

# Interosseous ganglion cyst of the ribs with unusual presentation of hemoptysis

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## Abstract:

An interosseous ganglion cyst is a very rare entity, found mostly in skeletally mature patients, particularly in long bones such as the tibia and femur. However, we are the first to report here an unusual case of interosseous ganglion cyst of the upper ribs in a young female patient, which she had an unpredicted presentation of cough and hemoptysis and a large painful lump over the anterior left upper chest. The radiological and pathological workup confirmed the presence of a benign interosseous ganglion cyst arising from the left first rib, invading the second rib and the apex of the left lung. The patient has been treated successfully by surgical resection of this rib cyst. However, we could not find any reported cases in the current literature of an interosseous ganglion cyst pathology arising in the ribs with a similar presentation of cough and hemoptysis.

## Keywords:

Cough, hemoptysis, interosseous ganglion cyst, ribs cyst

**I**nterosseous ganglion is benign cystic lesions that contain gelatinous mucoid fluid, surrounded by fibrous tissue.<sup>[1]</sup>

The interosseous ganglion cyst often occurs in middle-aged patients, with preponderance in the male gender.<sup>[1]</sup> It is a rare condition that mostly diagnosed after an incidental finding. However, cadaveric wrists study had shown interosseous ganglion in the wrists in 10%.<sup>[2]</sup> They are most common in skeletally mature patients, particularly in long bones, such as the tibia and femur, and rarely can develop in other sites, such as flat and small bones.<sup>[1,2]</sup>

Most of these patients are asymptomatic; however, some patients may present with localized pain aggravated by motion.<sup>[2]</sup> or present with nerve compression, which results usually in nerve dysfunction causing pain and paresthesia.<sup>[3]</sup> The management of such condition ranging

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from surgical curettage to arthroplasty, with bone grafting in all curetted lesion.<sup>[1]</sup>

To the best of our knowledge, we could not find any reported cases in the English-speaking literature of an interosseous ganglion cyst pathology arising in the ribs with a similar presentation of cough and hemoptysis and treated successfully with surgical resection.

## Case Report

A 26-year-old female patient, a known case of hypothyroidism on maintenance therapy of thyroxine, presented to the emergency room complaining of cough and hemoptysis for the last 5 days, it was moderate in amount, mainly in the morning, associated with sharp left upper chest pain developed a few months earlier. There was no dyspnea or other constitutional symptoms. Chest examination revealed a large painful lump over the anterior left upper chest. However, cardiovascular, abdominal, and other systems examinations were unremarkable,

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and her vital signs and blood workup analysis were all within normal range.

Chest X-ray revealed a left first rib mass [Figure 1]. Computed tomography (CT) scan of the chest with intravenous contrast showed a left first rib lesion with a lytic and sclerotic component, (8 cm × 6 cm × 4 cm) in size, invading the second rib, and the apex of the left lung [Figure 2]. A CT scan guided tru-cut biopsy of this mass showed the benign nature of multiple cysts filled with gray gelatinous material.

The patient underwent surgical exploration by left transverse anterior thoracotomy under the left clavicle. Division of the left clavicle was performed to get access to the left first rib and the mass, which was found to be arising from the left first rib with direct invasion of the second rib anteriorly and extending inside to the apex of the left lung. *En bloc* excision of the mass with underlying first and second ribs was performed, with the attached apex of the left lung, which was stapled [Figure 3].

However, the divided left clavicle was reconstructed at the end of the surgery by the placement of the left clavicle plate [Figure 4].

The histopathology confirmed that the lesion was consistent with an interosseous ganglion, with a cystic structure lined by fibrous connective tissue with surrounding sclerotic bone, all have a benign feature. No exostosis was seen, and there was no evidence of malignancy [Figure 5].

Postoperative recovery was uneventful; the patient was discharged home 5 days later, and she remained very well, asymptomatic in a regular follow-up in the thoracic outpatient clinic for 5 years without any local recurrence.

## Discussion

We are the first to report this case as we could not find

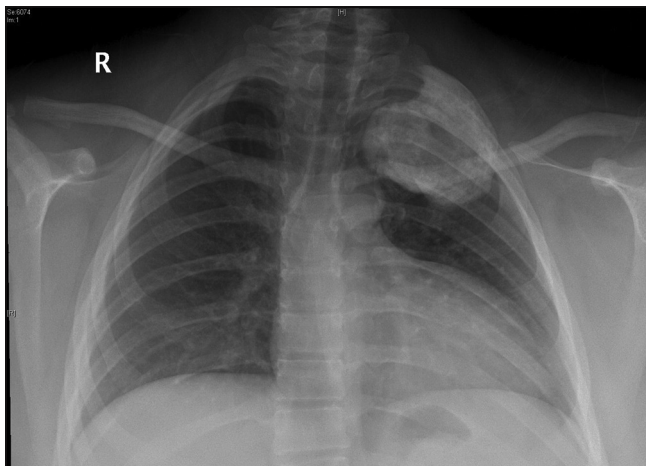


Figure 1: Chest X-ray showing a left 1<sup>st</sup> rib mass (8 × 6 × 4) cm in size



Figure 2: Computed tomography-scan chest with intravenous contrast showing lesion on the left first rib with lytic and sclerotic component, invading the second rib and the apex of the left lung

