

# Treatment of Subdeltoid Calcific Bursitis with Ultrasound-Guided Percutaneous Lavage

Esra Dilşat Bayrak,<sup>1</sup> İlknur Aktaş,<sup>2</sup> Feyza Ünlü Özkan<sup>2</sup>

<sup>1</sup>Department of Rheumatology,  
Istanbul Fatih Sultan Mehmet  
Training and Research Hospital,  
Istanbul, Turkey

<sup>2</sup>Department of Physical Medicine  
and Rehabilitation, Istanbul Fatih  
Sultan Mehmet Training and  
Research Hospital, Istanbul, Turkey

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Correspondence: Esra Dilşat Bayrak,  
Istanbul Fatih Sultan Mehmet  
Eğitim ve Araştırma Hastanesi  
Romatoloji Kliniği, Istanbul, Turkey  
E-mail: drdilsat@hotmail.com



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## ABSTRACT

Calcific bursitis most commonly affects the subacromial and trochanteric bursae. Patients most often present at the hospital because of increased pain at night and when performing overhead activities. A physical examination of the shoulder typically reveals restriction in abduction and internal rotation. Pain is usually observed during the resorption phase of the deposit. Chronic pain is also related to the inflammatory process caused by calcification. Calcified lesions in a bursa or tendon are not always visible on an X-ray, and may not be apparent among physical examination findings. Small and scattered deposits can often be detected on an X-ray; however, a calcific slurry mass in the subacromial-subdeltoid bursa can be found more reliably with ultrasonography (US) than with plain film. Pain is often resistant to steroid injections. In symptomatic patients, US-guided fragmentation of the lesion with a needle, using a local anesthetic, saline lavage, and a steroid injection, can often achieve complete healing in a very short period of time. Presently described is successful treatment of a calcified lesion located in the subdeltoid bursa achieved by performing lavage, splitting the calcified lesion, and administering a steroid injection.

## INTRODUCTION

Shoulder pain affects about 1% of people over 45 years of age.<sup>[1]</sup> Most often, the pain is caused by rotator cuff or bursa pathologies in the subdeltoid region. Subdeltoid bursa inflammation in this region may be a result of trauma, long-term pressure, overuse, crystal arthropathy, inflammatory arthritis, or infection. Pain caused by subdeltoid bursitis typically occurs during rest, becomes more apparent with use, and then may be so severe as to disrupt sleep. It may result in adhesive capsulitis in the long term. Superficially localized lesions (olecranon, prepatellar, retrocalcaneal) may produce symptoms that are evident during a physical examination, while deep lesions (subdeltoid, anserine bursitis, trochanteric) may not yield physical findings suggesting the presence of bursitis. In such cases, diagnostic tests, such as direct radiography, ultrasonography (US), computed tomography, and magnetic resonance

imaging (MRI), may prove useful. US can be valuable in making the diagnosis and in providing treatment at the site. The goal is to relieve the pain and to provide full range of shoulder movement.

This report describes the successful treatment of a patient with bursitis that was the result of a calcified lesion in the subdeltoid bursa. Splitting the calcific lesion, performing percutaneous lavage, and administering a steroid injection led to complete recovery.

## CASE REPORT

A 63-year-old woman had admitted to another clinic with pain and restriction of movement in the right shoulder during overhead activities nearly 3 months earlier. The patient's shoulder MRI demonstrated impingement findings, so she was included to a physical therapy program. She

admitted to our clinic because of a lack of improvement in her complaints. A physical examination revealed swelling of the shoulder without redness and an increase in local temperature with restricted shoulder flexion and internal rotation. Neer and Hawkins tests were positive. Muscle strength and neurological examination values were within normal limits. Acute phase reactant levels (sedimentation, C-reactive protein, uric acid, calcium, phosphate, whole blood, renal function tests, thyroid-stimulating hormone, and parathormone) were within normal limits for patients without any known systemic disease and drug use. Tests performed for autoantibodies (rheumatoid factor, anti-cyclic citrulline protein antibody) yielded negative results. No pathology of the shoulder was observed on direct radiogram; however, the increased power Doppler signal intensity observed on US revealed a subdeltoid bursal effusion with a large calcific lesion in the bursa (Fig. 1). The effusion in the subdeltoid bursa was drained with US guidance, the calcific lesion was fragmented using a 21-G needle, 2 cc 2% lidocaine and 2 cc saline were injected into the bursa, and the cavity was irrigated once again. Betamethosone 6 mg was then injected into the bursa. At a follow-up visit 1 week later, the pain and restriction of movement had been completely resolved. Repeated US demonstrated complete regression of the calcified lesion and the bursitis.

## DISCUSSION

Calcific bursitis is frequently seen in the subdeltoid bursa and the trochanteric bursa. Patients typically present with pain aggravated by overhead movements, and a physical examination usually reveals restricted abduction and internal rotation of the shoulder.

Calcification of the rotator cuff and bursa can take many forms. Large calcific foci may be hard or soft. Calcification is thought to have various phases. The first accumulation occurs in a harder form. Subsequently, the calcification is disintegrated or softened in the inflammatory resorptive phase. There may be severe pain during this phase. This is followed by the postcalcific phase.<sup>[2]</sup> Often, chronic pain is also the result of inflammation as a result of calcification.

In many cases, the pain is resistant to steroid injections.

