has a specific action on these disorders of the shoulder. The mechanism of its action is unknown. However, because its action is immediate, neural reflex mechanisms are undoubtedly involved.

Although humoral mechanisms such as endorphins are known to be involved in the acupuncture mechanism, it is unlikely that

these chemicals play a part in the action of ST-38 (Tiaokou) because the results are immediate. The specifics of this particular acupuncture point for shoulder disorders need

further investigation because other points of the stomach meridian, for example, ST-36 (Tsusanti), do not seem to be as effective in the same manner.

#### Literature

1. Jayasuriya, A., Fernando, F.: *Principles and Practice of Scientific Acupuncture*. Lake House Publishers, Colombo, Sri Lanka, 1979.
2. Krupp, M. A.: *Current Diagnosis and Treatment*. Lange Medical Publications, Los Altos, California, 1971.
3. Lenggenhager, K.: Die "Kranke" Schulter. *Allg. Med. Z.*, 55: 4 (1979), pp. 197-200.
4. Neviasser, J. S.: Musculoskeletal Disorders of the Shoulder Region Causing Cervico-Brachial Pain. *Surg. Clin. N. Amer.*, 43 (1963), pp. 1703-1714.
5. Academy of Traditional Chinese Medicine: *An Outline of Chinese Acupuncture*. Peking, 1975.