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Effectiveness of Spencer Technique of Mobilization on Adhesive Capsulitis: A Single Case Study

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Abstract

Background: Frozen shoulder, or adhesive capsulitis, is a condition characterized by pain, restricted motion, and stiffness in the shoulder joint. This occurs due to inflammation and the thickening of the joint capsule. The Spencer technique, is a manual therapy method consisting of seven steps designed to improve shoulder function by enhancing joint mobility, circulation, and lymphatic flow. These movements target shoulder extension, flexion, circumduction, abduction, and adduction, to reduce stiffness and improve ROM. Objective: To investigate the effectiveness of Spencer technique on pain and ROM with adhesive capsulitis. Purpose: This study examines the effectiveness of Spencer technique on a patient suffering from frozen shoulder. Methodology: A single-case study, involved a 60-year-old patient with secondary Frozen Shoulder affecting the right shoulder post anterior dislocation of shoulder suffered 7 months back. The patient was non diabetic and had no apparent contra-indications for Spencer Technique. The patient's ROM was limited, and pain was rated 7 on the Visual Analog Scale (VAS). Active ROM was measured using a goniometer for baseline value. The treatment included applying a moist hot pack for 20 minutes, followed by the Spencer technique where a series of seven steps to improving shoulder mobility. Starting with two sets of 10 repetitions, it increased to three sets in subsequent weeks. Sessions were held five times weekly, with weekly progress measurements. Result: In this study, a Spencer technique was applied to treat a patient with a frozen shoulder. The technique demonstrated significant improvements in shoulder ROM and VAS score decreased from 7 to 4, over a 3-week observation period. Conclusion: From this study we believe that the Spencer technique is a valuable therapeutic approach for enhancing shoulder function and reducing discomfort. Further research is needed to done for its broader applicability, effectiveness and long-term benefits across a larger patient population.

Keywords: Frozen shoulder, adhesive capsulitis, spencer technique, manual therapy, restricted motion

INTRODUCTION

Frozen shoulder, or adhesive capsulitis, is a soft tissue condition that results in pain, stiffness, and a gradual decrease in both active and passive range of motion in the glenohumeral joint. In this condition, the connective tissue around the shoulder joint becomes inflamed, thickens, and loses its flexibility (Figure 1). [1]. Frozen shoulder can occur as a primary condition, where the exact cause is unclear, and may be idiopathic in nature. Contributing factors include a sedentary lifestyle, post-traumatic injuries, or secondary conditions like rotator cuff tendonitis, bicipital tendonitis, fractures, and shoulder dislocations, all of which can lead to the development of frozen shoulder [2].

Frozen shoulder affects approximately 2% of the general population, with 10–29% of individuals with diabetes being more susceptible to the

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condition. This condition is more prevalent in women than in men and usually affects the non-dominant arm more frequently. The condition is most frequently seen in adults aged 40–60, and rarely affects those under 40. Around 12% of patients experience symptoms in both shoulders, suggesting a potential genetic predisposition. The pain and restricted movement caused by frozen shoulder can vary from mild to severe, making it difficult to carry out everyday tasks such as dressing, personal care, lifting overhead, and sleeping [3].

Frozen shoulder is commonly described as a fibrotic and inflammatory tightening of the rotator interval, joint capsule, and ligaments. The precise cause of its development remains unclear. While there is some debate, the most widely accepted pathology involves cytokine-driven synovial inflammation, accompanied by fibroblastic growth, as seen in arthroscopic examinations. Other observations include the formation of adhesions around the rotator interval due to increased collagen and the development of nodular bands. The coracohumeral ligament, located at the top of the rotator cuff interval, is typically the first structure affected. Its contraction restricts the external rotation of the arm, which is often the earliest sign of the condition. In the later stages, thickening and contraction of the glenohumeral joint capsule further limit the shoulder's range of motion in all directions [4].

Frozen shoulder progresses through three stages. The first stage, known as the "freezing" phase, is characterized by increasing pain and difficulty moving the shoulder, with the pain often being most intense at night. This phase can last between 6 to 9 months. The second stage, called the "frozen" phase, is marked by a reduction or stabilization of pain, although stiffness persists. Shoulder movement remains restricted for about 4 to 6 months. In the final stage, the "thawing" phase, which can last anywhere from 6 months to 2 years, movement gradually becomes easier and closer to normal, with pain diminishing but sometimes returning intermittently [5].

