

Post-traumatic Thoracoabdominal Hernia☆

Hernia toraco-abdominal postraumática

Dear Editor,

Hernias through the intercostal spaces are rare and few cases have been reported in the literature.¹ They appear as a consequence of torn intercostal muscles, which allow the hernial sac to protrude with either lung parenchyma or abdominal viscera in its interior, when the intercostal space is low or when there is associated trauma with diaphragmatic rupture.²

We present the case of a large intercostal post-traumatic thoracic hernia with herniation of abdominal content. As a review of the literature provides no evidence-based recommendations for treatment, we report our experience in the surgical repair of this infrequent lesion.

The patient is a 57-year-old obese male with COPD and hypertension who reported a history of chest trauma with a series of left rib fractures (from the 8th to the 11th) and hemothorax that required hospitalization and pleural drainage just 6 months earlier. He came to our consultation due to a painful and palpable mass in the ribcage area that had been previously injured. Thoracoabdominal CT confirmed multiple rib fractures that had not consolidated in the region of the posterior ribcage and herniation of abdominal content (Fig. 1a).



Fig. 1 – (a) Three-dimensional reconstruction of the thoracoabdominal CT demonstrating multiple synarthroses and rib separation between the 10th and 11th ribs and (b) palpation of the hernia defect in the region.

Examination revealed truncal asymmetry caused by a soft, elastic, reducible herniated mass, and an extensive hernial orifice was palpated through the intercostal spaces (Fig. 1b).

Preoperative nutritional therapy was initiated, and we decided on surgery. A lateral thoracotomy was performed over the hernia defect, which revealed several costal pseudoarthrosis in the area of the left 9th and 10th ribs with protruding abdominal content. We proceeded with the reduction of the hernia and approximation and cerclage of both ribs with thick, slow-absorbing sutures.

Four months later, a symptomatic recurrence of the hernia was observed with a more anterior component, requiring reoperation. In this case, the lower half of the left rib cage was completely dissected, the fractured bone edges were refreshed, and plate osteosynthesis was performed with Judet struts along with approximation of the costal spaces using intercostal sutures (Fig. 2b). The abdominal content was reduced and the abdominal wall was closed and reinforced with synthetic mesh. The follow-up thoracic CT 3 months after surgery confirmed the integrity of the chest wall (Fig. 2a) and one year later the patient continues to be asymptomatic with no signs of recurrence.

Herniations through the chest wall are very uncommon events that can arise after trauma or surgery, although there have also been reports of cases of herniations after intense physical effort, such as energetic coughing, vomiting or defecation. Mean age at presentation is after 50, and associations have been identified with COPD, obesity and asthma.³ In the case of COPD, the characteristic progressive weakness of the chest muscles in addition to frequent cough and, eventually, the existence of underlying

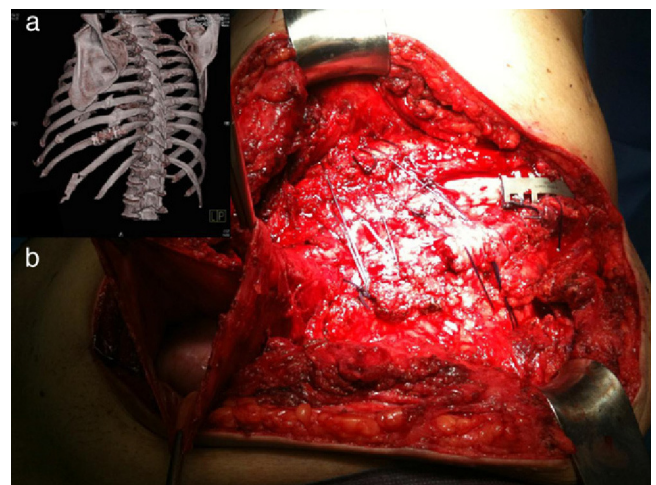


Fig. 2 – (a) Postoperative CT 3D image showing the integrity of the ribcage after osteosynthesis with struts and approximation using sutures and (b) intraoperative image of the procedure.

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spontaneous rib fractures favor the protrusion of content through the weakened areas of the chest wall.

Due to the relative weakness of the anterior chest wall muscles, this area is more often affected³ compared to the posterior wall, which is protected by powerful muscles like the latissimus dorsi, trapezius, subscapularis and rhomboids. Occasionally, the weakness generated by a surgical incision can become a predisposing factor for the appearance of thoracic herniations, especially if the closure of the rib injury was defective or if the surgery involved loss of rib segments. In our case, the hernia occurred between the 10th and 11th intercostal spaces as the result of unhealed rib fractures. Intercostal hernias generally have abdominal content, occurring more frequently on the left side⁴ as in our case.

Hernia masses can increase with Valsalva maneuvers or with coughing. They present as chest wall masses that are occasionally painful, along with digestive alterations or complications resulting from the strangulation of the hernia content.

As for imaging studies, chest radiography can reveal the effects of prior trauma (such as fractures) and reveal the widening of the corresponding intercostal space, as in our case. Radiology studies with contrast have been substituted for ultrasound, which confirms the presence of soft tissue herniation. This should be complemented with tomography as it provides greater detail, such as the size and location of the hernia defect, the nature of its content, the presence of concomitant disease and the structural state of the ribcage. The possibility to create 3D reconstructions is especially useful for planning surgical strategy.

Regarding chest wall repair methods, rib approximation and cerclage using absorbable pericostal sutures alone has been associated with a high rate of recurrences, as in this case. Therefore, we recommend the use of synthetic

mesh to reinforce the wall, refreshing the fractured edges in order to avoid pseudoarthrosis (which perpetuates wall weakness) and the use of prosthetic material for osteosynthesis, such as Judet struts, which help maintain the integrity of the thoracic cage.

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