

Evaluate the effectiveness of Physiotherapy management in the Frozen Shoulder: A Case study

¹Saidu Salisu Jawa, BPT, Lovely Professional University

¹Prabhjot Kaur, BPT, Lovely Professional University,

²Dr. Sakshi Sadhu, Assistant Professor, Lovely Professional University Phagwara, Punjab.

Abstract

Background: Frozen shoulder is the most common self limiting disability which affects about 2-5% of the population with the females being more prone. It's having three phases and the treatment depends upon the phases. The best treatment choice should be started from the conservative treatment then proceed to invasive. Frozen shoulder case is clinically diagnosed and requires minimal investigations as there is complete restriction in the passive and active range of motion.

Objective: The objective of this case study was to provide the relief to the patient in terms of pain as well increase the range of motion which helps in enhancing the functional activities. This case study evaluates the effect of combined treatment methods used in the physiotherapy.

Case Description: A 48 year female visited OPd with the complaints of pain and restricted active and passive range of motion in the left shoulder. The shoulder disability index of the patient was approximately 90% and the severity of the pain in the shoulder as well as the surrounding structures of shoulder was about 9 out of 10 on the NPRS. She was provided with the treatment after the proper assessment with combination of exercise, electrotherapy, manual therapy and rehabilitative exercises. The treatment was continued for 4 weeks and after that post assessment was done and there was change in the parameters which was taken initially.

Outcome measures: the outcome measures or the assessment tools used for this study was Numerical pain rating scale for the pain, goniometer to assess the range of motion, Manual muscle testing to check strength of shoulder muscles and the shoulder pain disability index for both pain as well disability.

Result: the study findings shows drastic changes in the parameters taken in the beginning of the study. There was reduction in the pain and increase in all the range of motion which was restricted. Shoulder disability index also shows improvement.

Conclusion: This study concluded that the physiotherapy treated provided beneficial effect to the frozen shoulder cases. This study adds to the evidence about the physiotherapy rehabilitation progressive effects.

Key words: Frozen shoulder, Adhesive Capsulitis, Periarthritic shoulder, Physiotherapy.

Introduction

Frozen shoulder also known as adhesive capsulitis or periarthritic shoulder (Nagy et al., 2013) . Duplay in 1872 gave the first recorded description of a frozen shoulder and First time the term frozen shoulder was first used in 1934 by Codman (Robinson et al., 2012). It is defined as a disorder without known aetiology which is characterized by restricted active and passive range of motion in absence of any intrinsic shoulder disorder. The most common sign and symptom of frozen shoulder include the pain which worsens at night, restriction in the range of motion both active and passive, and shoulder stiffness. There is although no typical finding in the assessment (Chan et al., 2017).

FS can be categorized into two types i.e., Primary and secondary. Primary frozen shoulder cases are usually idiopathic without any reason and it is found in association with the systemic diseases for example Diabetes mellitus, thyroid etc. Secondary frozen shoulder is usually associated with the shoulder injury or the immobilization which lead to the restriction in the range of motion over the time and the person develops adhesive capsulitis (Tamai et al., 2014).

AC is considered as the self limiting co- morbidity which lasts for approximately 1-3 years. It progress in three phases i.e. the freezing phase which lasts for about 2- 9 months and its having diffuse onset. The second phase is frozen stage which approximately lasts for 4-12 months, in this stage there is loss in the range of motion particularly GH flexion, abduction and the both rotations. The third phase is thawing phase which is believed to last for 5- 26 months. In this stage the patient returns back to its normal stage and the symptoms starts to resolve on its own(Eljabu et al., 2016) .

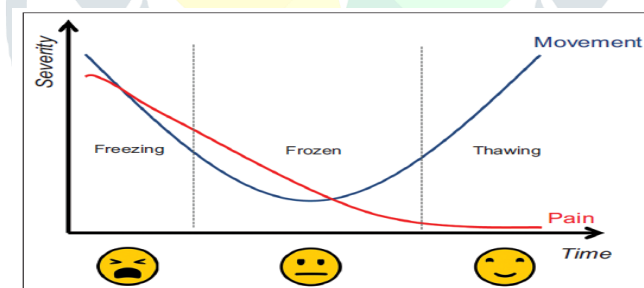


Fig 1: Chart showing the clinical presentation of pain and Movement in different stages of frozen shoulder

Frozen shoulder is considered as the most severe musculoskeletal disorder. The prevalence rate of this condition is about 2-5% in general population with the most commonly found in diabetic population and females. This condition is common in the age group of 40 and 60 with rare cases outside this age group and in the people who are manual workers.

The frozen shoulder biomechanics indicates that the primary pathology can be correlated to contractures of individual structures in the capsule. There are evidences which shows that due to the

tightness of the antero-superior capsule there is a restriction in the external rotation. The Posterior capsular restriction reduces internal rotation of the shoulder.

