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A Case Report: Adhesive Capsulitis and Physical Therapy Intervention

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A Case Report: Adhesive Capsulitis and Physical Therapy Intervention

by

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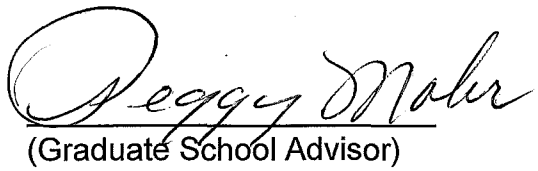
This Scholarly Project, submitted by Haley Brenner in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Advisor and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.



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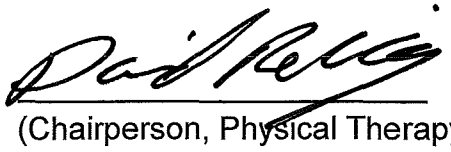

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Signature Haley Brenner

Date 6-12-18

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ACKNOWLEDGEMENTS

I would like to thank my clinical instructor, faculty of the University of North Dakota physical therapy department, and my classmates for the continual support and proofreading for the preparation of this case report. I would also like to thank Nathan Mertens for agreeing to be photographed to further demonstrate the mobilizations done during this case report and Jayla Greene for assisting in the photography.

ABSTRACT

Background and Purpose

The purpose of this case report is to describe the physical therapy interventions for a patient with adhesive capsulitis.

Case Description

The patient was a 68-year-old right-handed male who presented with left shoulder pain and limited range of motion (ROM) following a fall 7 months prior. The patient had a past medical history of type II diabetes mellitus. The diagnosis of adhesive capsulitis was determined following radiographs, mechanism of injury, past medical history, and physical therapy examination and evaluation.

Intervention

The patient was seen for a total of 8 physical therapy sessions over the span of 6 weeks. Interventions included a home exercise program, instruction in heat/ice use, mobilizations, therapeutic exercises, ROM, stretching, and upper body ergometer use. Outcome measures included ROM measurements, pain ratings, strength tests, the Shoulder Pain and Disability Index (SPADI), and the Patient Specific Functional Scale (PSFS).

Outcomes

Following 6 weeks of physical therapy intervention and home exercise program, the patient demonstrated increased shoulder ROM, decreased pain, and improved function based on the improved SPADI and PSFS scores

Discussion

Rationale for treatment was based on textbook information for shoulder interventions and research articles. The treatment was altered based on patient's response.

Conclusion

This case report is in concordance with the current research that shows strengthening, mobilizations, a home exercise program and stretching are appropriate combinations of interventions for individuals with adhesive capsulitis. This patient returned to his prior level of function following the above treatment regimen.

CHAPTER I

BACKGROUND AND PURPOSE

Adhesive capsulitis is a nonspecific chronic inflammatory reaction of tissues in the glenohumeral joint which causes synovial thickening. This thickening results in limited range of motion (ROM) most commonly seen in shoulder abduction and external rotation. Other signs and symptoms include severe pain at night and pain upon palpation of the anterolateral aspect of the shoulder. The onset can be insidious or occur after an injury. Secondary adhesive capsulitis can be the result of an existing shoulder pathology such as a dislocation, fracture, osteoarthritis, or a neurological condition leading to muscular imbalances.[1] Risk factors include diabetes, trauma, hypertriglyceridemia, and thyroid disease.[2]

The prevalence rate is reported to be 2-5.3% of the population with individuals between ages 40-70 most commonly affected. Studies[1] have shown that adhesive capsulitis affects 20% of people with diabetes. Diabetes can alter the collagen formation and delay the healing process following traumatic events or surgery.

Individuals with adhesive capsulitis generally progress through 4 stages: Prefreezing (1-3 months), Freezing (3-9 months), Frozen (9-14 months), and Thawing (12-14 months). Interventions for adhesive capsulitis can include physical therapy, corticosteroid injections, NSAIDs, and surgery.[3] Rawat et al[4] referred to Sahrmann's theory that rotator cuff muscle weakness is often seen in

patients with adhesive capsulitis. Strengthening of the rotator cuff muscles can restore proper alignment which can decrease pain and improve movement strategies of the shoulder. A systematic review by Page et al[5] found that glucocorticoid injections are more effective than manual therapy and exercises in the short term for decreasing pain, but manual therapy and exercise are more effective than sham ultrasound to increase range of motion.

