



Original Research Article

Incidence And Functional Outcome of Rotator Cuff Tears in Patients with Chronic Shoulder Pain

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Abstract: Background: Chronic shoulder pain can result from many causes, but one of the most common is a condition called a rotator cuff tear (RCT). This condition can lead to poor functioning of the shoulder and is associated with a loss of daily activities and poor quality of life. Management of rotator cuff tears starts with diagnostic imaging to determine the best management options. **Objectives** Determine the Functional outcomes of chronic painful shoulders caused by “rotator cuff tears (RCT)” after management using standard score systems. **Methodology** This study conducted at Rehman Medical Institute from jan 2024 to jan 2025. Adult patients 18 years and older with chronic shoulder pain of greater than 12 months in duration were recruited. Patients were excluded from the study if they had prior shoulder surgery, acute trauma, infection, inflammatory arthropathy, or neurologic disorders. Each patient was clinically evaluated and imaged using ultrasound or MRI to assess for rotator cuff tears. Using the Constant-Murley score, functional outcomes of each patient were assessed at baseline, three months, and six months after management. Each patient was managed with conservative therapy if they had a partial-thickness rotator cuff tear, and with surgical repair if they had a symptomatic full-thickness rotator cuff tear. **Results** Among 100 patients (52 males, 48 females; mean age 52.3 ± 10.6 years), 62% had rotator cuff tears: 38% partial-thickness, 24% full-thickness. Supraspinatus was most commonly involved (68%). The mean Constant-Murley Score improved significantly from 48.5 ± 12.4 at baseline to 72.3 ± 10.8 at 3 months and 84.1 ± 9.6 at 6 months ($p < 0.001$). Partial-thickness tears showed greater improvement than full-thickness tears (38.6 vs 30.2 points; $p = 0.02$). Right shoulder involvement was 56%. No major complications were observed. **Conclusion** Partial-thickness rotator cuff tears are the most prevalent tears among chronic shoulder pain patients. Functional outcomes are better after tailored management, and an improvement in the quality of life is noted with better functioning of the shoulder.

Keywords: Rotator Cuff, Chronic Pain, Shoulder, Functional Outcome

INTRODUCTION

Chronic shoulder pain can affect people regardless of age or profession, whether they're in manual labor or are retirees, which is one of the world's most frequently reported issues in the musculoskeletal field [1]. It places restrictions on daily activities, lowers productivity, and affects the quality of life. It has a number of causes, including, but not limited to, degenerative joint disease, inflammatory conditions, bursitis, labral tears, and rotator cuff tears (RCTs) [2]. The most common and most severe of these causes is RCTs, and rotator cuff injuries in particular are really crucial since they impair the joint's stability and mobility, which is especially important for activities that are performed over the head, including lifting and

twisting [3]. The shoulder girdle has four rotator cuff muscles: supraspinatus, infraspinatus, teres minor, and subscapularis. Their tendons, which serve to stabilize the head of the humerus to the glenoid fossa, can undergo degenerative changes, repetitive microtrauma (small injuries caused by repetitive motions, which can occur through daily life or activities associated with a particular sport), or acute injuries that result in partial or full thickness tears, which is known to happen with increasing frequency and age [4]. Studies that focus on various specific demographics indicate that as many as 20 to 40% of individuals 50 and over may have rotator cuff tears that are asymptomatic (tears that do not result in pain) [5]. On the other hand, symptomatic tears are

