2007

Nonoperative Management of a Client with a Full-Thickness Rotator Cuff Tear

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NONOPERATIVE MANAGEMENT OF A CLIENT WITH A FULL-THICKNESS ROTATOR CUFF TEAR

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Master of Physical Therapy
University of Mary
2001

A Scholarly Project

Submitted to the Graduate Faculty of the

Department of Physical Therapy

School of Medicine

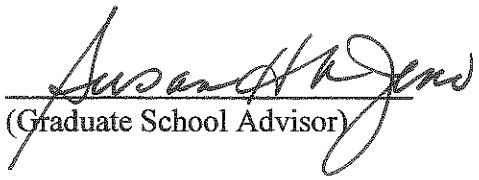
University of North Dakota

in partial fulfillment of the requirements for the degree of

Doctor of Physical Therapy

Grand Forks, North Dakota
December, 2007

This Scholarly Project, submitted by Samantha Neary 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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Department	Physical Therapy
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Signature Samantha A Neary

Date 11-28-07

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ACKNOWLEDGEMENTS

I would like to extend a special thanks to the following people who made this project possible:

- Sue Jeno for her experience and knowledge in guiding me while writing this paper.
- Dave Relling for his guidance while throughout the entire process of putting this project together.

ABSTRACT

Shoulder pain caused by a rotator cuff tear may inhibit one's ability to perform activities of daily living. Although surgery is a common intervention with this diagnosis, some clients are not surgical candidates or do not wish to undergo surgical intervention leaving conservative treatment as their only option. Therefore, the purpose of this case report is to describe the intervention used in the nonoperative management of a client with a full-thickness rotator cuff tear. The client was a 68 year old male with the diagnosis of a right shoulder rotator cuff tear. The client participated in physical therapy 2 times a week for 4 weeks (8 visits). The intervention consisted of postural education, scapular stabilization exercises, range of motion exercises, and strengthening exercises. This client demonstrated increased shoulder range of motion (ROM) and strength to within functional limits, decreased pain and was able to return to prior functional level to include recreational exercises 2-3 days a week. Conservative, nonoperative management may be an effective method for restoring the function in clients with rotator cuff tears. This case report demonstrates the effectiveness of physical therapy intervention on returning a client who had a full-thickness rotator cuff tear to prior functional activities.

Key words: shoulder pain, rotator cuff tear, physical therapy, exercises

CHAPTER 1

INTRODUCTION

Rotator cuff tears are a common diagnosis seen in the physical therapy clinic. Clients with rotator cuff tears may end up with functional limitations along with pain and weakness. Although conservative treatment may be attempted initially for a small number of individuals, a common treatment approach is surgical intervention. Some authors report that the only way to eliminate the pain and weakness is through surgical intervention. Ellman et al[1] reported a satisfaction rate of 84% in the 50 patients studied who had undergone surgery to repair a torn rotator cuff. Surgical intervention may be well documented in the literature; however, further studies need to be performed to demonstrate the effectiveness of nonoperative management.

Conservative treatment may consist of exercises and pain management techniques to decrease pain and increase strength in a client with a rotator cuff tear. Goldberg et al[2] showed that out of the 46 clients studied, 59% experienced improvement with nonoperative treatment, 30% experienced worsening of symptoms and 11% were unchanged. This study documented the functional outcome following a treatment program of patient education and a home program of gentle stretching and strengthening.

Piccoli and Hasson[3] published a case study on the conservative management of a large rotator cuff tear. The study showed increased ROM (to approximately 85% of normal) and strength (4 to 4+ out of 5 for all motions) along with the report of decreased pain (95% decline from the initial report) following conservative treatment over a 7 week period.

The purpose of this case report was to show the effectiveness of conservative, nonoperative management of a client with a full-thickness rotator cuff tear.