The purpose of this case report was to describe the physical therapy interventions that were done with a patient with adhesive capsulitis and to describe the outcomes following these interventions. Interventions included strengthening, stretching, manual therapy, upper body ergometer, and instruction in a home exercise program.

CHAPTER II

CASE DESCRIPTION

A 68-year-old right-handed male patient was seen in physical therapy 7 months after he fell on the ice. He presented with left shoulder pain and limited range of motion during the initial evaluation. The patient had a past medical history of type II diabetes mellitus, hyperlipidemia, hypertension, and obesity. The diagnosis of adhesive capsulitis was determined following radiographs, mechanism of injury, past medical history, and physical therapy examination and evaluation. The patient's chief complaints were decreased ROM, pain, and decreased ability to independently put on his jacket. His goals for therapy were to decrease pain and improve movement of his arm.

Examination, Evaluation and Diagnosis

Upon palpation, patient had tenderness along the left biceps tendon and coracoid process. Upon observation, patient had a forward head and rounded shoulders. Examination and evaluation procedure was done according to *Dutton's Orthopaedic Examination, Evaluation, and Intervention.*[3] The patient's cervical range of motion was within normal limits and painfree. The initial evaluation included shoulder ROM into flexion, abduction, internal rotation, functional internal rotation, external rotation, and functional external rotation (Table 1). The main limitations in range of motion included abduction and external rotation, which is consistent with the typical presentation of

adhesive capsulitis.[1] Functional external rotation was decreased which was also evident in the patient's inability to effectively put on his jacket.

Table 1. Shoulder Range of Motion Initial Evaluation

	Right	**Left**
Flexion	155	155
Abduction	170	135, pain
Internal Rotation	65 (passive)	70 (passive)
Functional internal rotation	T12	T12, pain
External rotation	90 (passive)	53, pain
Functional external rotation	T4	C7, pain

Table 2. Shoulder Strength Initial Evaluation

	Right	**Left**
Flexion	5/5	5/5
Abduction	5/5	4, pain
Internal Rotation	5/5	5/5
External Rotation	5/5	5/5

Positive special tests performed on the patient's left shoulder included Neer's Impingement, Speeds, O'Brien, and empty can tests. Negative tests included Hawkin's Kennedy, coracoid impingement, crossarm, drop-arm, and apprehension tests. The patient's positive special tests did not clearly indicate what was causing the pain and limited ROM. With the patient's history of diabetes, decreased active and passive ROM most limited in external rotation, and his fall on the ice 7 months prior, the diagnosis of adhesive capsulitis was supported.

Prognosis and Plan of Care

The patient was seen for a total of 8 visits throughout 6 weeks. Throughout the 8 visits, the patient was provided with a home exercise program which was updated according to patient's tolerance. Other interventions included upper body ergometer, shoulder strengthening exercises, stretching, and manual therapy. Progress notes were completed every fifth visit which consisted of goniometric and strength measurements, reassessment of goals and patient reported pain. A Shoulder Pain and Disability Index (SPADI) was given to measure the functional improvements at initial and final evaluation. The patient was provided a home exercise program with the following exercises: shoulder strengthening into flexion, external rotation, and abduction. Stretches included abduction and external rotation. Exercises during therapy sessions included various shoulder strengthening and stretching activities. Goniometric measurements were used to determine progress and ROM improvements. Manual muscle testing was performed to evaluate increases in shoulder strength. Shoulder mobilizations were performed at each physical therapy session to improve ROM. The patient's prognosis was deemed fair. This prognosis was determined because of his history of diabetes, limited ROM, and SPADI score.

CHAPTER III

INTERVENTION

Patient was seen for a total of 8 visits during a 6-week period. The first session following the evaluation included manual therapy with the patient in supine. Mobilizations included glenohumeral distraction grade II, glenohumeral inferior glide grade II-IV, glenohumeral posterior glide grade II-IV and glenohumeral posterior glide with external rotation grade II and IV. The glenohumeral distraction, inferior glide, and posterior glide were done according to *Dutton's Orthopaedic Examination, Evaluation, and Intervention*.[3] The glenohumeral posterior glide with external rotation mobilization, illustrated in Figure 1, was performed as described by Johnson et al[6] which showed a posterior mobilization with external rotation rather than the traditional anterior mobilization to increase shoulder external rotation.

