Acute Exostosis Bursata: A Rare Complication of Scapular Osteochondromas—Case Report and Literature Review

Daniel Moya,[*] Héctor Salamone,[**] Alejandro Vaccarelli,[#] Daniel Márquez Grand,[#] Federico Alfano,[##] Diego Gómez[*]

[*]Orthopedics and Traumatology Department, Hospital Británico de Buenos Aires, Autonomous City of Buenos Aires, Argentina.
[**]Orthopedics and Traumatology Department, Hospital "César Milstein", Autonomous City of Buenos Aires, Argentina.
[#]Orthopedics and Traumatology Service, Hospital Zonal General de Agudos "Dr. Eduardo Wilde", Buenos Aires, Argentina.
[##]Clínica Universidad de Navarra, Pamplona, Navarra, Spain

ABSTRACT

Osteochondromas involve the scapula in only about 4% of cases. Although many are asymptomatic, they may produce symptoms and complications such as pain, crepitus, palpable masses, scapular dyskinesia, snapping scapula, scapular winging, and the formation of large bursae. This latter complication—which can occur at any skeletal site—is referred to as *exostosis bursata*, a large bursa that typically develops slowly and progressively and may prompt consideration of malignant transformation or infection in the differential diagnosis.

We report a rare case of the acute, post-traumatic onset of exostosis bursata secondary to an osteochondroma on the ventral surface of the scapula. The treatment is described, and a review of the literature is provided.

Keywords: Exostosis bursata; scapular osteochondroma; bursitis; bone tumor.
Level of Evidence: V

Exostosis bursata aguda: una complicación poco frecuente de los osteocondromas de la escápula. Presentación de un caso y revisión bibliográfica

RESUMEN

Los osteocondromas se localizan en la escápula solo en el 4% de los casos. Si bien un porcentaje importante cursa de forma asintomática, pueden provocar síntomas y complicaciones, como dolor, crepitaciones, tumoraciones, discinesia y resaltos escapulares, escápula alada y la formación de grandes bursas. Esta última complicación que, en realidad, puede sobrevenir en cualquier localización esquelética de los osteocondromas, se ha denominado "exostosis bursata". Se trata de una bursitis de gran tamaño, generalmente de desarrollo lento y progresivo, que puede determinar la necesidad de considerar diagnósticos diferenciales con malignización tumoral e infecciones. Se presenta un raro caso de aparición aguda postraumática de una "exostosis bursata" secundaria a un osteocondroma localizado en la cara ventral de la escápula. Se describe el tratamiento y se presenta una revisión de la bibliografía.

Palabras clave: Exostosis bursata; osteocondroma de escápula; bursitis; tumor óseo.
Nivel de Evidencia: V

INTRODUCTION

Osteochondromas are the most common benign bone tumors. Their location in the scapula accounts for only 4% of cases.[1,2] They have been identified on the dorsal aspect of the scapula,[2] but the most frequent location is on the ventral surface of the bone.[1]

When small and located in areas not subject to excessive friction, patients may remain asymptomatic even with ventral scapular osteochondromas.[1] However, when they enlarge, are situated in mechanically demanding regions

Received on May 20th, 2024. Accepted after evaluation on November 20th, 2024 • Dr. DANIEL MOYA • drdanielmoya@gmail.com https://orcid.org/0000-0003-1889-7699

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with greater friction, or occur in very active patients, they can produce significant symptoms and complications.[1] The most frequent complications include scapular dyskinesis, snapping scapula, winged scapula, and the development of large bursae.[1] The latter is a very uncommon complication characterized by the slow and progressive appearance of a large mass that may necessitate consideration of infectious processes or even malignant tumors in the differential diagnosis. In the literature, these bursae—sometimes of considerable size—have been termed "exostosis bursata." The term was first used in 1891 by Orlow,[3] who described it as a slowly developing bursal tumor located between an osteochondroma and the surrounding soft tissue in different regions of the musculoskeletal system.