Frozen shoulder is thought to develop due to a combination of persistent inflammation and capsular fibrosis. The pain, which often disrupts sleep, is usually the main reason individuals seek medical help. Numerous treatment options have been identified for managing frozen shoulder, such as oral medications, corticosteroid injections, physical exercises, joint mobilization, acupuncture, manipulation, nerve blocks, and even surgery. Additionally, physiotherapy treatments, including thermal therapy, interferential therapy, ultrasound, therapeutic exercises, stretching, graded mobilization, and manipulative techniques (such as high-velocity low-amplitude thrusts, end-range and mid-range mobilization, the Spencer technique, and muscle energy techniques) are commonly used to treat adhesive capsulitis [6].

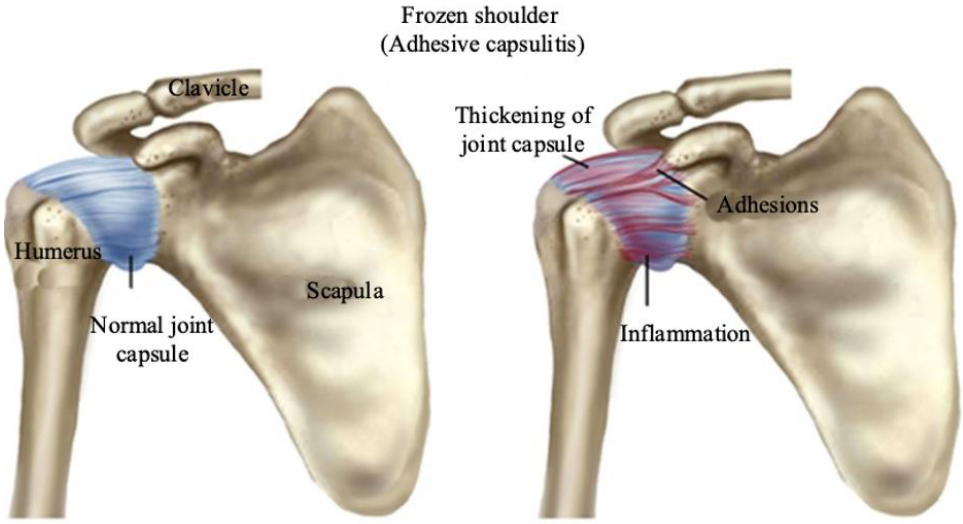

Figure 1. Thickening of joint capsule due to adhesive capsulitis.

Spencer technique: The Spencer technique, developed by Spencer, D.O. in 1961, is a comprehensive and standardized series of osteopathic manipulative treatments specifically designed for the diagnosis, treatment, and prognosis of shoulder pain resulting from restricted mobility. This well-known multistep approach focuses on the mobilization of both the glenohumeral and scapulothoracic joints, addressing common issues such as frozen shoulder [7].

This technique consists of seven distinct articulatory procedures that facilitate the stretching of contracted muscles, ligaments, and joint capsules. The treatment is characterized by the application of passive, smooth, and rhythmic motions performed by the therapist, ensuring that the movements remain within the patient's pain-free limits and most of the force is applied at the end range of motion, which allows for effective stretching and mobilization of the tissues involved. This technique enhances joint circulation, boosts lymphatic flow, and stretches the tissues, helping to increase the range of motion (ROM) without causing pain [8].

Application of the Spencer Technique

Stage 1. extension: The patient lies on their side with the affected shoulder positioned on top. The therapist stands in front of the patient, stabilizing the acromioclavicular (AC) joint with one hand and extending the patient's shoulder in the horizontal plane with the elbow flexed, until a barrier is felt at the end range. Resistance is applied to the elbow, and the patient is instructed to push against the resistance at the restricted barrier and maintain the contraction.

Stage 2. flexion: The patient lies on their side with the affected shoulder on top. The therapist stands in front of the patient, stabilizing the AC joint with one hand and flexing the patient's shoulder in the horizontal plane, with the elbow extended, until a barrier is felt at the end range. Resistance is applied to the distal forearm, and the patient is asked to push against the resistance at the restricted barrier and maintain the contraction.

Stage 3. circumduction/compression: The patient lies on their side with the affected shoulder on top. The therapist stands in front, stabilizing the AC joint with one hand while abducting the patient's shoulder in the horizontal plane with the elbow flexed. The elbow serves as a pivot to rotate the humerus in both clockwise and counterclockwise directions while applying slight compression to the shoulder joint.

Stage 4. circumduction/traction: The patient lies on their side with the affected shoulder on top. The therapist stands in front, stabilizing the AC joint with one hand while abducting the shoulder in the horizontal plane with the elbow extended. The distal forearm is used as a pivot to rotate the humerus clockwise and counterclockwise while applying gentle traction to the shoulder joint.

