

## Incidental imaging finding of chest wall mass

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### Discussion

Abdominal radiography demonstrates a well-defined lenticular lucent mass over the liver with cortical thickening of the adjacent rib with ossific spicules protruding into the mass. The curvilinear opacity superomedial to the lucent mass is not part of the lesion; other views (not included) show this to be the inferior border of the scapula. Contrast-enhanced chest computed tomography (CT) reveals a non-enhancing homogenous fat attenuation extrapleural mass with a broad-based rib attachment. Thin, cortically based ossific excrescences extend from the inner cortex into the fatty mass. Small bilateral pleural effusions with bibasilar atelectasis are related to the patient's underlying condition and not the lesion.

While soft tissue lipomas are the most common benign mesenchymal tumors, osseous lipomas are uncommon, with

most occurring in the medullary cavity [1]. Parosteal lipoma, a rare benign tumor of adipose tissue contiguous with underlying periosteum, accounts for only 0.3 % of all lipomas [2]. They are indolent, usually asymptomatic masses, most often diaphyseal involving the femur (approximately one-third of cases), proximal radius, humerus, tibia, clavicle, or pelvis [2]. To our knowledge, only seven of the approximately 150 reported cases in the English literature have involved a rib [3–8].

Since originally described by Seering in 1836, “parosteal lipoma,” not periosteal, has been the preferred terminology since there are no adipocytes in the periosteum [2]. On gross pathology, the lesion is well circumscribed, yellowish, and strongly adherent to the underlying periosteum. While characteristically attached by a sclerotic bony pedicle, this is not always present. A cartilaginous cap may be present [3, 4, 6, 9]. When the fibro-osseous pedicle and cartilage cap predominate, the lesion can have an appearance similar to osteochondroma [3]. Histologically, the fat cells are identical to those in typical lipomas of soft tissue [3, 4]. Cytogenetic analyses have shown the chromosomal translocations in soft tissue and parosteal lipomas are identical, suggesting a common histopathogenesis [10].

Characteristic radiographic features include a well-defined lucency against the cortical bone with osseous reactive changes of the underlying cortex that may include focal hyperostosis, osseous bowing, and/or shallow cortical pressure erosion [3]. Cross-sectional imaging, either CT or MRI, shows fat with or without fibrous stranding. The radiological differential diagnosis is limited. The reactive bony changes may mimic an osteochondroma, but no corticomedullary continuity with the subjacent bone will be seen with parosteal lipoma [9]. On radiographs, juxtacortical (or periosteal) chondromas also appear as sharply marginated radiolucent bone surface tumors with similar cortical reactions. Unlike parosteal lipoma, nearly

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Answer

Parosteal lipoma of the rib

The case presentation can be found at doi: [10.1007/s00256-015-2147-z](https://doi.org/10.1007/s00256-015-2147-z)

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50 % of these lesions will demonstrate chondroid matrix mineralization [11].

Predominantly adults in the fifth to seventh decades of life have been affected, but the ages have ranged from 3 to 84 years. In their case series and review, Kapukaya et al. reported local swelling and pain in 58 % of parosteal lipomas with a slow-growing, painless, and non-tender immobile mass being the typical presentation [1]. Occasionally, large parosteal lipomas cause symptomatic mass effect resulting in limited joint mobility and/or nerve deficits [4]. Although definitive treatment is complete excision, these benign tumors have no known risk of malignant transformation [4]. When found incidentally in an asymptomatic patient, a parosteal lipoma with characteristic imaging findings may be followed without biopsy. Resection in our patient would have required a thoracotomy. If there is nerve entrapment, surgical resection should be performed to avoid irreversible muscle atrophy [4].

In summary, parosteal lipoma of the rib is a rare, benign entity with diagnostic imaging features. When discovered as an asymptomatic or incidental finding, confident diagnosis based on the imaging appearance can help avoid unnecessary biopsy or surgical resection.

**Conflict of interest** The authors declare that they have no conflicts of interest.

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