Case Report

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Maternal Diaphragmatic Hernia Correction During Pregnancy

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Abstract

Congenital diaphragmatic hernia consists of a defect in the embryonic development of the diaphragm that allows the passage of the abdominal viscera into the thoracic cavity, its diagnosis during pregnancy is quite rare. We present the case of a 31-year-old woman, with 23 weeks of gestation, who consulted for epigastric pain, nausea, and repetitive emetic episodes, without improvement with the medication provided. Due to the intense abdominal pain, a computed tomography of the abdomen and thorax was performed where the 28 mm defect was found at the left diaphragmatic level with protrusion of the gastric fundus to the thoracic cavity. She was taken to surgical management by laparoscopy with abdominal and thoracic approach, with a successful result and without maternal perinatal complications. Although the integrity of the diaphragmatic suture could be feared in relation to the increase in intraabdominal pressure due to uterine growth, the evolution of our patient and previous reports show that postoperative complications are not frequent. Successful vaginal delivery has even been described in some reports. Diaphragmatic hernias diagnosed during pregnancy are quite rare. We suggest that the optimal management of them during pregnancy is immediate surgical correction in case of persistent symptoms, more studies are needed to establish firm recommendations on the management of this pathology.

Keywords: Hernias, diaphragmatic, congenital; Bochdalek; Pregnancy

Introduction

Congenital diaphragmatic hernia consists of defects within the embryonic development of the diaphragm, allowing the passage of abdominal viscera into thoracic cavity. It has an incidence of 1 in 3300 live births.[1] Usually, it is associated with abnormal lung development leading to pulmonary hypoplasia and pulmonary hypertension; these being the main determinants of morbidity and mortality in these patients.[1]

The diaphragmatic defects developed due to altered separation in the thoracic and abdominal compartments at the level of the embryonic pleuroperitoneal conduits.[2] Four forms of congenital diaphragmatic hernia are described: hiatus hernia, para-esophageal hernia, Mor-gagni-Larrey hernia, and Bochdalek hernia.[3] The specific prevalence of the latter is 1 per 2500 live births, resulting from incomplete fusion of the lumbar (posterior) and costal (lateral) elements during the development of the diaphragm.[4] It is rarely diagnosed in adults (10%) and often located in the left hemithorax.[3]

When the diagnosis is made at birth, patients usually present with respiratory failure, and to a lesser extent with gastrointestinal symptoms. A chest X-ray may evidence the incorrect positioning of the viscera suggesting the diagnosis. Computer tomography (CT) can provide greater detail of the degree of involvement.[2] Definitive management consists of surgical correction of the lesion with abdominal contents returned to the peritoneal cavity.[5]

The diagnosis of Bochdalek hernia during pregnancy is quite rare, with only 44 cases reported up to 2016.[6] Its infrequency leads to its unsuspected occurrence, delaying diagnosis, and facilitating the appearance of complications, with a mortality of up to 32% when intestinal strangulation occurs.[1] These are usually previously asymptomatic patients who, with the increased abdominal pressure associated with pregnancy, develop symptoms such as pain, gastrointestinal symptoms, or dyspnea.[1]

Despite the high maternal-perinatal morbidity associated with this condition, some publications have supported surgical correction of the lesion during gestation, subsequently allowing the evolution of the pregnancy.[6] The patient has given her consent to publish her clinical information and figures in this journal.

Case presentation

A 31-year-old patient, gravida 3, para 1, ectopic 1, at 23 weeks of gestation and previously asymptomatic consulted with epigastric pain, nausea, and repeated emesis. She received symptomatic management with an antiemetic and an antacid without improvement. Due to an intense abdominal pain, a thoracic and abdominal CT scan was done and reported a solution of continuity in the left diaphragm of 28 mm with

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Maternal-Fetal Medicine (2023) 5:4