CHAPTER II

CASE DESCRIPTION

Examination, Evaluation, and Diagnosis

The client is a 68 year old male who sustained an injury to his right shoulder on September 13, 2004. The client reported reaching and pulling open the fridge door when he experienced acute onset of pain with immediate bruising of the right shoulder area. The client reported he was unable to move his right shoulder without increased pain, therefore sought medical treatment. The client was evaluated by an orthopedic surgeon on September 28, 2004 and was referred for physical therapy services for evaluation and treatment of right shoulder rotator cuff tear. The MRI results showed a full thickness tear of the entire supraspinatus tendon with both muscle and tendon retraction, a full thickness tear of infraspinatus with retraction, contusion or partial tear of muscle bed of teres minor, significant synovial fluid around midsection of biceps brachii and minimal degenerative joint disease of acromioclavicular joint.

The client's past medical history included high blood pressure and heart bypass surgery (September of 1997). The client reported sustaining an injury to his right shoulder in September of 2002 when his wife ran into the back of his outstretched arm. Client reported that this injury did not require medical intervention and he made a full recovery. The client participated in a cardiac rehabilitation program following his bypass surgery (1997) and continued to participate in a recreational conditioning program 2-3 days a week at the hospital. He reported he had been unable to fully participate in his recreational conditioning program since injuring his shoulder on September 9, 2004. The client was retired but had been very active prior to the injury. The client's wife had been undergoing radiation treatment for cancer at the time of the injury; therefore he performed the majority of the cooking and cleaning along with the outside work

such as mowing, gardening, and snow removal. The client was also the care giver for his wife during this time. Personal goals of the client included being able to return to doing the household chores without increased pain and to be able to care for his wife. The client reported that he would also like to return to his recreational conditioning program 3 days a week.

Examination, Evaluation and Diagnosis

The client was evaluated on October 6, 2004. Prior to the evaluation, the client completed a health history questionnaire and gave informed consent for the treatment. Upon evaluation, client demonstrated slight rounded shoulders and a forward head posture. There was no bruising noted on right upper extremity. There was increased winging of the right scapula compared to the left. The client denied any numbness or tingling in either arm. The client reported increased pain with range of motion (ROM) and described his shoulder as feeling unstable. Client reported his average pain 7 to 8 out of 10 (on a 0-10 Visual Analog Pain Scale) with maximum pain reported as 9 out of 10 while performing any activity that involved movement of the right shoulder. The pain was reported as sharp with ROM and a dull ache at other times. The client was unable to pinpoint an exact location of the pain; reported his whole right shoulder hurt but with the intense pain in the anterior aspect of the shoulder. He reported having decreased pain at rest. The client reported increased difficulty putting on his shirt/jacket.

An examination of the dermatomes of the right upper extremity showed no decrease in sensation. The neck was examined and client was found to have normal cervical ROM without pain. Client demonstrated ROM and strength in the left shoulder to within functional limits. Upon palpation of the right shoulder, client had increased tenderness over the anterior acromion, the bicipital groove and the greater and lesser tuberosities of the humeral head. The client had limitations in active range of motion (AROM) in all right shoulder motions but demonstrated full

passive range of motion (PROM). Shoulder AROM was measured using a goniometer. See results in table 1.

Table 1. Initial right shoulder AROM (in degrees)

MOVEMENT	DEGREES
Flexion	135
Abduction	90
External Rotation	Client unable to tolerate testing position for both external and internal rotation. Client was unable to bring right hand to head
Internal Rotation	Client able to bring right hand to level of L4

Shoulder strength was measured in the left shoulder and the client demonstrated 5/5 strength throughout all motions. Right shoulder strength was deemed to be less than 3/5 with the client unable to complete full ROM against gravity. Special tests were performed to further assess the right shoulder and to confirm the findings of the MRI report. The following tests were performed as instructed in Magee 1997[4] and were found to be positive on the right shoulder: 1) Drop Arm Test; 2) Empty Can Test. During the Drop-Arm test, the client was unable to return his right arm slowly to his side from 90 degrees of abduction which is indicative of a tear in the rotator cuff. To further assess the rotator cuff muscles, the empty can test was performed. The client demonstrated increased weakness and pain in the anterior right shoulder during the test which indicates a tear of the supraspinatus muscle. The relationship between a positive test and the incidence of a rotator cuff tear was studied by Murrell and Walton[5]. These authors concluded that a client over the age of 60 who had two of the three positive tests for the clinical features of supraspinatus weakness, weakness in external rotation and impingement had a 98%

chance of a rotator cuff tear. They also stated that any patient with a positive drop-arm sign had a 98% chance of a rotator cuff tear. The results of this study support the evaluation finding for the current client.

