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PHYSICAL THERAPY INTERVENTION FOR A PATIENT WITH POST-SURGICAL SHOULDER CAPSULORRHAPHY

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ABSTRACT

Background: Posterior shoulder capsulorrhaphy is a surgical procedure to help restore shoulder joint stability in patients with a history of recurrent shoulder dislocations. Physical therapy (PT) may be beneficial in outpatient rehabilitation to improve patient shoulder range of motion (ROM), muscular strength, endurance, joint stability, and return to prior level of activities after general shoulder surgery. The purpose of this case study was to describe PT intervention for a patient with shoulder posterior capsulorrhaphy in an outpatient setting.

Case Summary: 21-year-old male with post-surgical right shoulder posterior capsulorrhaphy due to multiple posterior shoulder dislocation. Patient's impairments were right shoulder weakness, decreased ROM, and functional immobility due to pain and a retracted capsule. PT intervention was 2-3X per week for nine weeks and included therapeutic exercises, manual therapy, modalities, and patient education for a home exercise program (HEP).

Outcome Measures: Patient was seen for 13 visits in an outpatient PT setting which improved his shoulder active ROM, strength, and outcome measures. The pain was also reduced. He returned to work with light duty restrictions after the 3rd week of PT and was able to perform normal responsibilities by the 9th week. He achieved the majority of his goals.

Conclusion: PT intervention may have accelerated the progression of patient's functional mobility, strength, ROM, and reduction of pain. Compared to the currently available literature for this diagnosis, the patient returned to normal function three weeks earlier than normal, probably due to earlier internal rotation exercise. Future research should include a randomized control trial regarding effective PT interventions following shoulder capsulorrhaphy surgery.

Keywords: Physical Therapy, Capsulorrhaphy, Rehabilitation, Shoulder, Intervention, Surgery.

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INTRODUCTION

Individuals in America with shoulder dislocations occur 24 per 100, 000 each year [1-5]. Seventy-two percent of dislocations occur in the male population in their twenties. Posterior shoulder dislocations are 4% of all cases [1-3]. There are several interventions to reduce effects of dislocations. One surgical option is to perform a capsulorrhaphy [4-6]. Physical therapy may be helpful to maximize shoulder mobility while maintaining stability in patients post-capsulorrhaphy. Some physical therapy interventions include patient education, precautions, therapeutic exercises, functional mobility, and modalities [6-7]. This case study described the physical therapy interventions of a patient status-post shoulder capsulorrhaphy surgery.

Patient Information

The patient was a 21-year-old white male (5'10" and 155 pounds) who had a history of recurrent right shoulder dislocations due to overhead throwing activities. Thermal shrinkage capsulorrhaphy right shoulder was performed 1 week prior. His prior level of function showed he was in good health but had pain and limited functional use performing household chores, driving, working, throwing, and hunting. His chief complaint was pain (8/10 Visual Analog Scale) and loss of motion after the surgery. He was instructed to wear a shoulder sling for 6 weeks and to avoid active motion for 3 weeks. He had right shoulder arthroscopy surgery 4 years ago and no other past medical issues. He took hydrocodone for pain as needed after the capsulorrhaphy. The patient was recently married and lived with his wife. He enjoyed bow hunting, bow fishing, hiking, football, and softball. He worked as a tractor operator and conditioning worker at a grain elevator prior to his injury. His goals were to maximize shoulder range of motion and return to full duty work without pain. Vitals were not taken. The patient was fully alert and oriented. There were no signs of infection at the three surgical incision sites on the right anterior, lateral, and posterior shoulder. He was in general good health and demonstrated coordinated movement patterns with right upper extremity in a sling. The patient provided written informed consent.

Physical Examination

Goniometry, pain assessment, and Quick Disability of Arm, Shoulder, and Hand (DASH) outcome measure were conducted. The patient had full active and passive motion in the left upper extremity and restrictions in the right upper extremity shown in Table 1.

Table 1: Right Shoulder Passive Range of Motion (PROM)

Right shoulder (sitting)	PROM
Flexion	0-97^0
Extension	0-44^0
Abduction	0-74^0
Adduction	WNL
Internal Rotation	0-74^0
External Rotation	0-30^0

Numeric pain scale was reported at 8/10 in the right shoulder during the initial evaluation, 6/10 at its best, and 9/10 at its worst over the last 24 hours. The Quick DASH was 79% disability in the right shoulder.

