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Research Article

# Preventing the Development of Recurrence and Postoperative Seroma of Elastofibroma Dorsi

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## Abstract

**Objectives:** Elastofibroma dorsi is a benign and infrequent tumor of uncertain etiology usually located at the subscapular region. We present our experience in the treatment of elastofibroma dorsi.

**Methods:** We conducted a retrospective study of 20 marginal excisions in 14 patients with the diagnosis of elastofibroma dorsi during a period of seven years. All patients underwent a marginal excision and also had flat silicone suction drains in the surgery site with pressure wound dressing to avoid seroma. Clinical parameters including age, gender, body mass index, type and duration of symptoms, radiological method of diagnosis, side and size of tumor, extent of surgical margin, complications and recurrence were examined.

**Results:** The patients are 4 male and 10 female with a median age of 54.2 years. Six patients presented with bilateral lesions. Symptoms are pain during movement and snapping scapula lasting for approximately nine months. The overall mean of tumor volume is 332.2 $cm^3$. Overall free surgical margin has an average of 1.14 cm. The only postoperative complication is a seroma in one (5%) patient. No patient had recurrence.

**Conclusion:** Current treatment modality of elastofibroma dorsi is a marginal excision. Flat suction drains in the surgery site and pressure wound dressing is of particular importance to prevent the most common postoperative complication.

**Keywords:** Elastofibroma dorsi, excision, seroma, recurrence

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Elastofibroma dorsi (ED) is a benign, infrequent and slow-growing soft tissue tumor of uncertain etiology. It is usually located at the inferior pole of scapula beneath the latissimus dorsi and serratus anterior muscles.[1]

ED often presents as an ill-defined mass causing symptoms such as pain, swelling, stiffness and snapping scapula. Diagnosis of ED stands on the ground of meticulous physical examination combined with radiological evaluation achieved by computed tomography (CT) or magnetic resonance imaging (MRI).[1–3]

Asymptomatic lesions do not require excision since malignant transformation of ED has never been described. However, close follow-up is mandatory for the differential diagnosis of sarcomas and desmoid tumors. Marginal excision is recommended in cases with severe pain, discomfort and physical strain.[2]

The current literature consists of only limited number of patients and data related to this entity. Herein, we present our experience in the management of ED.

## Methods

We conducted a retrospective study to clarify the treatment strategy and outcomes in 14 patients who underwent a total of 20 marginal excisions with the diagnosis of ED in our clinic between April 2010 and May 2017.

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All patients were evaluated in terms of age, gender, body mass index (BMI), type and duration of symptoms, radiological method of diagnosis, tumor size, tumor site, extent of surgical margin, complications and recurrence.

All cases were assessed with clinical history, physical examination and radiologic studies. We did not approve pre or peroperative histological evaluation because none of the masses presented with atypical clinical features or rapid enlargement within a short period of time.

Surgical treatment was only performed for symptomatic lesions. All tumors were excised along with the surrounding fatty tissue leaving safe margins under general anesthesia. Diagnosis was confirmed by postoperative histopathologic study. Bilateral tumors were excised at the same session.

All patients had flat silicone suction drains in the surgery site and pressure wound dressing during the postoperative three days to avoid any seroma. The follow-up period was 12 to 36 months after operation.

## Results

We have 4 male (28.5%) and 10 female (72.5%) patients with a median age of 54.2 years (range, 39-71 years). Lesions are bilateral in six (42.8%), left – sided in three (21.4%) and right-sided in five (35.8%) patients.

None of the patients showed a family history of ED, a trauma or a physical activity causing chronic mechanical stress. Physical examination revealed a soft density mass located inferior to the tip of scapula. Main symptom is pain in movement in 6 (42.9%), snapping scapula in 5 (35.7%) and both in 3 (21.4%) patients. Duration of symptoms is 9.5 months in average (range, 4-22 months). The overall mean BMI is 29.9 kg/m$^2$ for all patients, and 31.8 kg/m$^2$ for cases who have bilateral ED. CT in 3 (21.4%) patients, and MRI in 11 (78.6%) patients confirmed the diagnosis.

Considering that the major part of the mass presents an iceberg appearance, we approved to appraise its size in volume rather than only the surface area by multiplying width, length and depth. Volume of tumor had a mean value of 332.2 cm$^3$ (range, 162-514). Surgical margin had an average of 1.14 cm in whole group of patients. Data relating the demographic and clinical analysis of patients were given in Table 1.

We have no mortality or morbidity. One patient (5%) developed a seroma following discharge. The patient was treated with CT guided percutaneous drainage without any recurrence.

