



Case study

Physiotherapy rehabilitation of rotator cuff injury

Yukti Jobanputra, Snehal Samal, Dushyant Bawiskar, Neha Chitale*, Pratik Phansopkar, Sakshi P. Arora

Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India

ABSTRACT

The shoulder can be considered as one of the largest and most flexible joints in human body. Subscapularis, Supraspinatus, Infraspinatus, Teres Minor are the group of muscles that called as the rotator cuff and Scapular glenoid cavity hold the head of humerus very strongly by the tendons which are surrounded to shoulder joint. Pain which is dull ache in nature may occur at rotator cuff after injury in the shoulder which often aggravates with the use of the arm apart from the body. As the age increases there is an increase in the injuries of Rotator cuff. These may happen earlier in people with occupation that require overhead motions. Many people with this injury can manage their symptoms and return to normal activities with physiotherapy exercises that make the surrounding muscle of the shoulder joint more flexible and improve their strength. A 34-year male was diagnosed in clinical examinations along special tests for the condition on his visit to physiotherapy opd. Patient's concern was pain at right shoulder and upper arm and difficulty in performing overhead activities. Patient underwent physiotherapy which comprised of reduction in pain, exercises for a period of 13 weeks and ongoing which till date resulted in improvements in pain, range of motion, and activities of daily living. The case report suggests the diagnosis and appropriately planned physical rehabilitation management that led to improvement in daily functional goals progressively and remarkably which is major key that leads to a successful recovery till date.

Keywords: Pain, Rotator Cuff, Physiotherapy, Rehabilitation.

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Correspondence: Neha Chitale* ✉ nchitale143@gmail.com

Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India.

INTRODUCTION

The shoulder is considered as one of the largest and most flexible joints in human body^[1]. The most known causes of shoulder pain are problems with rotator cuffs that are seen in primary care practice^[2]. There are various causes for Rotator Cuff Injuries such as recurrent small injuries, severe injuries which are traumatic, age wise changes, dysfunction which are secondary in nature. Among the various diseases of shoulder, Rotator Cuff Injury is the most probably injury. Symptomatic and asymptomatic are the two types of Rotator Cuff. In such patients, Pain is the biggest problem. Many times without symptoms injury patient may suffer with symptomatic injury because of increase in the size of the injury^[3].

Surveys conducted in overall population shows the results for age group more than 50 years age is 25% prone to injury^[4] and 20% prone to injury in age group more than 20 years age^[5]. Only 1/3rd injuries leads to the pain and 2/3rd injuries are seen painless which the interesting fact are. Few patients who are having shoulder pain go to the hospital for clinical opinion rest all manage by taking pain killer tablets or visit bone setter and sometime ignore the pain^[6]. and this what the reason behind the visiting the physiotherapist or clinical setup is very less and the ratio is 1:15.

There are several factors into account for rehabilitation program of non-operative patient: Destabilization degree, Patient condition is acute or chronic; muscles around the shoulder joint, in particular the cuff, have strength and resistance, the patient output and the resilience of the soft tissue around the shoulder. If surgical repairs are necessary, the details of the procedure and the duration of the time of immobilisation are also needed. Furthermore, all reinforcement exercises should be modified to allow painless movement^[7].

Patient information

A 34 year male patient, field worker by occupation, right handed dominance, had complains of pain and tightness of right shoulder and upper arm referred to orthopaedic clinic at Tilakwadi, Yavatmal on 1 October 2020 where he was prescribed with medications and several exercises and patient was also asked to avoid heavy weights and jerks and x ray was done. The medications continued till 1 month and then patient referred to physiotherapy OPD at Sawangi Meghe on 14 November 2020 after referral from his family physician. The patient came with complains of pain in upper right shoulder and arm in the last 7 months that aggravates during overhead activities, rotational motion as on/ off of tap and then there its cause tingling

sensation to right upper limb. Hence physiotherapy management for this condition of the patient started on 16 November 2020.

Clinical findings

Patient was conscious and oriented. A proper informed consent was taken from patient prior. Physical examination was done. Patient was examined in both supine and sitting position. Local temperature was normal. On palpation slight swelling was present and no marked oedema was present. Tenderness grade 2 was marked in right shoulder. Pain assessment on VAS, pre-rehabilitation was VAS 8 and post -rehabilitation was VAS 4.

Physiotherapy modalities and manual techniques are preferred choice of management in such musculoskeletal disorders [1].

Table 1. Timeline

Date of this OPD visit	14 November 2020
Date of start of physiotherapy	16 November 2020
Date till the report	18 February 2021
Last date of rehabilitation	18 May 2021

Figure 1. X-ray image pre-visit to OPD



Drop arm test, Empty can test, Lift off test, Belly press or abdominal compression test, all these tests were marked positive.

