

## Effects of Ultrasound therapy and Myofascial release in a patient with Sub-deltoid bursitis- A case report.

Dr.Kashish Shaikh<sup>1</sup> , Dr.Kajal Kadam<sup>2\*</sup>

Affiliations-

1.BPT, MGM School of Physiotherapy, Aurangabad, a constitute unit of MGMIHS, Navi Mumbai, Maharashtra, India.

[skashish3017@gmail.com](mailto:skashish3017@gmail.com)

2. Assistant Professor, MGM School of Physiotherapy, Aurangabad, a constitute unit of MGMIHS, Navi Mumbai, Maharashtra, India.

[drkajalkadam@gmail.com](mailto:drkajalkadam@gmail.com)

\*Corresponding Author: - BPT, MGM School of Physiotherapy, Aurangabad, a constitute unit of MGMIHS, Navi Mumbai, Maharashtra, India.

### ABSTRACT

**Background:** Recent studies have shown high frequencies of pain in shoulder region. Shoulder pain due to sub-deltoid or subacromial bursitis is common. Sub-deltoid bursitis is inflammation of the sub-deltoid bursa. Shoulder pain can further lead to formation of trigger points leading to severe shoulder pain.

**Case Information:** A-40-year old female was diagnosed with sub-deltoid bursitis. For 1 month, the patient was having symptoms of left shoulder pain up to left upper arm. Her pain was constant in nature and gradual in onset which aggravated during lifting movements. The patient was treated with ultrasound therapy for 4 days for 2 weeks. Additionally, myofascial release was given to the patient along with Interferential Therapy (IFT), cold pack and passive range of motion exercises. Outcome measures of Numerical Pain Rating Scale (NPRS) which was used to assess pain and Shoulder Pain And Disability Index (SPADI) which was used to assess disabilities associated with shoulder pain were taken both pre and post interventions.

**Result:** The pre intervention score for shoulder pain and disability of the patient was 8 on NPRS and 81 points on Shoulder Pain And Disability Scale and post intervention scores were 3 on NPRS and 50 points on Shoulder Pain And Disability Scale respectively.

**Conclusion:** This study concluded that ultrasound therapy and myofascial release techniques were effective in reducing shoulder pain and disability.

**Keywords:** Ultrasound therapy, myofascial release, shoulder pain, sub-deltoid bursitis.

### INTRODUCTION

Shoulder pain is a debilitating chronic condition that contributes significantly to individual dependence. In orthopaedic practice, it is the third most common musculoskeletal complaint (1). Shoulder pain is the most common cause of non-traumatic upper-limb pain, which is characterized by chronicity and recurrence of symptoms (2). The involvement of inflammation in the subacromial-sub-deltoid bursa has recently been suggested as a key radiologic factor in predicting chronic limitation and pain in patients who have had surgery. Bursae are synovial-line sacs that sit on top of areas where structures overlap and cause friction. Between the rotator cuff tendons and the undersurface of the acromion, the acromio-clavicular joint, and the deltoid muscle, the SASD bursa—an extra-articular synovial space—overlies the bicipital groove (3). Soft tissue lesions have a wide range of causes. It may be caused by a variety of things, like subacromial or subacromio-deltoid bursitis, partial or complete rotator cuff tendon breaking, calcific rotator cuff tendonitis, and tendonitis and rupture of the long biceps tendon (4). The subacromial and sub-deltoid bursae, which are the largest in the human body, are the major bursae of the shoulder (5). Chronic bursitis causes intense pain as a result of a chronic inflammatory process in the bursa, which can also cause the underlying ligaments and tendons to weaken and ultimately rupture (6). The walls of the sub-deltoid subacromial bursa can thicken and fluid may collect within it. The bursa's inner wall is often thickened with low echogenic content (7). We've seen a widened anterior portion of the subacromial-sub-deltoid bursa in patients complaining of antero-medial shoulder pain on sonography in our clinical practice.

Several studies have shown that this bursa could be involved in impingement syndrome patients' shoulder pain (8). Since the subacromial bursa and subdeltoid are typically co-functional, they are often grouped together as the (SASD) subacromial-sub-deltoid bursa (9). Sub-deltoid bursitis pain normally starts at rest, becomes more evident with use, and then becomes intense enough to wake you up. In the long run, it can cause adhesive capsulitis (10). Chronic repetitive trauma irritates the SA-SD bursa more often in patients with a narrowed supraspinatus outlet ("impingement syndrome"). These thickened bursae are distended with hypoechoic and anechoic fluid on sonograms (11). The goal is to reduce pain and provide full range of motion at shoulder joint. The goal of this report is to evaluate effectiveness of ultrasound therapy and myofascial release technique in shoulder pain associated with sub-deltoid bursitis.

