



Case report

Surgical technique of congenital diaphragmatic hernia following sleeve gastrectomy; a case report study



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ABSTRACT

Introduction and importance: Congenital diaphragmatic hernia (CDH) is caused by a defect of diaphragm. The incidence of CDH is 1/3600 in new births in the US, causing pulmonary hypoplasia and pulmonary hypertension. In rare cases, the late presentation in adulthood is reported.

Case presentation: We report a 31-year-old female with respiratory distress and gastrointestinal disease, diagnosed on X-ray chest and abdomen CT scan as CDH case, which was in left-sided diaphragm.

Clinical discussion: Left posterolateral thoracotomy was performed for this patient. The patient with late diaphragmatic hernias presentation had a variety of symptoms, but diagnosis was very difficult.

Conclusion: In this super rare case, the patient had a mix of bariatric surgery complications such as excessive weight loss. Additional investigation and research are necessary to better detect this type of disease.

1. Introduction

A congenital diaphragmatic hernia (CDH) is caused by an opening in the diaphragm [1], and this defect allows abdominal organs, including the stomach, liver, and intestines [2], to enter the chest through the hole in the diaphragm. This interferes the development of the lungs completely and cause pulmonary hypoplasia and pulmonary hypertension due to the smaller size of the lungs and less development of its blood vessels [3]. CDH occurring is 1 of every 3600 live births in the United States [4]. In most CDH patients, it is diagnosed in infancy by respiratory distress symptoms [5], but in rare cases it remains undetected until adulthood and found in adult patients through respiratory and gastrointestinal tract symptoms [6], either non-specific (epigastric pain, dyspnea) or catastrophic (colon strangulation) [7]. In adults, left-sided diaphragmatic hernia (it is called Bochdalek hernias) is more common than right-sided cases [8] and may the defect grows asymptotically and slowly over many years [7]. For the first time in the literatures on bariatric surgery, we present an extremely rare case of super obese patient with a case of a 31-year-old female with left-sided CDH who had an experience of respiratory distress.

2. Presentation of case

A case was a 31-year-old female with left-sided CDH, with BMI 44 kg/m² who had underwent laparoscopic sleeve gastrectomy in *** hospital, ***, ***, under supervision of *** and his team. After performing surgery and routine evaluations, she discharged from hospital with completely healthy parameters and without any serious post-operative complication. The patient came back to the hospital with cough, fever, shivering and excessive weight loss after 4 months of sleeve gastrectomy. The patient had no family history of hemithorax or taken specific medications history in the past. Unfortunately we were not able to go into more detailed genetic analysis before and after treatment. The primary diagnosis revealed a hemothorax abscess and after deep evaluations, several adhesions in abdominal cavity were observed. Figs. 1, and 2 illustrate clinical evaluations of abdomen and chest before diaphragmatic hernia surgery, respectively. Thoracic and hernia surgeons performed left posterolateral thoracotomy and diaphragmatic hernia repair surgery and after 72 h of NPO, microingredient analysis was performed. Fig. 3 shows CT scan thorax and abdomen after diaphragmatic hernia surgery. Then, she underwent another operation for bariatric silver covered stents and after six weeks, drainage secretion

