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### RESEARCH ARTICLE

#### BILATERAL ELASTOFIBROMA OF THE SCAPULA: A CASE REPORT AND LITERATURE REVIEW

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#### Abstract

**Introduction:** Elastofibromas are ill-defined, benign lesions typically located on the inferior pole of the scapula underneath the serratus anterior and latissimusdorsi. Elastofibromas are treated surgically to relieve pain and patients can regain range of motion in the shoulder. Bilateral scapulaelastofibromas are extremely rare. To the best of our knowledge, this report details the first case of symptomatic bilateral elastofibromas of the scapula in a patient younger than 60 years of age.

**Case presentation:** A 51-year-old woman with diabetes mellitus and hypertension presented to the orthopedic clinic at King Saud University Medical City in August 2022. The patient had begun experiencing dull bilateral shoulder pain, with swelling which began five years. Patient denied any constitutional symptoms. A physical examination revealed a 7×8cm mass on the right scapula and a 6×7cm mass on the left scapula. There was no tenderness over the mass, and in both shoulders, the range of motion was restricted. MRI of both shoulders revealed increased intensity in the T1 and T2 axial and coronal cuts (Figures 3A-D). The right-side mass was 8×9cm, and the left-side mass was 8×7cm. Excisional biopsy is done for both lesions in separate time and sent for histopathology which confirmed the diagnosis of Elastofibroma. Also, the patient regains her full functionality of both shoulders, and the pain was resolved

**Conclusion:** Elastofibroma can present on both shoulders, lead to chronic shoulder pain and decrease the functionality of the shoulders. Elastofibroma should be diagnosed by MRI and treated surgically by excision to improve the pain and functionality.

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#### Introduction:-

Elastofibromas are benign, ill-defined lesions typically found beneath the serratus anterior and latissimus dorsi muscles, primarily on the inferior pole of the scapula. (1) Patients with these lesions often present with complaints of mass, pain, stiffness, and scapula snapping. (2) Magnetic resonance imaging (MRI) is the preferred diagnostic tool for elastofibromas, showing low signal intensity in T1 and T2 compared to adjacent muscles. Surgical intervention is typically necessary to alleviate pain and restore shoulder range of motion. (3) Bilateral scapula elastofibromas are exceptionally rare, and this case report details the first instance of symptomatic bilateral elastofibromas in a patient under 60 years of age.

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**Case presentation**

A 51-year-old woman with diabetes mellitus and hypertension presented to the orthopedic clinic at King Saud University Medical City in August 2022. She had begun experiencing dull bilateral shoulder pain, which began five years before her visit. Also, the pain radiated into both proximal arms. The patient previously managed the pain with paracetamol but reported that it had been ineffective for the past year.

A physical examination revealed a 7×8 cm mass on the right scapula and a 6×7 cm mass on the left scapula (Figure 1). There was no tenderness over the mass, and in both shoulders, the range of motion was restricted. The X-ray results were unremarkable (Figure 2); however, MRI of both shoulders revealed increased intensity in the T1 and T2 axial and coronal cuts (Figures 3A-D). The right-side mass was 8×9 cm, and the left-side mass was 8×7 cm.

We informed the patient that resection was required to improve range of motion and reduce pain. We began with the right side and excisional biopsy is done and sent the lesion for histopathology, which confirmed the elastofibroma diagnosis. The left side was resected three months later, and histopathology also confirmed the elastofibroma diagnosis. After the second resection, the patient was regularly followed up in the clinic for six months. There were no surgical site infections, the pain was completely relieved, and the patient's bilateral range of motion improved significantly. A postoperative X-ray 6 months post-op was obtained to follow up on her progress (Figure 4).

**Physical examination**

6 months post-operation. The patient was examined, appeared healthy, and showed no signs of cachexia. Local examination of both shoulders revealed no skin changes, erythema, muscle atrophy, or obvious deformities. Palpation revealed ill-defined, non-tender, non-mobile masses measuring 7×8 cm on the right scapula and 6×7 cm on the left scapula. There was no tenderness over prominent bony or soft tissue, and no excess warmth was noted on either shoulder.