Given the rarity of this complication and the infrequent occurrence of osteochondromas in the scapula, few cases have been published. We found no previous reports of "exostosis bursata" in our setting.

The purpose of this article is to present a rare case of "exostosis bursata" secondary to a scapular osteochondroma that, unlike the usual presentation, appeared rapidly after trauma. In addition, we conducted a literature review by searching the PubMed, Google Scholar, and PEDro electronic databases from their inception through April 2024. The search terms were: exostosis bursata, scapulothoracic bursitis, snapping scapula and scapular osteochondroma.

CASE REPORT

A 21-year-old woman had been asymptomatic in her left, nondominant shoulder until a traumatic event. She reported a backward fall with a direct contusion to the posterior aspect of the shoulder. Within 48 hours of the trauma, a large medial parascapular mass appeared, extending along the entire medial border of the scapula (Figure 1).

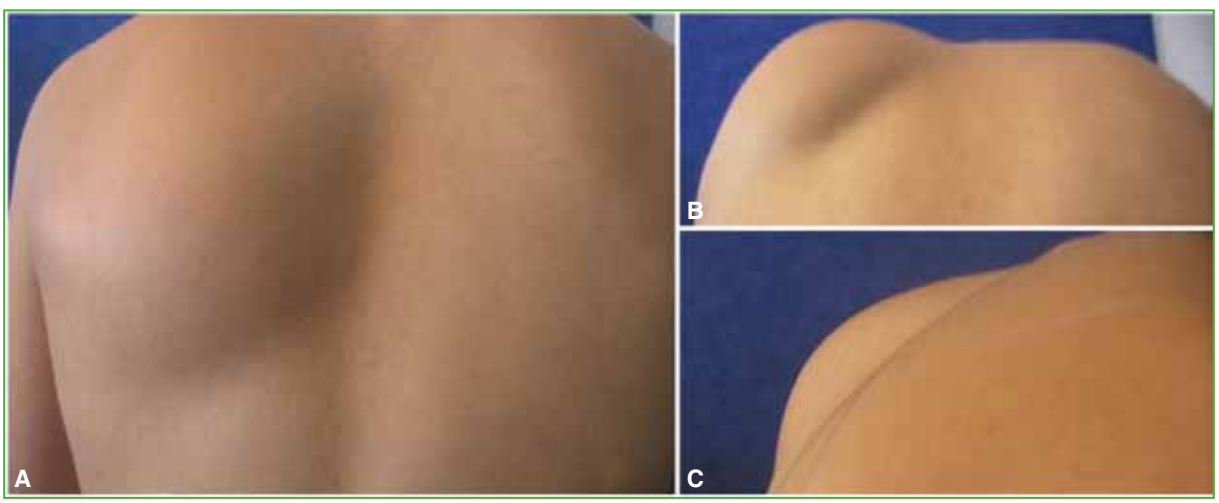

Figure 1. A. Dorsal view in standing position. **B.** Sagittal view, anterior aspect. **C.** Sagittal view, lateral aspect.

The patient reported pain and functional limitation. Active range of motion measured 60° of forward flexion and 40° of external rotation; internal rotation allowed the tip of the thumb on the affected side to reach the level of the spinous process of the fifth lumbar vertebra.

There was no alteration of scapular protraction against resistance, scapular lateralization, the shoulder shrug test, or scapular retraction against resistance.

Complementary studies revealed a ventral osteochondroma near the inferior angle of the scapula (Figure 2). Computed tomography showed the typical mushroom-shaped image at approximately the level of the fifth rib and a homogeneous hypodense fluid collection measuring 16 × 5 cm. Traumatic bone lesions were ruled out. Ultrasound also demonstrated the fluid collection, measuring 150 x 30 x 80 mm (Figure 3).

