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Case Report

Chondrosarcoma of the Sternum Treated with En Bloc Resection: A Case Report

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Abstract

Introduction: Chondrosarcomas are malignant neoplasms of cartilaginous mesenchymal. The diagnosis is based on a complete radiological examination. The treatment of choice is surgical, being the only curative option due to the resistance of the lesions to chemotherapy and radiotherapy.

Case presentation: 66-year-old male patient presenting chest pain, dry cough and occasional dyspnea, diagnosed with sternal chondrosarcoma and treated with en bloc resection of the tumor mass.

Conclusion: A primary chondrosarcoma of the sternum was treated with resection of the anterior costal railing, pericardium, tumor mass and partial sternectomy, en bloc. Reconstruction was performed using Marlex microporous mesh.

Keywords: Chondrosarcoma; Sternum; Thoracic Surgical Procedures

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Consent: Consent was taken from the patient for publication of this case report.

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Introduction

Primary malignant tumors of the thoracic wall are extremely rare and include a wide variety of bone and soft tissue lesions, accounting for less than 1% of all neoplasms[1,2]. Chondrosarcomas, malignant neoplasms of cartilaginous mesenchymal origin, represent approximately 20% of the primary tumors of the chest wall, 80% of which originate in the ribs and only 20% in the sternum[1,3].The accurate diagnostic evaluation of these tumors requires a complete radiological examination based on the complex location of the lesions[3]. The treatment of choice is surgical resection of the lesion, being the only curative option, due to resistance to chemotherapy and radiotherapy[3,5].

Case presentation

A 66-year-old male patient, seeking medical care for chest pain in the retrosternal region, more pronounced in the region of the xiphoid appendix, started 30 days ago, from mild to moderate intensity, associated with dry cough, occasional dyspnea on moderate efforts and asthenia. Physical examination was normal. Chest X-ray showed moderate to massive pleural effusion on the right and preserved pulmonary transparency in the left. Computed Tomography (CT) of thorax (Figure 1) identified a large expansive lesion with soft tissue density and lobulated contours in the right anteroinferior thoracic wall, measuring approximately 10 cm with the involvement of the xiphoid process and followed by prolapse upon the anteroinferior aspect of the right hemithorax. There was wide pleural effusion in the right, predominantly free, accompanied by atelectasis in the middle and inferior lobes, and with septated area in its anteroinferior aspect. In addition, there was no evidence of consolidation either tumescent pulmonary parenchymatous lesion or pleural lesion in the right, no mediastinal lymph nodes enlargement was found and the heart and large thoracic vessels had an usual configuration. The lesion was biopsied and the anatomopathological examination revealed consistent findings with high-grade chondrosarcoma. Furthermore, pleural fluid was analyzed – being negative for malignancy and with presence of red blood cells, mesothelial cells and inflammatory cells. Bone scintigraphy showed nonspecific findings in skull, spinal column, ischium and lower sternum, being necessary complementary radiographic correlation. The patient underwent a costotomyand a thoracotomy with resection of the anterior costal railing (5th to the 10th costal arches), partial sternectomy (only the distal two-thirds), associated with partial removal of the pericardium and the totally removal of the tumor mass, en bloc (Figures 2 and 3). The reconstruction was performed through thoracoplasty using a Marlex microporous mesh sutured with polypropylene wire with fixation in costal arches and remaining sternum and rectus abdominis muscle. The screen was covered with bone cement (Figure 4) to achieve rigidity of the implanted structure. Finally, complete closure of the skin over the prosthetic area was performed (Figure 5). Informed consent was taken from the patient prior publication.