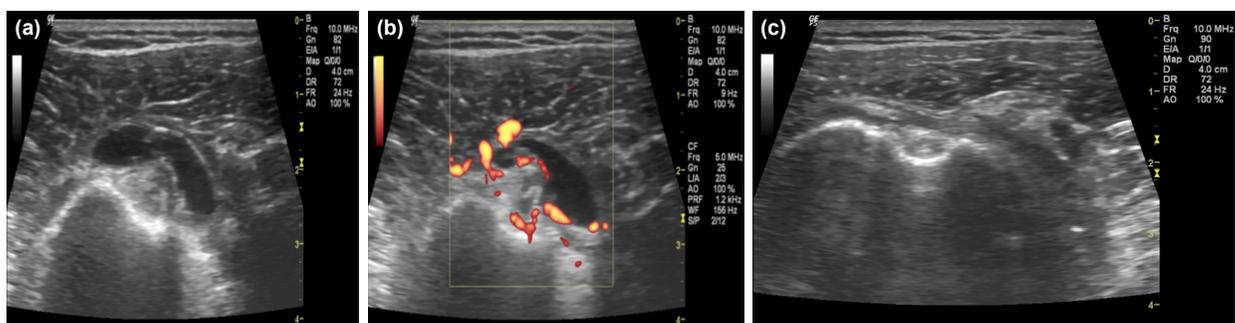
Large, muddy calcifications and bursal calcifications can be detected better with US than direct graphy, while small, scattered deposits have a high direct radiogram detection rate.<sup>[3]</sup>

US is very useful in the evaluation of pathologies of the rotator cuff, biceps tendon, and bursa of the shoulder. In cases of shoulder impingement, dynamic assessment and therapeutic interventions are also possible. It has been reported that 25% to 30% of blind injections do not reach the bursa, and this can lead to false negative results.<sup>[4]</sup> The available data suggest that injections performed with US guidance are much more effective than blind injection.<sup>[5]</sup>

Surgical interventions have also been performed in addition to conservative approaches (steroid and anesthetic injections). Two supraspinatus calcific lesions were reported to have completely regressed with steroid injections after lavage.<sup>[6]</sup> In another case report, successful treatment of calcific bursitis in the medial collateral bursa was achieved with percutaneous lavage using US guidance.<sup>[7]</sup> Furthermore, a study of 431 patients with calcific tendinitis of the rotator cuff indicated that needle aspiration of calcific deposits was successful.<sup>[8]</sup>

In the present case, the patient arrived with right shoulder pain and physical examination revealed restricted abduction and internal rotation. A large calcific lesion and bursitis were observed on the US image in the subdeltoid bursa; however, the direct radiogram had not revealed any pathology. The subdeltoid bursa was located and penetrated with a needle using US guidance, and the calcific lesion was disintegrated. Subsequently, a local anesthetic and saline were injected into the bursa, and the area was irrigated. An intrabursal steroid injection was administered, and at follow-up 1 week later, the patient reported that she had no pain, and the physical examination and ultrasound findings confirmed complete resolution.

As demonstrated in this case, calcified lesions in structures such as bursa and the tendons do not always appear on direct radiograms, and physical examination findings are not discriminative. US imaging is very valuable in these



**Figure 1.** (a, b) The initial ultrasound image, which demonstrates a calcific lesion, effusion, and increased signal intensity in the subdeltoid bursa. (c) Ultrasonographic images obtained 1 week after treatment.

cases. In symptomatic patients, US-guided disintegration of the lesion with a needle, using local anesthetic, saline lavage, and steroid injection can achieve complete healing in a very short time.

#### Informed Consent

Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

#### Peer-review

Internally peer-reviewed.

#### Authorship Contributions

Concept: E.D.B., İ.A.; Design: E.D.B., İ.A.; Data collection &/or processing: E.D.B., İ.A.; Analysis and/or interpretation: E.D.B., F.Ü.Ö.; Literature search: E.D.B., F.Ü.Ö.; Writing: E.D.B., İ.A.; Critical review: İ.A., F.Ü.Ö.

#### Conflict of Interest

None declared.

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### Subdeltoid Kalsifik Bursitin Ultrason Eşliğinde Perkütan Lavaj İle Tedavisi

Kalsifik bursit, sıklıkla subakromial ve trokanterik bursada izlenmektedir. Omuzda gözlendiğinde hastalar genellikle istirahat, hareketlerle ve gece artan ağrı nedeniyle başvurmakta, fizik muayenede omuz hareketleri kısıtlanmaktadır. Ağrı genellikle depozitin rezolüsyon fazında izlenmektedir. Kronik ağrı aynı zamanda kalsifikasyon nedeniyle oluşan enflamasyon sonucu oluşmaktadır. Bursa, tendon gibi yapılarda kalsifik lezyonlar her zaman MRG ve direkt grafilerde bulgu vermez, fizik muayene bulguları da ayırt edici olmamaktadır. Büyük çamursu kalsifikasyonlar ve bursal kalsifikasyonlar ultrasonografi ile çok daha iyi saptanır, küçük ve dağınık depozitlerin ise direkt grafide görülme oranı daha yüksektir. Birçok olguda ağrı birçok durumda steroid enjeksiyonlarına dirençli olmaktadır. Semptomlu hastalarda lezyonun iğne ile parçalanması, lavajı ve steroid enjeksiyonu ile çok kısa sürede komplet iyileşme sağlanabilmektedir. Bu yazıda, subdeltoid bursa içinde kalsifik lezyonu ve bursiti olan hastanın ultrason eşliğinde yapılan girişimle kalsifik lezyonun parçalanarak bursa içine lavaj yapılması ve sonrasında steroid enjeksiyonu yapılarak başarılı bir şekilde tedavisi sunuldu.

**Anahtar Sözcükler:** Kalsifik bursit; omuz ağrısı; perkütan lavaj; steroid enjeksiyonu; ultrasonografi.