Figure 2. **A.** Anteroposterior radiograph of the left shoulder. The arrow indicates the area of the osteochondroma. **B.** Lateral radiograph of the left scapula showing the lesion clearly. **C.** Computed tomography of the scapula, lateral view, with 3-D reconstruction showing the characteristics of the osteochondroma.

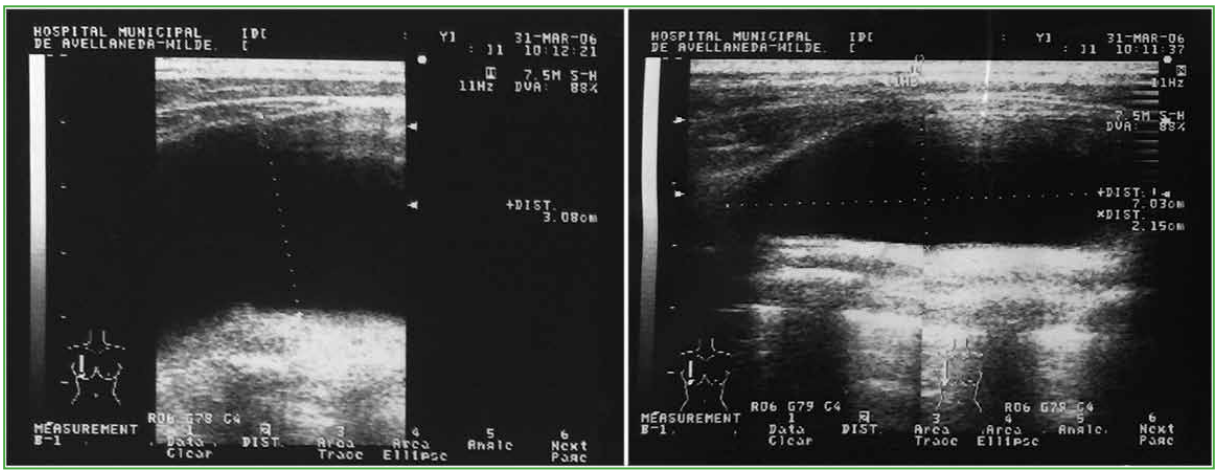

Figure 3. Ultrasound measurement of the bursa.

The mass was interpreted as a post-traumatic exacerbation of chronic bursitis secondary to an osteochondroma that had not produced symptoms prior to the event.

Surgical Treatment

Surgery consisted of resection of the bursa and the osteochondroma. Under general anesthesia, the patient was placed in oblique prone position (ventral decubitus), supported on the right hemithorax.

A longitudinal approach parallel to the inferomedial border of the scapula was used, approximately 10 cm in length and about 3 cm medial to the vertebral border of the scapula. The trapezius fibers were split, and the rhomboid major muscle was detached from the medial border of the scapula (Figure 4A). The scapula was mobilized laterally, revealing a large thick-walled bursa (Figure 4B), which was drained. Careful dissection was performed, and most of the bursa was resected.

Subperiosteal dissection allowed separation of the scapula from the chest wall to expose the osteochondroma (Figure 5A). The pleura was protected throughout the procedure. The osteochondroma was excised at its base with a chisel (Figure 5B), and a clear cleavage plane was observed. The lesion measured 3.5 x 2 cm (Figure 5C).