Received: 21 January 2021 / Accepted: 30 June 2021

First online publication: 20 July 2021

http://dx.doi.org/10.1097/FM9.0000000000000119

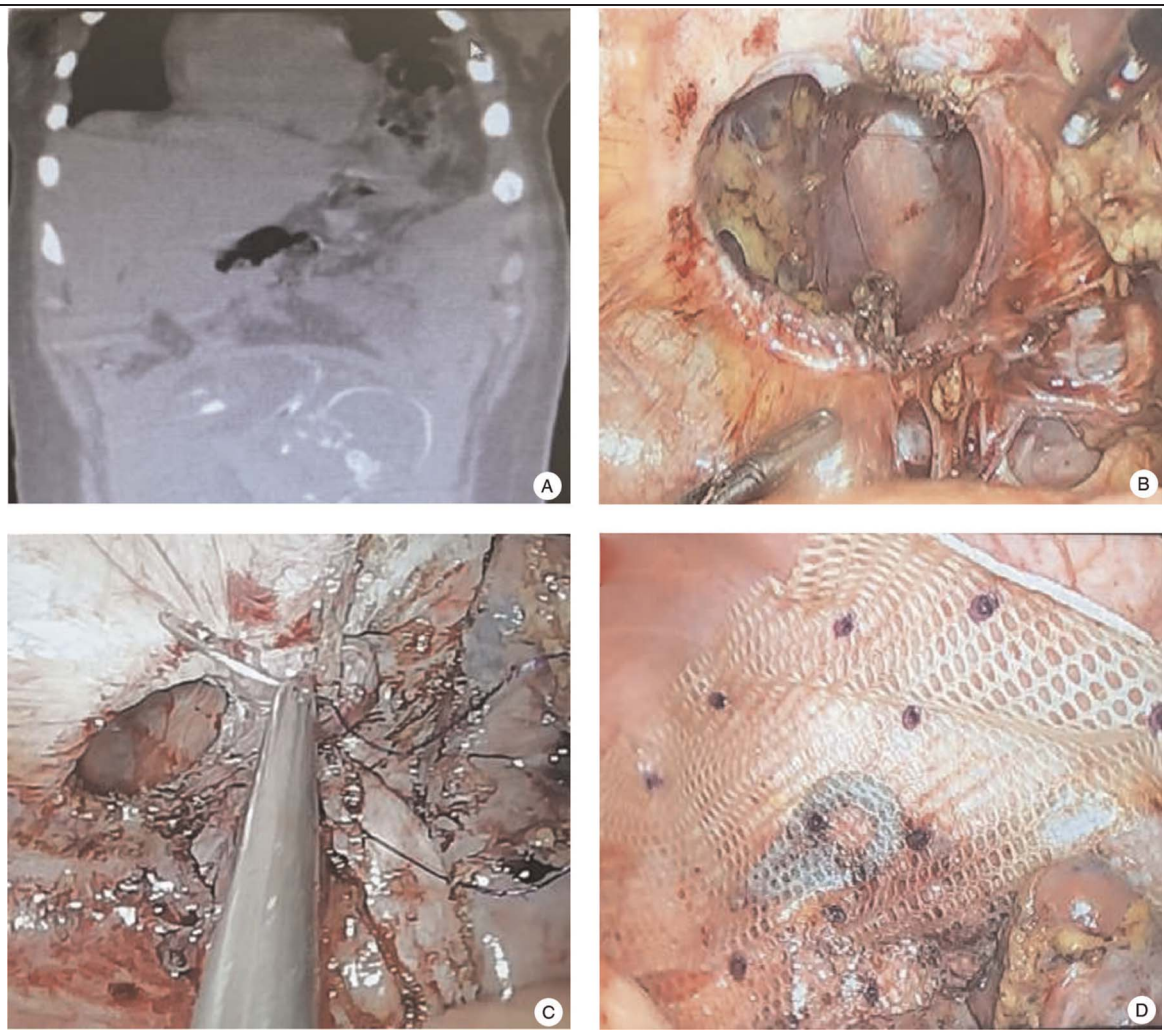

Figure 1. Images of the diaphragmatic hernia. A. Contrasting thorax CT scan showing left diaphragmatic hernia with gastric content at intrathoracic level. B. Hernial defect at diaphragmatic level (5-6 cm). C. Defect correction with suture. D. Mesh placed over the repaired area and fixed with mechanical suture.