Table 2. Range of motion on 1st day of physiotherapy treatment

Shoulder joint Movements	Right		Left	
	Active	passive	active	passive
Flexion	0-120	0-130	0-175	0-180
Extension	0-35	0-40	0-57	0-60
Abduction	0-120	0-130	0-175	0-178
Adduction	0-27	0-35	0-45	0-50
Internal rotation	0-45	0-49	0-77	0-80
External rotation	0-40	0-45	0-80	0-85

Table 3. Manual muscle testing (strength) assessment on last till the date of physiotherapy treatment

Joint	Movement	Right	Left
Shoulder	Flexion	02/05	05/05
	Extension	02/05	05/05
	Abduction	02/05	05/05
	Adduction	02/05	05/05
	Internal rotation	02/05	05/05
	External rotation	02/05	05/05

Interventions

All the interventions was to reach a goal of improving strength, increase ROM and to decrease pain. Each session was started with 10 to 15 min warm up exercises then prescribed exercises, manual therapy, then finally cool down period of 10 min. home exercises program was also given to improve functioning of the limb [8].

Step I

ROM Passively (week one-three)

The goals of phase 1 is to, slowly increase passive ROM, relieve pain and inflammation, and increase strength. The patient was given some exercise .i.e. tolerable flexion movement using table sides. With the use of stick external and internal rotation in scapular plane 20 repetition 4 times in a day. Pendulum exercises were given. Patient was

asked to do retraction and depression of scapula in sitting position. Upper neck stretching was prescribed. Cryotherapy treatment was given for inflammation and pain 15 -20 min 2-3 times a day

Patient was instructed to avoid lifting heavy weight, sudden stretching, sleeping on affected side, also to avoid backward or extension movements.

Step 2

ROM Actively (Three to Six weeks)

In this phase passive ROM is continued. A pillow was used under arm to help alleviate passive tension across the rotator cuff. This is slowly graduated to full active ROM. and active assisted ROM was introduced, patient was given self-assisted therapy with use of overhead pulley and stick assistance, open chain proprioceptive exercise, internal and external rotation sub maximal isometric exercises and scapula thoracic exercises were given along with this, mobilisation technique was given. No resistance or strength activities were performed till this phase. Supervised and planned active exercises help increase the range of movement and alleviate discomfort [9].

Step 3

Initial Strengthening (Six to Ten weeks)

In these phase passive ROM and stretching was continued also self-directed home program is ongoing. Then progressive strengthening both eccentric and concentric was given till tolerable range. Then this was followed up by elastic resistance exercises, core muscle strengthening, parascapular muscle strengthening. Patient was asked to avoid overhead activity.

Step 4

Advanced Strengthening (Eleven to Thirteen weeks and still ongoing)

In these phases 4 parascapular muscle strengthening was continued along with isometric strengthening and then advanced rotator cuff strengthening was initiated along other exercises like finger ladder and increased resistance exercises were given along mobilisation along modalities. Till this phase the patient resulted in decrease in pain and inflammation and increase in range of motion, strength of rotator cuff muscles and surrounding.

Figure 2. Diagnostic procedure- Empty can test



Table 4. Range of motion till date of physiotherapy treatment

Shoulder joint Movements	Right		Left	
	active	passive	active	passive
Flexion	0-160	0-168	0-175	0-180
Extension (hyperextension)	0-45	0-53	0-57	0-60
Abduction	0-150	0-160	0-175	0-178
Adduction	0-30	0-40	0-45	0-50
Internal rotation	0-55	0-63	0-77	0-80
External rotation	0-60	0-70	0-80	0-85

Table 5. Manual muscle testing (strength) assessment

Joint	Movement	Right	Left
Shoulder	Flexion	03/05	05/05
	Extension	03/05	05/05
	Abduction	03/05	05/05
	Adduction	03/05	05/05
	Internal rotation	02/05	05/05
	External rotation	03/05	05/05

DISCUSSION

In this case report, we found a patient who was diagnosed having rotator cuff injury in right shoulder with history of pain was advised for physiotherapy treatment. Main exercises of rehabilitation were therapeutic modalities to decrease pain (cryotherapy, Interferential therapy) scapula isometrics, range of motion, strengthening exercises, muscle energy technique with open-chain proprioceptive activities [10].

