



Before and After Manipulation under Anesthesia Physiotherapy in Chronic Adhesive Capsulitis – An Evidence Based Study

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Abstract

Shoulder injuries are common among geriatric population. As it leads to limited joint range, pain and limiting daily function.

Aims & Objectives of this original presentation was to analyze effects of 2 months of mobilization prior to manipulation under GA and two months of the post manipulation using shoulder function index.

Materials & Methodology: 63 year old female post traumatic stiffness of left shoulder was treated for 2 months of mobilization, then she was treated with manipulation under GA (MUA) and physiotherapy restarted, For 2 months in Chennai between 03.09.2017 to 04.01.2018.

Results: Pre & Post physiotherapy before MUA was $P < .05$ and after manipulation under GA for 2 months period using shoulder function index $P < .001$

Conclusion: Proper physiotherapy modalities following injuries promote earlier recovery of functional activities.

Keywords: Manipulation under General Anesthesia, Manual Therapy, Adhesive Causalties, Shoulder Function Index.

Introduction

Frozen shoulder or adhesive Capsulitis (AC) affects 2-5% of the population and is most common in the 40-60 year old age group (Wolf and Green 2002). Frozen shoulder (FS) is characterized by an insidious and progressive loss of active and passive mobility in the glenohumeral joint presumably due to capsular contracture (Maeda 1977) with etiopathogenesis remaining enigmatic (Bunker & Anthomy 1995) with decreased capsular volume and capsular

contractions (Neviaser 1987) contractures of coraco humeral ligament, capsular and intra articular subscapularies tendon thickening were recorded (Bunker & Anthomy 1995). Pain of the shoulder region keeps FS patients from performing AD2 and can lead to decrease in range of shoulder ROM, muscle strength and endurance (Sandor & Brone 2000). Hence rehabilitation of FS should be aimed at improving ROM, muscle strength, decrease pain and daily functional activities (Jurgel et al 2005)

Most commonly used treatments in AC are steroid injection and physiotherapy. Steroid injection has strong anti inflammatory effects and has long been used for ACS, but in vasovagal reaction, and serum glucose level changes may prevent patients from accepting this method (Park 2014) Compared with steroid injection, physiotherapy, with no or minimal invasion to the body, may be more applicable for patients with ACS but anti-inflammatory effect may be limited modalities to improve active glenohumeral motion ice, hot pack, ultra sound and Proprioceptive neuromuscular facilitation (Shah 2007). Cleland and Durall 2002 have recorded in a RCT among adhesive Capsulitis patients that corticosteroid injections may produce greater improvement than physiotherapy. Rookmoneea etal 2010 in a systematic review that have evidenced that multiple corticosteroid injections may be more effective than physiotherapy in the short term, but these findings were from a number of small RCTS hence conclusion cannot be drawn. Chamblor and Carr 2003 having examined the role of surgery in AC found little evidence that it changes the natural progression of the disease. Patients who have failed to responded to conservative treatment after 6 months (Taste and Elias 2007) with long standing restrictions in range of movement be recommended for surgery (Grubbs 1993)

Aims & Objective of this original presentation was to compare two months mobilization with two months of mobilization post manipulation under GA on a subject with chronic AC using shoulder functional index

Materials & Methodology

This study subject aged 63 years, female with BMI – 25 kg/m², WC- 100 cm and diabetic on medication, gives a H/O fall in June 2017 developed pain in the shoulder, subsequently treated with NSAID and electrotherapy modalities elsewhere from June to August 2017. She was treated with manual therapy and shoulder mobilization along with hot pac by this author from September 2017 and October 2017 with thrice a week frequency. First November 2017 she was treated with manipulation under GA by Chennai based orthopaedic surgeon and she was restarted with shoulder rehabilitation from 03.11.2017 to 04.01.2018, weekly thrice. Frequency with this study aims to analyze the mobilization prior to manipulation under GA and mobilization after that pre and post shoulder function index were recorded and analyzed statistically from 03.09.2017 to 04.01.2018.