This disorder is thus one of the most common musculoskeletal problems seen in orthopedics (Uppal et al., 2015).

Rodeo et al described FS as inflammatory and fibrotic condition. There is synovial hyperplasia which leads to vascularity which leads to fibrosis in subsynovium and synovium of capsular tissue, this process leads to inflammatory response and causes synovitis and capsular fibrosis which lead progressive contracture of the capsule (Cho et al., 2018; Hand et al., 2007).

There is no as such agreement regarding the best treatment of the adhesive capsulitis but the evidences shows that there are various number of treatment procedures used to treat this condition that include the conservative as well as surgical treatment. The treatment used for the frozen shoulder cases include Non steroidal anti-inflammatory drugs, oral steroid treatment, Intra-articular steroid injections, Sodium hyaluronate intra-articular injections, suprascapular nerve block, Mobilization under anesthesia, Arthrographic distension, Arthroscopy, Open release, Physiotherapy and mobilization (Exercise therapy, Electrotherapy as well Rehabilitation). The treatment should be based on the phases of the disease and on the presenting complaints of the patients but the first approach should be conservative then surgical (D'Orsi et al., 2012; Lorbach et al., 2010; Margaretha, 2014).

Case description

A 48 year old presented in lovely professional university out- patient department with the 5 months history of pain in the left shoulder. She also had restriction in the range of motion. Before visiting the physiotherapy department in lovely she had taken the treatment from several different places which include the allopathic as well as the physiotherapy treatment also but none of the treatment was proved to be beneficial in terms of her recovery. She walked in the physiotherapy clinic with straight posture but she was having her arm into apprehension position (flexed at elbow and closer to the body). On taking the history assessment she said that she had all sorts of painkillers as well as corticosteroid injection but no one have any productive benefit. She was a febrile, non pale, non dehydrated and well oriented. She was referred from hospital for physiotherapy with the diagnosis of frozen shoulder.

On physical examination, palpation around the shoulder, the pain was felt around whole of the left glenohumeral joint as well there was severe tenderness in the armpit area. She was not even able to move her shoulder joint. All the range of motion activities was restricted. There was visible muscle atrophy and there was weakness of the (L) shoulder muscles especially the abductors, external rotators and internal rotators about muscle power of 2+. All the Movement of cervical spine are painful and even on palpating the cervical spine, it elicit pain.

On assessment of the investigating report of MRI it was found out that there is prolapsed intervertebral disc at the multiple level of cervical and lumbar segment but the main presenting problem is the shoulder pain so through shoulder physiotherapy assessment was done with the help of special tests of shoulder in which scratch test and shoulder shrug sign was found to be positive. There was no history of degenerative changes which was assessed by X-ray. However, prior to commencement of physiotherapy, patient's baseline functional status was ascertained using shoulder pain and disability index (SPADI) as an outcome measure. Baseline score was 20%.

The outcome measures used for the case study were following: The patient is having the pain severity of 9 out of 10 on the Numerical analogous scale. The range of motion is restricted particularly flexion (20 degree), Abduction (20 degrees) and external rotation not able to perform. The shoulder disability index was assessed and the score was 20%.

The details of the Outcome measures are given below:

Outcomes	Pre	post
NPRS	9	0
SPADI	90%	20

Table: 1 Detailed outcomes(pre and post)

ROM(JT)	Flexion		Abduction		External Rotation	
	Pre	Post	Pre	Post	Pre	Post
Shoulder	20degree	170 degree	20 degree	170 degree	Not able to perform	30 degree

Table 2: Range of motion (pre and post)

Following the detailed assessment physiotherapy treatment and rehabilitation was started on the same day.

Goals of the Treatment:

The main treatment goals of this case were as following:

- Decrease the pain severity of the patient.
- Increase the ROM.
- Boost the functional independence of the patient

DESCRIPTION OF THE INTERVENTIONS USED IN THIS STUDY:

S.no	Description of treatment	Mode/Intensity	Timing
1	Thermotherapy		15 mins

2	Transcutaneous electrical nerve stimulator	Initially Burst mode Later Continuous mode	12 mins
3	Ultrasound therapy	CUST	5 mins
4	Mobilization	MWM and Maitland Mobilization	Initially grade 1 and 2 Later Grade 3 and 4
5	Rehabilitation Exercises	Stretching and strengthening	According to FIIT principle
Rehabilitation Exercises used for the patient:			

The intensity of the rehabilitation was decided according to the FIIT principle and it was modified over the time according to the need of the patient. The patient continued the treatment for approximately for one month of time duration.