## **PATIENT DESCRIPTION**

The 40-year-old female patient who has a 1 month , patient was having symptoms of left shoulder pain upto left upper arm along with pain on palpation and left side shoulder palpation trigger pain. The patient reported pain at rest as well. As a result, patient's pain response was radically different. Rehabilitation mostly focused on ultrasound therapy and myofascial release. Treatment protocol also included IFT, cold pack and passive range of motion exercises. In this research we concentrate on ultrasound therapy release of myofascial trigger points in a patient with sub-deltoid bursitis.

## **CASE HISTORY**

The 40-year-old female patient who was a house wife and a home maker. The patient spent over 80% of her day seated at home. The patient had no medical history that was compelling. The patient reported a 1 month history of chronic shoulder pain more at left side than right side along with left upper arm pain and ROM restriction. The pain had begun insidiously but gradually increased in severity. The patient then sought medical attention from her primary care physician. The patient's primary care physician diagnosed the shoulder pain as sub-deltoid bursitis.

She was then prescribed with medications and calcium supplements. The patient then reported that the medications provided minimal pain relief.

An ultrasonography investigation of shoulder joint was done.

The patient was then referred to PT for further treatment for which she then visited MGM School Of Physiotherapy Rehabilitation and Fitness Center Aurangabad for further investigations. She was then diagnosed with sub-deltoid bursitis. The patient rated her shoulder pain 5/10 at rest and 6/10 on movement and left arm pain as 5/10 (0, no pain; 10, worst pain imaginable) in intensity on a numeric pain rating (NPR) scale at the time of the PT examination. She reported that the pain traveled from the shoulder down the left upper arm. The patient described that the quality of pain was dull. The patient also described she had difficulty sleeping at night due to pain in her shoulder and left upper arm. Her socio-economic status was that she belonged to upper middle class. The study was approved by the MGM School of Physiotherapy Aurangabad's Institutional Review Board and carried out after receiving patient consent.

## **CLINICAL FINDINGS**



### **Objective Examination**

The pain evaluation of current symptoms of patient was more painful onset of shoulder pain at the left side was gradual and the pain level of the patient was 6 on NPRS. The pain continued to increase. Although the flexion movement and abduction movement were exacerbated. On palpation tenderness was present over head of humerus. On examination, the range of motion [ROM] was restricted to shoulder flexion, abduction which were painful and incomplete. Tightness and muscle spasm was present in the anterior and middle fibres of deltoid and biceps brachii muscles. The muscle strength was grade 3 for shoulder flexors and abductors, grade 3+ for extensors and lateral rotators of shoulder.

### **Diagnostic Investigations**

Ultrasonography diagnostic test was performed .

Mahatma Gandhi Mission's  
**MGM Hospital**  
N-6, CIDCO, Aurangabad - 431003 Tel -91-0240-6482000, Ext.-1000/1001/1002, Fax -91-0240-2487727

**Department of Imaging & Radiodiagnosis**

Patient Name	[REDACTED]	Bill No.	: MGMOP210007387
Referred By Dr	: [REDACTED]	Report No	: MGMUSG210001782
UIN	: 210008180	Reported on	: 09-02-2021 10:51:48
Age / Gender	: 40 Yrs / FEMALE	Ward / Bed	:
Ref Department	: Orthopedic	Ref Unit	: ORTHOPEDIC (U-1)
Unit Incharge	: DR. ORTHO1		

**HIGH FREQUENCY USG LEFT SHOULDER**

**Minimal free fluid is noted in subacromio and subdeltoid bursa.**

Supraspinatous , infraspinatous , subcapsularis tendons appear normal .


No e/o tendinosis / tear.

Articular margins of head of humerus is seen .

Visualized muscles surrounding shoulder joint appear normal.

Shoulder muscles appear normal.

**Imp: F/s/o subacromio and subdeltoid bursitis.**

for  **DR. P S MISHRIKOTKAR**  
M.B.B.S.,M.D.(RADIOLOGY)

**DR. MISHRIKOTKAR**  
M.D, RADIOLOGIST  
REG. NO. 60663

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Along with sub-deltoid bursitis, the gold standard for diagnosis of myofascial pain syndrome i.e the criteria by Travell and Simon , was positive. They were presence of taut bands , presence of tenderness , pain on palpation and pain on full ROM stretch along with local twitch visual or tactile response and sensation of pain alluded to by compression of the taut band.

**Diagnosis:** Based on subjective and objective examination and Travell and Simon criteria , patient had a confirmed diagnosis of myofascial pain syndrome associated with sub-deltoid bursitis.

