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Functional outcome of non-operative management in chronic supraspinatus tear among geriatric population: A prospective study

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Abstract

Introduction: Supraspinatus tear is an important shoulder condition evading proper diagnosis, thus requiring thorough clinical and diagnostic evaluation. Relatively under diagnosed in geriatric population. Debate exists over how to best provide pain relief, restore shoulder function, and to assess the effectiveness of a non-operative physical therapy program in treating rotator cuff tears in elderly patients.

Methods: A total of 150 patients of supraspinatus injury were analyzed prospectively over a period of 18 months from June 2018 to November 2019 to assess the non-operative management in geriatric population. With an oral NSAID from the start of the study, a four phased physiotherapy regimen was followed.

Results: At the end of the study patients were assessed with VAS score, range of movements and a simple questionnaire of modified UCLA score. 105 of 150 came for follow up at phase II out of which 68.57 % had good or excellent scores. And 95 of 150 completed all 4 phases with 84.21 % having good or excellent results with significant improvements in abduction of the shoulder joint.

Conclusion: For chronic supraspinatus injuries this simple modality of rehabilitation exercises can reduce pain and improve function of the shoulder. Thus, surgical treatment for chronic injury is not necessary if conservative treatment is strictly followed in geriatric group.

Keywords: Chronic supraspinatus injury, physiotherapy regimen, non-operative management, geriatric population, modified UCLA score

Introduction

Chronic Supraspinatus tears of the shoulder joint are one of the common causes of a painful shoulder. This condition is characterized by gradual functional loss of the shoulder joint thus leading to subsequent stiffness, weakness, and instability of the shoulder joint^[1, 2]. A high rate of people after fifty years of age are affected by Supraspinatus tear and as age progresses the frequency also increases^[3, 4, 5, 6] and the most of them are asymptomatic^[7, 8]. In addition to the increased prevalence of Supraspinatus tear with aging, there is a higher rate of large and massive tears^[9], which are less amenable to surgical repair^[10, 11]. The Conservative management is an important first-line approach for those with irreparable tears, low functional demand and associated with co morbidities^[12]. A major concern with Supraspinatus repairs in older patients is decreased vascularity, poorer healing potential of the tendons and increased risk of re rupture^[13, 14, 15, 16]. We in our study have prospectively diagnosed Supraspinatus tears in elderly individuals and evaluated the outcome of non-operative management (a four phased physiotherapy regimen) of chronic Supraspinatus tears. The outcomes were determined in terms of subjective and objective parameters.

Material and Methods

On approval from ethical committee, we in our study have all the painful stiff shoulders, right from the history of presentation to examination, screened for having any Supraspinatus tears. Once diagnosed clinically, we have confirmed the diagnosis by either USG of the shoulder joint and/or MRI of the shoulder joint. Patients with Previous shoulder surgeries, any fractures around the shoulder joint within 3 months prior to the study, cervical pathology with neurological deficits, Suprascapular neuropathy,

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Brachial plexus injuries are been excluded from the study. With due consent from the patients, prospectively 150 elderly patients with Supraspinatus tear were evaluated for a period of 18 months with follow up interval of 6, 10 and 14 weeks from June 2018 to November 2019 in our institute. All of them were treated conservatively with 4 phased physiotherapy regime along with an oral analgesic. Oral analgesic was a simple NSAID (Non-Steroidal Anti-Inflammatory Drug) and was asked to take only during first phase of the regime.

Phase 1: Aimed at achieving full passive range of motion with minimal painless functional range of motion. In this phase pendulum exercises are utilized to initiate gentle stretching and are followed by passive forward flexion, abduction, extension, internal rotation, and external rotation exercises. Other exercises initiated during this phase include wall walking, posterior capsular stretches, and overhead stretching. Application of ice packs or ice massage, microwaves, short waves, heat lamps, TENS (Transcutaneous Electrical Nerve Stimulation) were also provided during this phase. This phase lasts up to 2 weeks.

Phase 2: Aimed at strengthening the remaining muscles of the rotator cuff, which includes stretching exercise with the help of elastic band with resisting strength ranging from 0.5 to 3 kg. Exercises are done two to three times a day, five repetitions each time, and each exercise is held for a count of five. This phase lasts up to 5 weeks.