**Table 1.** Details of 14 patients with elastofibroma dorsi

| Age/ Gender | BMI (kg/m$^2$) | Side | Symptom | Radiological Study | Duration of symptoms (months) | Volume of tumor (cm$^3$) | Surgical margin (cm) | Complication |
|---|---|---|---|---|---|---|---|---|
| 56/F | 31.6 | Bilateral | Pain | CT | 11 | 426 | 1.4 | – |
| | | Snapping scapula | | | | 274 | 2.1 | |
| 55/M | 30.1 | Right | Pain | MRI | 7 | 288 | 0.7 | – |
| | | Snapping scapula | | | | | | |
| 61/F | 31.4 | Left | Pain | MRI | 4 | 214 | 1.1 | – |
| 39/F | 29.4 | Right | Snapping scapula | MRI | 8 | 238 | 0.8 | – |
| 53/M | 32.8 | Bilateral | Pain | MRI | 6 | 384 | 1.5 | – |
| | | | | | | 328 | 1.7 | |
| 59/F | 31.9 | Bilateral | Snapping scapula | MRI | 22 | 248 | 1.3 | – |
| | | | Pain | | | 186 | 0.9 | |
| 55/M | 28.7 | Left | Snapping scapula | CT | 5 | 464 | 0.8 | Seroma |
| 39/M | 23.4 | Right | Pain | MRI | 6 | 390 | 1.2 | – |
| 71/F | 31.7 | Bilateral | Snapping scapula | MRI | 10 | 324 | 0.9 | – |
| | | | | | | 298 | 1.2 | |
| 56/F | 27.8 | Left | Pain | MRI | 8 | 162 | 1.3 | – |
| 49/F | 29.1 | Right | Snapping scapula | CT | 11 | 248 | 0.7 | – |
| 53/F | 32.4 | Bilateral | Pain | MRI | 13 | 482 | 1.1 | – |
| | | | | | | 312 | 1.3 | |
| 50/F | 28.3 | Right | Pain | MRI | 9 | 514 | 0.7 | – |
| 43/F | 30.4 | Bilateral | Snapping scapula | MRI | 14 | 382 | 1.4 | – |
| | | | | | | 502 | 0.7 | |

F: Female; M: Male; BMI: Body mass index; CT: Computered tomography; MRI: Magnetic resonance imaging.

The follow-up of patients did not reveal any recurrence of excised tumors. However, two patients who refused surgery, showed newly developing ED on the opposite side of initial surgery on physical and radiological examination.

## Discussion

ED is a rare, benign tumor of connective tissue with a most common location at the subscapular region. It is also reported to develop in other sites like foot, cornea, stomach, omentum, deltoid muscle and olecranon.[1]

Incidence of ED has been reported as high as 2%. In addition, autopsy series by Jarvi and Lansimies has reported this rate as 24% for females and 11% for males.[2] Larger studies on elastofibromas have found ED to be predominant in females over age of 50 years.[3–5] Similarly, most of our patients accounting for 72.5% are female with a median age of 54.2 years.

Development of ED is considered to involve an overproduction of collagenous connective tissue with a degeneration of collagen fibres and overproduction of immature elastic tissue. Although previous studies emphasize genetic predisposition or repetitive minor trauma during heavy labor, none of our patients have a family story or a hard and prolonged physical activity.[6] Considering BMI values, our patients are overweighted. Moreover, our cases with bilateral lesions are within the limits of obesity. We think that this data requires further researches relating the weight of patients and the etiology of ED.

Presentation of ED may be bilateral in frequency up to 60% whereas 42% of our patients have bilateral lesions. Moreover, all of our cases have classical subscapular localization of tumors as commonly mentioned in the literature.[4–7]

Predominant symptoms of ED are pain, swelling and clicking of scapula.[2–7] Similarly, the most common symptom in our patients is pain in movement and snapping scapula with a rate of 42.9% and 35.7%, respectively.

ED might be diagnosed on the basis of careful physical examination and characteristic imaging features. Assessment of the patients usually shows a palpable mass located at the tip of scapula accompanying pain and clicking sensation on the mobilization of the arm. For an accurate diagnosis of possible bilateral lesions, the patient should be preferably positioned to stand with arms adducted and slightly elevated forward to make the tumor protrude and easy to palpate.[8] Diagnosis of ED becomes absolutely definite with radiologic findings. MRI clearly identifies the alternating pattern of fibrous fatty tissue, as well as the patognomonic location of the tumor. On T1 and T2 weighted sequences, the fibrous tissue generates a low-intensity signal whereas fatty tissue produces a high signal on T1-weighted images.[9] CT is also successful in clarifying the presence of a heterogeneous soft-tissue mass beneath scapula. Although some authors advocate priority of MRI in terms of sufficient contrast resolution for small sized elastofibromas, CT was still diagnostic in three of our patients. Radiologic presentation of ED was given in Figure 1.