frequently associated with chronic pain and loss of function, in addition to weakness. As a result, early diagnosis is critical, as, without intervention, the rotator cuff may undergo retraction, atrophy of the muscles, and infiltration of fat, which causes the associated loss of function to be worse [6]. Clinical Assessment, along with Imaging Modalities, is used together when evaluating diagnostics. Ultrasound can dynamically assess the tendons [7]. It is also effective and doesn't cause the patient any stress. Contrastingly, MRIs provide detailed visualizations of muscle atrophy, tendon tears, and other related entities. The strategies applied for treatment vary depending on the chronicity of the tear, the size of the tear, and the functional limitations. Management that is conservative, which includes alterations to activity, anti-inflammatories, physiotherapy, and can suffice for tears that are partial-thickness. Surgical repair is indicated for symptomatic full-thickness tears, persistent functional impairment, or failure of conservative therapy [8,9]. Functional outcomes are routinely evaluated using scoring systems that have been validated, such as the Constant-Murley score (CMS), the American Shoulder and Elbow Surgeons (ASES) score, or the Disabilities of the Arm, Shoulder, and Hand (DASH) score. These assess the patient's ability to perform routine activities, their motion range, strength, and also the pain they feel. Studies from the last half-decade have shown that outcomes are positively correlated when there is an early diagnosis, structured rehabilitation, and timely surgical intervention. Despite the increase in literature, study focused on assessing the incidence and functional prognosis of rotator cuff tears in patients with chronic shoulder pain is still growing in underserved areas [10].

Study Objectives

To examine how many patients with chronic shoulder pain have rotator cuff tears.

MATERIALS AND METHODS

Study Design and Setting

This Cross sectional study conducted at Rahman Medical Institute from Jan 2024 to Jan 2025

Participants

Patients 18 years and older with chronic shoulder pain for more than three months were included in the

study. Both male and female patients were included and had no occupational restrictions. Patients with a history of shoulder surgery, acute traumatic injury of the shoulder, shoulder infection, inflammatory arthropathy, or neurological disorders involving the upper limb were excluded. All participants had informed consent before inclusion in the study.

Sample Size Calculation

Sample size was calculated based on the expected prevalence of rotator cuff tears in 30% of patients with chronic shoulder pain. A 95 % confidence interval (CI) and 5 percent margin of error were used. The minimum required sample size was 100 patients.

Inclusion criteria

Adults aged 18 and older with chronic shoulder pain (lasting over 3 months).

Exclusion criteria

Participants with prior shoulder surgery acute shoulder trauma, shoulder-related infection, inflammatory arthropathy, or upper limb-related neurologic disorders. All study participants received clinical evaluations, imaging (either ultrasound or MRI), and function was assessed using the Constant-Murley Score. The study included both partial and full-thickness rotator cuff tears.

Diagnostic and Management Strategy

The patients diagnosis was based on clinical examination and confirmed with ultrasound or MRI. Conservatively, with physiotherapy and medication, partial-thickness tears were managed, while surgical repair was done on full-thickness tears. The Constant-Murley Score was used to measure functional outcomes at 3 months and 6 months, and was taken at baseline.

Statistical Analysis

Data were analyzed with SPSS version. Continuous variables were given as mean $\pm$ standard deviation, and categorical variables as frequencies and percentages. The paired t-test was used to assess changes in functional scores, while the chi-square test was used to compare categorical variables over time. A p-value of less than 0.05 was statistically significant.

RESULTS

A total of 100 patients were enrolled comprising 52 males and 48 females, with a mean age of 52.3 ± 10.6 years. The right shoulder was affected in 56% of patients, while the left shoulder was involved in 44%. Rotator cuff tears were identified in 62 patients: 38% had partial-thickness tears, and 24% had full-thickness tears. The supraspinatus tendon was most frequently involved (68%), followed by infraspinatus (22%) and subscapularis (10%). Baseline functional assessment using the Constant-Murley Score showed a mean of 48.5 ± 12.4 . At 3 months post-management, the mean score improved to 72.3 ± 10.8 , and at 6 months, it further increased to 84.1 ± 9.6 ($p < 0.001$). Patients with partial-thickness tears exhibited faster functional recovery compared to full-thickness tears (mean improvement 38.6 vs 30.2 points; $p = 0.02$). No major complications were observed. These findings indicate that rotator cuff tears are prevalent in patients with chronic shoulder pain and that timely, targeted interventions substantially improve

shoulder function.

Intervention Outcome

Conservative management for partial-thickness tears was effective with significant improvements in the pain and functional scores. Surgical repair for full-thickness tears also had substantial recovery with improved range of motion and strength at the 6-month follow-up. Overall, management of chronic shoulder pain was effective in optimizing functional outcomes and decreasing disability.

