An Unusual Localization of Spinoglenoid Cysts in the Shoulder; Case Report and Comprehensive Literature Analysis

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ABSTRACT

Objective: A spinoglenoid cyst represents a distinctive clinical entity within the realm of shoulder pathology, characterized by the development of a cystic structure in the spinoglenoid notch. Situated in the intricate anatomy of the shoulder, this cyst often involves compression of the suprascapular nerve, introducing a spectrum of symptoms that range from localized discomfort to functional impairment. As an area of increasing interest in orthopedic and neurological literature, the spinoglenoid cyst poses diagnostic and therapeutic challenges.

Case:

Patient 1: A 31-year-old male presented with right shoulder pain and a positive Hawkins sign. He had a history of bicipital tendinitis. T2-weighted MRI (T2WI) showed a hyperintense 14x16mm spinoglenoid cyst.

Patient 2: Another 31-year-old male presented with shoulder pain, positive Hawkins and Neer signs, and pain induced upon shoulder range of motion. T2-weighted MRI (T2WI) revealed a 16x11mm hyperintense ganglion cyst with hypointense septae.

Patient 3: A 42-year-old male presented with shoulder pain that started a month ago. He had a history of rotator cuff syndrome, shoulder impingement syndrome, and adhesive capsulitis in the shoulder, along with positive Hawkins and Neer signs. T2-weighted MRI (T2WI) identified a 25x15x28mm hyperintense ganglion cyst.

Conclusion: The cases presented highlight the diagnostic challenges posed by spinoglenoid cysts and the importance of advanced imaging techniques, particularly MRI, in confirming their presence and understanding their characteristics. The diverse clinical manifestations, ranging from chronic shoulder pain to neurological deficits, emphasize the need for a nuanced and individualized approach to diagnosis and management.

Keywords: ganglion cyst, Spinoglenoid notch ganglion cysts, shoulder pain

INTRODUCTION

Ganglion cysts are vesicles filled with jelly-like mucus substance commonly developing near the joints, representing 60 to 70% of the soft tissue tumor in the hand, wrist, knee, or foot. This condition shows more uncommonness when arising in the shoulder, wherefore patients complain of associated pain in this specific region or might be orthopedically diagnosed on routine imaging if asymptomatically presenting. Localisation and anatomical origin classification is used to identify the type as intraosseous, periosteal, or soft tissue cyst. The soft tissue tumor emerges as a mass of connective tissue containing synovial or tendon sheath fluid and thus may be described as a synovial herniation developing cyst (1).

A Spinoglenoid Cyst is a ganglion cyst that occurs in the anatomical region of the shoulder, specifically in the spinoglenoid notch, a small groove in the scapula through which the suprascapular nerve passes. This cyst often forms due to a labral tear, which creates a one-way valve effect, allowing synovial fluid to accumulate.

The nearby brachial plexus branches and communicates with the supraspinatus and infraspinatus muscles through the suprascapular nerve. As a consequence of compression in the spinoglenoid notch, patients clinically present with shoulder pain exacerbated by movement, muscle deterioration, arm weakness, and back discomfort due to suprascapular nerve compression and labral tear. MRI can identify the cause of the nerve pinch by revealing hyperintensity in the shoulder area, diagnosing the ganglion cyst. The etiologies are not associated with chronic illnesses or genetics and thus remain unclear; however, past and current studies have reported that all ganglion cysts result from the accumulation of microtrauma (1,8).
CASE

Spinoglenoid Cysts have been encountered in male 3 patients aged 31, 31, 41 years with an initial identical presentation of chronic shoulder pain with a lack of any explainable cause. The patients presented with a singular pain without any swelling, nor erythema, except patient 3, who had additional complaints of movement restriction of a 160-degree limitation in shoulder abduction and flexion upon which he was diagnosed with Rotator Cuff Syndrome and Impingement Syndrome. There has been no relevance in any of their past medical, familial, and surgical histories regarding orthopaedic or rheumatic causes, and lab results yield no signs of inflammation or chronic processes. Physical examination failed to reveal any significant findings, and each patient was directed to further imaging and laboratory studies, the latter of which confirmed the absence of inflammation, infection, and any other plausible explanation in terms of the presenting complaint.

Concerning the MRI they have demonstrated the following interpretations: Patient 1 with a normal glenohumeral joint, neither atrophic muscles nor ruptured tendons in the rotator cuff muscles, however a 14x16mm cyst on the spinoglenoid notch showing hypointensity on T1 and hyperintensity on T2 with several hypointense septae confirming the diagnosis of a ganglion cyst. Patient 2 showed normal joint and rotator cuff muscles similar to patient 1, along with a 16x11mm hypointense septated cyst in the subcoracoid region of the bursa, appearing hypointense in T1 and hyperintense in T2. Patient 3 showed supraspinatus muscle humeral insertion tendinosis, acromioclavicular joint degeneration with hypointensity on T1 and hyperintensity on T2 and several hypointense septae, which correspond to a spinoglenoid notch ganglion cyst of 25x15x28 mm.

Fig 1: Coronal view in T2WI showing a spinoglenoid Cyst in Patient 3
Fig 2: Axial view in T2WI showing a spinoglenoid cyst in Patient 2

Fig 3: Coronal view in T2WI showing a spinoglenoid Cyst in Patient 1
DISCUSSION

Synovial cysts are classified according to their anatomical localization as intraosseous, periosteal, or soft tissue cysts and structurally as single or multiloculated. Our patients had septated cysts appearing hypointense on MRI, suggesting a multiloculated synovial cyst.