The findings of the evaluation were consistent with the MRI results indicating the patient had sustained a full thickness tear of the rotator cuff muscles. The client had severe pain which was limiting all activities along with decreased strength and ROM in his right shoulder. The client demonstrated increased scapular winging which plays a role in the stabilization of the shoulder. The client's impairments included decreased strength and ROM on in his right shoulder. The client's functional limitations included difficulty dressing his upper extremities, difficulty with household chores, and inability to lift anything heavy.

The client was not taking any pain medications for the injury. The client was taking the following medications: Ecotrin, Indapamide, Atenolol, Lisinopril, Simvastatin, and Omeprazole. The side effects pertinent to our physical therapy intervention were the possible dizziness or back pain that may occur with Omeprazole and muscle pain, tenderness, or weakness that may occur with Simvastatin. However, there were no side effects noted during the course of this treatment related to the client's medications.

According to the Guide of Physical Therapist Practice[6], the Preferred Practice Pattern was: Pattern 4E: Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Ligament or Other Connective Tissue Disorder

ICD-9-CM Code: 726.1: Rotator cuff syndrome of shoulder and allied disorders

Prognosis and Plan of Care

The prognosis for this client was fair to good based on the extent of the injury. Therefore, I felt that over the course of 8 visits that the client would be able to return to his prior functional level. At the conclusion of the evaluation, the client and physical therapist jointly devised both short term and long term goals to be achieved throughout the course of treatment. The short term goals included the following to be achieved in 2 weeks: 1). Decrease pain with increased right shoulder AROM to increase client's ability and ease in performing ADL's. 2). Tolerate progression of home exercise program (HEP) without increased symptoms to maximize client's functional ability. The long term goals (to be accomplished in 4 weeks) included the following: 1). Increase right shoulder strength to a grade of 4-4+/5 to return client to prior functional activities. 2). Increase right shoulder AROM to within functional limits to allow client to perform all ADL's independently. 3). Return to daily activities with max pain of 3 to 4 out of 10 to allow client to perform these activities as comfortable as possible as previously performed. 4). Independence with HEP.

Intervention

The initial physical therapy evaluation was performed approximately 3 weeks from the date of injury and continued over the course of 4 weeks to include 8 treatment sessions. Initial treatment consisted of active assisted range of motion (AAROM) exercises and included supine cane exercises for flexion, abduction, and internal/external rotation for the right shoulder. Client was also instructed on seated scapular squeezes on initial visit. A cold pack was applied to the right shoulder for 10 minutes following the treatment. It was decided that the communication style that worked best for this client included reviewing of the exercises with demonstration by the therapist followed by the client repeating the exercises; therefore, the client was given

exercise cards that were both written and pictured for performing the exercises at home. Client was instructed on performing the HEP 2 times a day and to ice for 10 minutes as needed. During the initial phase of physical therapy, the goal was to increase ROM along with decrease pain.

Due to scheduling conflicts with the client, his next visit was 1 week after his initial evaluation. During this visit, overhead pulley exercises were begun into forward flexion and abduction to client's tolerance. The client also began using the weight machines in the gym since he was eager to begin his recreational exercises again. The client performed seated rows on the row machine, lat pull-downs, serratus anterior punches on the vertical bench machine and shoulder press. The resistance for each machine was determined with the client able to perform 10 repetitions with no increase in pain.