Phase3: Strengthening of the scapular stabilizing muscles (serratus anterior, rhomboids, latissimus dorsi, and trapezius), and deltoid. This phase lasts up to 3 weeks.

Phase 4: Includes gradual reinstatement of normal activities. The patients are called for a maintenance program that is performed three times per week and that includes both stretching and strengthening exercises. This phase lasts up to 4 weeks. Subjective outcomes were assessed with Visual Analogue Scale, functional Outcome assessed with simple questionnaire for UCLA score [17] and range of motion in degrees (using Goniometer) after phase 2 and phase 4 of physiotherapy regime.

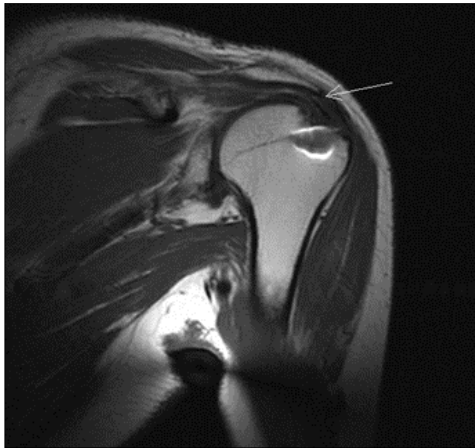


Fig 1: MRI showing a full thickness supraspinatus tear



Fig 2: Phase I physiotherapy



Fig 3: Phase II physiotherapy



Fig 4: Phase III physiotherapy

Results

Out of 150 patients who enrolled in the study 115 were males and 35 females with mean age of the patients enrolled was 65.35 years, (minimum: 60 maximum: 85), 110 patients had right shoulder involvement and 40 had left shoulder involvement. Out of the 150 people, 95 of them completed all the four phases of physiotherapy. 45 of the 150 patients completed up to the second phase. 10 of the 150 patients lost follow up at the middle of phase II. The modified UCLA scores, range of movement measurements, the visual analogue

scale marking was conducted after phase II and phase IV.

The mean pretreatment VAS score was 6.2 (+/- 0.87 SD); after phase II scores were 2.27 (+/- 0.51 SD) and after phase IV scores were 1.26 (+/- 0.52 SD). The mean difference of the VAS scores between phase II and pretreatment was 3.90 (+/- 1.01 SD); between phase IV and pretreatment was 4.91 (+/- 1.08 SD); between phase IV and phase II was 0.91(+/- 0.10 SD). For the purpose of analysis of Range of motion, the mean of the external rotation, flexion (forward elevation) and abduction was calculated and analyzed. Mean improvement in

range of movement of the shoulder joint of flexion 110.17° , abduction 133.21° and external rotation of 26.60° was noted at the end of phase II. Mean improvement in range of movement of the shoulder joint of flexion 133.15° , abduction 154.73° and external rotation of 31.58° was noted at the end of phase IV. So, the greatest improvement was noted in abduction movement followed by flexion and external rotational movement. On comparing the data at the time of first visit, after phase II and phase IV in all the three range of movement were highly significant with p value ($p < 0.0001$).



Fig 5: Post Treatment – Range of movements

Table 1: Range of movements (In degrees)

Range of movements	Pre treatment	After phase II	After phase IV
Flexion	92.33	110.17	133.15
Abduction	111.50	133.21	154.73
External rotation	17.33	26.60	31.58

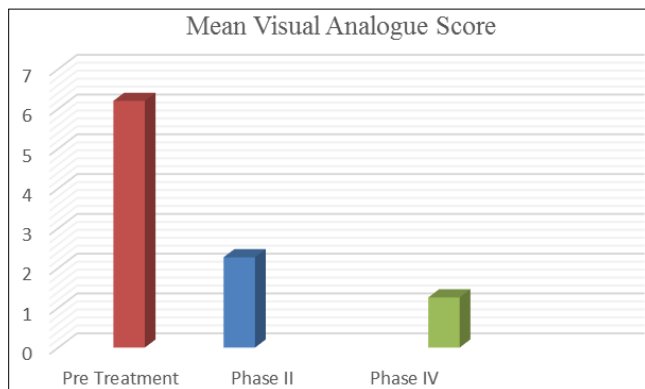


Fig 6: Visual Analogue Score

The mean pretreatment modified UCLA score was 24.03 (+/- 2.83 SD); after phase II scores were 27.49 (+/- 2.02 SD) and after phase IV scores were 30.06 (+/- 2.57 SD). At end of phase II 105 of 150 was assessed with 68.57 % (i.e. 72 out of 105) showing good or excellent results. 95 of 150 completed all 4 phases and 84.21 % (i.e. 80 out of 95) showing good or excellent results.

