

# Osteochondrolipoma of the Chest Wall Identified on Clinical Breast Exam: A Case Report

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## Abstract

**Background:** A lipoma is a benign mesenchymal neoplasm of mature adipose tissue that is often slow-growing and may appear anywhere in the body. However, finding a multilineage differentiation of mesenchymal cells in a lipoma is a rare occurrence.

**Case Presentation:** We present a case of an incidental finding of an osteochondrolipoma (OCL) on clinical breast exam in a 57-year-old woman. The palpable mass measured 4.9 x 3.4 x 2.3 cm post excisional biopsy. The pathology report confirmed the presence of cartilaginous and osseous cell differentiation embedded in mature adipocytes. Lipomas of the breast are very difficult to diagnose and often must be differentiated from benign and malignant breast lesions. Previous cases have reported lipomas and chondrolipomas found in breast tissue but here we present a novel finding of an intramuscular OCL palpated on clinical breast examination and excised from the chest wall.

**Clinical Significance:** Several reports have shown that lipomas, especially intramuscular lipomas rarely have the potential for malignancy. OCL must be considered in the assessment of soft tissue neoplasms of the breast and chest wall.

**Ethics and approval and consent to participate:** After ethical review, this case report was approved by the Institutional Review Board (IRB) of the United Health Services.

**Keywords:** Osteochondrolipoma • Lipoma • Chondroma • Osteoma

**List of Abbreviations:** OCL: osteochondrolipoma • CT: Computed Tomography

## Introduction

Lipoma is a common, slow growing, and benign mesenchymal tumor made of mature adipose tissue [1]. It typically may present as a soft, painless, asymptomatic nodule or mass and can be found subcutaneously, intramuscularly, or deep-seated when under the enclosing fascia. Lipomas are often painless, unless associated with increased vascularity (as seen in an angiolipoma). [2] Pain may also be an uncommon late symptom of a lipoma and is usually due to compression of adjacent soft tissues. A clear gender predilection has not been established for lipomas; however, there is female predominance for intramuscular lipomas [1]. Lipomas may differentiate into a diversity of mesenchymal elements including blood vessels, fibrous tissue, and muscle, but differentiation to cartilage and bone is a rare occurrence.[3] This is known as an osteochondrolipoma (OCL) and often occurs in the head and neck region or in the proximal extremities of the body. OCL has the same prognosis as a simple lipoma [4] and treatment of choice involves complete surgical excision with little risk of recurrence [5]. There are a few cases presented of giant lipomas of the breast [6] or chondrolipomas [7,8], but no known documentation of an OCL of the breast has been reported. However, there is a case report of a

superficial OCL found in a male chest wall [3] but to our knowledge a deep-seated intramuscular OCL of the chest wall is a novel entity. Here, we present a case of OCL of the female chest wall found incidentally on clinical breast examination.

## Case Presentation

### Clinical History

A 57-year-old female presented with complaints of a subjective breast lump. The patient has a history of bilateral reduction mammoplasty 31 years prior to presentation but otherwise no significant breast history. She does have known endometrial carcinoma with pulmonary metastases and pulmonary lymphoid hyperplasia. The patient's self-identified lump was in the left upper outer quadrant. On exam, an additional mass was palpable deep to the inframammary fold at the T-junction of the Wise pattern mastopexy incision, and the patient reported that it had become more noticeable lately. CT scan of the thorax was obtained incidentally for surveillance of her pulmonary disease. In the inframammary fold a fatty collection with increased calcifications was noted that had increased in size over the past two years. There was no associated pain, nipple discharge, skin changes, contour, or nipple changes.