The following visit, the client reported feeling as though he had more movement in his right shoulder than he had previously. Two new exercises were added during this visit to include forward flexion wall walking with the right upper extremity along with wall pushups for scapular stabilization strengthening. Increasing strength in the serratus anterior and rhomboid muscles with wall pushups prevents scapular winging, which usually is seen in chronic shoulder disorders. According to Voight and Thomson[7], evaluating scapular function is critical to the success of your rehab program regarding shoulder injuries. They report that in many cases, shoulder dysfunction can be corrected by properly strengthening the scapular muscles. See table 2 for the AROM measurements taken on visit #3, 2 weeks after initial treatment.

Table 2 Initial and week 2 right shoulder AROM measurements

Movement	Initial	Week Two
Flexion	135	159
Abduction	90	145
External Rotation	Unable to bring right hand to head	Able to bring right hand to inferior neck
Internal Rotation	Level of L4	Level of L1

The short term goals of decreased pain with ROM and ability to progress with HEP without increased symptoms had been achieved therefore, the treatment plan was continued with the goal of achieving the long term goals devised at the evaluation. During each consecutive visit, resistance was increased on the weight machines per client tolerance. Resistance exercises were added on visit #4 using an orange (resistance level 2) theraband. The theraband used was latex free and was distributed by Sammons Preston Rolyan, Cedarburg, WI. These bands come in 5 colors with each providing increasing resistance. The theraband was tied in a knot on one end and put in a closed door; this may also be done by tying the theraband around a fixed object. The client was given the theraband to take home as part of his HEP. The resistive exercises included shoulder internal/external rotation with the elbow against the side of the body. Shoulder flexion and extension theraband exercises were also performed keeping the elbow straight.

Free weights were incorporated into the client's existing HEP. This included standing right shoulder flexion and abduction while holding onto a 1 pound weight; 2 sets of 10 repetitions. Also included were prone scapular retraction exercises with a 3 pound weight along

with prone scapular stabilization exercises into shoulder flexion, abduction and extension with a 1 pound weight.

At the next visit (#6) the client reported feeling he was getting a little better although he continued to report increased pain with right shoulder flexion. AROM measurements were taken for right shoulder flexion and abduction with the measurements being 165 degrees of flexion and 160 degrees of abduction.

On visit #8, the client reported maximum pain of 2 to 3 out of 10 (on initial visit he reported a 9 out of 10). The client's HEP was reviewed with him demonstrating the correct technique on all of the exercises. Client reported not having any questions regarding his HEP and wanted his resistance levels written down for the weight machines so that he could continue with his HEP during his recreational exercising. The client demonstrated increased strength to 4 to 4+ out of 5 for all right shoulder motions. Final AROM measurements were taken and are reported in table #3. The client had achieved all goals initially set and was discharged from physical therapy following visit #8.

Table 3 Initial and final right shoulder AROM measurements

Movement	Initial	Final
Flexion	135	170
Abduction	90	166
External Rotation	Unable to bring right hand to head	Inferior neck
Internal Rotation	Level of L4	Level of T7

The exercise prescription involved in this case study was similar to that explained by authors Wirth et al[8] who studied 721 clients were referred for evaluation and treatment of rotator

cuff pathology. Of these clients, 60 had a radiographically documented full-thickness rotator cuff tear (38 male and 22 female clients) and 11 clients had bilateral cuff tears. Each client was started on an orthotherapy program and followed up for at least 2 years. This program included 3 phases: phase 1= restore full, painless ROM; phase 2 = strengthen remaining muscles of the rotator cuff to include scapular and deltoid strengthening; phase 3 = gradual reinstitution of normal activities to include work, hobbies, and sports. The American Shoulder and Elbow Surgeons evaluation form and the UCLA end-result criteria were used to score both subjective and objective finding at initial evaluation and 2-year minimum follow-up visits. The results at the 2-year follow-up included all clients showing significant improvement in their UCLA score (mean pretreatment score = 13.4 points and post-treatment score = 29.4 points) with an average improvement of 16 points. All shoulders were graded poor on initial examination. All clients showed an improvement of at least 2 standard deviations above their pretreatment scores and only 1 client improved less than 3 standard deviations. The author's concluded that the clients were successfully managed with nonoperative treatment with documented full-thickness rotator cuff tears. The program that the authors described was similar to the program utilized in this case report with an emphasis on first restoring ROM and then progressing with strengthening of the rotator cuff muscles to include scapular strengthening. The effectiveness of this nonoperative treatment is worthy of emphasis and should be regarded as an important factor in the management of clients with this type of pathology.