protrusion of the gastric fundus into the chest cavity. She was referred to a tertiary care institution where a digestive endoscopy was performed, evidencing a stomach hernia through the defect in the diaphragm. The chest CT scan revealed compressive atelectasis in the left lung (Fig. 1A). Intolerance to food and persistent pain motivated the decision to perform surgery with an interdisciplinary board. A laparoscopic approach was performed through the abdomen by general surgeons and through thorax by thoracic surgeons. A defect of 6 cm in transverse diameter is found in the diaphragm, with gastric fundus protrusion and omentum, with evidence of ischemia that corrected after visceral reduction (Fig. 1B). Chest adhesions and lung decortication were released. Omentum adhesions were released, as well as the entire splenic surface attached to the diaphragmatic border. An herniorrhaphy was performed with Stratafix 1 suture (Ethicon US, LLC. 2017 DSL #085133.171129) in a continuous horizontal fashion (Fig. 1C). Subsequently, 10 cm × 15 cm Symbotex mesh (710 Medtronic Parkway. Minneapolis, MN. 55432–5604, USA) was placed over the repaired area and fixed with Absorbatack 15 mechanical suture (710 Medtronic Parkway. Minneapolis, MN. 55432–5604, USA) (Fig. 1D).

Abdominal and thoracic organ integrity was evaluated, and laparoscopy ports were closed. During the postoperative period, orotracheal extubation was achieved within 24 hours, and noninvasive ventilation with positive pressure was performed intermittently for 3 days. Complete pulmonary re-expansion was achieved and was discharge on the fourth postoperative day. At 39 weeks of gestation, the patient was again admitted for a scheduled C-section to avoid any Valsalva maneuvers that might hazard the suture of the diaphragm, a procedure that was carried out without complications. The patient was discharged 2 days after the surgery, with an optimal postoperative evolution. The newborn had no complications and was discharged with his mother.

Discussion

The presentation of maternal diaphragmatic hernia in pregnancy is infrequent, and its management is complex.[7] The increase of intra-abdominal pressure during pregnancy by the uterus is perhaps the factor that contributes to the presentation of more severe cases, with management implicating greater risks.[7]

Simple abdominal and chest X-rays are useful for diagnosis. Although a CT Scan or magnetic resonance studies are usually necessary to adequately document the size of the defect, the organs involved, other considerations such as fetal radiation should also be taken into account in the choice of the diagnostic image modality.[8]

From patients diagnosed during pregnancy, 54% of them presented after the 24-week of gestation, 21% before that gestational age, and 20% during labor. Six cases of maternal death and 11 cases of fetal death have been reported in the literature.[7]

The recommended approach is immediate surgical management, including maternal steroids after the 24th week of gestation.[6,8] After surgery, the most usual course is favorable, with no further complications.

In our patient, persistent symptoms (pain and intolerance to food) motivated immediate surgical management at 23 weeks of gestation, with complete resolution of symptoms and adequate postoperative evolution. Accordingly, to other reports, a synthetic prosthesis was used for correction of the diaphragmatic defect.[6,8]

The integrity of the diaphragmatic suture repair could be impaired by the increased intra-abdominal pressure due to uterine growth. However, our patient's evolution and previous reports have shown that postoperative complications are not frequent. More even, previous reports have described that these patients could achieve successful vaginal delivery.[8] Nonetheless, the fear of re-herniation related to the large size of the diaphragmatic lesion in our patients led us to a C-section to avoid intense Valsalva maneuvers during the labor.

In conclusion, diaphragmatic hernias diagnosed during pregnancy are quite rare. We suggest that the optimal management of diaphragmatic hernias during pregnancy is the immediate surgical correction in case of persistent symptoms. This might control the symptoms and prevent the development of complications. Further studies are needed to establish firm recommendations on the management of this pathology.

Acknowledgments

The authors extend special appreciation to the Clinical Research Center team of Fundación Valle del Lili (FVL), for support during the development of the article.

Funding

None.

Conflicts of Interest

None.

Data Availability

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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Edited By Dandan Shi

How to cite this article: Barona-Wiedmann JS, Velásquez M, Franco MJ, Muñoz H, Nieto-Calvache AJ. Maternal Diaphragmatic Hernia Correction During Pregnancy. Maternal Fetal Med 2023;5(4):257–259. doi: 10.1097/FM9.0000000000000119.