Treatment modality of ED consists of conservative and surgical approaches. Patients lacking complaints or bearing moderate symptoms may be observed. However, surgical excision is recommended in patients with pain, functional disability or tumor dimensions exceeding 5 cm in diameter.[6,8,10] In our series, all patients have severe pain, snapping scapula or both for an average of 9.5 months before surgery. Preoperative biopsies should be taken into consideration in the presence of rapid enlargement of tumor within a short period of time and evidence of any uncertain malignancy obtained in radiologic studies. None of our patients had a pre or peroperative biopsy because they do not have a history of rapid enlargement of tumors. Intraoperative appearance of ED is a firm, rubbery and nonencapsulated mass frequently attaching to the periosteum of the underlying ribs and the tip of the scapula (Fig. 2). Although ED is accepted to be a benign tumor and the local recurrence is very rare, surgery should be applied within

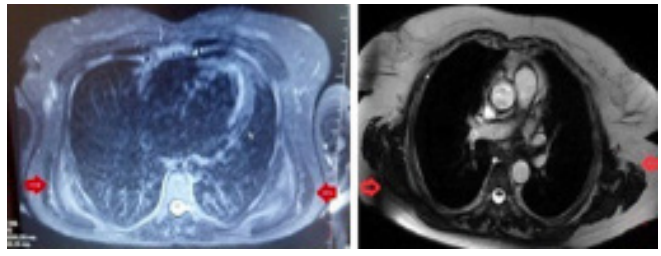

**Figure 1.** MRI images of ED.

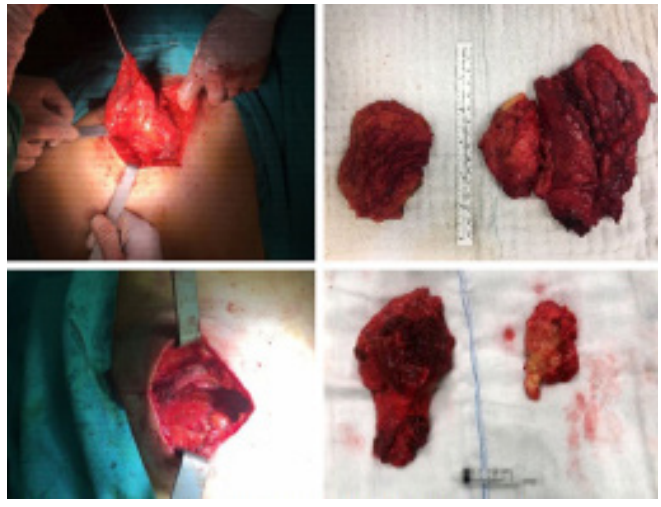

**Figure 2.** Macroscopic view of ED.

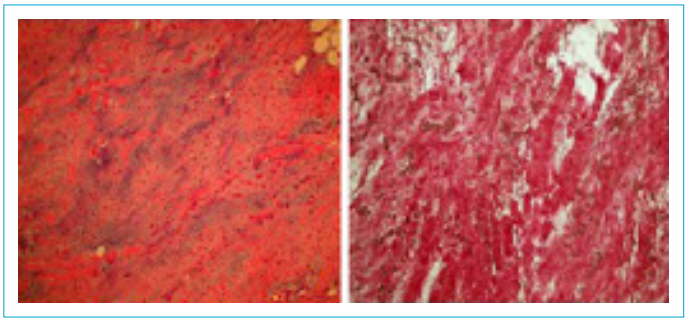

**Figure 3.** Microscopic appearance of ED.

negative margins. Although the current literature does not include a definitive agreement for the extent of the safe surgical margin, we predict that average of 1 cm obtained in our series prevented us from encountering any relapses.

Histologically, all tumors were composed of fibrous and collagenous strands and densely packed elastic fibres. Hematoxylin and eosin stain shows randomly distributed elastic fibres admixed with collagen and adipose tissue whereas Elastica van Gieson stain highlights fibres as dark brown and black (Fig. 3).[10–12]

Previous studies reported the incidence of posteroperative complications ranging from 8% to 36% for seromas, 20% to 37% for hematomas and 2% to 11% for wound infection, respectively.[3–5,10] Mostly larger tumor size and lack of wound drainage appliance are accepted as risk factors that may affect the development of these events.[10,13] Our series included only one patient who developed a seroma (5%) and was easily treated with CT guided percutaneous drainage. Low rate of any seroma or hematoma in our series might be attributed to our management with flat silicone suction of the surgery site and pressure wound dressing for at least postoperative one week period even if the amount of drainage is not significant.