Discussion

A Supraspinatus tear is a major cause of shoulder pain and disability, accounting for 20% to 50% of cases in older adults [18]. This proportion may increase as the population ages [19]. Many different types of treatment methods can be applied to this disorder including pain medication, activity modification, manual therapy, supervised exercise, corticosteroid injection and surgical repair [20]. Studies have shown that more than 90% of patients experienced symptomatic and functional recovery from a symptomatic Supraspinatus tear without surgical repair [21]. Conservative treatment that includes shoulder exercises, pain medication or steroid injection, has

been reported to be effective for rotator cuff tears [22, 23, 24]. More over with increasing age surgical treatment often results in poor outcome due to decreased vascularity, poorer healing potential of the tendons and increased risk of re rupture and added co morbid conditions associated [25]. Our study of chronic Supraspinatus tears between 60 to 85 years of age we found a maximum incidence between 60 to 70 years with male preponderance and most of them had dominant right-handed. No complications were noticed and the treatment protocol was well tolerated by the patients. The functional outcome after analgesics and exercises had significantly improved according to modified UCLA score both after phase II and phase IV. There was significant improvement in all range of shoulder motion, especially at the end of phase IV. Most of the patients had pain and disturbed sleep before treatment but there was significant reduction in mean score on Visual Analogue Scale pointing at a good pain relief after phase II. The measurable limitations and deficiencies at the outcome evaluations were acceptable to the patients and did not appear to affect their routine activities. However, there was a significant improvement of both subjective and objective outcomes after phase IV. Even after phase II, a similar improvement was noted, suggesting the importance of phase II. This study points out three cornerstones of the program are motivation, frequency and consistency. This study defined outcomes in terms of patient's self-assessment rather than categorical ranking, which is critically important when managing any musculoskeletal problems. We emphasize that patient must assume primary responsibility and tolerate the discomfort that comes along with the exercise program in order to recover early. Further long term and prospective studies are warranted to find the optimal conservative treatment combination for maximizing the treatment effectiveness and to identify the factors that may help establish a treatment guideline for conservative treatment.

Conclusion

This study concludes that all Supraspinatus tears diagnosed among the geriatric population does not necessarily warrant a surgical approach. More over conservative treatment with phased physiotherapy gives them good result to carry out their needs and improve their quality of life. We emphasize that improvement with this phased physiotherapy depends mainly on motivation, frequency and consistency.

References

1. Matsen FA, Lippitt SB, Sidles JA, Harryman DT II. Practical evaluation and management of the shoulder. Philadelphia: WB Saunders, 1994, 1-242.
2. Samilson RL, Binder WF. Symptomatic full thickness tears of the rotator cuff: An analysis of 292 shoulders in 276 patients. Orthop Clin North Am. 1975; 6:449-466.
3. Yamanaka K, Fukuda H, Hamada K, Mikasa M. Incomplete thickness tears of the rotator cuff. Orthop Traumatol Surg (Tokyo). 1983; 26:713.
4. Fukuda H, Mikasa M, Ogawa K *et al*. The partial thickness tears of rotator cuff. Orthop Trans. 1983; 7:137.
5. Milgrom C, Schaffler M, Gilbert S, van Holsbeeck M. Rotatorcuff changes in asymptomatic adults. The effect of age, hand dominance and gender. J Bone Joint Surg Br. 1995; 77(2):296-298.
6. Yamaguchi K, Ditsios K, Middleton WD, Hildebolt CF, Galatz LM, Teefey SA. The demographic and morphological features of rotator cuff disease. A