- Range of motion exercises with assistance at the beginning and in later stages she was able to perform with the manual resistance.
- Capsular stretches
- Pendulum Exercises
- Armpit stretch
- Cross body stretch
- Pectoral muscle stretch
- Rhomboids strengthening
- Dumbbell exercises
- Theraband exercises
- Home exercises

Discussion

Frozen shoulder as seen in this case is a self limiting disorder particularly found in the diabetic population but it can be found in the other group of the population also. Frozen shoulder as mentioned early has three stages and it takes time for resolution. It may take 2-3 year for symptoms to resolve completely but the physiotherapy treatment has provided several evidences to resolve this conditions and symptoms at the early stages of life (Blanchard, Barr, & Cerisola, 2010). There are evidences for the fact also that the early we start the rehabilitation, more results of recovery we get. This case study utilized physiotherapy approach involving thermotherapy and electrotherapy in addition with the manual and supervised exercise therapy for this condition.

Findings from this study showed that the treatment protocol we have opted for provided the positive results in the shortest amount of the time. The patient recorded a remarkable improvement in the pain and range of motion after one month of treatment. On the other hand evidences are there that the groups treated with superficial heating and stretching instead of stretching alone is more beneficial (Leung & Cheing, 2008).

One of the limiting factors in this study is patient's compliance with her home program as one could not determine how well patient was doing her home program but had to depend solely on the report given by the patient.

However, this study has results which could be attributed to strict adherence to principles guiding the management of frozen shoulder.

Conclusion:

The result finding of this study concluded that the physiotherapy can improve the pain, range of motion and well as improve the functional disability of the patient suffering from the frozen shoulder condition. Although there are several evidences which have proved that there are various methods to treat this condition which include Pharmacological, Ayurveda as well as physiotherapy. In physiotherapy there are several number of treatment approaches which can be used to resolve the suffering of the patient.

Reference:

1. Chan, H. B. Y., Pua, P. Y., & How, C. H. (2017). Physical therapy in the management of frozen shoulder. *Singapore Medical Journal*, 58(12), 685–689. <https://doi.org/10.11622/smedj.2017107>
2. Cho, C. H., Song, K. S., Kim, B. S., Kim, D. H., & Lho, Y. M. (2018). Biological Aspect of Pathophysiology for Frozen Shoulder. *BioMed Research International*, 2018. <https://doi.org/10.1155/2018/7274517>
3. D'Orsi, G. M., Giai Via, A., Frizziero, A., & Oliva, F. (2012). Treatment of adhesive capsulitis: A review. *Muscles, Ligaments and Tendons Journal*, 2(2), 70–78.
4. Eljabu, W., Klinger, H. M., & von Knoch, M. (2016). Prognostic factors and therapeutic options for treatment of frozen shoulder: a systematic review. *Archives of Orthopaedic and Trauma Surgery*, 136(1), 1–7. <https://doi.org/10.1007/s00402-015-2341-4>
5. Hand, G. C. R., Athanasou, N. A., Matthews, T., & Carr, A. J. (2007). The pathology of frozen shoulder. *Journal of Bone and Joint Surgery - Series B*, 89(7), 928–932. <https://doi.org/10.1302/0301-620X.89B7.19097>
6. Lorbach, O., Anagnostakos, K., Scherf, C., Seil, R., Kohn, D., & Pape, D. (2010). Nonoperative management of adhesive capsulitis of the shoulder: Oral cortisone application versus intra-articular cortisone injections. *Journal of Shoulder and Elbow Surgery*, 19(2), 172–179. <https://doi.org/10.1016/j.jse.2009.06.013>
7. Margaretha, S. (2014). *ORR-71115-management-of-the-frozen-shoulder*. 81–91.
8. Nagy, M. T., MacFarlane, R. J., Khan, Y., & Waseem, M. (2013). The Frozen Shoulder: Myths and Realities. *The Open Orthopaedics Journal*, 7(1), 352–355. <https://doi.org/10.2174/1874325001307010352>
9. Robinson, C. M., Seah, K. T. M., Chee, Y. H., Hindle, P., & Murray, I. R. (2012). Frozen shoulder. *Journal of Bone and Joint Surgery - Series B*, 94 B(1), 1–9. <https://doi.org/10.1302/0301-620X.94B1.27093>

10. Tamai, K., Akutsu, M., & Yano, Y. (2014). Primary frozen shoulder: Brief review of pathology and imaging abnormalities. *Journal of Orthopaedic Science*, 19(1), 1–5. <https://doi.org/10.1007/s00776-013-0495-x>
11. Uppal, H. S., Evans, J. P., & Smith, C. (2015). Frozen shoulder: A systematic review of therapeutic options. *World Journal of Orthopaedics*, 6(2), 263–268. <https://doi.org/10.5312/wjo.v6.i2.263>