Stage 5 (A). abduction with external rotation: The patient lies on their side with the affected shoulder on top. The therapist stands in front, stabilizing the AC joint while the patient grasps the therapist's same forearm. The therapist applies resistance at the elbow joint to facilitate abduction. The patient is instructed to apply upward pressure on the elbow to increase abduction until the end range is reached, then push against the resistance at the restricted barrier and maintain the contraction.

Stage 5 (B). adduction with external rotation: The patient lies on their side with the affected shoulder on top. The therapist stands in front, stabilizing the AC joint while the patient holds the therapist's forearm. The therapist abducts the arm to 90 degrees in the horizontal plane and applies resistance at the elbow for adduction. The patient is instructed to push against the resistance at the restricted barrier and maintain the contraction.

Stage 6. internal rotation: The patient lies on their side with the affected shoulder on top, with the elbow flexed and the hand positioned on their lower back within the available range. The therapist uses one hand to stabilize the AC joint while applying resistance with the other hand or two fingers at the elbow, where the arm is internally rotated. The patient is instructed to exert forward pressure on the

elbow to achieve further internal rotation until the end range is felt, then push against the resistance at the restricted barrier and maintain the contraction.

Stage 7. deltoid traction: The patient rests on their side, with the affected shoulder positioned on top. The shoulder and elbow are extended and rest on the therapist's shoulder. The therapist clasps their hands around the patient's shoulder, providing both downward and upward motions to the deltoid muscle, helping to increase soft tissue mobility in the deltoid and shoulder ligaments.

AIM OF THE STUDY

To assess the impact of the Spencer technique on pain relief and range of motion in individuals with adhesive capsulitis.

PURPOSE OF THE STUDY

This study examines the effectiveness of Spencer technique on a patient suffering from frozen shoulder.

METHODOLOGY

A single-case study was conducted in Arogya Clinic Jorhat, involving a 60-year-old patient with secondary Frozen Shoulder (FS) affecting the right shoulder post anterior dislocation of shoulder suffered 7 months back. The patient was non diabetic and had no apparent contra-indications for Spencer Technique. Adhesive capsulitis resulted in a restricted range of motion (ROM) in the shoulder, with limitations including 110 degrees of flexion, 80 degrees of abduction, and 30 degrees of external rotation. The pain level during shoulder movement was rated as 7 on the Visual Analog Scale (VAS). Active ROM was measured using a goniometer for baseline value and VAS is used for measuring the pain felt when the shoulder joint was move.

Procedure

A moist hot pack was applied to the patient's affected shoulder for 20 minutes to relax the muscles and prepare the shoulder for manual therapy. After the applying the moist heat, the therapist performed the Spencer technique, which involves a series of manual manipulations designed to improve shoulder mobility. The Spencer technique has seven step which included: flexion, extension, circumduction with compression and traction, abduction and external rotation, adduction and internal rotation, internal rotation and a stretching tissue and pumping fluid (Fig 2 & 3). At the start, the exercise was done for two sets of 10 repetitions, with a one-minute rest between sets, five times a week. In weeks two and three, the routine was adjusted to three sets of 10 repetitions. Two-to three-minute breaks were provided depending on the patient's pain level, and a five-minute break was offered after the entire session[8].

The measurements were collected every week at the end of each week during the three-week treatment period for assessing the impact of the Spencer technique. After the final session, the patient's ROM and pain levels were reassessed using the same instruments for compare the pre and post treatment.

RESULT

The data was collected and pre and post treatment values were computed using MS Excel 2021 from the Table 2. It was seen that VAS decreases gradually from an initial value of 7 to 4 by the final day of treatment. By the third week, measurement for active range of motion across all three components-flexion, abduction and external rotation it showed a demonstrated incremental progression (Table 1 & Table 2)

Table 1. Pre- treatment shoulder range of motion.

MOVEMENT	LEFT	RIGHT (affected)
Flexion	0-170	0-120
External rotation	0-80	0-30
Abduction	0-150	0-80

Figure 2. Circumduction with distraction

Figure 3. Stretching tissue and pumping fluids with the arm extended

Table 2. Post -treatment outcome measure (Outcome for right shoulder).