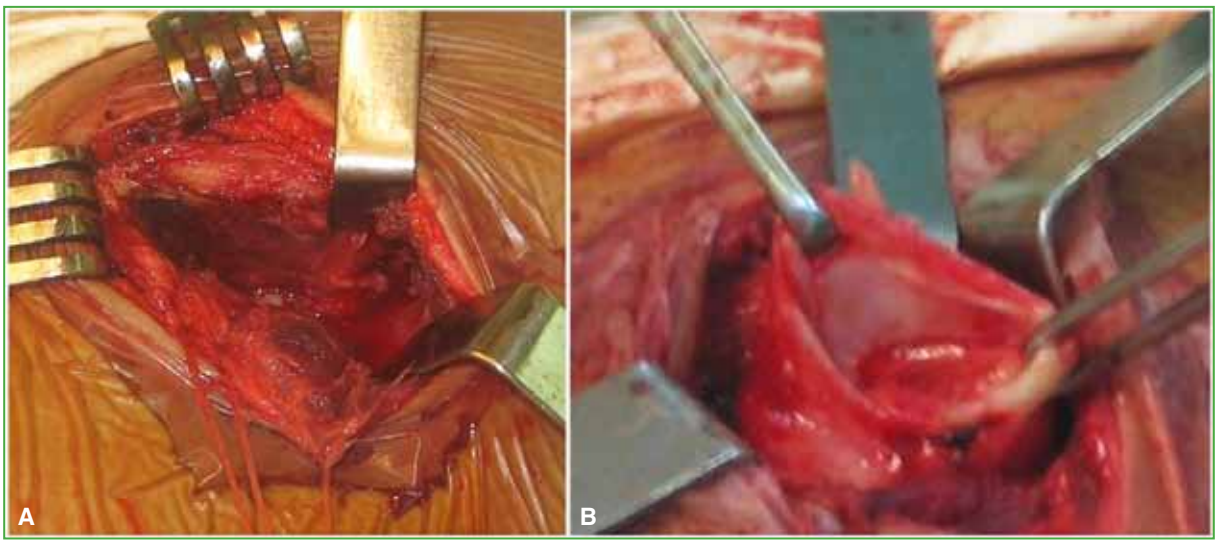

Figure 4. A. F Fibers of the rhomboid major detached and retracted medially. **B.** Bursa after drainage of synovial fluid. Note the thickness of its walls.

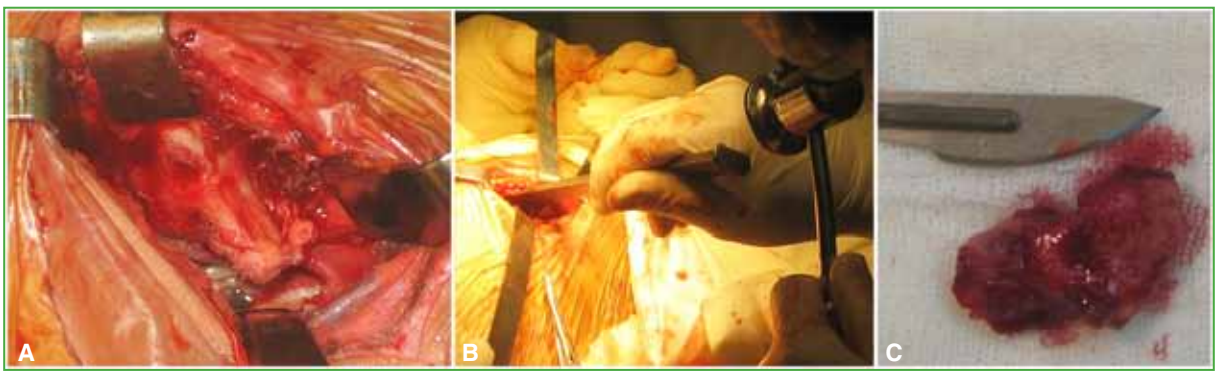

Figure 5. A. Osteochondroma on the deep surface of the scapula. **B.** Separation of the base of the osteochondroma from the scapular body with a chisel. **C.** Resected osteochondroma.

Electrocautery was applied to the insertion area of the osteochondroma pedicle. The rhomboid major was reinserted using transosseous tunnels, and the superficial muscular layer was repaired.

A postoperative chest radiograph ruled out pleural and pulmonary complications. In the immediate postoperative period, a sling was prescribed for 2 weeks, and the patient began protected shoulder mobility starting in the fourth week.

Histologic examination confirmed the typical features of an osteochondroma with no evidence of malignant transformation.