## Conclusion

ED is a benign tumor mostly affecting females over age of 50. It presents as a soft and mobile mass which is typically located in the subscapular region causing swelling, pain in movement and snapping scapula. Diagnosis should be confirmed with both careful physical examination and radiologic studies considering its possible bilateral localization. Preoperative biopsy is not necessary unless there is a radiologic suspicion of malignancy or rapid enlargement of tumor in a short period of time. The patients who develop severe pain and impairment of arm movements should be treated with marginal excision. Bilateral excision is feasible without any increased complications. Drainage of the surgery site and pressure wound dressing for at least one week following the excision of the tumor is very likely to contribute to a postoperative low rate of complications.

**Disclosures**

**Ethics Committee Approval:** The study was approved by the Namık Kemal University Faculty of Medicine Ethics Committee.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

**Authorship Contributions:** Concept – M.S.; Design – M.S., B.O.; Supervision – M.S.; Materials – M.S., B.O.; Data collection &/or processing – M.S.; Analysis and/or interpretation – M.S., M.K.; Literature search – M.S., M.K.; Writing – M.S.

## References

1. Shimizu S, Yasui C, Tateno M, Sato H, Homma S, Hirano E, et al. Multiple elastofibromas. J Am Acad Dermatol 2004;50:126–9.
2. Järvi OH, Länsimies PH. Subclinical elastofibromas in the scapular region in an autopsy series. Acta Pathol Microbiol Scand A 1975;83:87–108. [CrossRef]
3. Nagamine N, Nohara Y, Ito E. Elastofibroma in Okinawa. A clinicopathologic study of 170 cases. Cancer 1982;50:1794–805.
4. El Hammoumi M, Qtaibi A, Arsalane A, El Oueriachi F, Kabiri el H. Elastofibroma dorsi: clinicopathological analysis of 76 cases. Korean J Thorac Cardiovasc Surg 2014;47:111–6.
5. Abat F, Álvarez C, Trullols L, Peiró A, Bagué S, Gracia I. Elastofibroma dorsi: a 7-year follow-up of 37 cases and a review of the literature. [Article in Spanish]. Rev Esp Cir Ortop Traumatol 2012;56:295–9. [CrossRef]
6. Nishio J, Isayama T, Iwasaki H, Naito M. Elastofibroma dorsi: diagnostic and therapeutic algorithm. J Shoulder Elbow Surg 2012;21:77–81. [CrossRef]
7. Ramos R, Ureña A, Macía I, Rivas F, Ríus X, Armengol J. Elastofibroma dorsi: an uncommon and under-diagnosed tumour. Arch Bronconeumol 2011;47:262–3. [CrossRef]
8. Kara M, Dikmen E, Kara SA, Atasoy P. Bilateral elastofibroma dorsi: proper positioning for an accurate diagnosis. Eur J Cardiothorac Surg 2002;22:839–41. [CrossRef]
9. Tamimi Mariño I, Sesma Solis P, Pérez Lara A, Martinez Malo J, Vazquez ML, Tamimi F. Sensitivity and positive predictive value of magnetic resonance imaging in the diagnosis of elastofibroma dorsi: review of fourteen cases. J Shoulder Elbow Surg 2013;22:57–63. [CrossRef]
10. Karakurt O, Kaplan T, Gunal N, Gulbahar G, Kocer B, Han S, et al. Elastofibroma dorsi management and outcomes: review of 16 cases. Interact Cardiovasc Thorac Surg 2014;18:197–201.
11. Daigeler A, Vogt PM, Busch K, Pennekamp W, Weyhe D, Lehnhardt M, et al. Elastofibroma dorsi-differential diagnosis in chest wall tumours. World J Surg Oncol 2007;5:15. [CrossRef]
12. Fukuda Y, Miyake H, Masuda Y, Masugi Y. Histogenesis of unique elastinophilic fibers of elastofibroma: ultrastructural and immunohistochemical studies. Hum Pathol 1987;18:424–9.
13. Bartocci M, Dell'Atti C, Meacci E, Congedo MT, Magarelli N, Bonomo L, et al. Clinical features, imaging findings, treatment aspects of elastofibroma dorsi and long-term outcomes after surgical resection. Eur Rev Med Pharmacol Sci 2017;21:2061–8.