- comparison of asymptomatic and symptomatic shoulders. *J Bone Joint Surg Am.* 2006; 88(8):1699-1704.
7. Keener JD, Galatz LM, Teefey SA, Middleton WD, Steger-May K, Stobbs-Cucchi G *et al.* A prospective evaluation of survivorship of asymptomatic degenerative rotator cuff tears. *J Bone Joint Surg Am.* 2015; 97(2):89-98.
 8. Dunn WR, Schackman BR, Walsh C, Lyman S, Jones EC, Warren RF *et al.* Variation in orthopaedic surgeons' perceptions about the indications for rotator cuff surgery. *J Bone Joint Surg Am.* 2005; 87(9):1978-84.
 9. Gumina S, Carbone S, Campagna V, Candela V, Sacchetti FM, Giannicola G. The impact of aging on rotator cuff tear size. *Musculoskelet Surg.* 2013; 97(1):69-72.
 10. Matthews TJ, Hand GC, Rees JL, Athanasou NA, Carr AJ. Pathology of the torn rotator cuff tendon. Reduction in potential for repair as tear size increases. *J Bone Joint Surg Br.* 2006; 88(4):489-495.
 11. Matthews TJ, Smith SR, Peach CA, Rees JL, Urban JP, Carr AJ. *In vivo* measurement of tissue metabolism in tendons of the rotator cuff: implications for surgical management. *J Bone Joint Surg Br.* 2007; 89(5):633-638.
 12. Michael B. Geary John, Elfar C. Rotator Cuff Tears in the Elderly Patients. *Geriatric Orthopaedic Surgery & Rehabilitation.* 2015; 6(3):220-224.
 13. Funakoshi T, Iwasaki N, Kamishima T *et al.* *In vivo* visualization of vascular patterns of rotator cuff tears using contrast-enhanced ultrasound. *Am J Sports Med.* 2010; 38(12):2464-2471.
 14. Rudzki JR, Adler RS, Warren RF *et al.* Contrast-enhanced ultrasound characterization of the vascularity of the rotator cuff tendon: age- and activity-related changes in the intact asymptomatic rotator cuff. *J Shoulder Elbow Surg.* 2008; 17(1):96S-100S.
 15. Tashjian RZ, Hollins AM, Kim HM *et al.* Factors affecting healing rates after arthroscopic double-row rotator cuff repair. *Am J Sports Med.* 2010; 38(12):2435-2442.
 16. Cho NS, Rhee YG. The factors affecting the clinical outcome and integrity of arthroscopically repaired rotator cuff tears of the shoulder. *Clin Orthop Surg.* 2009; 1(2):96-104.
 17. Amstutz HC, Sew Hoy AL, Clarke IC. UCLA anatomic total shoulder arthroplasty. *Clin Orthop Relat Res.* 1981; (155):7-20.
 18. Tempelhof S, Rupp S, Seil R. Age-related prevalence of rotator cuff tears in asymptomatic shoulders. *J Shoulder Elbow Surg.* 1999; 8:296-9.
 19. Tashjian RZ. Epidemiology, natural history, and indications for treatment of rotator cuff tears. *Clin Sports Med.* 2012; 31:589-604.
 20. Pedowitz RA, Yamaguchi K, Ahmad CS, Burks RT, Flatow EL, Green A *et al.* Optimizing the management of rotator cuff problems. *J Am Acad Orthop Surg.* 2011; 19:368-79.
 21. Kijima H, Minagawa H, Nishi T, Kikuchi K, Shimada Y. Long-term follow-up of cases of rotator cuff tear treated conservatively. *J Shoulder Elbow Surg.* 2012; 21:491-4.
 22. Heers G, Anders S, Werther M, Lerch K, Hedtmann A, Grifka J. Efficacy of home exercises for symptomatic rotator cuff tears in correlation to the size of the defect. *Sportverletz Sportschaden.* 2005; 19:22-7.
 23. Koubaa S, Ben Salah FZ, Lebib S, Miri I, Ghorbel S, Dziri C. Conservative management of full-thickness rotator cuff tears: a prospective study of 24 patients. *Ann Readapt Med Phys.* 2006; 49:62-7.
 24. Bokor DJ, Hawkins RJ, Huckell GH, Angelo RL, Schickendantz MS. Results of nonoperative management of full thickness tears of the rotator cuff. *Clin Orthop Relat Res.* 1993; (294):103-10.
 25. Michael B, Geary BA, John C, Elfar MD. Rotator Cuff Tears in the Elderly Patients. *Geriatric Orthopaedic Surgery & Rehabilitation.* 2015; 6(3):220-224.