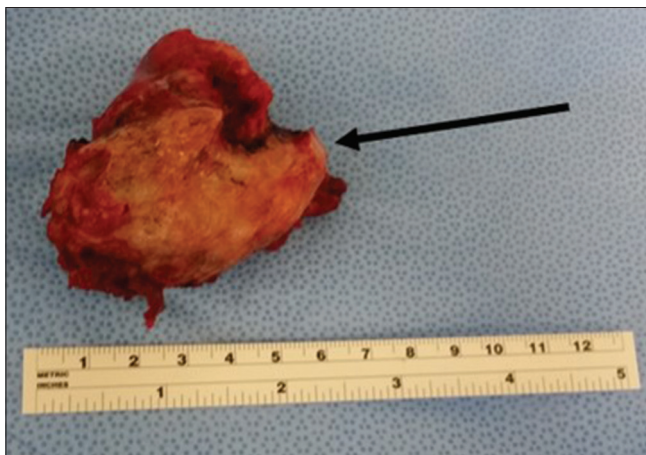
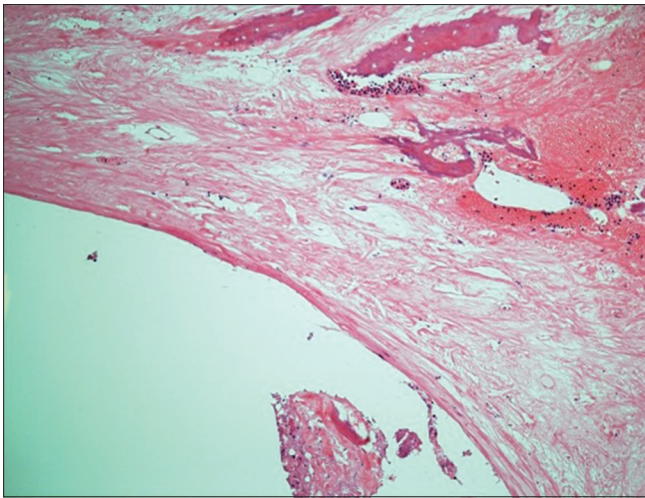


Figure 3: The excised bony mass measured (8 cm × 6 cm × 4 cm) showing interosseous ganglion of the left 1<sup>st</sup> rib (arrow showing the cut margin of the left 1<sup>st</sup> rib)



Figure 4: Chest X-ray postoperative showing the divided left clavicle reconstructed by placement of left clavicle plate



**Figure 5:** The histopathology of the interosseous ganglion cyst showing that the lesion was consistent of an interosseous ganglion with a cystic structure lined by fibrous connective tissue with surrounding sclerotic bone, all have benign features. Hematoxylin and Eosin stain (x100 magnification)

any reported cases in the literature of an interosseous ganglion cyst pathology arising in the ribs with a similar presentation of cough and hemoptysis and treated successfully with surgical resection.

Interosseous ganglion cyst is a rare condition defined as a benign cystic sac that is lined by fibrous connective tissue that is surrounded by condensed sclerotic bone.<sup>[4]</sup> It is usually filled with fluid mucoid gelatinous materials or foamy macrophages.<sup>[2]</sup> It is usually formed near a joint or tendons.

Interosseous ganglion is mainly an incidental finding and very rarely causes any symptoms. Pain, restriction of normal movement of a joint, and nerve compression manifestations are not that common.<sup>[2]</sup> An unusual presentation was reported in a case of ganglion cyst of the scapula caused suprascapular nerve compression, which resulted in nerve dysfunction, causing pain and paresthesia.<sup>[4]</sup> Surprisingly, our patient presented with a very unusual presentation of cough and hemoptysis, though pulmonary and cardiac diseases were ruled out.

Interosseous ganglion cysts tend to be mainly in middle-aged patients and commonly in the male gender.<sup>[1]</sup> It usually formed in long bones and lower limbs.<sup>[2]</sup> Radiological features on plain X-ray and CT scan usually demonstrate a well-demarcated lytic bone lesion with a sclerotic outline margin, mainly nearby the joint.

Magnetic resonance imaging shows the same appearance of solitary lesions with benign manifestations.<sup>[3]</sup> On bone scan, which is rarely done, usually shows radiotracer uptake of the lesion in 10% only.<sup>[3]</sup> Despite the very rare location of the cyst in our patient, which was in the ribs,

it is manifested on radiological imaging with the same radiological findings.

Differential diagnoses of such cyst manifestations range from benign conditions such as bony cyst, chondroma, fibroma, or degenerative connective tissue diseases, to malignant differentials like giant cell tumor or Ewing's sarcoma.<sup>[2]</sup>

No risk factors have been identified to form this type of cyst; however, two theories have been reported as mechanisms of the formation of ganglion cysts. The first theory hypothesizes that it is caused by penetration of the soft tissue into the underlying bone. The second one is mechanical stress, which leads to vascular disturbances and bone necrosis, which is preceded by trauma mainly.<sup>[5]</sup>

Complications of interosseous ganglion cysts that could happen rarely such as recurrence, bone fractures, rupture of tendons, or the cyst after aspiration or bone grafting.<sup>[6]</sup> None of these complications has occurred to our patient.

No internal structures invasion by interosseous ganglion cysts has been reported previously, though our case invaded the apex of the left upper lobe of the lung, and the patient presented with a very unusual presentation of cough and hemoptysis due to direct erosion and invasion of the apex of the left lung.

Management of this condition varies from conservative management, like analgesics or casting, to ultrasound-guided needle aspiration, or surgical cystic curettage and bone grafting.<sup>[7]</sup>

Our patient was treated successfully by complete surgical excision of the lesion with the underlying structures, which were invaded by the cyst, including the first and second ribs along with the involved apex of the left lung.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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