MOVEMENT	DAY 0	1st WEEK	2nd WEEK	3rd WEEK
Flexion	0-120	125	130	135
External rotation	0-30	35	40	55
Abduction	0-80	95	100	115

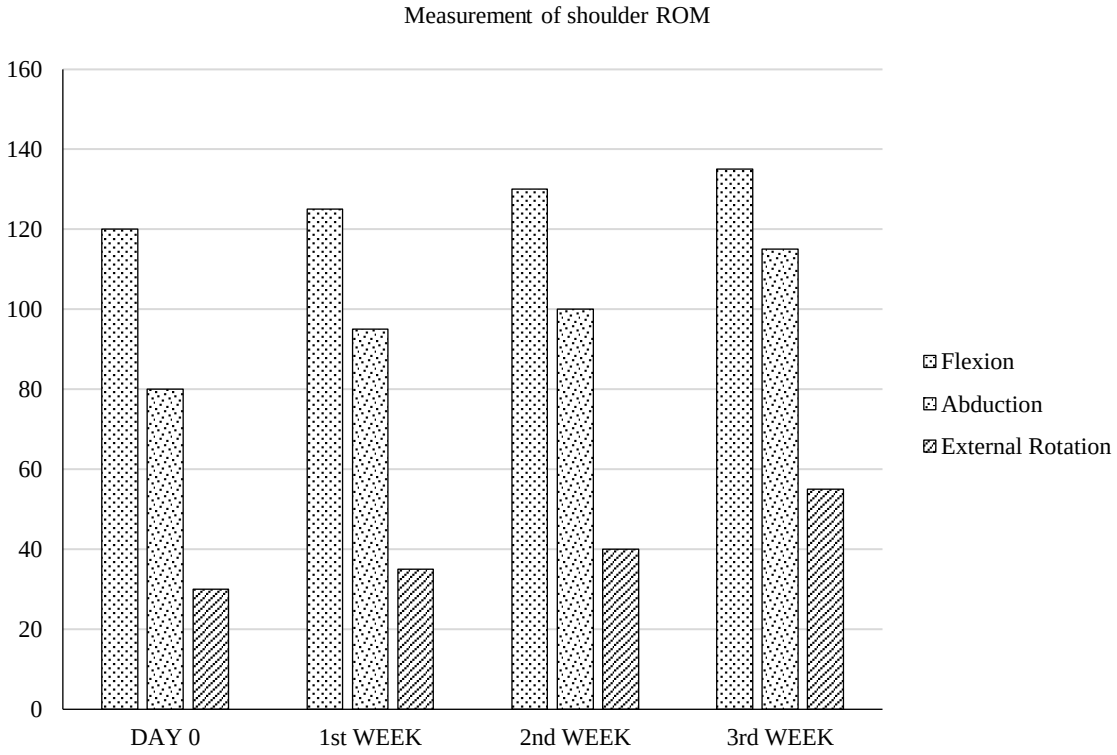

Figure 4. Increase in shoulder ROM after giving spencer technique and it is measured by goniometer.

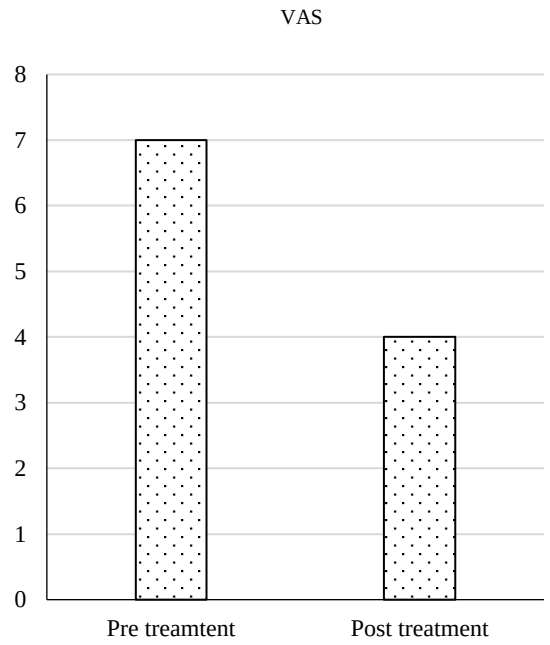

Figure 5. Reduction of pain after using spencer technique and it is measured by VAS.

DISCUSSION

This study aimed to evaluate the effectiveness of the Spencer technique in enhancing range of motion (ROM) and alleviating pain in patients with secondary frozen shoulder (FS). Post-intervention assessments were conducted at specific time intervals. The results showed a notable decrease in pain and an improvement in ROM after treatment. Pain levels were assessed using the Visual Analog Scale (VAS), while shoulder range of motion (ROM) was measured with a goniometer to track functional progress (Figure 4 & 5). These assessments revealed that the Spencer technique contributed to improvements in shoulder flexibility and a significant reduction in pain. Overall, the Spencer technique showed promise as an effective therapeutic approach for alleviating pain and improving mobility in cases of secondary frozen shoulder.