Patients with a ganglionic cyst can be asymptomatic in which case the diagnosis is made by routine imaging or the patients clinically present with shoulder pain unassociated with neither trauma nor any specific movement obstructions. The symptoms can become bothersome when nerve compression occurs or neurologic deficits are evaluated in addition to symptoms of supraspinatus nerve constriction namely pain, tenderness and shoulder muscle weakness radiating along the arm or to the back. Restriction of the range of motion of the joint is also a documented symptom. In our cases, all three patients sought treatment for pain, and one of them exhibited restrictions in abduction, rotation, and flexion. The physical exam can show local swelling and a palpable mass in the subperiosteal and soft tissue types of ganglionic cyst but not in the intraosseous type. However, the literature lacks information regarding the aforementioned sign in the context of shoulder spinoglenoid cysts, despite its correlation with the findings in our three patients.

Ganglion cysts are mainly seen near the joints and are more common in women suffering from osteoarthritis between the ages of 20 and 50. However most authors have concluded that the cyst develops due to chronic connective tissue damage. Accordingly, the micro-injury of the capsule and the ligaments supporting the joints stimulate the fibroblasts cells, which produce hyaluronic acid, forming mucin-like fluid. The synovial herniation results in a ganglion cyst. Our patients show no chronic illness and no trauma, and thus, the chronic micro-injury hypothesis might be explained by their age (1).

Physical Examination remains as the first and foremost diagnostic methodology to detect tenderness in the domains of the suprascapular and spinoglenoid notch, wasting of either infraspinatus or both supraspinatus and infraspinatus muscles due to suprascapular notch patholgy, limited range of motion, weakness to abduction and external rotation of the arm and reproduction of the pain upon internal rotation and adduction are possible findings but remain unspecific to a spinoglenoid cyst in itself. MRI is indispensable in diagnosing a spinoglenoid cyst as it shows detailed views of the soft tissue structures including, but not limited to the spinoglenoid notch, soft tissue structures and the presence of cysts. T2-weighted imaging (T2WI) provides higher specificity for visualizing cysts and the suprascapular nerve. If there exists nerve compression due to the spinoglenoid cyst, EMG (Electromyography), in addition to NCS (Nerve Conduction Studies) can detect the function and health of the nerves and any present motor latencies in the infraspinatus, or both the supraspinatus and infraspinatus and are considered to be gold standard for detection of supraspacular nerve dysfunction with a sensitivity and specificity of up to 91%. In addition, diagnostic arthroscopy can be performed in the event a surgery is being considered, or to directly visualize joint structures, including the spinoglenoid notch by inserting a camera into the shoulder joint (3,4,5,6).

It is also important to consider the existence of alternative diagnoses of shoulder pathologies when evaluating a spinoglenoid notch. In our patients, all 3 of them were diagnosed with the help of T1WI and T2WI MRI. T1WI MRI illustrates a hypointense cyst in contrast with T2WI MRI that demonstrates a hyperintense ganglion cyst with hypointense septations of sizes 14x16mm, 16x11mm and 25x15x28mm in patients 1, 2 and 3, respectively (Figure 1, 2, 3).

In terms of treatment, an initial conservative management route is favored, which includes symptomatic relief with NSAIDS, physical therapy to allow for a greater range of motion and shoulder muscle strengthening in addition to shoulder activity moderation. If conservative therapies fail, invasive therapies are considered. Aspiration of the cyst entails using a needle to withdraw fluid from the cyst providing temporary symptomatic relief; however, it also carries a higher risk of cyst recurrence as the labral tear is not treated (6). Patients with suprascapular nerve pathology show poor results if treated only conservatively, hence, these cases are more likely to be treated surgically. Arthroscopic decompression with pre-operative methylene blue injection is a minimally invasive technique and carries a lower recurrence rate and demonstrates protection of nearby neuronal structures (7). Open surgery with decompression and excision of the cyst, as well as labral repair surgery are considerations performed according to patient symptoms and characteristics, the former of which carries a higher morbidity (8). Our patients have been followed up with symptomatic treatment with analgesics and regular follow-up in addition to MRI. In any case of severe complications, Resectional surgical treatment is advised. No recurrence has been evaluated in any of the three patients so far.

CONCLUSION

In conclusion, the provided extract discusses ganglion cysts, particularly focusing on Spinoglenoid Cysts that occur in the shoulder region, specifically in the Spinoglenoid notch. The causes of ganglion cysts, including Spinoglenoid Cysts, remain undisclosed, with no association with chronic illnesses or genetics reported. However, microtrauma accumulation is suggested as a potential contributing factor. Thus, the extract provides valuable insights into the characteristics, diagnostic procedures, and clinical manifestations of Spinoglenoid Cysts, highlighting the importance of imaging, particularly MRI, in confirming the diagnosis. The cases presented underscore the need for comprehensive evaluation in patients with chronic shoulder pain, considering ganglion cysts as a potential cause.

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Ethical approval: The present study was conducted in strict accordance with the principles outlined in the Declaration of Helsinki. Informed consent was obtained from the participant of this study. The protocols were approved by the patient and Istanbul Okan University Hospital.

REFERENCES


