

Treatment of Frozen Shoulder by Manipulation under Anesthesia with Intra-Articular Injection

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Abstract: 90 patients who failed to improve after conservative treatment with idiopathic frozen shoulder, were studied prospectively. They were then managed by manipulation under anaesthesia (MUA). 45 patients were also given with intra-articular injection (methylprednisolone), and 45 weren't given steroid. All patients were put on physiotherapy. Patients were followed for an average of 9 months. At 9 months the patients who had MUA with an intra-articular steroid had results similar to those who only had MUA. The manipulative procedure combined with or without injection of steroid is safe and effective for the treatment of frozen shoulder.

Keywords: Frozen shoulder, Manipulation under anesthesia, Intra-articular injection, Treatment of choice

1. Introduction

Codman [1] in 1934. He described the common features of frozen shoulder as slow onset of pain near the insertion of the deltoid, inability to sleep on the affected side and painful and incomplete elevation and external rotation of the arm, together with a normal radiological appearance. In 1945, Neviaser [2] adopted the term "adhesive capsulitis". There is spontaneous recovery occurring within 18–24 months [3, 4].

A variety of regimens have been used for the treatment of frozen shoulder, which include non-steroidal anti-inflammatory drugs, local intra-articular steroid injection, stretching exercises, manipulation under anaesthesia (MUA), distension and manipulation under local anaesthesia, arthroscopic release and – as a final resort – open capsulotomy [5, 6, 7]. The aim of this study was to assess the efficiency of MUA alone or in association with intra-articular injection of methyl-prednisolone.

2. Patients and Methods

90 consecutive patients with idiopathic frozen shoulder of at least 3 months duration who failed to improve with non-manipulative treatment were treated at bone and joint hospital between 2015 and 2018. These patients underwent MUA either alone or with steroid injection. There were 51 women and 39 men, with an average age of 49 (range 35–70) years. The left shoulder was affected in 51 patients, the right shoulder in 39. Physical examination was performed in all patients using a goniometer to determine the active range of motion of both shoulders. Haemoglobin, erythrocyte sedimentation rate, fasting blood glucose, blood urea and ECG were recorded in all patients. An A/P radiograph of the shoulder and A/P and lateral views of the cervical spine were performed routinely.

The patients were divided into two groups of 45 each: The first group was treated by MUA, the second by MUA combined with local steroid injection.

All patients received post-manipulation physiotherapy.

Under anaesthetic, pure glenohumeral abduction was produced by fixing the scapula with one hand and abducting

the humerus with the other, placing the manipulating hand at mid-shaft of the humerus rather than at the elbow in order to avoid fracturing the humerus. During this procedure, the adhesions could be felt and heard to tear, and the manipulation continued until 'pure' glenohumeral abduction of 90° was obtained and external rotation with further abduction was achieved. Internal rotation was performed last. The patient was then transferred directly to bed with the shoulder abducted to 90° and externally rotated to the same extent as obtained at manipulation. Physiotherapy began the same day and the arm was kept 'permanently' above 90° for at least 3 weeks post-MUA in order to avoid approximation of the dependent fold [8, 9].

After the manipulation, all patients were examined twice a week for the first 2 weeks, once a week for another 2 weeks, then once every 3 weeks for 2–3 months, following which all underwent the same programme of daily pendulum exercises. The final assessment was made 4–5 months after manipulation and the results were graded as good, fair or poor. A good result implied improvement in the range of active shoulder motion, pain relief and return to daily activities; a fair result included a little increase in the range of active motion; while a poor result was indicated by no improvement or even worsening of shoulder motion.

3. Results

At presentation, all patients experienced pain over the deltoid muscle mainly at night, were unable to sleep on the affected side and had tenderness over the humeral head. Only two patients showed deltoid wasting due to disuse atrophy. Of the 90 shoulders, 88% had limitation of abduction to less than 90° and 90% had limitation of forward flexion to less than 60°. All had severe limitation of internal rotation and 93% had external rotation of less than 30°.

Cervical spondylosis was present in 15 patients. Results are shown in Table below.

Patient group	Shoulders	Good	Fair	Poor
MUA with steroid	45	23	7	15
MUA alone	45	21	8	16

Radiologically, 15 patients showed an osteopenia in the humeral head while two had sclerosis in the region of the greater tuberosity. Cervical spine X-rays revealed cervical spondylosis in 75 patients of whom only 15 had positive clinical findings.

Complications included two patients with a post-manipulation simple undisplaced fracture of the surgical neck of the humerus.

4. Discussion

Frozen shoulder is also known as peri-arthritis or adhesive capsulitis [1, 2] and usually occurs in the sixth decade of life. It affects women more than men and frequently involves the non-dominant shoulder. The pathology is unknown and usually no precipitating cause is found. However, there are a number of predisposing factors such as diabetes mellitus, cervical spine disorders, trauma, ischaemic heart disease and rheumatoid arthritis [9, 10,].

In 1995, Bunker and Anthony [11] stated there is a high incidence (about 58%) of Dupuytren's disease in association with frozen shoulder and that both Dupuytren's disease and frozen shoulder are 'fibrosing' conditions rather than inflammatory in nature.

For frozen shoulder, MUA should be advised for every patient who does not respond to daily physiotherapy. Post-manipulation physiotherapy is of great importance, as it helps in achieving a good range of active shoulder movement. It should include daily pendulum and stretching exercises.

On radiological examination, 60 of our patients with painful stiffness of one or both shoulders but without clinical signs of cervical spondylosis had evidence of spondylosis of their cervical spines, with either narrowing of the disc spaces or osteophyte formation. In addition, a further 15 of our patients had clinical evidence of cervical spondylosis, and so we agree with Kamieth [12] and Wright et al. [13] that there is a strong association between frozen shoulder and cervical spondylosis [7, 14, 15].

In our study we found that the results of MUA without steroid injection vs MUA with steroid injection had almost same results with 30 out of 45 patients having good or fair results in steroid group, while 29 out of 45 patients having good or fair results in MUA only group. While 15 and 16 patients had poor results in steroid and MUA only groups.

We found both MUA with or without steroid as the treatment of choice as it is safe, effective and relatively inexpensive.

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