Initially, the Spencer technique was applied in the rehabilitation of a patient with frozen shoulder (FS), and the positive results prompted the researchers to conduct a single case study to further investigate and possibly confirm the technique's effectiveness in a wider context. Research has demonstrated that stretching, combined with the application of moist heat, can improve muscle extensibility, likely due to neuromuscular relaxation and a reduction in muscle viscosity. According to a study by Chan et al [5]. these methods improve muscle flexibility. Similarly, Haveela et al. [7] found that the Spencer technique restores specific joint motions by stretching the shoulder capsule and tight soft tissues, thereby increasing pain-free range of motion (ROM). This technique also promotes lymphatic flow from the treated area, helping to reverse detrimental changes in the joint and restore normal arthrokinematic movement, such as rolling and gliding. Enhanced gliding contributes to the recovery of shoulder mobility by normalizing osteokinematic rotation. The primary mechanism behind pain relief from this technique involves changes in circulatory pain biomarkers, alongside soft tissue stretching and fluid mobilization, which together improve glenohumeral and scapulothoracic joint mobility [9-12].

CONLUSION

From this single case study on Spencer technique the Researchers observed that there was significant improvement in VAS scores, and ROM of Flexion, external rotation and abduction. It is a beneficial treatment for enhancing shoulder function and reducing pain. Fuerther research is needed to done for its broader applicability, effectiveness and long-term benefits across a larger patient population.

LIMITATIONS OF THE STUDY

1. Inaccess Study was done in a short period of time
2. Large population size could have been covered
3. Inaccessibility of SPSS software for statistical analysis

REFERENCES

1. Prasanth S, Mohana A, Sreedharan S, et al. Comparative effect of gong's mobilization and spencer technique to manage frozen shoulder. Physiother Q. 2022;31(3):57–64.
2. Textbook of orthopedics by John Ebnezar and Rakesh John (5th Edition), JP Medical Ltd, 2016, Page no 366
3. Anil Rimal. Short term effect of spencers muscle energy technique on frozen shoulder patients attending at CRP, SAVAR. 2020. Dspace Repository. Available online at: http://dspace.crp-bangladesh.org:8080/xmlui/handle/123456789/667
4. Cho CH, Song KS, Kim BS, Kim DH, LHO YM. Biological Aspect of Pathophysiology for Frozen Shoulder. Biomed Res Int. 2018; 2018:7274517.
5. Chan HBY, Pua PY, How CH. Physical therapy in the management of frozen shoulder. Singapore Med J. 2017;58(12):685–689; DOI: 10.11622/smedj.2017107.
6. Hsu JE, Anakwenze OA, Warrender WJ, Abboud JA. Current review of adhesive capsulitis. J Shoulder Elbow Surg. 2011;20(3):502–514; DOI: 10.1016/j.jse.2010.08.023.
7. Haveela B, Dowle P, Chandrashekar P: Effectiveness of mulligan's technique and spencer's technique in adjunct to conventional therapy in frozen shoulder: a randomized controlled trial. Int j adv res dev. 2018,3(1):253-60.
8. Phansopkar P, Qureshi MI. Impact of Spencer Technique on Pain, Range of Motion, and Functional Disability in Patients With Frozen Shoulder: A Pilot Study. Cureus. 2024 Jan 30;16(1):e53263. doi: 10.7759/cureus.53263. PMID: 38435910; PMCID: PMC10904876.
9. Jayvant Gohil1, et al. Effect of Spencer Technique Combined with Conventional Physiotherapy on Pain and Functional Disability in Patient with Shoulder Impingement Syndrome: An Experimental Study. International Journal of Health Sciences and Research Vol.13; Issue: 6; June 2023. DOI: https://doi.org/10.52403/ijhsr.20230640
10. Phansopkar P, Qureshi MI. An Integrated Physical Therapy Using Spencer's Technique in the Rehabilitation of a Patient With a Frozen Shoulder: A Case Report. Cureus. 2023 Jun 30;15(6):e41233. doi: 10.7759/cureus.41233. PMID: 37529524; PMCID: PMC10387580.
11. Robertson VJ, Ward AR, Jung P. The effect of heat on tissue extensibility: a comparison of deep and superficial heating. Arch Phys Med Rehabil. 2005 Apr;86(4):819-25. doi: 10.1016/j.apmr.2004.07.353. PMID: 15827938.
12. Curcio JE, Grana MJ, England S, Banyas PM, Palmer BD, Placke AE, Rieck WA Jr, Eade AM. Use of the Spencer Technique on Collegiate Baseball Players: Effect on Physical Performance and Self-Report Measures. J Am Osteopath Assoc. 2017 Mar 1;117(3):166-175. doi: 10.7556/jaoa.2017.031. PMID: 28241328.