The patient progressed favorably, recovering full, asymptomatic range of motion. At 2-year clinical and radiographic follow-up, the results remained favorable (Figure 6).

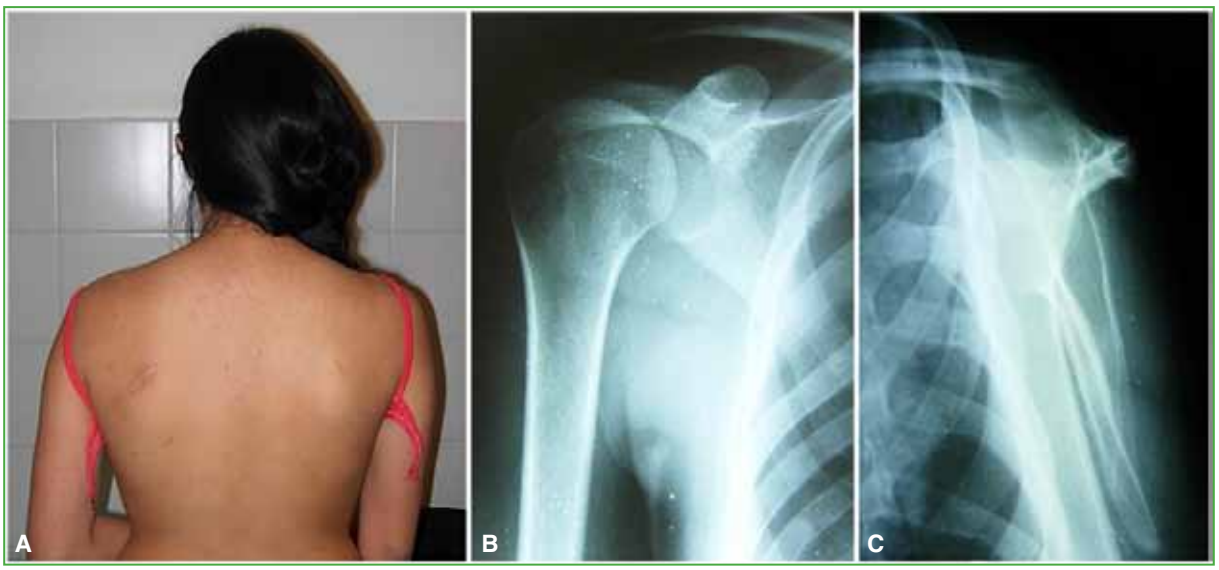

Figure 6. A. Dorsal view of the patient 2 years after surgery. Note the incision in the left scapular region. **B.** Follow-up shoulder radiograph, anteroposterior view. **C.** Follow-up shoulder radiograph, lateral view.

DISCUSSION

The first description of a large bursitis related to an osteochondroma is attributed to Billroth, in Germany, in 1863.[4] This first case, together with a second case, was presented by Fehleisen in Berlin at a surgical congress in 1885 under the title "Zur Casuistic der Exostosis Bursata."[4] This appears to have been the first use of that name.

In 1890, Orlow, in a German-language publication, classified exostoses into three types: solitary, multiple, and bursata.[3] He noted that, in the latter variety, the exostosis is surrounded by a bursa of such size that it is usually the reason for the patient's consultation. He reported cases located in the femur, humerus, and metatarsals.[3] In 1889, Bell[4] published the first English-language article describing a tumor located in the distal third of the femur.

In 1914, McWilliams[5] published the first case of a scapular osteochondroma associated with significant bursitis. That case is very similar to ours in terms of location and treatment, but involved an 18-year-old woman with a one-year history.

Since McWilliams' publication, approximately twenty cases have been reported worldwide (Table),[6-28] and only 10 explicitly mention the term "exostosis bursata."