**Active movement:**

**Right shoulder:** The forward flexion had increased to 120°, abduction had increased to 110°, internal rotation had increased to Sacral 1 vertebra, and external rotation had increased to 50°.

**Left shoulder:**

The forward flexion had increased to 130°, abduction had increased to 120°, internal rotation increased to Lumber 4 vertebra, and external rotation increased to 60°.

**Passive movement:****Right shoulder:**

The forward flexion had increased to 140°, abduction had increased to 110°, internal rotation had increased to Lumber 4 vertebra, and external rotation had increased to 60°.

**Left shoulder:**

The forward flexion had increased to 130°, abduction had increased to 120°, internal rotation had increased to Lumber 4 vertebra, and external rotation had increased to 60°.

**Special tests**

Near-impingement test and internal-impingement test were positive for both shoulders.

Subscapularis muscle tests (lift-off and belly-press) were negative.

Supraspinatus muscle test (Jobe's-test) was positive for the right shoulder only.

Infraspinatus muscle test (external rotation lag sign) was negative for both shoulders.

Teres minor strength was intact in both shoulders.

As shown in Figures 3A-D, Both infrascapular regions exhibited large, deep, and relatively well-defined soft-tissue lesions beneath the serratus anterior and latissimus dorsi muscles. The left-side lesion was larger. The right-side

mass measured approximately 8x2.5x9 cm and displayed increased intensity in T1-weighted images due to mixed fibrous and fatty components. There was a decrease in intensity in the T2-weighted images, likely reflecting secondary traumatic changes, especially on the left side. No invasive or destructive processes were observed in adjacent osseous and soft-tissue structures.

### **Impression**

The patient consented to elastofibroma excision. We began with the right side due to greater pain and decreased range of motion on that side.

### **Surgical technique**

With the patient in a prone position, paring and draping were performed in a sterile manner. Using the Judet approach, curved incision was made, beginning from the posteriolateral lip of the acromion and extending to the spine of the scapula. Superficial dissection was performed until the posterior deltoid muscle—the origin of the deltoid muscle from the scapula spine—was detached. This was then retracted laterally. After identifying the infraspinous and teres muscles, the former was retracted superiorly, and the latter was retracted inferiorly. The soft-tissue lesion was identified and resected (Figure 5). Closure was achieved layer-by-layer, and pressure dressing was applied to avoid the risk of seroma. Postoperative examination confirmed that distal neurovascular was intact. One week later, the histopathology report revealed:

### **Gross description(verified)**

The specimen was submitted in formalin and labeled as follows: lipomatous mass from the right scapula. It consisted of a piece of fibrofatty tissue measuring 14.0x8.0x2.0cm. The outer surface was a whitish yellow-tan color and irregularly shaped. Sectioning revealed heterogeneous, ill-defined, rubbery gray-white fibrous areas mixed with yellow-streaked adipose-tissue. Representative sections of the specimen were submitted in seven cassettes.

### **Diagnosis(verified)**

The excised right scapula mass was diagnosed as an elastofibroma. There was no evidence of malignancy.

The patient was seen in the clinic two weeks post-excision. The wound was completely healed, and the patient was referred for physical-therapy. Two months after the first excision, the patient underwent a left-side excision using the same surgical technique.

### **Gross description(verified)**

The specimen was received in formalin and labeled as follows: fibroma left scapula. It consisted of three irregular fragments of fibroadipose-tissue measuring 12.0x11.0x2.5cm (Figure 6). No orientation was provided. The cut section of the largest piece revealed a greasy surface with fibrosing areas. Representative sections of the specimen were submitted in six cassettes.

### **Diagnosis(verified)**

The histological features of the excised left scapula mass were consistent with an elastofibroma. There was no evidence of malignancy.

The patient was seen in the clinic six months post-excision. She had completed physical therapy, and her pain had completely resolved. The patient's range of motion was completely restored, and she no longer had near-impingement in either shoulder.

