

# Painful Snapping Shoulder Complicating Soft Tissue Pseudotumor Secondary to Rib Osteochondroma: A Case Report

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Osteochondroma develop most commonly at distal femur, proximal humerus and proximal tibia, but the rib osteochondroma was reported less commonly. In this report, scapular snapping syndrome complicated by adventitious bursa and soft tissue pseudotumor surrounding the osteochondroma of the 6<sup>th</sup> rib body was treated successfully by surgical excision of them. We report this rare case with reviewing the relevant literature.

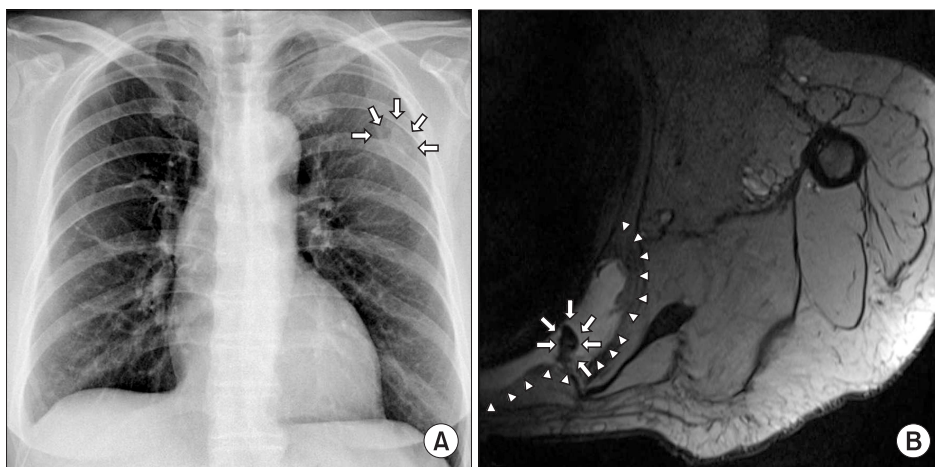
**Key words:** rib, osteochondroma, scapular snapping, soft tissue pseudotumor, adventitious bursa

Most of osteochondroma is asymptomatic and is initially noticed by non-tender palpable mass. It can affect any part of the body, but the common affected sites are distal femur, proximal humerus and proximal tibia. Sometimes repeated stimulation around mass causes painful idiopathic bursitis.<sup>1-5)</sup> Also in rare cases repetitive pressure and stimulation on nearby vessels cause pseudoaneurysm, acute ischemia, phlebitis, and if it develops in posterior lamina cord can be compressed.<sup>6-8)</sup> Authors are reporting a case of 6<sup>th</sup> decade female patient, without history of coagulopathy or vascular disease, who had

soft tissue mass subscapularly which caused pain and crepitus associated with scapular motion which is thought to be closely related with left 6<sup>th</sup> rib osteochondroma.

## Case Report

A fifty-one year old nonsmoking house wife visited out-patient clinic complaining of large palpable soft tender mass on medial margin of left scapula accompanying intermittent subscapular



**Figure 1.** On preoperative x-ray about 1.2 cm size exophytic bony mass (white arrow) is noted on the middle part of the left 6<sup>th</sup> rib (A). On MRI about 1.2×1 cm sized exophytic bony lesion (white arrow) in posterolateral arc of the left 6<sup>th</sup> rib with surrounding loculated fluid-signal like collection (white arrow head) is seen (B).

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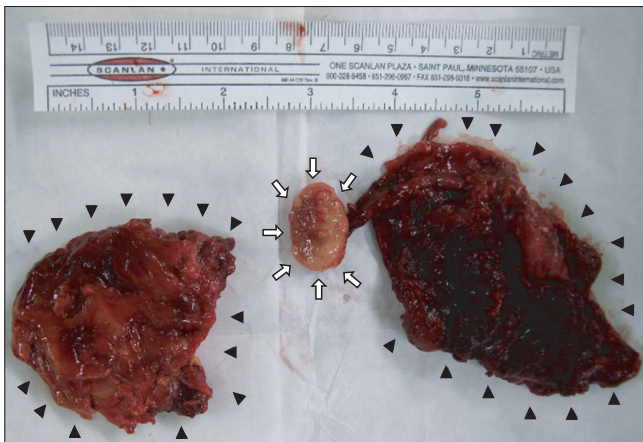
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**Figure 2.** Excised osteochondroma (white arrow) with surrounding soft tissue (dark arrow head) is shown. The surrounding soft tissue has soft and amorphous shape bursal sac and relatively hard pseudotumor, which cannot be demarcated well.

crepitus associated with scapular motion over a month. Laboratory studies disclosed no coagulopathy or abnormal platelet count, and there was no family history of bone tumor nor thrombophlebitis. On plain radiograph, a 1.2 cm sized nonpedunculated osteochondroma was found on mid-posterior junction area of left 6<sup>th</sup> rib, but punctuated calcification was not seen around it (Fig. 1A). On T1 and T2-weighted images of MRI, mass had high signal intensity, and separately 10×13 cm sized soft tissue mass containing liquefied material around the mass was found (Fig. 1B). There was no neurologic symptom.

