

Tension colothorax causing cardiac tamponade: A life-threatening complication following transhiatal oesophagectomy

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ABSTRACT

Postoperative diaphragmatic hernia following transhiatal oesophagectomy is a rare but potentially life threatening complication. We describe a case of a 65 year old patient who developed diaphragmatic hernia following oesophagectomy and presented with cardio pulmonary compromise. During surgery, haemodynamic instability continued despite fluid resuscitation and noradrenaline infusion. An immediate improvement in the haemodynamics and reduction in airway pressure occurred on reduction of the herniated colon from the thoracic cavity. This can be explained by tension colothorax causing collapse of the underlying lung and cardiac tamponade. It is a surgical emergency requiring urgent decompression for resuscitation. The etiology, clinical presentation, pathophysiology and preventive measures are discussed.

Key words: Cardiac tamponade, diaphragmatic hernia, shock, transhiatal oesophagectomy

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INTRODUCTION

A diaphragmatic hernia presenting in the postoperative period is a rare complication of transhiatal oesophageal surgery with an incidence of 0.4-2%.^[1,2] It can be easily confused with pulmonary complications like aspiration, atelectasis, consolidation, pneumonia and anastomotic leak causing sepsis which are the leading cause for morbidity. Literature review has revealed very few such case reports. It carries high morbidity and mortality rate.^[1,2] Our aim is to highlight the possibility of this complication in the presence of cardio-respiratory compromise. This will help in a prompt diagnosis and swift surgical intervention to get the best outcome.

CASE REPORT

A 65 year old male diabetic patient underwent transhiatal oesophagectomy and gastric resection for adenocarcinoma of the gastro-oesophageal junction. On the 10th postoperative day, he developed

progressive breathlessness which became severe by the next day. Air entry was significantly reduced on the left hemithorax. Chest X-ray as in Figure 1 revealed large bowel loops in the left hemithorax leading to a diagnosis of diaphragmatic hernia. The patient was rushed for an emergency thoracotomy.

Clinical examination revealed that the patient had severe respiratory distress with inability to lie down, nasal flaring, active accessory muscles, sweating and dilated neck veins. The respiratory rate was 40/min. The pulse was thready with a rate of 180/min and blood pressure of 90/60 mmHg. He maintained oxygen saturation of 85-90% with supplemental oxygen of 6 l/min.

The patient was preoxygenated and induced in sitting position. Fluid resuscitation was initiated. Airway was secured by rapid sequence induction technique. Haemodynamic instability continued despite fluid resuscitation. Thus, noradrenaline infusion was initiated at 0.05-0.1 µg/kg/min. The airway pressures went up to 42 cm of water.

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Figure 1: Chest X-ray showing herniated colon in the left hemithorax

An immediate and dramatic improvement in the haemodynamic parameters and resolution of high airway pressures was observed following reduction of the herniated colon. Noradrenaline infusion could be immediately weaned off.

Postoperatively, the patient was transferred to the intensive care unit for ventilatory support in view of severe mixed acidosis. He was weaned off and extubated the next day. Eventually, the patient succumbed to septic shock following anastomotic leak.

DISCUSSION

Diaphragmatic hernia following transhiatal oesophagectomy is an uncommon but potentially life-threatening complication, especially, if the diagnosis is delayed. It can present in the early postoperative period or many years later. Extended incision, lateral incision and partial resection of the diaphragm are associated with increased incidence of diaphragmatic hernia.^[1-3]

It is more common on the left side and the colon is most likely to herniate. Once in the thoracic cavity, the hernia contents stay there due to transdiaphragmatic pressure gradient.^[3] It can be asymptomatic or present with abdominal pain, intestinal obstruction and cardio-respiratory distress.^[1-3]

Our patient presented with impending cardio-respiratory failure. This can be explained

by the tension colothorax which caused a cardiac tamponade. The large volume of the oedematous herniated colon caused an exponential rise in the intrathoracic pressure. This led to the collapse of the underlying lung, resulting in ventilation perfusion mismatch and hypoxaemia. The continued rise in the intrathoracic pressure led to an extrinsic compression of the heart.^[3-5] It has been seen that extrapericardial pathology can mirror the pathophysiology of pericardial tamponade.^[4,5]

Cardiac tamponade results in impaired venous return, increased intracardiac pressure and decreased cardiac output. It has a cascading effect on the patient's condition which is likely to progress to shock, cardiovascular collapse and death. Resuscitation is impossible without surgical intervention and decompression.^[4,5]

An early X-ray chest would have helped in early diagnosis and decreased morbidity.

Practicing defensive surgical measures like routine narrowing of hiatus, making an anterior incision in the diaphragm rather than lateral and checking diaphragmatic integrity at the end of surgery minimize the chances of postoperative herniation of abdominal contents through the diaphragm.^[1]

In conclusion, cardio-respiratory compromise following oesophagectomy requires exclusion of diaphragmatic hernia as an underlying cause. Awareness about this complication will facilitate early detection and optimisation of surgical risk.

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