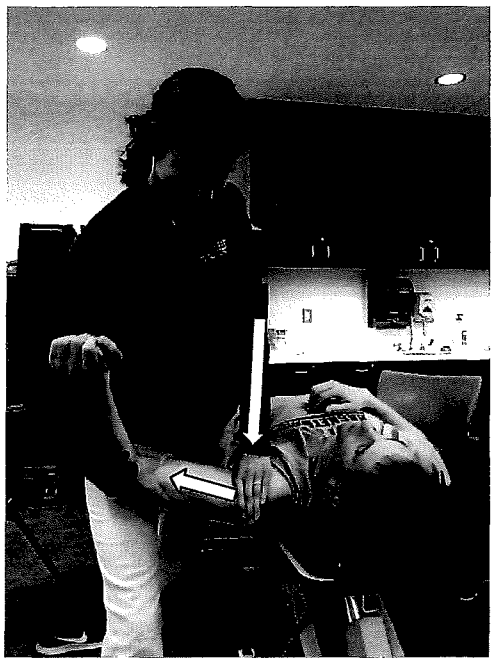

Figure 1. Posterior Mobilization with External Rotation

Therapeutic exercises focused on improving shoulder external rotation, abduction, flexion, and scaption which were all limited motions during the patient's ROM evaluation. Throughout the sessions, interventions included the mobilizations mentioned above and therapeutic exercises including left shoulder external rotation in sidelying, shoulder external rotation in standing, and left horizontal abduction bent forward at the waist with table support. Active assistive exercises included left shoulder flexion and left shoulder scaption in supine. The patient completed 15 repetitions of all exercises and progressed in weight and sets throughout the sessions. Other exercises included shoulder perturbations with the patient in supine and proprioceptive exercises with the patient's shoulder flexed to 90 degrees and standing with his hand against a stability ball. Patient also used an upper body ergometer forward and backward, biceps curl, shoulder

scaption in standing, wall push-ups, shoulder flexion using an exercise ball to roll up the wall, triceps extension, external rotation stretch in supine using a dowel, external rotation stretch with palmar surface of hand on wall, shoulder flexion ball taps with 5-pound ball clockwise and counterclockwise on a grid on the wall, and shoulder stretching in supine including flexion, scaption, external rotation, and internal rotation.

During session 5, an examination was completed to assess how the patient's pain, strength, and ROM improved over the previous 4 sessions of physical therapy. The patient reported he could reach behind his back and above his head with greater ease and, over the previous 2 days, his pain was at 0/10 at the lowest and 3/10 at the highest. Sleeping, movement in general, and reaching behind his back all continued to increase his pain.

The patient met his short-term goals. Those short-term goals included the patient will: understand the biomechanical stressors of the shoulder joint in order to make modifications to activities to reduce further risk of injury, be independent with a short-term home exercise program, and report pain at worst of 5/10 in order to perform ADLs.

CHAPTER IV

OUTCOMES

During the patient's last session, a reassessment was done before discharge. The patient reported he felt he had made 60% improvement since the initial evaluation and reported he was able to lay on his left arm without numbness or pain and was sleeping normally. Patient was consistent with his home exercise program and felt he could independently continue his exercises at home. He reported his pain at 0/10 at the best and 1-2/10 at the worst. The patient demonstrated increased ROM and strength before discharge (Table 3).

Table 3. Shoulder Range of Motion at Discharge

	Right	**Left**
Flexion	155	160
Abduction	170	160, no pain
Internal Rotation	65 (passive)	70 (passive)
Functional Internal Rotation	T12	T12, pain
External Rotation	90 (passive)	76
Functional External Rotation	T4	T3

The patient scored 4.7% disability on the SPADI which demonstrated an improvement from the initial 17% disability. Patient met all his long-term goals

including: improve score on SPADI by 13 points to correlate with clinically significant change, patient will report pain at worst of 2/10 or less, patient will demonstrate 75 degrees or more of shoulder external rotation without pain in order to manage his coat independently, and patient will demonstrate shoulder abduction strength of 5/5 without pain.

CHAPTER V

DISCUSSION

According to Page et al[5] using a combination of manual therapy and strengthening increased function and range of motion patients with adhesive capsulitis. Page et al concluded that patients also demonstrated improved function, decreased pain, and increased range of motion following manual therapy and exercise when compared with sham ultrasound. The authors also found that glucocorticoid injections were more effective than manual therapy for pain management. This evidence supports the interventions implemented in this case study.