Patient responded to this rehabilitation positively. hence for this patient rehabilitation minimizes pain, and increases ROM and strength of patient. Clive Brewster and his team in study states that for rehabilitation program it's not compulsion to be followed in same rigidity. for effective and efficient treatment some overlap may be advisable. In general initial phase concerns with pain relief and next phases concentrates on strengthening and increase in rom and final phases focuses on gradually progressing isotonic and isokinetic exercises [7]. Also in study done by Todd s Ellen Becker and his team concluded that the integration of key physical techniques with evidence -driven rehabilitation concepts to restore optimal rom and rotator cuff and scapular strength and stabilisation forms the basis of clinical rehabilitation [11]. Moosmayer and his team in the study of comparisons between stated that physiotherapy was started on the basis of fixed treatment criteria. On initial, a number of therapeutic management was fixed, but the choice of exercises, the number of repetitions and the time of treatment was individually adjusted according to the clinical findings and the responses to treatment [12]. Ming Zhang on study stated that the combination of standard rehabilitation interventions and scapula training exercises are an effective treatment of shoulder joint dysfunction after rotator cuff injury repair. However, increasing scapula training exercises has obvious advantages in improving the pain outcomes, scope of activities, and total scores of functional assessments [13]. Horsley, and many other scholars put advocated scapulohumeral muscle strength training, especially training of rotator cuff muscles, which help improve glenohumeral joint stability, expanding shoulder ROM, and improving the curative effect of patients with scapula glenoid labrum tear.

CONCLUSION

In conclusion, physiotherapists need to first analyse main causes of shoulder joint disorders in the later rehabilitation and treatment process, and then need to formulate a targeted rehabilitation and treatment schedule according to the cause of disease.

Thus, the rehabilitation protocol set for the patient lead to

relief of pain along with strengthening of SITS muscles and the muscles around the joint and enhancement in the range of motion.

REFERENCES

1. Deshmukh Mitushi Kishorao, 2020. Comprehensive Physiotherapy Rehabilitation on a Complex Case of Combination of Subcoracoid, Subacromial, Subdeltoid, and Supraspinatus Tendinitis. *Jour. of Evolution of Med. & Dental Sci.* 9(41), 3075.
2. Yadav, Madhumita, 2020. Impact of Physiotherapy Rehabilitation Program on Post-Operative Stiffness of Supraspinatus Tendinitis. *Journal of Evolution of Medical and Dental Sciences.* 9(33), 2403.
3. Itoi E, 2013. Rotator cuff tear: physical examination and conservative treatment. *J Orthop Sci.* 18(2), 197–204.
4. Minagawa H, Yamamoto N, Abe H, Fukuda M, Seki N, Kikuchi K, 2013. Prevalence of symptomatic and asymptomatic rotator cuff tears in the general population: From mass-screening in one village. *J Orthop.* 10(1), 8–12.
5. Yamamoto A, Takagishi K, Osawa T, Yanagawa T, Nakajima D, Shitara H, Kobayashi T, 2010. Prevalence and risk factors of a rotator cuff tear in the general population. *J Should Elbow Surg.* 19, 116–20.
6. Kobayashi M, Itoi E, Minagawa H, Yamamoto N, Tuoheti Y, Saito H, Seki N, Aizawa T, Abe H, 2004. Prevalence of the shoulder pain in the middle-aged and the elderly and their choices for the treatment. *Katakansetsu.* 29, 179.
7. Brewster C, Moynes Schwab DR, 1993. Rehabilitation of the Shoulder Following Rotator Cuff Injury or Surgery. *J Orthop Sports PhysTher.* 18(2), 422–6.
8. Ghordadekar D, Dhole R, Darware M, Mishra D, 2020. Adhesive Capsulitis In Patient Post Modified Radical Mastectomy Surgery. *European Jour. of Molecular & Clinical Medicine.* 7(11), 3214-9.
9. Bhamra MK, Bhamra JK, Naqvi WM, Mishra G, 2020. Frozen Shoulder Response with Short Wave Diathermy, Acupuncture And Supervised Active Exercise In Eight Weeks. *European Journal of Molecular & Clinical Medicine.* 7 (11), 3114-7.
10. Swapna Jawade, 2020. Post-operative physiotherapy rehabilitation in rare combined full thickness tear of supraspinatus and subscapularis tendon managed by arthroscopy with mini open Supraspinatus tendon repair, *European Journal of Molecular & Clinical Medicine.* 7(2), 1212-1219.
11. Ellenbecker TS, Cools A, 2010. Rehabilitation of shoulder impingement syndrome and rotator cuff injuries: an evidence-based review. *Br J Sports Med.* 44(5), 319–27.
12. Moosmayer S, Lund G, Seljom U, Svege I, Hennig T, Tariq R, 2010. Comparison between surgery and physiotherapy in the treatment of small and medium-sized tears of the rotator cuff: A randomised controlled study of 103 patients with one-year follow-up". *J Bone Joint Surg Br.* 92(1), 83–91.
13. Zhang M, Zhou J, Zhang Y, Zhang X, Chen J, Chen W, 2020. Influence of Scapula Training Exercises on Shoulder Joint Function after Surgery for Rotator Cuff Injury. *Med Sci MonitInt Med J Exp Clin Res.* 26, e925758-1-e925758-7.

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