Outcomes at Discharge

At the conclusion of the 4 week physical therapy program, the client demonstrated increased ROM in the right shoulder (to functional limits according to Norkin and White[9]) along with increased strength (4 to 4+ for all motions of the right shoulder). The client reported a pain

level of 2 to 3 out of 10 for his maximum pain; initial report of maximum pain was 9 out of 10. Client was able to resume his recreational exercising without increased pain and was able to perform all ADL's to include housework and gardening without increased symptoms. The client achieved all goals that were initially set.

The client was very satisfied following his physical therapy program. He was not only able to return to his daily activities but was also able to care for his wife; which was extremely important to him. The client resumed his 3 day a week recreational conditioning program; adding the weight machines that were incorporated into his HEP. Client was encouraged to continue with the strengthening HEP to further increase his strength in his upper extremities to reduce the risk of injury.

I was fortunate enough to see this client on a regular basis following discharge. The client continued to report being able to perform all activities with no problems. Client also reported he had been able to increase the amount of weight on the exercise machines; which demonstrated increase in strength. The client continued to be very satisfied with his progress and continued performing his HEP with his recreational conditioning program up to a year later.

CHAPTER III

DISCUSSION/REFLECTION

The approach to the management of a client with a rotator cuff tear must be examined on an individual basis and should be based upon the understanding of the results of both nonoperative and operative treatment. Carter R. Rowe, MD[10] reported that the more experienced the surgeon, the more emphasis he will place on the conservative management of rotator cuff lesions, and the slower he is to approach this problem surgically. This case report demonstrated the effectiveness of nonoperative management in a client with a rotator cuff tear that allowed the client to return to his prior functional activities. The result of this case report reiterates the conclusions of similar studies.[2,3]

Conservative physical therapy treatment for rotator cuff tears may allow clients to return to functional activities without the need for surgical intervention. With increasing insurance premiums and out of pocket maximums, conservative physical therapy may also help to reduce medical costs not only for the client but insurance companies as well. A limitation to this case report is that it is based on the result of one client; therefore, the outcome of this report cannot be generalized to all clientele. In order to generalize the results to our clientele, larger subject sizes need to be studied. Therefore, further research studies are warranted to demonstrate the effectiveness of conservative treatment on rotator cuff tears.

One thing that I would change during my evaluation process is to take measurements of the non-effected extremity instead of looking at the motion and determining it is WFL's without measuring. At times we may look at ROM and assume that the client has full ROM when that may not be the case if we were to take the time to measure it.

Some changes I may have made to the intervention may include performing a modality such as ultrasound or iontophoresis to decrease the pain and swelling to allow the client more comfort. This may result in a faster progression of the HEP with less pain. One of this client's main goals was to return to his recreational exercises; therefore that is the reason why we began working on the weight machines. In a client that does not regularly work out; I would have given them different strengthening exercises that they could reiterate at home to allow them to continue to progress once therapy had discontinued. I feel that further scapular strengthening exercises could be incorporated to further stabilize the shoulder.

I believe that one area where I could change not only with this client, but with all clients, is incorporating functional activities into the HEP. These activities, for this client, could include getting down on the floor to simulate scrubbing the floor while keeping the shoulder stabilized to decrease pain and decrease the risk of injury. As physical therapists, we are in a position to incorporate any task a client wishes to perform into their HEP. This not only leads to greater client satisfaction but physical therapy outcomes as well. Physical therapy outcomes could be tested using an instrument such as the SPADI, in this case, as this is something that could be incorporated into the future. Focusing on functional activities and using functional instruments to document outcomes is also becoming important aspects of insurance companies and approval of physical therapy visits.