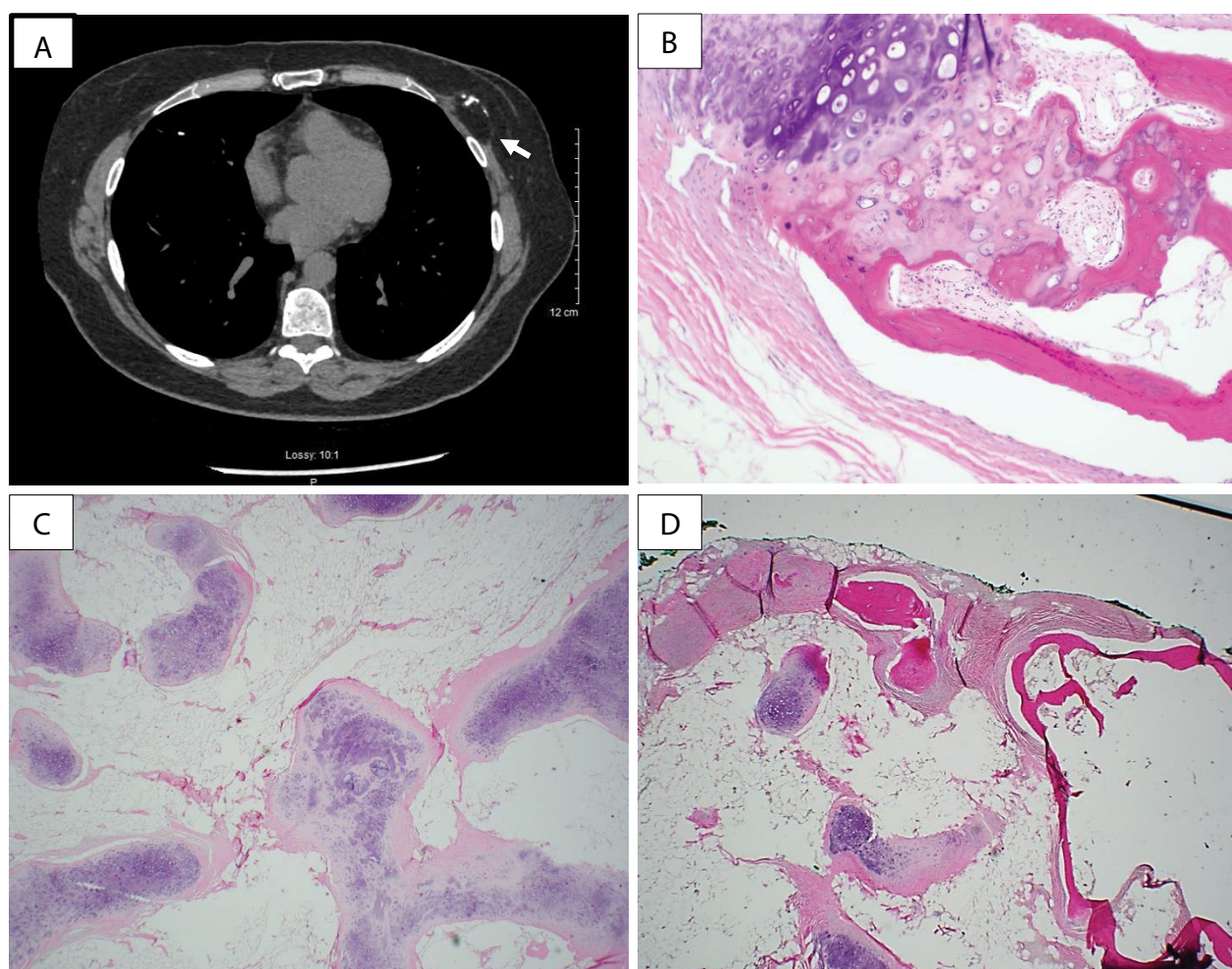
**Diagnostic imaging –** Diagnostic mammography, breast ultrasound, and computed tomography:

Diagnostic mammogram and ultrasound imaging showed no suspicious findings in either breast with a BI-RADS category 1. CT scan revealed a well-circumscribed 3.8cm fat attenuation collection

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**Figure 1:** (A). Computed Tomographic scan shows smooth mass of partial calcification with fat attenuation at the anterolateral left chest wall embedded in the intercostal muscle. (B). A mixture of chondroid tissue with bone formation (40x H&E). (C). Segments of lamellar bone embedded in adipose tissue (2x H&E). (D). Osteochondrolipoma, mass showing adipose, chondroid tissue and lamellar bone formation (2x H&E).

in the subcutaneous soft tissues of the anterolateral left chest wall with discontinuous suspicious peripheral calcifications (**Figure 1A**). The image had increased in size from 2.8 cm to 3.8 cm over a two-year period. The findings from CT scan was suspicious for lipoma. In addition, soft tissue stranding was also noted, raising liposarcoma as a possibility.

