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Diaphragmatic hernia repair more than four years after severe trauma: Four case reports

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ABSTRACT

INTRODUCTION: Diaphragmatic rupture is an infrequent complication of trauma, occurring in about 5% of those who suffer a severe closed thoracoabdominal injury and about half of the cases are diagnosed early. High morbidity and mortality from bowel strangulation and other sequelae make prompt surgical intervention mandatory.
CASE PRESENTATION: Four Brazilian men with a delayed diagnosis of a rare occurrence of traumatic diaphragmatic hernia. Patient one had diaphragmatic rupture on the right side of thorax and the others three patients on the left thoracic side, all they had to approach by a laparotomy and some approach in the chest, either thoracotomy or VATS. This injuries required surgical repositioning of extensively herniated abdominal viscera and intensive postoperative medical management with a careful control of intra-abdominal pressure.
DISCUSSION: The negative pressure of the thoracic cavity causes a gradually migration of abdominal contents into the chest; this sequestration reduces the abdomen's ability to maintain the viscera in their normal anatomical position. When the hernia is diagnosed early, the repair is less complicated and requires less invasive surgery. Years after the initial trauma, the diaphragmatic rupture produces dense adhesions between the chest and the abdominal contents.
CONCLUSIONS: All cases demonstrated that surgical difficulty increases when diaphragmatic rupture is not diagnosed early. It should be noted that when trauma to the thoraco-abdominal transition area is blunt or penetrating, a thorough evaluation is required to rule out diaphragmatic rupture and a regular follow-up to monitor late development of this comorbidity.

1. Introduction

Diaphragmatic rupture is an infrequent complication of trauma, occurring in about 5% of those who suffer a severe closed thoracoabdominal injury [1,2]. The left side is most commonly involved (80%) [3], and about half of the cases are diagnosed early [4]. High morbidity and mortality from bowel strangulation and other sequelae [2–4] make prompt surgical intervention mandatory [3–6]. With delayed treatment, abdominal viscera can become sequestrated into the chest cavity [7,8]. This situation often requires visceral reduction surgery together with complete muscular relaxation in the immediate postoperative period to control intra-abdominal pressure (IAP). This report describes the delayed diagnosis of four rare occurrences of traumatic diaphragmatic hernia. The injuries required surgical repositioning of extensively herniated abdominal viscera and intensive postoperative medical management [9].

2. Case reports

2.1. Patient one

A Brazilian, 37-year-old male presented with the chief complaints of progressive dyspnea and pain in the right thorax. His symptoms exacerbated during and after meals. No breath sounds were detected in the right chest area; however, bowel sounds were audible. Four years ago, he was the victim of a hit-and-run vehicular accident. Chest tomography confirmed a right diaphragmatic her-

Abbreviations: IAP, intra-abdominal pressure; ICU, intensive care unit; VATS, videothoracoscopy.

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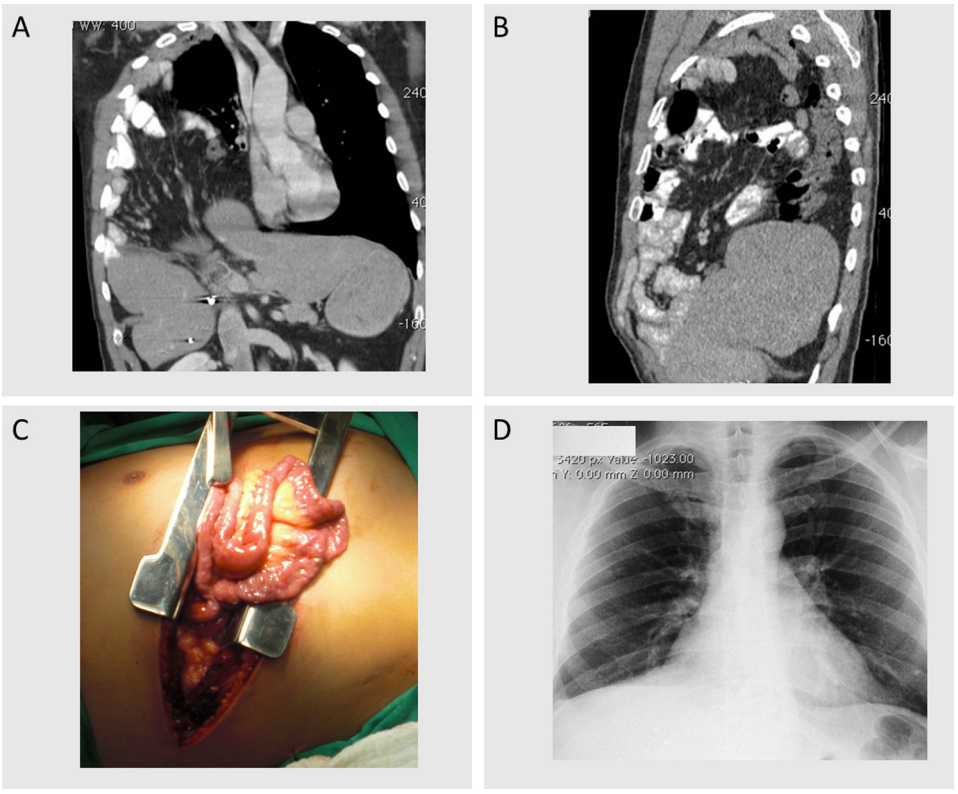