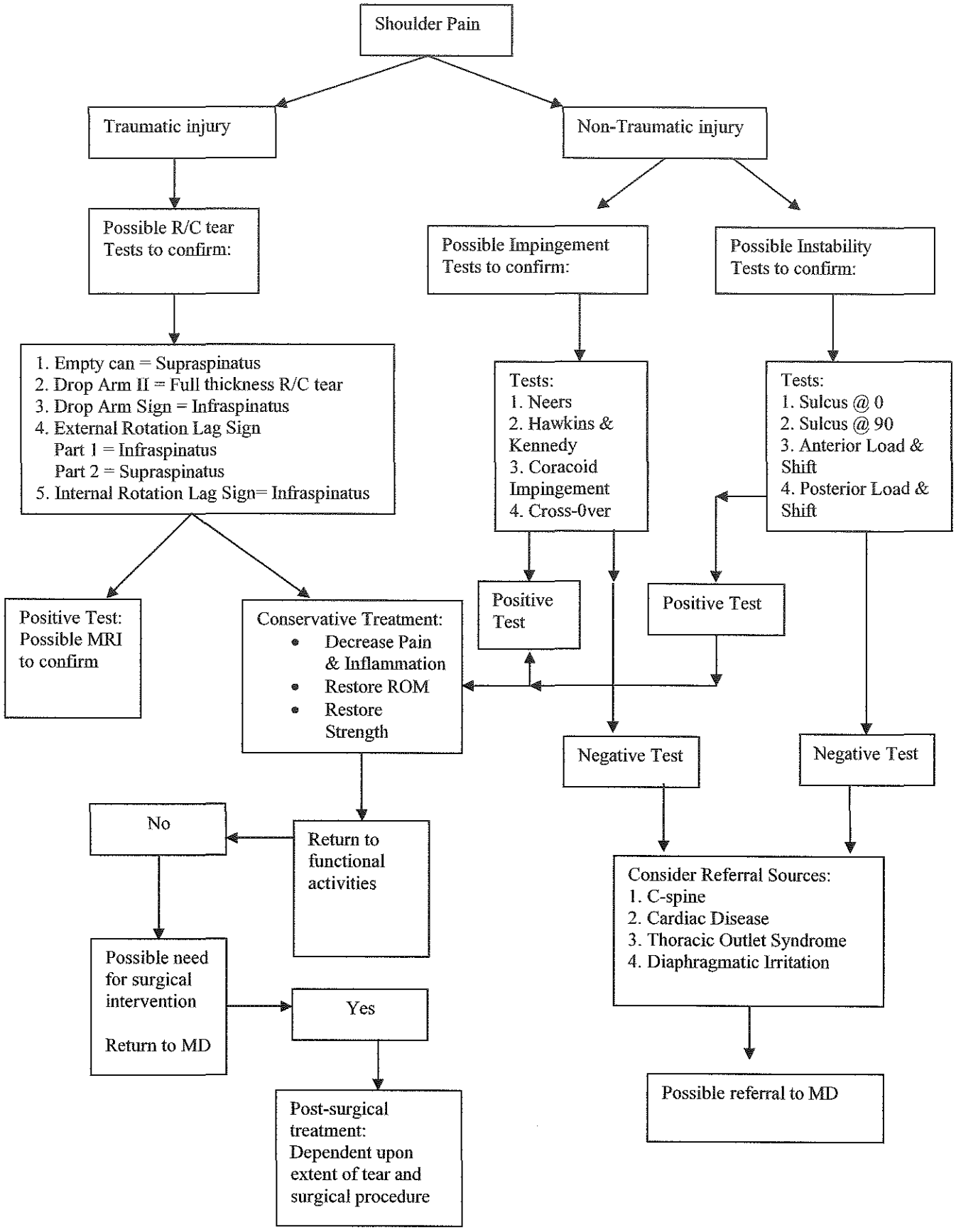
Although this client had a very positive experience and was able to attain all of his goals, one can always find ways to improve themselves so that clients continue to have positive experiences with physical therapy interventions.

APPENDIX A

EXAMINATION & INTERVENTION ALGORITHM

Appendix A

Examination & Intervention Algorithm



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