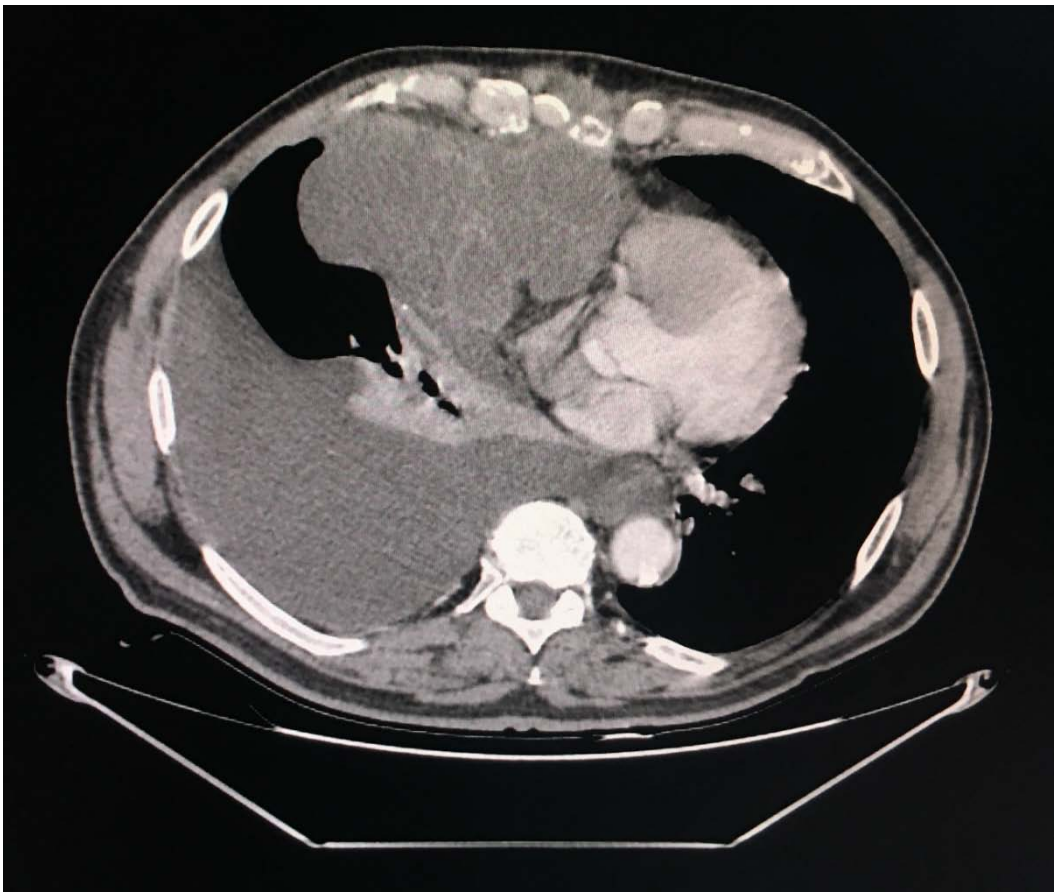

Figure 1 Computed Tomography of thorax evidencing a large expansive lesion measuring approximately 10 cm in the right anteroinferior thoracic wall