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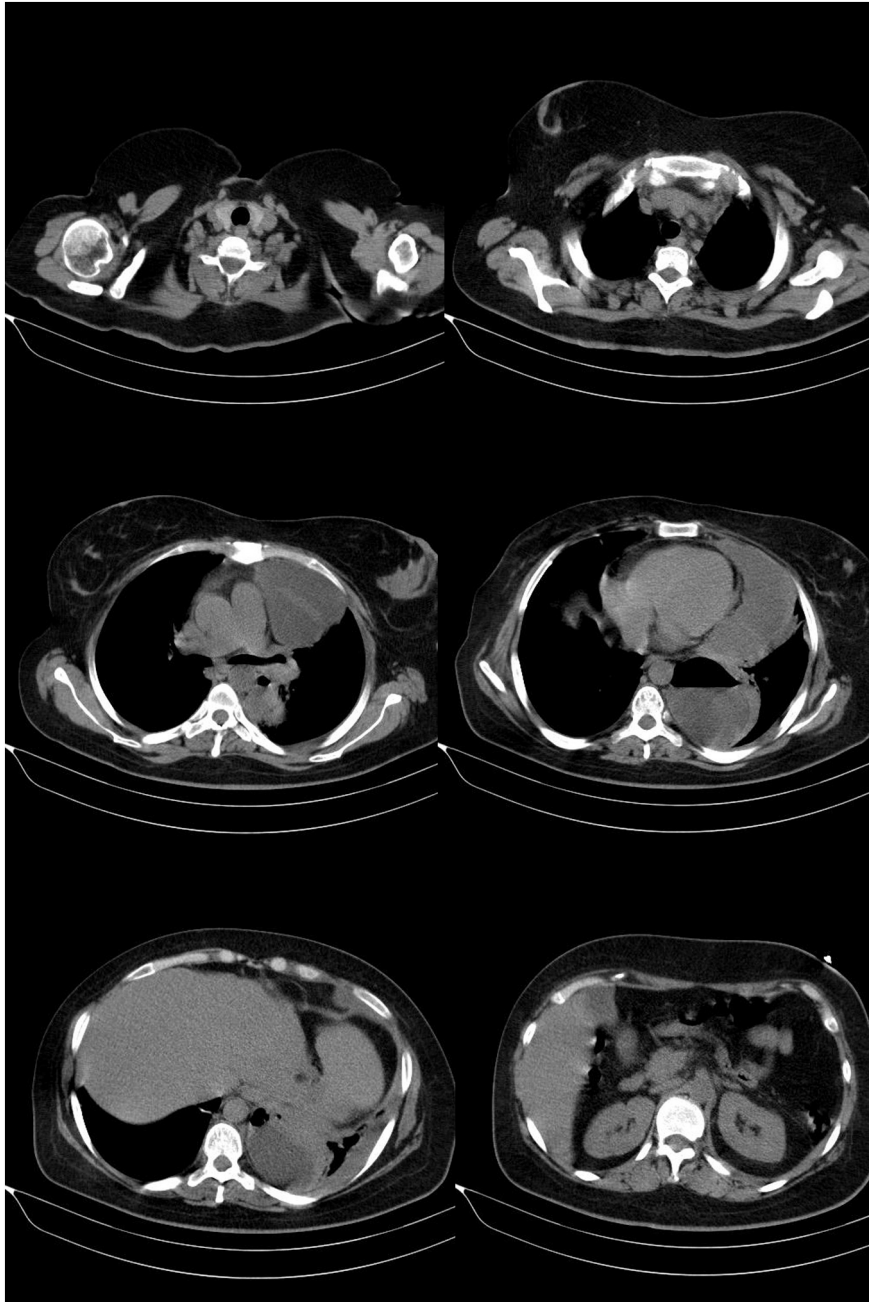


Fig. 1. Clinical evaluations of abdomen before diaphragmatic hernia surgery. CT scan thorax and abdomen revealed a Bochdalek hernias.



Fig. 2. Clinical evaluations of chest before diaphragmatic hernia surgery. Preoperative chest X-ray showed no symptomatic difference.

of abdomen was declined and finally stents removal was done, and patient discharged from hospital (Fig. 4).

The latest follow-up visit was at 3 years after surgery and patient had no serious complications with normal weight and BMI of 29 kg/m² without any symptoms of recurrent CDH. This study has been reported in line with the SCARE 2020 criteria [9].

3. Discussion

CDH, which is a rare developmental defect of the diaphragm, in some rare cases are diagnosed in adulthoods through respiratory and gastrointestinal tract symptoms. There are several studies reporting the approaches for management of CDH which is one of the most severe birth defects [10]. The etiology and risk factors of CDH remains is unknown and poorly understood, but based on reports maternal underweight, nor overweight or even obesity is not risk factors of CDH development. While, based on a case report, an extremely low birth weight infant with left CDH was diagnosed [11] but overweight has not been reported as one of the long-term complications. We found just a case study with same problem in which a 36-year-old morbidly obese female who wanted to undergo bariatric surgery and found to have incidental finding of morgagni hernia. The surgeons reported a safely concomitant laparoscopic hernia repair along with sleeve gastrectomy [12]. Nevertheless, it is the first time a patient was diagnosed with CDH following bariatric surgery where the patient had no respiratory and gastrointestinal symptoms. The only answer for this rare case is that probably the patient experienced severe weight loss after sleeve gastrectomy that may put the susceptible individuals at the risk of late occurring diaphragmatic hernia. Researchers believe that obesity and chronic cough develop intraabdominal pressure leading to acquired hernias. While in this case, the patient presented Bochdalek hernias after excessive weight loss that may reduce the intraabdominal pressure leading to a reduction in the risk of occurrence of CDH. To conclude, although diaphragmatic hernia is not common among adult patients, but this super rare case of Bochdalek hernias patient, who had undergone sleeve gastrectomy 4 months before diagnosing CDH, is a good listen for general and bariatric surgery surgeons to have an initial exploration of the whole abdomen prior to sleeve gastrectomy. This case report adds the best surgical approach and management strategy after diagnosis in Bochdalek hernia patients following bariatric surgery. In addition, more investigation and reports are required to better detect this type of disease and have a deep understanding on the correlation of CDH and bariatric surgery.