For excisional surgery the patient was placed on prone position. Dissection was carried out along the medial border of trapezius and inferior margin of scapula. When the soft mass was reached, it was excised together with osteochondroma. On gross examination, 10×10 cm sized soft tissue mass with well demarcated border was seen which adhered to surrounding tissue minimally (Fig. 2). It was speculated that osteochondroma on left 6<sup>th</sup> rib, rubbing the subscapular muscles and gave damage the muscles with repeated bleeding and hematoma formation. Bleeding and resulting maturation of hematoma led to the non-infectious inflamed mass. Based on these findings it was thought that soft tissue lesion initially developed in subscapular region and expanded to extra-scapular space.

Histologically, lining cells of bursa showed inflammation, and soft tissue mass was found to be scarring mass with inflammation. Wide and irregular tidemark of the cartilaginous cap of osteochondroma was observed (Fig. 3). At three weeks after operation, the patient did not complain of pain nor crepitus.



**Figure 3.** Histologic section shows thickened bone and cartilage fragment. The mature bone stalk is covered with well differentiated cartilaginous cap with irregular tidemark (H&E, ×40).

## Discussion

Osteochondroma precipitates variable clinical symptoms. Osteochondromas develop most commonly at distal femur, proximal humerus and proximal tibia, but the rib osteochondroma was relatively reported less commonly. Clinical problems of most of the rib osteochondroma develop in the thoracic cage such as hemothorax, pneumothorax and spinal cord compression (Table 1). Although snapping scapula complicated by scapular osteochondroma has been often reported, that caused by rib osteochondroma has not been reported in the literature yet. The current authors' case is thought primarily related with left 6<sup>th</sup> rib osteochondroma, and caused snapping scapula complicating subscapular soft tissue pseudotumor.<sup>1-3)</sup>

Painful scapulothoracic crepitus and bursitis have been rarely reported, but are the examples of complications that can develop in thoracic joint.<sup>7-10)</sup> It is important to know that there are two types of crepitus-precipitating conditions which are slightly different in character. Milch has divided scapulothoracic crepitus in two categories.<sup>3,4)</sup> The first one is a bony lesion in scapulothoracic space accompanying pain with crepitus of high tone and squeaking sound.<sup>4)</sup> Milch named this state as snapping scapula, and on another subtype is the scapulothoracic crepitus which causes more mild symptoms by soft tissue abnormality like bursa.<sup>9)</sup> But it is important to understand that painful scapulothoracic bursitis can have no crepitus, and that scapulothoracic crepitus can be heard physiologically. It can be helpful in diagnosing and providing treatment for these two diseases if a doctor can keep in mind that they are related but different pathologic find-

Table 1. Review of the Cases Reported in the International Literature with Rib Osteochondroma

