

Anesthetic Management of Adult Diaphragmatic Hernia for Primary Repair with Colostomy: A Case Report

Vaishali Waindeskar¹, Thomas Francis², Divas Sinha³, Anuj Jain⁴,
Ashutosh Kaushal⁵, Sunaina Tejpal⁶

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ABSTRACT

Congenital Diaphragmatic Hernia (CDH) occurs in about 1 in 3000 births. It usually presents at birth because of the defects in the foramen of Bochdalek or Morgagni in the postero-lateral or anterior part of the diaphragm. The late presentation in adulthood is rare and is reported in the literature. We describe anesthetic management of a rare case of 45-year-old female admitted with history of pain in abdomen who suffered from sealed perforation from the obstructed Morgagni hernia with transverse colon and omentum as contents.

Keywords: Diaphragmatic hernias; Double lumen tube; Anesthesia management; Colostomy.

INTRODUCTION

Diaphragmatic hernias can be classified into congenital and acquired types. Congenital Diaphragmatic Hernia (CDH) includes Bochdalek hernia (70%) in the posterior lateral and Morgagni hernia (25%-35%) in the anterior or central (2%-5%) part of the diaphragm, resulting in herniation of bowels and liver into the thorax.¹ Acquired

diaphragmatic hernias usually result from all types of blunt and penetrating trauma accounting for the majority. Adult late onset Congenital Diaphragmatic Hernia (CDH) is uncommon but not rare with variable clinical manifestations like gastrointestinal cardiopulmonary symptoms.² Of all CDH, late onset congenital diaphragmatic hernia accounts for only 5–30%, and of those cases chances of Morgagni hernia are only 1.5–6%. This emphasizes the rarity of Morgagni hernia in adult patients.^{3,4,5} A combination of eventration of diaphragm, Morgagni hernia with obstruction of contents with sealed perforation is rare and poses various challenges which require urgent and efficient management. We describe the successful management of such a rare case in a young adult.

CASE REPORT

A 45-year-old female patient; presented with complaints of fever and pain in abdomen for 2

Author Affiliation: ¹Professor, ^{2,3}Resident, ^{4,5,6}Associate Professor, Department of Anesthesiology & Critical Care, All India Institutes of Medical Sciences, Bhopal 462020, Madhya Pradesh, India.

Corresponding Author: Vaishali Waindeskar, Professor, Department of Anesthesiology & Critical Care, All India Institutes of Medical Sciences, Bhopal 462020, Madhya Pradesh, India.

E-mail: vaishaliwaind@gmail.com

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days. She was a known case of hypertension and bronchial asthma for 25 years and was on Tab. Amlodipine 5mg, Tab. Telmisartan 40mg and Tab. Hydrochlorothiazide 12.5mg OD for hypertension and took Formoterol fumerate and budesonide puff occasionally. On examination, the patient was febrile 100.4°F, dehydrated, with pallor and B/L pedal edema. Pulse rate was 142 bpm, RR-32/min, BP-148/98, SpO₂-88% on room air,

gradually increased to 95% with 3L/min O₂ support through mask. On systemic examination, there was decreased breath sounds in left hemithorax with B/L coarse crepitations present. Abdomen was soft, distended with mild diffuse tenderness with bowel sounds present. Chest X-ray and Abdominal X-ray showed multilinear gas-filled shadows with moderate pleural effusion in the lower lung fields with blunting of costophrenic angle (Fig. 1 and 2.



Fig. 1: Pre-operative chest X-ray



Fig. 2: Pre-operative abdominal X-ray

Further CT scan of thorax and abdomen was done, and it showed large left anterior diaphragmatic hernia (Morgagni's Hernia) with omentum and transverse colon herniating. There was moderate pleural effusion in the left side with underlying lung consolidation with mild pericardial effusion (Figure 3). ECG showed sinus tachycardia. ICD

was inserted and 100 ml straw colored fluid was drained. Investigations were done. The patient was taken for emergency surgery. Combined balanced general and epidural anesthesia was planned and its risks were explained to the patient and relatives. Informed written consent and postoperative ventilator consent were taken.



Fig. 3: Contrast Enhanced Computerized Tomography (CECT) of the abdomen

Preoperative optimization was done by nebulizing the patient with bronchodilators and mucolytic agents to improve pulmonary reserve, antibiotic coverage was given. At arrival in operation theatre, multi-parameter monitors were attached with ECG, SpO₂, EtCO₂, temperature, invasive blood pressure, and central venous pressure (CVP). The patient received aspiration prophylaxis and premedicated with intravenous midazolam 1 mg and 0.2 mg glycopyrrolate. Nasogastric tube was inserted, and stomach was deflated. After preoxygenation, rapid sequence induction was performed using Inj. fentanyl 2mcg/kg, Inj. propofol 100 mg and succinylcholine 75mg. Intubated done with right sided 32-Fr. double lumen bronchial tube. Anesthesia was maintained with Atracurium, Isoflurane and 50% O₂ in the air and volume-controlled mode ventilation with PEEP of 5mm Hg. After diaphragmatic defect repaired both the lungs were ventilated. Under all aseptic precautions, the thoracic epidural catheter (T9-T10) was placed using 16G Touhy's Inj. Lignocaine with adrenaline 2% 3cc test dose was given and catheter placement was confirmed and first dose of 8mL of 0.25% bupivacaine given.

Patient underwent resection of the transverse colon segment with adhesiolysis with primary repair of Morgagni hernia and diverging colostomy (Hartmann technique). At the end of surgery, DLT tube was exchanged with a single lumen cuffed 7.5 tube. The patient was mechanically ventilated overnight and extubated next day. Postoperative chest X-ray was done Fig. 4.



Fig. 4: Postoperative chest X-ray

DISCUSSION

Incidence of diaphragmatic hernia beyond the neonatal period varies from 5% to 30%.⁶ Late-

onset of CDH is more difficult to diagnose as they present with vague symptoms of cardiorespiratory and others which can mislead the diagnosis. And one should always have a differential diagnosis of diaphragmatic hernia in the list of such scenarios. On systemic evaluation, decreased breath sounds along with diffuse tenderness on palpation of abdomen with Chest X-ray and Contrast Enhanced Computerized Tomography (CECT) of the chest and abdomen remain the gold standard in diagnosing these cases.⁷ Anesthetic management of such adult type of CDH are very challenging to anaesthesiologist in every stage from anesthetic technique, considering them as full stomach and providing required aspiration prophylaxis, all the necessary modalities for hemodynamic monitoring for which large gauge intravenous access is necessary to manage any hemodynamic instability along with invasive blood pressure and CVP monitoring and anticipation of difficult airway for which difficult airway cart is ready.

DLT was used to avoid inflation of the collapsed lung to avoid the combined mass effect of herniated viscera and inflated lung. Any event that increases the intra abdominal pressure especially during induction, intubation, and extubation is decremental to the patient. There may be decreased venous return and cardiac output due to positive pressure ventilation with potential gastric insufflation and expansion of the compressed lung. Thus, low tidal volume and low airway pressure strategy was employed. Nitrous oxide may also worsen the mass effect and was thus avoided.

CONCLUSION

Anesthetic management of CDH repair in adult patients is challenging for anesthesiologists and requires special care. Aspiration prophylaxis, rapid sequence induction, lung isolation technique, meticulous monitoring, adequate plane of anesthesia and avoidance of nitrous oxide is the key of successful anesthetic management.

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Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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