We analyzed the 24 cases reported in 23 publications that document the presence of significant bursitis associated with a scapular osteochondroma. In 18 of them, the descriptions indicate that the bursae were large (Table, column 3). Only 4 of the 24 cases had a confirmed traumatic antecedent, and all 4 presented large bursae.[11,13,16,24] In our case, the formation of a large bursa occurred just 48 hours after the traumatic event. Among the 4 published cases with a traumatic history, only one had immediate bursa formation;[11] the remaining 3 patients were initially evaluated after an interval ranging from 7 weeks[13] to 6 months.[24]

Our patient also has long-term follow-up, unlike most published cases.[6-28]

When growth is rapid, as in the present case, other diagnoses must be ruled out, including infectious processes, malignant tumors, and fractures of the osteochondroma pedicle.

Table. Publications reporting large bursitis associated with scapular osteochondromas.

Author and year	Onset of symptoms	Trauma	Exostosis bursata
McWilliams[5] (1914)	1 year	No	?
El-Khoury and Bassett[7] (1979)	2 months	No	Yes
Borges et al.[8] (1981)	18 years	No	?
Charelli et al.[9] (1988)	?	?	Yes
Griffiths et al.[10] (1991)	20 years	No	Yes
Cuomo et al.[11] (1993)	Immediate	Yes	Yes
Ben Hamouda et al.[12] (1993)	?	No	Yes
Jacobi et al.[13] (1997)	7 weeks	Yes	Yes
Okada et al.[14] (1999)	1 month	No	Yes
Shackcloth and Page[15] (2000)	6 months	No	Yes
Chávez and Giménez Bascuñana[16] (2001)	4 months	Yes	Yes
Rahul et al.[17] (2014).	2 years	No	?
Mohsen et al.[6] (2006)	6 months	No	Yes
Yoo et al.[18] (2009)	3 months	No	Yes
Aalderink and Wolf[19] (2010)	15 years	No	Yes
Frost et al.[20] (2010)	?	?	?
Orth et al.[21] (2012)	"several months"	No	?
	"several years"	No	?
Ceberut et al.[22] (2013)	3 months	No	Yes
Sivananda et al.[23] (2014)	6 months	Yes	Yes
Flugstad et al.[24] (2015)	4 months	No	Yes
Ali et al.[25] (2016)	1 year	No	Yes
Ogawa and Inokuchi[26] (2018)	11 years	No	Yes
Tuncer et al.[27] (2018)	4 months	No	Yes

In long-standing conditions, it is necessary to differentiate the condition from Sprengel deformity when the bursa is located in the upper region of the scapula, and to consider the possibility of malignant transformation of the osteochondroma.

Although primary tumors of the scapula are rare, the risk of malignancy at this site has been reported to be higher than in other parts of the shoulder girdle.[29] The rate of malignant transformation of solitary osteochondromas of the scapula is approximately 2%.[29]

This study has the limitations inherent to a case report. Such articles are typically considered low level of evidence and tend to have low citation rates.[30] However, case reports also have strengths. In general, they can reveal findings that often go unnoticed in large series of patients.[30] In our particular patient, we describe a very rare presentation with growth that has been reported only once before; it is well documented and includes 2-year follow-up.

CONCLUSIONS

The formation of large bursae secondary to an osteochondroma is an uncommon phenomenon. In most cases, development is slow and progressive; however, abrupt onset may occur and requires a differential diagnosis that includes malignant transformation, infection, and fracture.

The presentation of "exostosis bursata" is not limited to scapular osteochondromas, and clinicians should be alert to this uncommon complication.

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H. Salamone ORCID ID: https://orcid.org/0009-0008-1095-4912
A. Vaccarelli ORCID ID: https://orcid.org/0009-0008-2854-7258
D. Márquez Grand ORCID ID: https://orcid.org/0009-0005-2725-6860
F. Alfano ORCID ID: https://orcid.org/0000-0003-1078-2600
D. Gómez ORCID ID: https://orcid.org/0000-0003-0258-6802

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