4. Conclusion

In conclusion, it is highly recommended to have an exploration of the whole abdominal cavity before any laparoscopic approach such as sleeve gastrectomy. Patients who undergo sleeve gastrectomy may have some of excessive weight loss, cough, fever, shivering complications after surgery and it should not be misdiagnosed. However, these mutual complications can be seen in different health-related problems, and CDH is not as common as other issues, but it should not be eliminated from the possibility check list in bariatric surgery patients.

Consent

Informed consent from the patient was recorded and evaluated for publication.

Ethical approval

In the treatment of this case report patient, no unproven interventions have been used, and written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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This is a self-funded study.

Author contribution

Hamidreza Goudarzi: data collection, data analysis or interpretation, writing the paper.

Mahsa Hemmatizadeh: writing the paper, data analysis.

Taha Anbara: study concept or design, writing the paper.

Guarantor

Taha Anbara.

Registration of research studies

Not applicable.

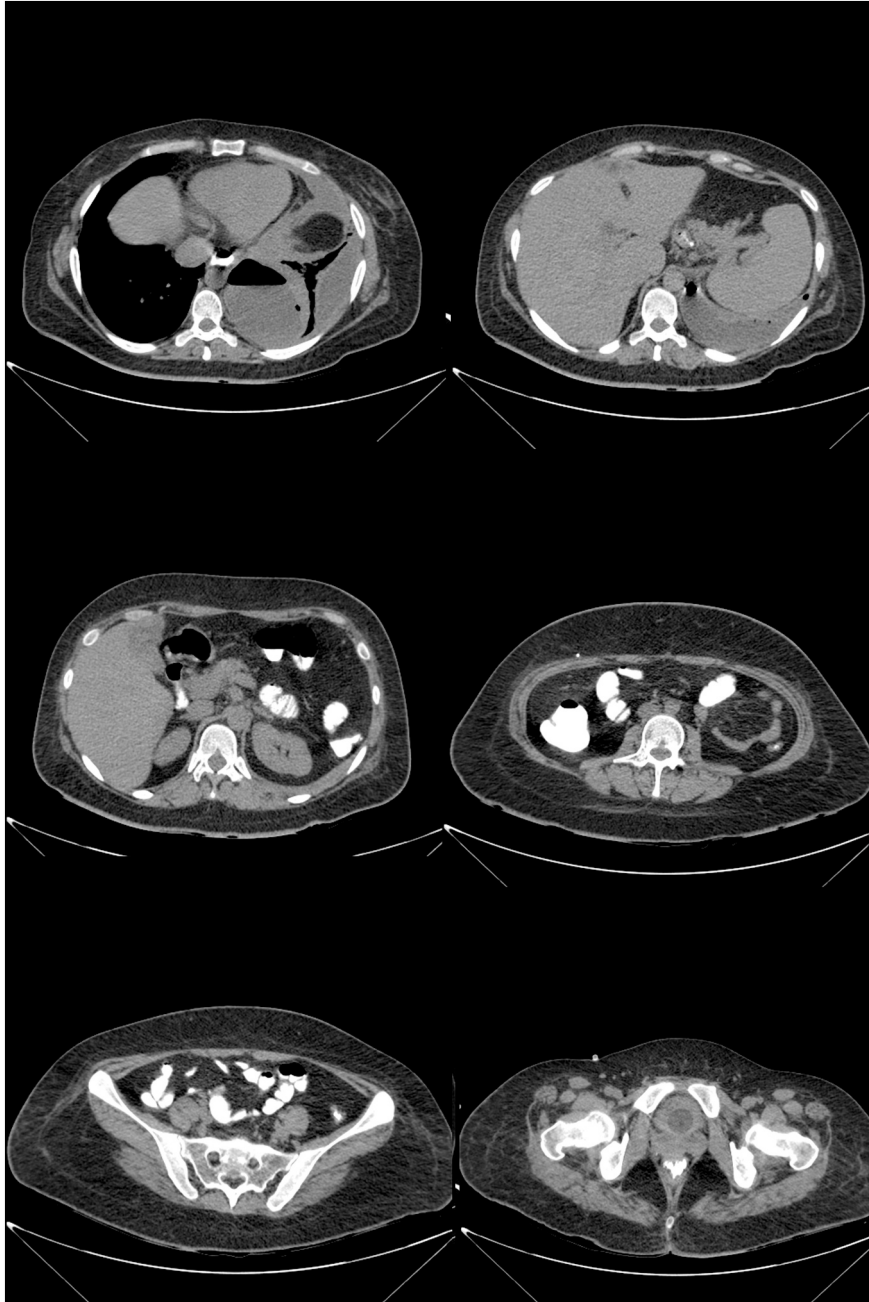


Fig. 3. Clinical evaluations of abdomen after diaphragmatic hernia surgery.

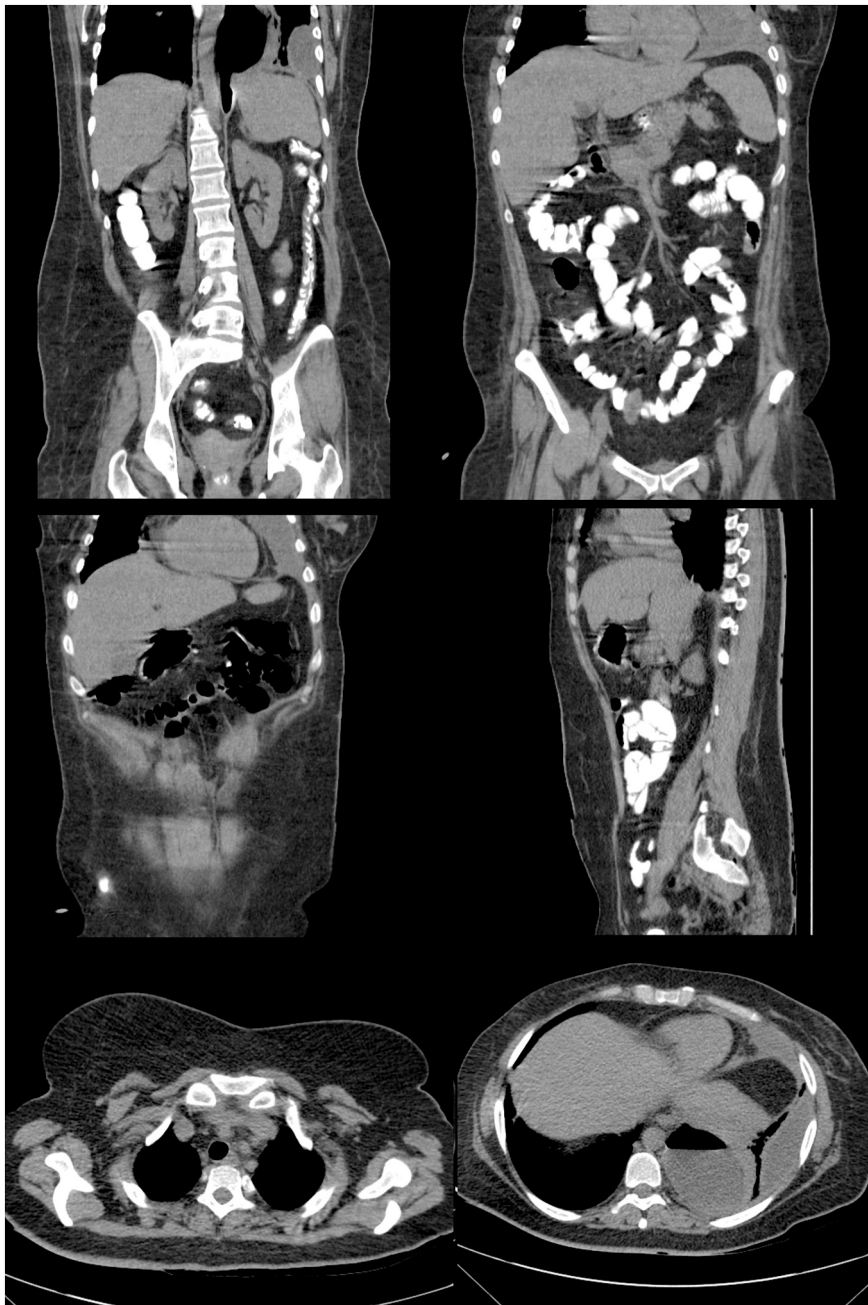


Fig. 4. Clinical evaluations of whole body after diaphragmatic hernia surgery.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of competing interest

No conflict of interests.

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