**OUTCOME MEASURES**

Several tests were used to monitor the patient's progress from visit to visit. The patient reported her intensity of pain through NPR scale, functional ability through The Shoulder Pain And Disability Scale.

Sr.no	Movement	Range of Motion
1)	Shoulder flexion	20 degrees
2)	Extension	40 degrees
3)	Abduction	40 degrees
4)	Adduction	30 degrees
5)	External Rotation	60 degrees
6)	Internal Rotation	30 degrees

**Table 1.1. Pre-intervention ROM**

**PHYSIOTHERAPY TREATMENT PLAN**

The physiotherapy treatment concentrated on ultrasound therapy and myofascial release which further improved the status of patient’s condition.

**TREATMENT METHODS**

We gathered information from the patient about her experience and awareness about her discomfort and current condition before beginning the physiotherapy care. And we asked her about her expectations, and we used her feedback to help us plan treatment strategy for her. Patient was treated for 4 weeks , and physiotherapy management was planned according to patient’s problem list , which included patient education, pain relief, trigger point release and to increase joint mobility. In the first and second week, ultrasound therapy of 7 minutes duration of 1Mhz and intensity of 0.8w/cm2 myofascial release of anterior and middle fibres of deltoid and biceps brachii muscles and neck muscle stretching was incorporated.

Thereafter, passive range of motion and stretching was added to the treatment which was continued till 4<sup>th</sup> week. The patient attended treatment 2 times weekly for 4 weeks, for a total of 8 sessions. The ultrasound therapy were performed on the patient in the sitting position, with her hands supporting hand rest of the chair.. The ultrasound therapy was done for 7 minutes with intensity of 0.8w/cm2z. In 3<sup>rd</sup> and 4<sup>th</sup> week , pain reduced from 6 to 3 on NPR scale. In the 3<sup>rd</sup> and 4<sup>th</sup> week, along with ultrasound therapy ,ergonomic advice was given to the patient and do’s and don’t’ were explained. Patient was also taught self stretching and postural correction exercises.

Sr.no	Movement	Range of Motion
1)	Shoulder flexion	90 degrees
2)	Extension	45 degrees
3)	Abduction	100 degrees
4)	Adduction	40 degrees
5)	External Rotation	80 degrees
6)	Internal Rotation	40 degrees

**Table 1.2. Post-intervention ROM**

**CONCLUSION**

Interventions were used to reduce pain and increase range of motion which included Ultrasound therapy in combination with myofascial release in sub-deltoid bursitis. Therefore, it is beneficial in reducing pain and improving shoulder range of motion.

**PATIENT’S PERSPECTIVE**

The patient shared her perspective that compared to Day-1, she had found that her neck pain was significantly reduced by the end of 4<sup>th</sup> week and her quality of life was improved.

## CONSENT

As per International standard or University standard written ethical approval has been collected and preserved by the author(s).

## CONFLICTS OF INTEREST

Authors have declared no competing interests exists.

## ACKNOWLEDGEMENT

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## FUNDING

This study has not received any external funding.

## DISCUSSION

In the case, study was conducted to see the combined effect of ultrasound therapy and myofascial release technique on pain, trigger points and mobility in sub-deltoid bursitis . The primary objective of reducing pain and increasing range of motion through ultrasound therapy and myofascial release of anterior and middle fibres of deltoid and biceps brachii muscles was inculcated. After 4 weeks of treatment, all assessment norms showed statistically significant improvement in the patient . Significant improvements was found in reducing pain, increasing range of motion and improving quality of life of the patient. In a recent study, Mustafa Aziz Yildirim et al 2013, concluded that In the treatment of subacromial impingement syndrome, ultrasonic therapy was proven to improve pain and functional status. Ultrasound treatment lasting eight minutes was found to be more effective than ultrasound treatment lasting four minutes (12). In a study, Praveena Thiruvassagar Department of Physiotherapy of Faculty of Allied Health Sciences UNIVERSITY OF PERADENIYA et al. 2013, concluded that the results of this study reveal that at the end of three weeks of treatment and at the end of each week, individuals who got manual therapy and shoulder exercises alone, as well as those who received ultrasound therapy in addition to manual therapy and shoulder exercises, showed considerable improvement (13). In a recent study held on 2021,

Elena Sirbu et al. concluded that In the short term, ultrasound and physical exercise therapy regimens were found to be effective in the treatment of SAPS, improving pain, functionality, and reducing impairment (14). In a recent research, Gandhi VM et al. 2016, According to the findings, shoulder taping and myofascial release therapy can help reduce discomfort and improve functional impairment (15).

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