

# Extracorporeal Shockwave Therapy for Calcified Tendinopathy of Supraspinatus: A Case Report

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## INTRODUCTION

Calcified tendinopathy of supraspinatus is often a self-limiting condition occurring at middle age in which accumulation of calcium phosphate crystals occur within the rotator cuff tendons.<sup>1,2</sup> Among individuals with calcific tendinitis, 2.7% - 20% are asymptomatic, while 35% - 45% acquire symptoms after discovering calcific deposits on X-ray.<sup>3-5</sup> However, conservative treatment has been shown to provide effective relief in the majority of cases.<sup>2,6</sup> For patients who do not respond adequately to conservative approaches, surgical intervention may be required.<sup>6-8</sup> In

recent years, extracorporeal shock wave therapy (ESWT) has emerged as a promising novel modality, offering a valuable alternative to surgical intervention.<sup>9-11</sup> We report a case of calcific tendinitis which was successfully managed by ESWT.

## CASE REPORT

A 60-year-old right-handed woman from Kathmandu was referred to our Department for her shoulder pain.

She was previously a chronic smoker but had quit smoking 10 years ago. She presented to Physiotherapy Outpatient Department with complaint of right shoulder pain and difficulty of movement. Pain was localized to the lateral and anterior side of right shoulder, with insidious onset, dull nature, and radiating to arm. The pain was aggravated by overhead activity and at nights and relived by analgesia and rest. There was also associated motor shoulder weakness, which had got worse in last three months. She had no prior surgical history and was prescribed non-steroidal anti-inflammatory drugs for 10 days. Over the past month and a half, she attended nine sessions of physiotherapy, which primarily included range of motion exercises, rotator cuff strengthening exercises, and ultrasound therapy. She was advised for arthroscopic removal of the calcification, which she refused.

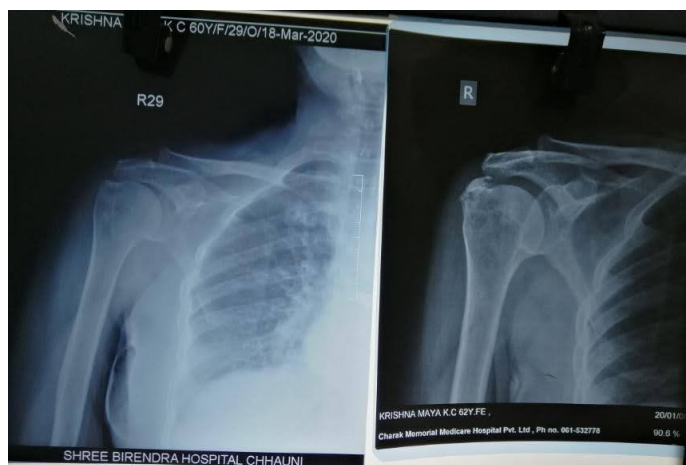
On inspection, there were no signs of swelling, redness, wasting, deformity, or scars observed on both shoulder and scapular region. On palpation, tenderness was felt over the greater tubercle region of the right shoulder and the interscapular region. Skin temperature was normal in both shoulders, and no differences in the texture of the scapular and shoulder muscles were felt. Her active range of motion of right shoulder included 150 degrees of forward flexion, 140 degrees of abduction, and 60 degrees each for internal rotation (IR) and external rotation (ER). ROM of IR and ER were measured in the pendent position with the help of goniometer. Passive range of motion revealed 170 degrees of flexion and abduction, with 80 degrees of IR and ER with empty end feel. On rotator cuff examination, pain and weakness were found during Jobe's test and the external rotation resistance test. The Bear Hug test and IR resistance test yielded negative results. On eliciting impingement tests, Neer's test, painful arch sign (50 - 100 degree) and Hawkins-Kennedy test were positive. Cervical spine inspection, palpation, range of motion were normal and spurling test was negative. Neurological and vascular examinations were normal for both shoulders. X-ray showed supraspinatus calcified tendinitis (Type 1 on DePalma and Kruper Classification) near greater tubercle (Figure 1). Her pain intensity was 3 at rest, rising to 7 during overhead activities, as measured by the Visual Analogue Scale (VAS). The disability as measured by Nepali version of Shoulder pain and disability score (SPADI) is 86 / 135 (63.70%).<sup>12</sup> The patient was informed about the benefits and potential risks of ESWT. After obtaining her verbal and written consent, she was referred to the Radiology Department for ultrasonographic marking of the calcified tendinitis site on the skin of her right shoulder to ensure precise placement of the focused shockwave probe. Patient was kept in sitting position in a chair with arms

by side of the body with elbow supported on a pillow placed on her lap. A focused probe from the Roland shockwave device was placed on the marked area and shockwaves were delivered. The patient received three sessions of ESWT, scheduled at seven-day intervals. Each session involved delivering 2000 impulses at an energy flux density of 0.32 mJ / mm<sup>2</sup> and a frequency of 10 Hz. Ultrasound guidance was utilized in every session to precisely target the calcified deposit. After the end of third session of ESWT, X-ray was repeated for her right shoulder. After the third session, the patient reported a pain intensity of 0 at rest and 2 during overhead movement. The SPADI score improved to 34 / 130 (25.18%). Active range of motion (AROM) of the shoulder measured 170 degrees in flexion and abduction, with 80 degrees in both internal and external rotation. Additionally, complete resolution of the calcified deposit over the greater tubercle was confirmed after three weeks via X-ray (Figure 2).



**Fig 1: Pre ESWT-AP X-Ray of Rt Shoulder.**

[Note: Calcified deposit was noted at greater tubercle area]



**Fig 2: Post ESWT AP X-Ray of Rt Shoulder**

[Note: Complete resolution of calcified deposit was noted at greater tubercle area]

## DISCUSSION

Calcific tendinitis of the shoulder is a disorder that mostly affects the supraspinatus tendon, with the etiology and pathophysiology unknown. While most cases are self-limiting, those with severe symptoms often require focused care. This article describes the successful use of ultrasound-guided ESWT in the treatment of calcific tendinitis of the supraspinatus tendon. In our case report, the patient reported significant pain reduction and improved functional results, as evidenced by lower SPADI and VAS ratings. The study supports Wu et al's findings that ESWT effectively reduces pain and improves range of motion in calcific tendinopathy.<sup>6</sup> Furthermore, the complete resolution of the calcified deposit observed on follow-up imaging supports the potential of high-energy ESWT to accomplish both symptomatic and structural resolution.<sup>9</sup>

The patient's desire to avoid invasive procedures and the lack of contraindications to ESWT led to the decision to use it instead of surgical options like arthroscopic removal. According to the literature, ESWT is a viable substitute for individuals who are reluctant to have surgery or who do not respond to conservative treatment.<sup>10</sup> This case emphasizes how crucial ultrasound guidance is for accurately locating calcifications because ineffective targeting can compromise the effectiveness of treatment.

While the conclusion was encouraging, there are limitations to generalizing this strategy. Individual pain thresholds, patient adherence, and heterogeneity in ESWT regimens all have an impact on outcomes.<sup>10</sup> Furthermore, the lack of a long-term follow-up in this case requires caution when

extrapolating the duration of symptom alleviation.

## CONCLUSIONS

Ultrasound-guided ESWT proved to be quite efficient in relieving pain, improving functionality, and resolving calcifications in supraspinatus calcified tendinitis. This method provides a non-invasive, efficient approach for treating calcific tendinopathy, especially when conservative treatments fail.

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**CONFLICT OF INTEREST:** None

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