### **Discussion:-**

Elastofibromas are rare, slow-growing soft-tissue tumors. According to the 2002 World Health Organization (WHO) classification, elastofibromas are benign fibroblastic/myofibroblastic soft-tissue tumors.<sup>[4]</sup> These ill-defined lesions are usually located in the inferior pole of the scapula, deep in the serratus anterior and latissimus dorsi.<sup>[1]</sup> However, they can be found in other locations, including the deltoid muscle, the greater trochanter of the humerus, and the olecranon.<sup>[5]</sup> Elastofibromas are rare lesions found in 2% of people over 60 years of age.<sup>[6]</sup>

Elastofibromas are most common in female patients. Patients typically present with a mass as well as stiffness, pain, scapula snapping, and decreased range of motion in the shoulder.<sup>[2]</sup> In our case, an older woman with multiple

comorbidities presented with chronic pain that lasted for multiple years, affected her day-to-day activities, and was not relieved by over-the-counter pain medications.

Radiological investigations play a crucial role in diagnosis, in addition to clinical findings. In the T1 and T2 MRI results, lesions typically appear with a low-intensity signal comparable to that of skeletal muscles. In contrast, fatty tissue appears as high-weighted signals on T1 images and intermediate signals on T2 images. Therefore, a unique streaking pattern indicates an elastofibroma diagnosis. MRI has a positive predictive value of 93.3% and a sensitivity of 100%.<sup>[3]</sup>

If the MRI findings are insufficiently clear for diagnosis, a biopsy is usually performed. If anything atypical is found, a biopsy is performed to confirm the diagnosis.<sup>[8]</sup> Histologically, it has been described as tissue made of collagen and fragments of eosinophilic fibers combined into a globe or disc and associated with mature fat cells.<sup>[9]</sup> In our case, histopathology sectioning revealed heterogeneous, ill-defined, rubbery, gray-white fibrous areas mixed with yellow-streaked adipose tissue.

To differentiate between elastofibroma and other neoplasms or pseudotumor, ensuring that there is no mitotic activity or atypia is critical.<sup>[4,10]</sup> For patients with asymptomatic incidental presentation and a mass smaller than 5cm, periodic clinical follow-up is sufficient.<sup>[11]</sup>

The surgical approach for elastofibroma involves completely resecting the mass with safety margins, and it depends on the presence of symptoms or an unclear diagnosis.<sup>[12]</sup> We performed surgery in our case because of the symptomatic aspects of the lesions, and the excisions were complete. The postoperative course is usually simple, and the most frequent complication is hematoma from the subscapular region's hypervascularization.<sup>[13]</sup> Our patient had no complications. The prognosis for elastofibroma is excellent. Recurrent cases due to incomplete excision represent an extremely low number of incidents.