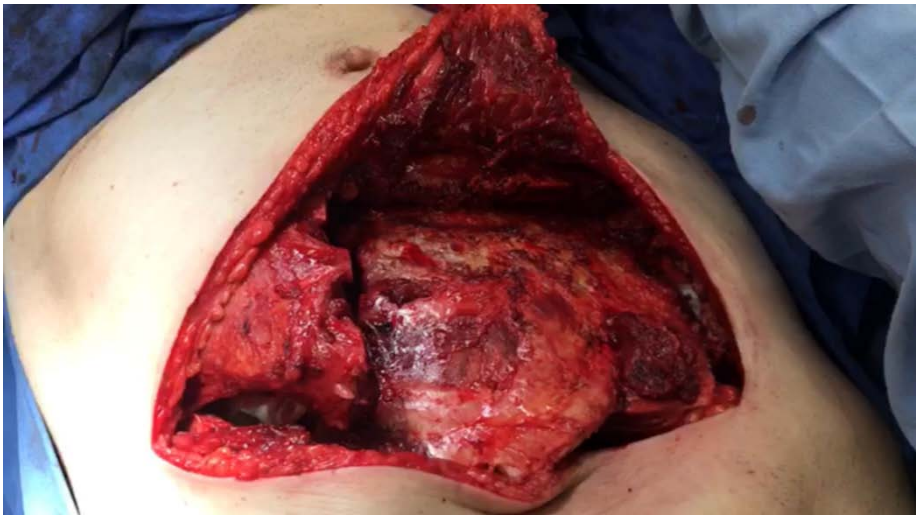

Figure 2 Resection of the lesion en bloc with the thoracic wall

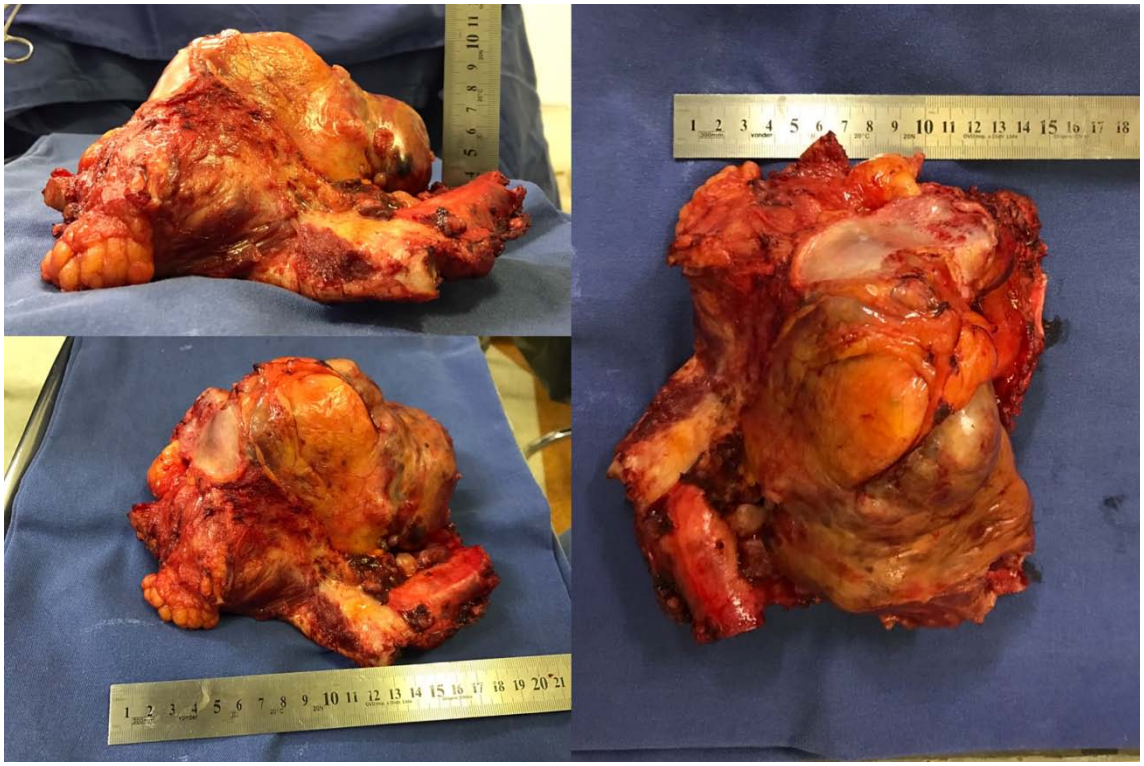

Figure 3 Resected tumor mass

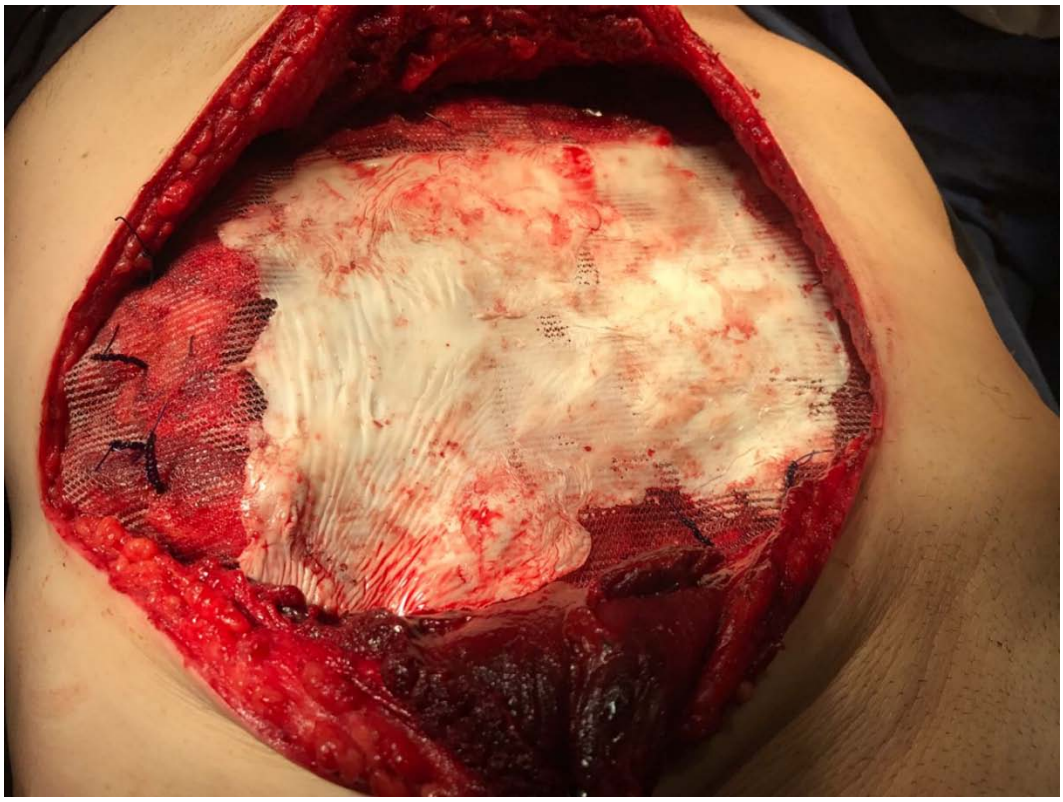

Figure 4 Reconstruction with Marlex mesh and the screen covered with bone cement

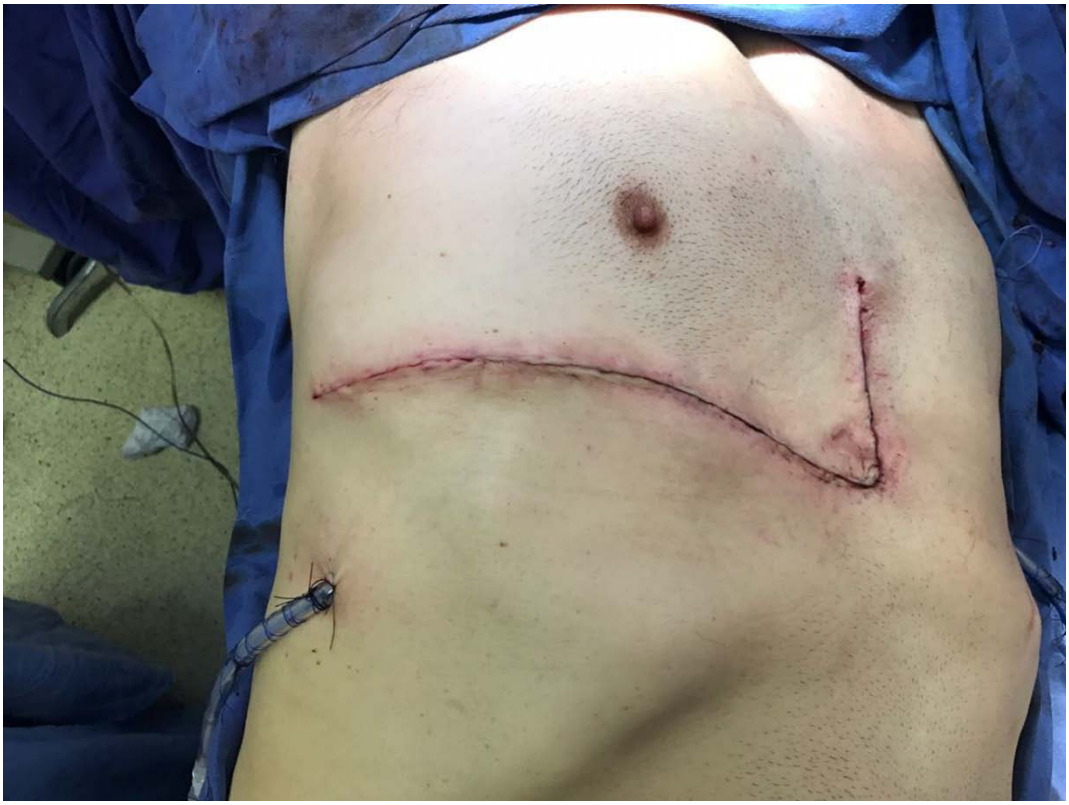

Figure 5 Skin closure

Discussion

Chondrosarcomas represent approximately 30% of the primary malignant bone neoplasms[1,3]. An accurate diagnostic evaluation of these tumors requires a complete radiographic examination, based on the complex location of the lesions[3], so computed tomography (CT) and magnetic resonance imaging (MRI) are great exams to characterize the tumor and its extent. However, the definitive diagnosis requires the association of radiology and histology. The gold-standard treatment is the surgical resection of the lesion, the only curative option, due to the therapeutic resistance to chemotherapy and radiotherapy[2,3,5]. The sternal tumors present themselves as a great therapeutic challenge on account of the local aggressiveness of these tumors and their high rate of recurrence, making it difficult to the lesion resection without compromising the stability and reconstruction of the chest wall. Nevertheless, with advancement in surgical techniques, sternectomy is possible to be performed, with surgical excision and adequate reconstruction, thus offering a definitive cure[2]. Moreover, the stability of the thoracic wall after an extensive sternectomy can be obtained with the use of several prosthetic materials[2]. Chondrosarcomas of thoracic wall typically grow slowly and relapse locally. Although, if not treated, it could evolve with metastases. Therefore, the complete control of primary neoplasia is the main survival determinant[2,6].

Conclusion

The current study reports a rare case of primary chondrosarcoma of the sternum, which was successfully treated with resection of the anterior costal railing, pericardium, tumor mass and partial sternectomy, en bloc. Thoracic wall reconstruction was performed using Marlex microporous mesh.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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