Fig. 1. Case 1. (A and B) CT coronal plane (A) and sagittal plane (B) with greater omentum, small bowel, colon and a portion of the liver in the right hemithorax. (C) Thoracotomy in the right 7th intercostal space with extrusion bowel. (D) Chest X-ray on postoperative day 30 showing adequate bilateral lung expansion.

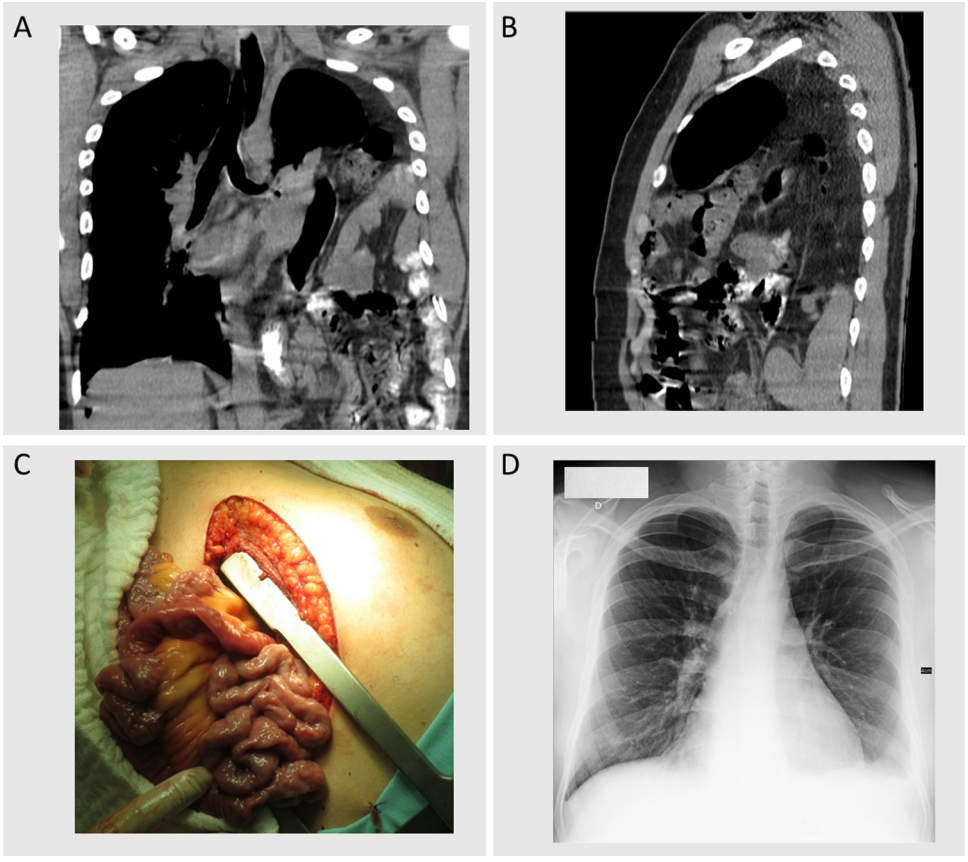

Fig. 2. Case 2. (A and B) CT coronal plane (A) and sagittal plane (B) with greater omentum, stomach, small bowel and colon in the left hemithorax. (C) Thoracotomy in the left 7th intercostal space with extrusion of bowel. (D) Chest X-ray on postoperative day 20 showing bilateral adequate lung expansion.