**Total Excisional Biopsy:** The patient underwent total excisional biopsy of the mass located in the left inframammary fold. The palpable mass was identified within the intercostal muscles, well deep to the breast tissue and was able to be dissected free with minimal adhesions to the surrounding tissue. The specimen was oriented and submitted for pathology. The palpable area in the left upper outer quadrant of the breast was also excised and submitted to pathology.

### Pathologic Findings

On gross examination a yellow-white, ovoid, partial encapsulated portion of fibrofatty tissue measured 4.9 x 3.4 x 2.3cm. The tissue was then serially sectioned revealing a yellow-tan, glistening, fatty appearing cut surface with focal marked areas of calcification. Histologically, the tumor showed mature adipose tissue with a small number of fibroblastic cells (**Figure 1B-D**). Woven bony structures were visible in several areas including osteoblasts and osteocytes (Figure 1B). Partly cartilaginous areas were also seen in several areas of the specimen. The tumor was attached to the fatty

tissue of the breast and the intercostal muscles but not the periosteum. There were no mitotic figures identified and the proliferation rate was very low, estimated at less than 1% (**Figure 1**).

### Discussion

Lipomas are composed of mature adipocytes and are among the most common benign soft tissue tumors in adults [4]. They are often subclassified based on morphologic features and some may have associated genetic rearrangements [4,9]. They are well-encapsulated tumors of varying sizes and are usually soft, mobile, and painless with a low risk of recurrence after complete excision. They can develop superficially, within the deep intramuscular tissues, or even on the surface of bone. [10] They are often found on the back, shoulder, abdomen neck, and extremities. Lipomas may contain other mesenchymal components such as bone, cartilage and blood vessels [11]. There is no clear sex predilection of lipomas; however, intramuscular lipomas seem to have female predominance [1-3]. Osteolipoma, (bone and fat) and chondrolipoma (cartilage and fat) are rare entities but the osteochondrolipoma is even more rare and to our knowledge only 16 cases have been reported in the English literature, including this case [11].

There are two main theories that describe the pathogenesis

of an OCL. One theory suggests that they develop independently from multipotent, undifferentiated mesenchymal stem cells [10]. The second theory states that OCLs may arise from a metaplastic process in a pre-existing lipoma or chondrolipoma, or possibly from fibrocyte metaplasia [10-11]. Many other hypotheses remain; but, the pathogenesis of OCLs still remains uncertain.

Lipomas or chondrolipomas are often reported in breast tissue<sup>6</sup> and are usually treated with simple excision. Of the different types of lipomas, namely intramuscular, superficial and deep seated, the deep-seated intramuscular lipomas may have the potential for malignancy hence surgical management is often appropriate. [12-13] In this case we present a 57-year-old female with a chest wall mass undetected on mammogram and breast ultrasound but clearly identified on clinical examination and seen on CT (**Figure 1A**) of the chest, performed for other reasons. Following total excisional biopsy and a pathology report, an osteochondrolipoma was identified. Histological images show the three different types of mesenchymal tissue in the specimen (**Figure 1B-D**), adipose, cartilage and bone. OCL is a variant of lipoma with only one other reported case seen in the chest wall of a male. [3] Our case presents a unique deep-seated OCL attached to the intercostal muscle in the chest wall of a female, unlike the superficial subcutaneous tumor found in the chest wall previously identified in Gru et al.

## Conclusion

In summary, osteochondrolipomas are rare variants of lipomas often found in the head and neck region but can be found anywhere in the body. Here we show the presence of a deep-seated OCL palpable on clinical breast exam. OCLs should be considered in the differential diagnosis for a well-defined calcified or ossified subcutaneous mass in the breast or chest wall.

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