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Use of Pectus Bars in the Reconstruction of Complex Anterior Chest Wall Defects☆

Uso de barras de pectus en la reconstrucción de defectos complejos de la pared torácica anterior

To the Editor,

En bloc resection of chest wall tumors with wide margins can generate wall defects which affect structural function and interfere in respiratory mechanics. Restoration of wall integrity is a surgical challenge, due to the complexity of reconstructing the structural rigidity of the thoracic cage, while preserving the elasticity required for the mechanics of breathing.[1]

We report the case of an 84-year-old woman who underwent resection of a giant chondrosarcoma. We were able to reconstruct the resulting large chest wall defect using a previously unpublished technique, which meets both rigidity and elasticity requirements.

The resection included the tumor, skin, soft tissue, ribs 2–5, and the lateral half of the sternum (Fig. 1). The resulting large chest wall defect was repaired using preformed surgical steel bars usually used for video-assisted surgical correction of congenital deformities of the chest wall (Walter Lorenz®). The bars were placed to mimic the form of the costal arches, and fixed using Dall-Miles® cerclage with steel cables and dedicated stabilizers screwed to the remaining sternum (Fig. 1). Polytetrafluoroethylene (PTFE) mesh (Gore-Tex®) was used to seal the pleural cavity (Fig. 1). No perioperative complications occurred, and 4 years after the intervention the patient remains symptomatic with no signs of tumor relapse.

Chest wall defect repair with biological substitutes or prosthetics is necessary when the defect is greater than 4 costal arches or 5 cm, and is of particular significance when the resection involves the anterior chest wall, as in our case. Most of the rigid prostheses and metal meshes or cement[2] currently available for reconstruction provide the necessary rigidity but lack the necessary elasticity, while commercially available rib substitutes provide better thoracic compliance, but are limited in terms of length and rigidity.

In our case, the pectus bars were long enough to repair the large chest wall defect, while the stabilizers we used provided secure and stable fixation of the bars to the remaining sternum. Moreover, subsequent fixing of the bars with steel cable gave added stability. From a mechanical point of view, shaping the bars in the form of

Fig. 1. Large chest wall defect after resection. Reconstruction with 2 pectus bars and PTFE mesh.

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arches transfers the compression forces to the bony supports at each end, so the proposed technique can support significant loads. The PTFE mesh tightly sutured to the edges of the defect adapts easily to the wound perimeter, completely sealing the pleural cavity. The arrangement of an elastic, sealed pleural cavity, supported by arches, allows for chest wall mobility and the reestablishment of the play of pleural pressures required for effective ventilation.[3] To conclude, we present a more physiological reconstructive technique which may have a positive impact on functional recovery.

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Thoracic Angiolipoma: The Risk of Being Original☆

Angiolipoma torácico: el riesgo de ser original

To the Editor:

We report the case of a 57-year-old woman with a history of arterial hypertension, myasthenia gravis, thymectomy and left empyema.

She was admitted with a 2-month history of dry cough and progressive dyspnea, and no other symptoms. Pulmonary auscultation revealed right basal hypoventilation; the examination was otherwise normal. Chest X-ray showed free pleural effusion in the right middle lung field. Clinical laboratory results showed moderate hypoxemia. Chest computed tomography (CT) revealed submassive right pleural effusion, with secondary atelectasis; a solid mass over the paravertebral parietal pleura was observed,

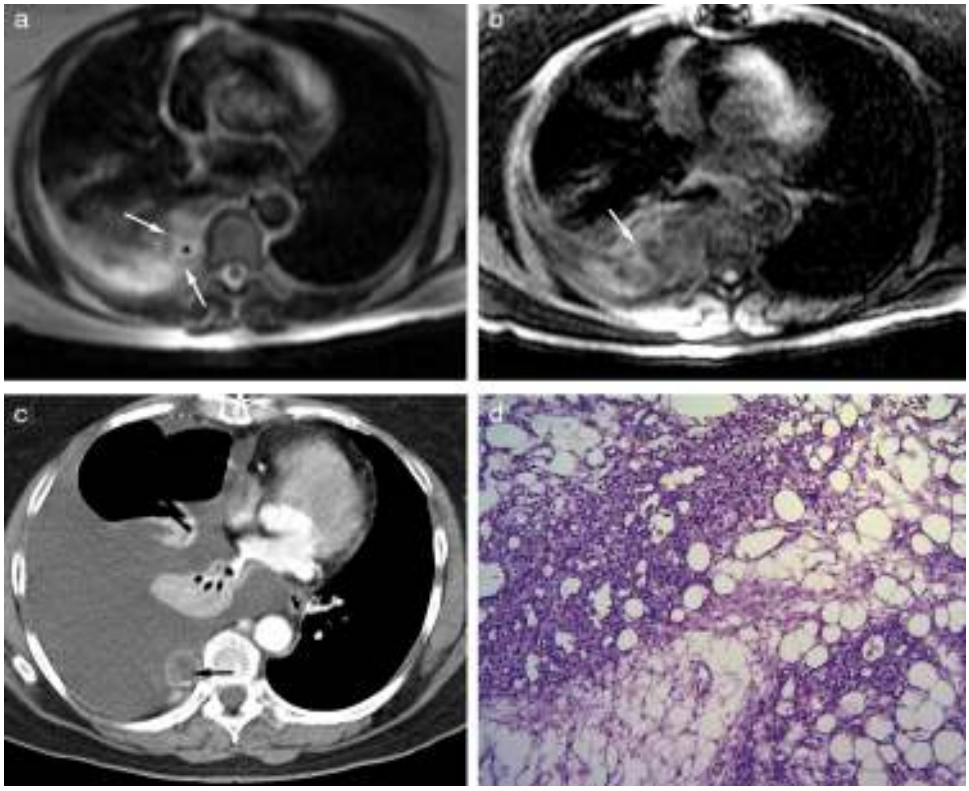

Fig. 1. (a) Chest magnetic resonance imaging, T2-weighted axial sequence showing heterogeneous lesion with hyperintense foci due to fluid cavities or fat (*) and hypointense linear images, due to septa or vessels (arrows); (b) Spoiled gradient-echo T1-weighted axial sequence with fat suppression and early-phase paramagnetic contrast medium (intravenous gadolinium): heterogeneous mass with enhancement of some of the serpiginous images (arrow); (c) computed tomography with intravenous contrast medium: heterogeneous lobulated mass, showing reticular and linear enhancement, with small hypodense foci (arrow), compatible with fat; and (d) solid tumor consisting of mature adipose tissue associated with a network of thin-walled, anastomated blood vessels. Red blood cells are seen in most of the vessels (hematoxylin & eosin ×100).

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