Diagnosis and assessment

See Table 2 for the clinical findings in the International Classification of Functioning (ICF) format.

Table 2: ICF Clinical Findings.

	Right shoulder posterior capsulorrhaphy	
Impairments: Pain, weakness, decreased ROM	Activity limitations: Driving, overhead activities, grooming, chores	Participation Restrictions: Tractor operator, conditioning worker, outdoorsman, athlete
Environmental Factors: One story house, spouse assist		Personal Factors: Young, healthy, fit, motivated

The physical therapy diagnosis was pain, weakness, and limited function due to right shoulder capsulorrhaphy to prevent further dislocations. The patient had an excellent prognosis to return to full function at work without pain within three months due to his motivation and good health. The frequency of the program consisted of one-hour treatments three times each week for six weeks. The expected outcome was to reduce the patient's pain, reduce joint inflammation, improve tissue healing, and increase strength and endurance. Regarding activity level, it was expected that the patient would return to work on a full duty basis within two months.

The goals for the episode of care included independence with the home program, equalizing the active motion of the right shoulder compared to the left, and ensuring the Quick DASH score was less than 40% disability. The patient was an appropriate candidate for physical therapy services and required no additional referrals or consultations. The interventions included therapeutic exercises, modalities, manual therapy, home exercise program, and patient education.

Interventions

Patient education was used to develop the home exercise program, use of a shoulder sling, posture, and positioning. Pendulums, elbow, and wrist range of motion and grip strengthening were performed three times each day. Modalities were moist hot pack, ice, interferential electrical stimulation, and Game Ready device for cold and compression [6,8,9]. Shoulder isometric contractions were performed in extension, flexion, external and internal rotation, and abduction on the third visit with the patient holding five repetitions for five seconds each. The exercise was progressed to ten repetitions holding for 10 seconds each by the eighth visit [6,10]. Shoulder internal rotation rhythmic stabilization with two repetitions for one minute was implemented on the fourth visit. It was progressed to two repetitions of two and a half minutes during visit eight [11]. Other exercises like the supine passive manual range of motion, prone rows, side-lying shoulder external

rotation, seated pulley, chest press, resistance band, upper body ergometer, and proprioceptive stabilization activities were used to maximize the patient's independent function. The patient began with eight to ten repetitions and would increase to fifteen repetitions at which point the resistance was increased [6,12,13].

Outcome measurements

The patient outcomes are found in Table 3 regarding seven weeks of physical therapy interventions for the patient. The pain was reduced by 8 points, an 80% improvement. The Quick DASH improved by 48%. Active right shoulder motion increased by 33 degrees (25% improvement) and the patient was able to return to active duty at the grain elevator.

Table 3: Outcome Right Shoulder Function

	Initial Evaluation	Week 7
Pain VAS	8/10	0/10
Quick DASH	79%	31%
PROM (degrees flexion) (degrees extension) (degrees abduction) (degrees external rotation)	0-97 0-44 0-74 0-30	0-130 AROM 0-45 0-90 AROM 0-38
Function	Unable to work	Return to work

DISCUSSION

The patient improved in all areas of function during physical therapy intervention. He was adherent to the home exercise program and achieved three out of four physical therapy goals. Active shoulder range of motion was initiated early due to excellent prognostic factors, personal factors, and environmental factors which led to rapid functional improvements. Case management improvements were necessary. Maximum communication with a physician was critical to prevent shoulder injury with progressive shoulder active range of motion and strengthening. Vital signs should have been assessed during the initial evaluation. Improvements were needed to assess bilateral shoulder strength and motion. Short term goals improved progress and focus on patient outcomes. More functional exercises would increase patient progress in the clinic. Future research may include ways to increase early active motion and strength for patients with shoulder capsulorrhaphy. There needs to be more information about incidence and prevalence of patients with this surgery. Researchers may also consider what interventions are more appropriate and lead to better and quicker outcomes.

Conclusion

Physical therapy intervention may have accelerated the rehabilitation of this patient's functional mobility and progression of his outcomes as a result of this case study as evidenced by achievement of therapy goals and return to normal function earlier than what is reported in the literature due to earlier shoulder motion and strengthening exercises.

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