The glenohumeral posterior glide with external rotation mobilization was performed on this patient rather than the traditional anterior mobilization. Johnson, et al[6] concluded greater improvements in range of motion were seen in patients that had the posterior glide versus anterior glide done. Further research should be done with a larger sample size to determine if a posterior mobilization with external rotation should be the preferred mobilization for patients that need increased external rotation. For the purpose of this case report, the patient demonstrated improvements in function and ROM but we were not able to determine which part of the intervention led to the increased functionality.

During the examination and evaluation of this patient, it was unknown if there was a specific special test that could have been used to determine if a patient has adhesive capsulitis. Carbone et al[7] found 96.4% patients with adhesive capsulitis had a positive coracoid pain test. Only 11% of patients with

rotator cuff tears had a positive coracoid pain test, and 2% of patients that were asymptomatic had a positive coracoid pain test. This test may be beneficial in the future to determine adhesive capsulitis in patients. The coracoid pain test is one of few special tests that has high specificity and sensitivity to determine if a patient has adhesive capsulitis. Further research should be completed to determine if the coracoid pain test alone could further support a diagnosis of adhesive capsulitis. Also, further research should be done to determine if the coracoid pain test can be used in differential diagnosis to separate adhesive capsulitis from other shoulder pathologies.

This case report is in concordance with the current research that shows strengthening, mobilizations, a home exercise program and stretching are an appropriate combination of interventions for individuals with adhesive capsulitis.[1,4,5,6] This patient returned to his prior level of function following the above treatment regimen.

Reflective Practice

Upon review of my clinical practice with this patient, I found that it would have been beneficial to know about the coracoid pain test to have an easier test to further determine whether the patient had adhesive capsulitis. In retrospect, I should have reviewed and changed his home exercise program more often. The mobilizations were very beneficial to him that we did in physical therapy, so focusing primarily on the mobilizations during therapy and less time on the exercises would have been more efficient. The client had time available outside

of physical therapy to do his exercises. With that in mind, rather than having him do his full exercises every session, I could have either given him new exercises to keep him motivated or focused more on manual therapy.

After reflecting on my clinical practice, I evaluated my strengths and weaknesses by creating a Johari Window.[8] The Johari Window examines the known and unknown factors to the patient and physical therapist. The model helps to determine outside factors that may be influential in treatment planning. One unknown factor and question that I wish I would have asked sooner is if the patient had any exercise equipment at home. For his first home exercise program, I gave him theraband to perform shoulder strengthening exercises. In therapy, we used 1-3 lb. weights to do other strengthening exercises. It wasn't until the 4th visit that the patient told me he had weights at home. If I would have asked for that information sooner, I could have given him more exercises to do and performed other interventions during physical therapy. I also did not know right away if the patient would consistently perform his home exercises. However, after the third visit when he demonstrated the exercises without error, I realized it was not an issue.

Overall, my patient increased in function and range of motion. There are many factors that influenced his final goal. He was motivated, and hardworking. He also had a supportive family, functional goals that he wanted to achieve, and time outside of physical therapy to do his exercises and stretching. All of these factors and attributes of my patient aided in his recovery.

APPENDIX

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A Case Report: Adhesive Capsulitis and Physical Therapy Intervention

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Abstract

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- **Purpose:** The purpose of this case report was to describe the physical therapy interventions for a patient with adhesive capsulitis.
- **Case Description:** A 68-year-old right-handed male patient who presented with left shoulder pain and limited range of motion (ROM) following a fall 7 months prior. The patient had a past medical history of type II diabetes mellitus. The diagnosis of adhesive capsulitis was determined following radiographs, mechanism of injury, past medical history, and physical therapy examination and evaluation.
- **Plan of Care:** The patient was seen for a total of 8 physical therapy sessions over the span of 6 weeks. Interventions included a home exercise program, instruction in heat/ice use, mobilizations, therapeutic exercises, ROM, stretching, and upper body ergometer use. Outcome measures included ROM measurements, pain ratings, strength tests, the Shoulder Pain and Disability Index (SPADI), and Patient Specific Functional Scale (PSFS).
- **Outcomes:** Following 6 weeks of physical therapy intervention and home exercise program, the patient demonstrated increased shoulder ROM, decreased pain, and improved function based on the improved SPADI and PSFS scores.
- **Discussion:** Rationale for treatment was based on textbook information for shoulder interventions and research articles. The treatment was altered based on patient's response.
- **Conclusion:** This case report is in concordance with the current research that shows strengthening, mobilizations, a home exercise program and stretching are an appropriate combinations of interventions for individuals with adhesive capsulitis. This patient returned to his prior level of function following the above treatment regimen.

