

## **A Rare Musculoskeletal Mass: Intermuscular Lipoma in a Child and Review of Literature**

**Volkan Sarper Erikci\* and Tunahan Altundağ**

*Departments of Pediatric Surgery, Sağlık Bilimleri University, Tepecik Training Hospital, Izmir, Turkey*

**\*Corresponding Author:** Volkan Sarper Erikci, Departments of Pediatric Surgery, Sağlık Bilimleri University, Tepecik Training Hospital, Izmir, Turkey.

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### **Abstract**

Lipoma is the commonest benign mesenchymal tumor and occur at any site of the body. Intermuscular lipomas are extremely rare and usually seen at middle age or later. They are usually seen on the anterior abdominal wall. A 3-year-old boy with an intermuscular lipoma between trapezius and rhomboideus muscles on the posterior thoracic wall wall is presented. To our knowledge, he is the youngest patient with intermuscular lipoma in the English language literature. This case is presented and discussed with reference to etiology and treatment options of this rather rare problem.

**Keywords:** *Lipoma; Intermuscular Lipoma; Children*

### **Introduction**

As a benign mesenchymal tumor, lipomas can occur at any part of the body. Intermuscular lipomas are extremely scarce and usually seen at middle age or later [1]. We treated a case of intermuscular lipoma in a 3-year-old boy presenting as a bulge at posterior thoracic wall between the trapezius and rhomboideus muscles. To our knowledge, he is the youngest patient with intermuscular lipoma reported in the English language literature. The topic is discussed under the light of relevant literature.

### **Case Report**

A 3-year-old boy was referred to our department with a complaint painless swelling on the posterior thoracic wall. The mass grew in size in the last six months. Physical examination revealed a soft, painless ovoid mass on the posterior thoracic wall on the scapula. Ultrasonography of the mass showed a hyperechoic, relatively well-defined mass with fine internal echoes and computerized tomography (CT) scan revealed a hypodense mass situated within the posterior thoracic wall muscles (Figure 1). Magnetic resonance image (MRI) of the mass presented as an ovoid and fusiform shape with high signal intensity on both T1- and T2- weighted images (Figure 2). Surgical intervention under general anesthesia was performed and revealed an unencapsulated lipomatous tumor with a dimension of 9 x 3 cm in between thoracic wall muscles of trapezius and rhomboideus and was totally excised (Figure 3). Histopathological study of the tumor showed a mature lipoma. Postoperative recovery was uneventful and he was discharged home well. There was no recurrence during the 1<sup>st</sup> year postoperative follow-up period and he is currently under follow-up.



**Figure 1:** CT of intermuscular lipoma on the posterior aspect of thoracic wall (Arrow showing the mass under trapezius muscle)



**Figure 2:** MRI view of intermuscular lipoma containing fat signal intensity.



**Figure 3:** Postoperative view of excised material.

## Discussion

Lipomas are the most common type of soft tissue tumors and are generally regarded as benign mesenchymal tumor [2]. They can occur at any part of the body, mostly subcutaneous planes in the extremities and trunk. These tumors are usually seen in the 5<sup>th</sup> and 6<sup>th</sup> decades of life [1,3].

The first description of a lipoma infiltrating into trapezius muscle was by Paget and in 1946 the term infiltrating lipoma was introduced by Regan [4-7]. Later it was recognized that these masses may be either intermuscular or intramuscular and this finding was based on the classification of Moriconi which differentiated between lipomas based on whether they were located between or within the muscles [8,9]. These lipomatous masses may further be divided into infiltrative, well-circumscribed, mixed types and intermuscular lipomas account for 0.3% of fatty tumors [10].

The exact etiology and pathogenesis of these tumors is unclear. Although it has been regarded as a true neoplasm directly originating from multipotent mesenchymal cells, reactive pathogenesis including trauma, chronic irritation, obesity, developmental disorders, endocrine, metabolic and genetic factors have also been suggested to play a possible role in the development of lipomas [11-15]. Several disease and syndromes have been reported to coexist lipomas including Gardner's syndrome, Madelung's disease, Dercum's disease, Bannayan-Rilley-Ruvalcaba syndrome and Aicardi syndrome [3,16,17]. Presented case in this study did not show any findings revealing a specific syndrome.

Clinically intermuscular lipomas present as a slowly growing asymptomatic mass. Infact many of the intermuscular lipomas grow by expansion and enclosure of other structures rather than infiltration [18]. In contrast to subcutaneous lipomas which produce superficial lesions causing cosmetic problems, deep located masses like intermuscular lipomas may not be noticeable unless they grow to a large size and may produce symptoms of compression to adjacent structures and may not be palpable during the initial stages of the disease. Hopefully, in our case, the mass was palpable even it was located in between the trapezius and rhomboideus muscles due to its rather large size. Literature review on intermuscular lipoma in children is scarce and, when reviewed, literature revealed a 4-year-old girl with intermuscular lipoma with symptoms similar to that of Spigelian hernia [1]. To our knowledge, our case is the youngest child reported in the English language literature with an intermuscular lipoma.

Differential diagnosis should include hematoma, muscle herniation, ganglion cyst, angiolipoma, haemangioma, fibrous myositis, liposarcoma, fibrosarcoma and other soft tissue masses [18]. Large intermuscular lipomas should also be differentiated from lipomatosis which are usually seen at much younger age involving entire body.

In the diagnostic work-up of these masses, imaging is important to establish the size, location, nature of the mass with relationship with adjacent structures. Ultrasonography (US) usually shows hyperechoic mass with well-defined margins and is a good initial diagnostic modality. US in our case showed a hyperechoic mass with internal septations. Computerized tomography (CT) scan reveals a hypodense mass situated in between the affected muscles with Hounsfield values in the negative range [19]. On the other hand magnetic resonance imaging (MRI) is very useful in defining fat containing tumors demonstrating high signal intensity on both T1- and T2- weighted images. CT and MRI were found to be helpful in defining the lipomatous mass in our case showing neighbourhood structures also.

The treatment choices in lipomas range from liposuction and steroid injection to surgical excision [17]. A successful surgical excision was performed in our case without any morbidity. Complication following surgical intervention for lipomas include vascular injury, nerve dysfunction, hematoma formation, surgical site infection, fat embolus and excessive scarring [3,17,20]. Recurrence may also be regarded as a complication and in contrast to usual lipoma with postsurgical recurrence rate of 1%, recurrence of up to 19% may be observed in cases with intermuscular lipomas and is attributed to incomplete surgical excision during the initial surgical intervention [10,21]. So an extended period of follow up up to 10 years has been recommended [22]. Our case is in a disease free state in the first postoperative year and is still under follow up.

### Conclusion

In conclusion, intermuscular lipoma is a rather uncommon subtype of lipoma and usually misdiagnosed as other benign and malignant lesions. To our knowledge, our case is probably the youngest child with an intermuscular lipoma located in between trapezius and rhomboideus muscles. This extremely uncommon mass should be kept in mind and with careful clinical, radiological and histological examination, appropriate treatment and prognosis will be achieved.

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