Case	Author	Age	Type	Location	Clinical problem
1	Pelc HJ, <i>Pediatr Surg Int.</i> 2014	2	Hereditary multiple	Rt. 8 <sup>th</sup> rib	Asymptomatic deformity
2	Simpson JF, <i>J Clin Diagn Res.</i> 2014			1 <sup>st</sup> rib	Horner's syndrome
3	Liu W, <i>J Pediatr Orthop B</i> 2013	42	Hereditary multiple	Lt. 4 <sup>th</sup> rib	Kyphosis, pain
4	Chen J, <i>Skeletal Radiol.</i> 2013	7	Solitary		Lung injury after trauma
5	Amritanand R, <i>BMC Musculoskelet Disord.</i> 2012		Hereditary multiple	Lt. 2 <sup>nd</sup> rib	Spinal cord compression, scoliosis
6	Shim JH, <i>Bol Asoc Med P R.</i> 2011	58	Solitary	12 <sup>th</sup> rib	Spinal cord compression
7	Marino-Nieto J, <i>H Vasc Surg.</i> 2011	7	Solitary	Lt. 4 <sup>th</sup> rib	Painless swelling
8	O'Brien PJ, <i>Gen Thorac Cardiovasc Surg.</i> 2010		Solitary	1 <sup>st</sup> rib	Thoracic outlet syndrome
9	Kikuchi R, <i>J Pediatr Surg.</i> 2010	73	Solitary	Rt. 4 <sup>th</sup> rib	Asymptomatic
10	Khosla A, <i>Spine</i> 2008	17	Solitary	Lt. 5 <sup>th</sup> rib	Pneumothorax
11	Mannoji C, <i>Rev Mal Respir.</i> 2008	10	Hereditary	Lt. 8 <sup>th</sup> rib	Paraparesis
12	Codron F, <i>J Pediatr Surg.</i> 2005	22	Hereditary	7 <sup>th</sup> rib	Hemothorax
13	Pham-Duc ML, <i>J Pediatr Surg.</i> 2005	15	Solitary		Hemothorax
14	Cowles RA, <i>Pediatr Radiol.</i> 2005	6	Hereditary	3 Lt. rib	Hemothorax, pericardial effusion
15	Jin W, <i>Eur J Cardiothorax Surg.</i> 2003	11	Solitary	Lt. 6 <sup>th</sup> rib	Hemothorax, Lacerated left hemidiaphragm
16	Alifano M, <i>Ann Thorac Surg.</i> 2003	15	Solitary	Lt. 4 <sup>th</sup> rib	Hiccup, chest pain
17	Hajjar WM, <i>Eur J Cardiothorax Surg.</i> 2001				Hemorrhagic shock Repetitive chest infection
18	Buchan KG, <i>Acta Chir Orthop Traumatol Cech.</i> 2000	21	Solitary	Lt. 4 <sup>th</sup> rib	Hemothorax
19	Steno B, <i>Rev Chir Orthop Reparatrice Appar Mot.</i> 1998	21	Solitary	1 <sup>st</sup> rib	Asymptomatic
20	Cottalorda J, <i>Spine</i> 1998	15	Hereditary		Chest pain
		11	Solitary		Asymptomatic
21	Tang WM, <i>J Bone Joint Surg.</i> 1997	15	Hereditary	Rt. 12 <sup>th</sup> rib	Spinal cord compression
22	Wright JM, <i>Ann Thorac Surg.</i> 1997	19	Hereditary	Lt. 2 <sup>nd</sup> rib	Haemothorax
23	Simansky DA, <i>Ann Thorac Surg.</i> 1996	17	Solitary		Haemothorax, Lacerated diaphragm
24	Gupta NK, <i>Thorax.</i> 1994			1 <sup>st</sup> rib	Exostosis bursa
25	Harrison NK, <i>Surg. Neurol.</i> 1994	36	Solitary	Lt. 4 <sup>th</sup> rib	Haemothorax
26	Kane PJ, <i>Nihon Kyobu Geka Gakkai Zasshi.</i> 1991				Spinal cord compression
27	Suzuki T, <i>Rev Chir Orthop Reparatrice Appar Mot.</i> 1990	21	Hereditary	Rt. 6 <sup>th</sup> , 7 <sup>th</sup> rib	Pneumothorax
28	Rosset P, <i>Ann Thorac Surg.</i> 1989		Solitary	1 <sup>st</sup> rib	Thoracic outlet syndrome
29	Teijeira FJ, <i>Kyobu Geka.</i> 1989	7	Hereditary	Lt. 6 <sup>th</sup> rib	Hemothorax
30	Koike R, <i>Orthopedics.</i> 1984	51		1 <sup>st</sup> rib	Asymptomatic
31	Cain PR, <i>Can Med Assoc J.</i> 1948			1 <sup>st</sup> rib	Pseudoarthrosis with clavicle

ings. Mauclore has classified crepitus as three subtypes –froissement (physiologic friction rub), frottment (friction rub that can be more pathologic) and craquement (pathologic friction rub).<sup>3)</sup>

In most cases of bursitis symptomatic improvement was shown after conservative care, but for bony lesion operative procedures has shown better prognosis compared to conservative treatment. The current authors' case was an example of typical bony snapping

scapula with painful uncomfortable symptoms that needed operative procedures.

Histologically, the soft mass in the current case was found to be the inflamed scar tissue, associated with bursa. Normal bursas in thoracoscavular joint are located in supraserratus and subserratus, and these can be easily found on arthroscope. Adventitious bursa is not a normal structure, but can be developed over the cartilaginous

cap of the osteochondroma and it can be inflamed in thoracoscapular joint.<sup>10)</sup> Commonly affected site is superomedial aspect of scapula. In the current case, repetitive movement of scapula over osteochondroma of the 6<sup>th</sup> rib caused injury of subscapular muscles and repetitive bleeding, which formed hematoma and adventitious bursa, and finally resulted in pseudotumor development. Histologically osteochondroma had irregular tidemark implying that it is not a normal articular cartilage but osteochondroma.

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# 늑골의 골연골종에 속발된 가성 연부조직 종괴에 합병한 통증성발음성 건갑증상증후군

문명상 • 전달재 • 김성수 • 윤민근

제주한라병원 정형외과

골연골종은원위 대퇴골, 근위 상완골, 근위 경골에 흔히 발생한다고 알려져 있으며 늑골에 발생한 골연골종은 상대적으로 드물게 보고되고 있다. 본 증례에서는 좌측 제6늑골 체부에 생긴 골연골종에 의한 우발성 점액낭과 그 주변에 생긴 연부조직 가성 종류가 발음성 건갑증후군 증후를 야기하여 관혈적 제거수술을 시행한 1례를 문헌 고찰과 함께 보고하고자 한다.

**색인단어:** 늑골, 골연골종, 발음성 건갑, 연부조직 가성 종류, 우발성 점액낭

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