Introduction

- Studies have shown that adhesive capsulitis affects 20% of people with diabetes. Diabetes can alter the collagen formation and delay the healing process following traumatic events or surgery.
- The etiology of adhesive capsulitis is not completely understood, but it is most likely caused by a nonspecific chronic inflammatory reaction of tissues in the glenohumeral joint causing synovial thickening. This thickening leads to a decrease in shoulder range of motion.
- Individuals with adhesive capsulitis generally progress through 4 stages:
  - 1. Prefreezing (1-3months)
  - 2. Freezing (3-9 months)
  - 3. Frozen (9-14 months)
  - 4. Thawing (12-14 months)

Case Description

- A 68-year-old, right-handed, male patient presented with left shoulder pain and limited range of motion following a fall 7 months prior. The patient had a past medical history of type II diabetes mellitus. The diagnosis of adhesive capsulitis was determined following radiographs, mechanism of injury, past medical history, and physical therapy examination and evaluation.

Plan of Care

- Patient was seen for a total of 8 visits throughout 6 weeks
- Patient was given a home exercise program with the following exercises: shoulder strengthening in flexion, external rotation, and abduction. Stretches included abduction and external rotation.
- Exercises during therapy sessions included various shoulder strengthening and stretching activities.
- Goniometric measurements were used to determine progress and ROM improvements.
- Manual muscle testing was performed to evaluate increases in shoulder strength.
- Shoulder mobilizations were performed at each physical therapy session to improve ROM.
- The mobilization in **Figure 1.** was performed as described by Johnson et al which showed a posterior mobilization with external rotation rather than the traditional anterior mobilization increases shoulder external rotation.

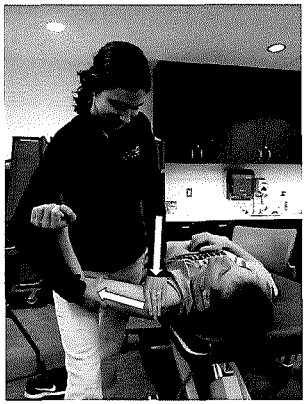

Figure 1. Posterior mobilization with external rotation

Outcomes

- Patient reached 5/5 strength (Manual Muscle Test Grading System 0-5) in shoulder flexion, abduction, internal rotation, and external rotation at final discharge.
- As shown in **Table 1.**, the patient demonstrated an increase of 30 degrees in shoulder abduction and 23 degrees improvement in shoulder external rotation from initial evaluation to final evaluation.

Table 1. Left Shoulder ROM

	Initial evaluation	Final evaluation
Shoulder flexion	155°	160°
Shoulder abduction	135°	165°
Shoulder external rotation	53°	76°

- Patient improved on SPADI from 17% disability to 4.7% disability.
- Patient reported 60% improvement in functional activities from initial evaluation to discharge.
- Patient met all goals prior to discharge.
- Patient felt he could continue his HEP independently and was given progressions.

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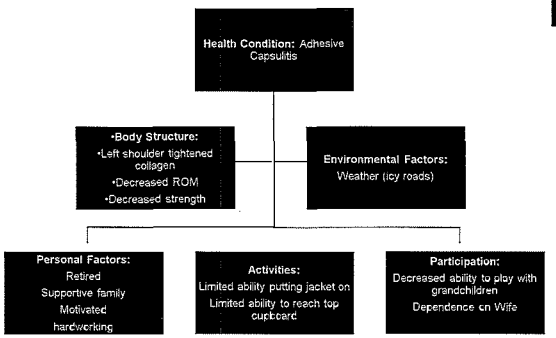

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Discussion

- Research indicated using a combination of manual therapy and strengthening to increase function and range of motion.
- According to Page et al, patients with adhesive capsulitis demonstrated improved function, decreased pain, and increased range of motion following manual therapy and exercise when compared with sham ultrasound. The authors also found that glucocorticoid injections are more effective than manual therapy for pain management.

Conclusion

This case report is in concordance with the current research that shows strengthening, mobilizations, a home exercise program and stretching are an appropriate combinations of interventions for individuals with adhesive capsulitis. This patient returned to his prior level of function following the above treatment regimen.

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