**Figure 1:-** An image of the mass obtained during the clinical examination.



**Figure 2:-** An anterior-posterior X-ray obtained during the patient's first clinical visit.



Figure 3:-

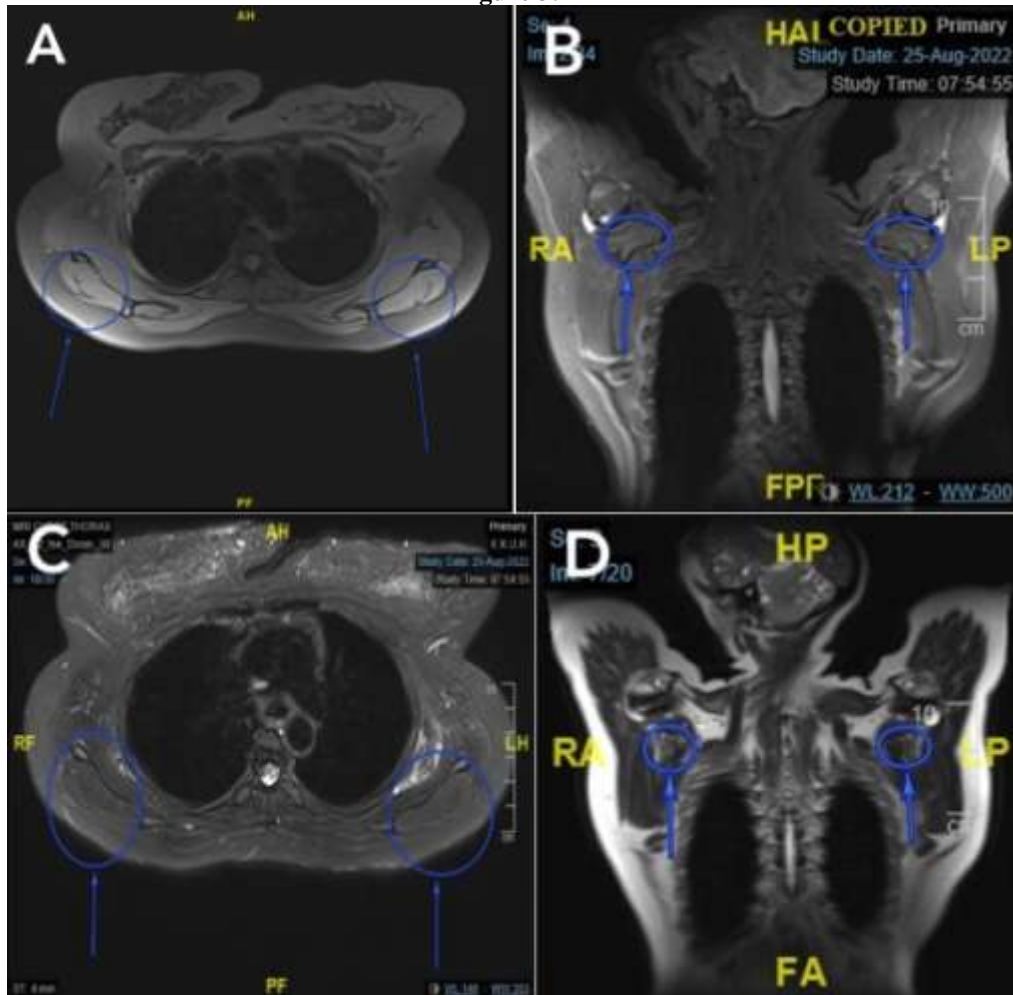
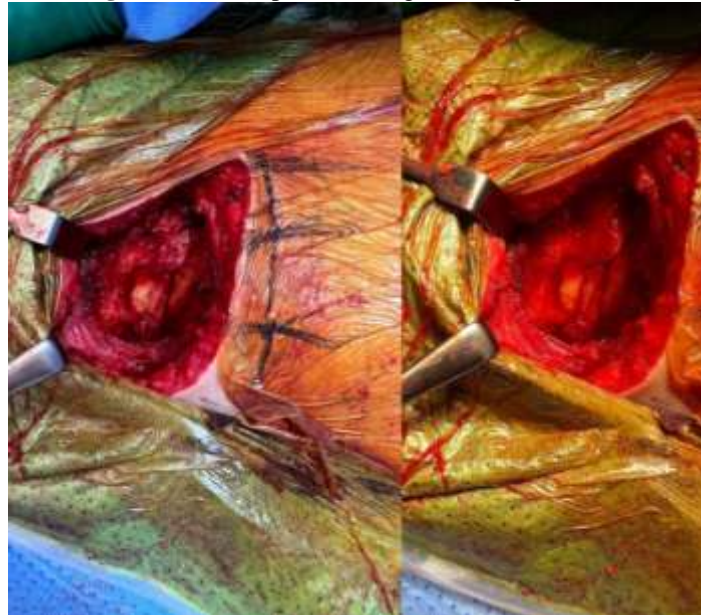


Figure 3A showing MRI T1 axial cut  
Figure 3B showing MRI T1 coronal cut  
Figure 3C showing MRI T2 axial cut  
Figure 3D showing MRI T2 coronal cut

Figure 4:- A post operative Xray done after 6 months of the operation.



**Figure 5:-** Intra operative image showing the mass.



**Figure 6:-** Gross image obtained of the mass.



**Conclusion:-**

Scapula elastofibromas can be bilateral, and patients can experience bilateral shoulder pain and decreased range of motion. This type of lesion should be diagnosed by using MRI, and surgical excision should be performed to relieve pain and restore range of motion.

**Acknowledgment:-**

Not applicable.



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