Management of Snapping Scapula Syndrome

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Abstract

Snapping scapula syndrome is a rare condition caused by the disruption of the gliding articulation between the anterior scapula and the posterior chest wall. The etiology of snapping scapula syndrome is multifactorial, and contributing factors include scapular dyskinesis, bursitis from repetitive use or trauma, and periscapular lesions. Although the majority of cases are initially treated with nonoperative modalities, recalcitrant snapping scapula syndrome can warrant surgical management. This report describes a 34-year-old amateur weight lifter with a 1-year history of increasing pain and fullness over his posterior shoulder region. He reported full shoulder motion associated with an audible, palpable, and painful crepitus, exacerbated with overhead movement and wall push-ups. Previous periscapular stabilization exercises and corticosteroid injection yielded minimal resolution of his symptoms. Prior to being referred to the authors’ clinic, the patient was evaluated at an outside facility and deemed a suboptimal candidate for arthroscopic bursectomy because of the large size and location of this lesion. Magnetic resonance imaging showed a large polylobulated fluid collection causing scapulothoracic distention. There was no evidence of osseous abnormalities originating from the scapular body. Computed tomography-guided placement of methylene blue and contrast dye was used to facilitate localization and, in an effort to minimize recurrence, ensure the complete removal of bursal tissue. During 8 weeks, this patient recovered unremarkably and returned to full-duty activities with resolution of symptoms. The authors present the management of chronic and recalcitrant snapping scapula syndrome, and report the open excision of the largest scapulothoracic bursal lesion described, to their knowledge, in the English literature. [Orthopedics. 2016; 39(4):e783-e786.]

Snapping scapula syndrome is a painful condition associated with periscapular crepitus and altered scapulothoracic kinematics. Although multiple etiologies exist, 3 major factors include (1) musculoskeletal changes with-
Case Report

A 34-year-old amateur weight lifter presented with a 1-year history of increasing pain and fullness over the posterior shoulder region and crepitus with overhead motion. Previous periscapular stabilization exercises and corticosteroid injection yielded minimal resolution of his symptoms. Magnetic resonance imaging showed a polylobulated fluid collection and scapulothoracic distention.

Prior to being referred to the authors’ clinic, the patient was evaluated at an outside facility and, because of the large size and location of this lesion, not considered an optimal candidate for arthroscopic bursectomy. The authors’ evaluation showed full glenohumeral range of motion associated with an audible, palpable, and painful crepitus with overhead movement and wall pushups.

After informed consent was obtained, computed tomography-guided injection of methylene blue and contrast dye was performed to facilitate localization and, in an effort to minimize recurrence, ensure the complete removal of bursal tissue (Figure 1). Additionally, there was no evidence of an osseous lesion originating from the scapular body. The patient underwent general anesthesia and was positioned in a lateral decubitus position. The interval between the superior edge of the latissimus dorsi and the lateral edge of the trapezius was developed (Figure 2). The rhomboid major was partially released off the inferior-medial insertion of the rhomboid major was partially released and repaired at the end of the case (B). A multilobular bursal sac was identified within the scapulothoracic space (C). This lesion was adherent to the posterior aspect of the thoracic cage and circumferentially dissected and excised (D).

**Figure 1:** Axial computed tomography scan of the scapulothoracic region establishing the position of the lesion relative to the bony landmarks (A). Three-dimensional computed tomography reconstruction images showing contrast marker localized within the infraserratus space (B, C, D). No evidence of an osseous lesion from the scapular body was identified.

**Figure 2:** The patient was positioned in a lateral decubitus position with slight shoulder forward flexion to facilitate exposure of the posteroanterior edge of the scapula. The incision split the difference between the lateral edge of the trapezius and the superior edge of the latissimus (A). The inferior edge of the rhomboid major was identified and bluntly dissected. The inferior-medial insertion of the rhomboid major was partially released and repaired at the end of the case (B). A multilobular bursal sac was identified within the scapulothoracic space (C). This lesion was adherent to the posterior aspect of the thoracic cage and circumferentially dissected and excised (D).