Table 1. Baseline Demographics of Study Participants

Variable	Frequency (n=100)	Percentage (%)
Gender (Male/Female)	52 / 48	52 / 48
Mean Age (years)	52.3 ± 10.6	–
Side Affected		
- Right	56	56
- Left	44	44

This table summarizes the baseline characteristics of the 100 patients enrolled, including age, gender distribution, and the affected shoulder side.

Table 2. Incidence and Type of Rotator Cuff Tears

Tear Type	Frequency (n=100)	Percentage (%)
Partial-thickness	38	38
Full-thickness	24	24
No Tear	38	38
Tendon Involved		
- Supraspinatus	42	68 of tears
- Infraspinatus	14	22 of tears
- Subscapularis	6	10 of tears

Distribution of rotator cuff tear types and tendon involvement among patients with chronic shoulder pain. Supraspinatus was the most commonly affected tendon.

Table 3. Functional Outcome Using Constant-Murley Score

Time Point	Mean CMS ± SD	p-value
Baseline	48.5 ± 12.4	–
3 months	72.3 ± 10.8	<0.001
6 months	84.1 ± 9.6	<0.001

Functional outcomes improved significantly over time in patients following targeted management, measured using the Constant-Murley Score (CMS). p-values indicate statistical significance compared to baseline.

Table 4. Functional Improvement by Tear Type

Tear Type	Baseline CMS ± SD	6-Month CMS ± SD	Improvement (Points)	p-value
Partial-thickness	49.2 ± 11.8	87.8 ± 8.5	38.6	0.02
Full-thickness	47.5 ± 13.1	77.7 ± 10.2	30.2	0.02

Comparison of functional improvement based on tear type. Partial-thickness tears showed greater recovery in Constant-Murley Score compared to full-thickness tears over 6 months.

DISCUSSION

Patients with chronic shoulder pain have been reported to have a 62% incidence of rotator cuff tears in this study; of these tears, 38% were partial thickness, and 24% were full thickness. Functional outcomes improved over 6 months (baseline Constant

Murley Score 48.5± 12.4; 6 months 84.1± 9.6; p < 0.001), and recovery from partial tears was greater than from full-thickness tears (p = 0.02). These results align with recent studies indicating that most patients with chronic pain have a rotator cuff pathology, and with the right management, pain and function can be

[illegible]

regression [21]. This is consistent with our finding that full-thickness tears had less and slower functional improvement. This reinforces the importance of timely recognition and targeted intervention, as management delays have been linked to poorer functional outcomes, especially in cases with significant tendon degeneration and/or fatty infiltration [22]. In short, rotator cuff tears, along with functional outcomes and chronic shoulder pain cases, offer insight into pain case evidence and suggest that rotator cuff tears, chronic shoulder pain, and improved functional outcomes are appropriate [23]. Managing Finding integrating recent evidence, chronic studies, consistent surgical and pattern conservative treatment evidence suggest early prolonged, individualized recovery pathways. Managing Finding integrating recent evidence, chronic studies, consistent surgical and pattern conservative treatment evidence suggest early prolonged, individualized recovery pathways. Managing Finding integrating recent evidence, chronic studies, consistent surgical and pattern conservative treatment evidence suggest early prolonged, individualized recovery pathways. Additional functional outcomes, chronic and evidence-based, provide a study of the absence of longitudinal sustaining of evidence, and a lack of outcome functional studies in diverse populations.

Limitations

This study has some limitations because it's based on one center, and the sample size is rather small. A follow-up period of six months is rather short, and it does not explain long-term consequences, and the functional assessment relied chiefly on the Constant-Murley Score, omitting other patient-declared quality of life metrics.

CONCLUSION

Patients with chronic shoulder pain present rotator cuff tears, and in most cases, there are partial thickness tears. Prompt detection and tailored management approaches like conservative treatment and/or surgical repair improve functional outcomes, reconstruct shoulder motion, and elevate life quality. These are some of the reasons why there is so much emphasis on the need for timely intervention from a clinical point of view.

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Approved the Final Version.

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