Results

P.T prior to manipulation under GA and P.T after Manipulation under GA

Table of results on shoulder function index of using student ‘t’ test

Shoulder Function Test	Mean		SD	SE	t	p
	Pre	Post				
Before Manipulation under GA	48	29	10.96	6.33	3.01	.05 X
	29	11				
After Manipulation under GA	29	11	10.39	6.	3.96	.001 XX
	11	11				

X- Significant Statistically

XX- Highly Significant Statistically

Discussion

Pathomechanics of AC

1) Ac resulting in capsular contracture (Castellarin et al 2004) holds the humeral head tightly against the glenoid fossa (Ozaki etal 1989) resulting in globall loss of both active

and passive glenohumeral joint (Diercks & Stevens 2004), thus the normal shoulder joint requires adequate coordination of all passive and active stabilizers to maintain shoulder stability (Warner etal 1999) and pathological changes in any of these can lead to

physiological translations of the humeral head relative to the glenoid fossa (Harryman et al 1990). Johnson et al 2007 have suggested to evaluate source of external rotation ROM deficit if glenohumeral external rotation ROM becomes greater as the shoulder is abducted, then soft tissue mobilization procedures to normalize muscle flexibility deficits (Gajdosik et al 1983). similar to this findings the subject has in the beginning of therapy has restricted external rotation with shoulder abduction versus. Where as if glenohumeral external rotation ROM becomes less as the shoulder is abducted indicating primary capsular associated mobility impairments

- 2) In a two year follow up comparing treatment with intra articular steroid with manipulation under anesthesia among 53 subjects with adhesive Capsulitis found similar results (Jacobs et al 2009). Many AC patients complain of sleeping disorders due to the pain and their ability to lie on the affected shoulder (Potter 1997) similar to this subject involved in this research had difficulty during first month of onset, but after 15 sessions of therapy she was able to sleep on the affected shoulder, may be due to muscle hypertrophy and decrease in pain. Pain of the shoulder region often keeps AC patients from performing ADL and this is one reason of decreasing the shoulder muscle strength and endurance (Sandor & Broue 2000) resulting in gradual loss of shoulder range of motion and strength of surrounding muscles (Kivimaki & Pohjolainen 2007). As clinically and evidenced with NMRI atrophy of muscles and movements were restricted in this subject. Increasing the shoulder active shoulder ROM and strength of the muscles and decrease of the pain are key component for reduction of physical disability and improvement of the shoulder function among AC during rehabilitation (Alvado et al 2001) Using mobilization and strengthening with due exercises the aim of this subject getting treated

was to maximize shoulder function, as indicated with results in the above table.

- 3) Binder et al 1984 have found 48 months of rehabilitation to improve ROM among AC compared to controls subjects. But 4 week rehabilitation among 20 subjects with AC have an increased ROM and muscle strength (Jürgens et al 2005), where as this study was for 16 weeks of rehabilitation. Grotle et al 2006 have found that subjects experiencing lesser pain have an increased functional recovery, similar to these findings, this study subject has started showing improvement with lessening of pain.

Manipulation under Anesthesia (MUA)

- When the rehabilitation process is slow and among chronic AC, MUA (Manipulation under Anesthesia) is recommended where under anesthesia, the surgeon aggressively stretches so that shoulder joint range of motion improves but this procedure may need to be repeated more than once and risks including injury to brachial plexus fractures, subscapularis rupture dislocation of shoulder (Witvrouw 2013)
- Neviasser 1983 have recorded MUA as the treatment of choice in subjects with frozen shoulder (FS) who cannot abduct 90⁰ Parker et al 2013 have recorded good results post MUA followed by physiotherapy, Neviasser 1987 further supports better results with MUA in less time among FS than an exercise alone. Post manipulation care is most important with an emphasis on maintaining the range of motion gained and minimizing the deleterious effects of inflammation in response to the induced mechanical trauma (Grubbs 1993) Shaffer et al 1992 have among 62 patients 50% had pain or stiffness at a mean of seven years and 60% had restricted movement who were treated with exercises, subacromial injection and MUA and they conclude that pain and

stiffness shoulder joint capsule were never more than mild. But with among chronic AC physiotherapy after MUA was more effective than physiotherapy alone as evidenced with statistical findings of this study

Critical Analysis of this Study Findings

- i. As there is no guidelines with evidence when to opt for manipulation under general anesthesia
- ii. Among chronic patients with atrophy of soft tissues and degeneration much care to be exerted not to flare (Signs of inflammation) injury to these structures during therapy
- iii. Patient adherence and preference plays vital while therapy selection, time involved for rehabilitation, cost of therapy, other associated medical conditions such as diabetes mellitus and pain threshold of the subject

Conclusion

Chronic rotator cuff lesion with muscle atrophy and restricted movements with mobilization and post manipulation under local anesthesia were compared in this presentation, with marginal improvement in the ranges of movements, but adherence with physiotherapy with due medication in early stage of soft tissue tightness could have avoided many of these complications recorded in this subject was the key findings of this original presentation

Limitations of this study was only Maitland manual therapy and mobilization exercises were used. Further studies comparing other manual therapy techniques, electrotherapy modalities and long duration follow up with larger sample size are recommended.

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