**Discussion**

Snapping scapula syndrome is a rare condition caused by the disruption of the gliding articulation between the anterior scapula and the posterior chest wall. The etiology of snapping scapula syndrome can be multifactorial and includes scapular dyskinesis, bursitis from repetitive use or trauma, and periscapular lesions, such as osteochondroma and

**Figure 3:** Valsalva test showed no violation of the pleural space. The tendinous portion of the rhomboid major was repaired to the inferior medial bone of the scapula using transosseous tunnels. During an 8-week period, the patient recovered unremarkably and returned to full-duty activities with resolution of symptoms.
elastofibroma.\textsuperscript{1,3} Characteristic symptoms include painful, and often audible, snapping and crepitus throughout scapular range of motion and, in more severe cases, scapular winging. Moreover, reactive bursitis and overuse are well-established factors of snapping scapula syndrome.\textsuperscript{1,2,8} Previously, distinctive types of bursa have been implicated in snapping scapula syndrome, most commonly involving the supraserratus bursa (between the subscapularis and serratus anterior muscles) and infraserratus bursa (between the serratus anterior muscle and the chest wall).\textsuperscript{9} Additionally, 4 minor bursae are found at the superomedial and inferior angles of the scapula as well as the scapular spine.

Multiple etiologies of snapping scapula syndrome have been reported in the literature over several decades.\textsuperscript{9,10} The majority of cases may be initially treated nonoperatively with successful outcomes expected. These cases are often associated with soft tissue or idiopathic etiologies rather than anatomical osseous lesions that tend to be treated operatively, at a higher rate. The goals of conservative management are to correct muscular dysfunction, increase the space between the chest wall and scapula, and strengthen core and periscapular musculature. Corticosteroid injections and anti-inflammatories may also provide additional benefits for managing pain.\textsuperscript{11}

The current patient presented with a large infraserratus bursa, resulting in symptomatic snapping scapula syndrome, refractory to conservative management. Size and location are 2 main determinants of whether the lesion is more amenable to arthroscopic vs open excision. The patient had a large infraserratus bursal mass (exceeding 10 cm in its largest dimension) located between the serratus anterior and the chest wall. This lesion was deemed suboptimal for arthroscopic removal because of its size and location, and was thus indicated for open excision. Additionally, computed tomography-guided placement of a radiopaque-methylene blue marker was advantageous for both preoperative planning and improving intraoperative localization of the mass core, thus ensuring complete removal of the bursal tissue.

Milch\textsuperscript{12} first described the surgical approach for snapping scapula syndrome in 1950. Since then, studies have corroborated the success of bursectomy and partial scapular resection for refractory symptoms.\textsuperscript{6,13} Arthroscopic techniques for bursectomy have shown successful resolution of both pain and crepitus and improved functional outcome for patients who have failed nonoperative management.\textsuperscript{3,4,8} Arthroscopic approaches to snapping scapula syndrome typically involve bursectomy and superomedial scapular pole resection, leading to satisfactory outcomes in 70% to 100% of cases.\textsuperscript{8,14}

More recently, there have been recommendations for combined arthroscopic and mini-open resections.\textsuperscript{4,7,15} It has been suggested that arthroscopy provides better visualization of the bursal tissue, whereas an open approach provides better evaluation of larger lesions in addition to enabling adequate inspection of the superomedial and inferomedial scapular angles, thus permitting scapular resection when indicated.\textsuperscript{7}

Figure 3: This lesion was 5 × 10 × 11 cm (A). Incision of the sac revealed the methylene blue marker within the core of the bursa (B). Histological analysis with hematoxylin-eosin stain showing a synovial-lined bursa with a wall consisting of fibrous tissue, abundant vessels, and scattered inflammatory infiltrates consisting predominantly of neutrophils (C, original magnification ×10; D, original magnification ×40).
**Conclusions**

Precise recommendations for arthroscopic excision, open excision, or a combined approach have yet to be established. Prospective, comparative studies of these techniques are warranted and may provide additional insight into the optimal treatment strategy for symptomatic snapping scapula syndrome based on lesion size and location.

**References**


