Asian Journal of Health Research
Journal Homepage: https://a-jhr.com
Published by Ikatan Dokter Indonesia Wilayah Jawa Timur

OPEN ACCESS

Case Report

Hiatus Hernia in Adult and Children: Case Report

Hanifa Fathinatul Amirahayu[1*], Yuyun Yueniwati[2]

[1] Radiology Resident of Radiology Specialist Study Program, Faculty of Medicine, Universitas Brawijaya/ Dr. Saiful Anwar Hospital, Malang, East Java, Indonesia
[2] Professor of Radiology, Radiology Specialist Study Program, Faculty of Medicine, Universitas Brawijaya/ Dr. Saiful Anwar Hospital, Malang, East Java, Indonesia

ARTICLE HISTORY
Received: 19 January 2026
Revised: 20 February 2026
Accepted: 18 March 2026

CORRESPONDING AUTHOR*
Hanifa Fathinatul Amirahayu
hanifaituifa@gmail.com
Radiology Resident of Radiology Specialist Study Program, Faculty of Medicine, Universitas Brawijaya/ Dr. Saiful Anwar Hospital, Malang, East Java, Indonesia

KEYWORDS
Bochdalek hernia; Congenital diaphragmatic hernia; Hiatal hernia; Paraesophageal hernia

This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (https://creativecommons.org/licenses/by/4.0/)

ABSTRACT

Introduction: Diaphragmatic and hiatal hernias are clinically significant and may lead to serious complications if not promptly recognized and treated. Differentiating these entities on imaging can be particularly challenging when extensive visceral herniation distorts normal anatomical landmarks.

Case Presentation: We report two rare cases illustrating distinct diagnostic challenges. The first involved a 49-year-old woman with paraesophageal hernia complicated by gastric volvulus. The second concerned a 1-year-old girl initially misdiagnosed with Bochdalek hernia, later identified intraoperatively as type III hiatal hernia, an unusual presentation in infancy.

Results: Radiologic imaging was crucial for diagnosis and management. Contrast-enhanced CT offered precise anatomical detail, enabling accurate identification of hernia type, extent, and complications, thereby guiding surgical planning. Notably, in the pediatric case, CT contributed to distinguishing a rare type III hiatal hernia from an initial Bochdalek diagnosis

Conclusion: These cases emphasize the key role of CT in distinguishing hiatal from congenital diaphragmatic hernias. Understanding hernia anatomy and imaging features is vital for timely diagnosis, surgical planning, and preventing serious complications.

Cite this as: Amirahayu HF, Yueniwati Y (2026) Hiatus Hernia in Adult and Children: Case Report. *Asian J Heal Res*. 5 (1): 39–48. doi: https://doi.org/10.55561/ajhr.v5i1.308

INTRODUCTION

Diaphragmatic hernias encompass a spectrum of conditions in which abdominal viscera herniate into the thoracic cavity through congenital or acquired defects. Among these, Bochdalek hernia represents a congenital posterolateral diaphragmatic discontinuity, whereas hiatal hernia involves herniation through the esophageal hiatus [1]. Although anatomically distinct, extensive intrathoracic migration of abdominal contents may obscure key landmarks and create diagnostic uncertainty on cross-sectional imaging.

Accurate differentiation between hiatal and Bochdalek hernia relies on precise anatomical localization. Hiatal hernia originates at the esophageal hiatus and is characterized by displacement of the gastroesophageal junction (GEJ) and involvement of the diaphragmatic crura, whereas Bochdalek hernia represents a true posterolateral defect without primary GEJ migration [2]. Multislice CT with sagittal and coronal reformatted images improves visualization of diaphragmatic integrity and the true site of herniation, while reliance on axial imaging alone may obscure occult defects or misrepresent the origin of the hernia [2,3].

Distinguishing between these entities is clinically important, as inaccurate classification may influence surgical planning and operative strategy [4]. Previous reports have demonstrated that large hiatal or paraesophageal hernias may mimic congenital diaphragmatic defects on imaging, only to be reclassified intraoperatively. Recognition of GEJ position, crural integrity, and the precise diaphragmatic defect is therefore essential to avoid diagnostic misinterpretation [5].

This report presents two illustrative cases: an adult with Type III hiatal hernia complicated by gastric volvulus and a pediatric patient in whom a Type III hiatal hernia mimicked a Bochdalek defect on CT. These cases emphasize a clinically significant diagnostic pitfall and highlight the importance of systematic anatomical assessment using multiplanar imaging reconstruction.

CASE PRESENTATION

We report two cases to illustrate the radiological and clinical spectrum of these conditions.

Case 1

Mrs. I, a 49-year-old woman, was diagnosed with a suspected paraesophageal hernia at Saiful Anwar Hospital, Malang. She had experienced shortness of breath and frequent vomiting after eating or drinking for 7 months before admission. After consuming 5–6 tablespoons of soft food, she felt nauseated, and liquids often triggered vomiting. She also reported difficulty with food passing smoothly through her esophagus. Episodes of dyspnea occurred intermittently. The patient had a previous diagnosis of gastroesophageal reflux disease (GERD) and was treated with ranitidine and lansoprazole. She later returned with abdominal pain, for which she received paracetamol. Her past surgical history included liposarcoma removal from her left shoulder in 2020 at RSUD Genteng, Banyuwangi. She did not undergo chemotherapy afterward.

Imaging Findings

Chest radiography demonstrated a cystic intrathoracic lesion with an air–fluid level in the left hemithorax, suggestive of gastric herniation. A contrast-enhanced CT scan of the thorax was subsequently performed with multiplanar reconstruction in axial, coronal, and sagittal planes. CT revealed herniation of the stomach from the fundus to the pylorus, along with portions of the duodenum and mesenteric fat, into the left hemithoracic cavity through an esophageal hiatal defect measuring approximately 4 × 6 cm. The GEJ was clearly displaced above the diaphragm, confirming supradiaphragmatic migration. Coronal and sagittal reformatted images demonstrated that the defect originated at the esophageal hiatus with involvement of the diaphragmatic crura, without evidence of a separate posterolateral diaphragmatic discontinuity. No small or large bowel dilatation was observed. Additional findings included atherosclerotic changes. Operative findings confirmed a hiatal defect corresponding to CT measurements, establishing the diagnosis of Type III paraesophageal hernia (Figure 1).

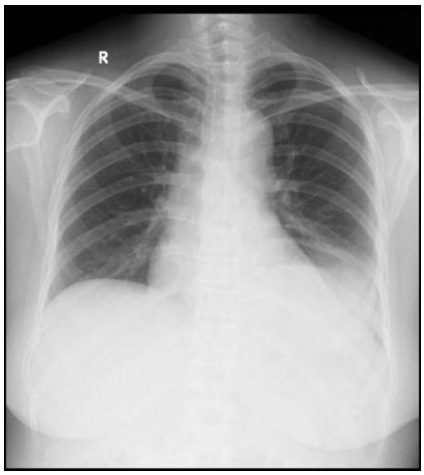


Figure 1. Chest X-ray of Mrs. I with an air-fluid level in the left hemithorax.

Surgical Findings

From the operative findings, it was found that the fundus of the stomach had herniated into the thoracic cavity through the esophageal hiatus. A hiatal defect measuring approximately 5 cm was identified. The herniated portion of the stomach was carefully repositioned into the abdominal cavity. Upon inspection, a hiatal defect was found and subsequently repaired by approximating the crura to effectively narrow the esophageal hiatus. Following the repair, a Nissen fundoplication was performed. Based on these intraoperative findings,

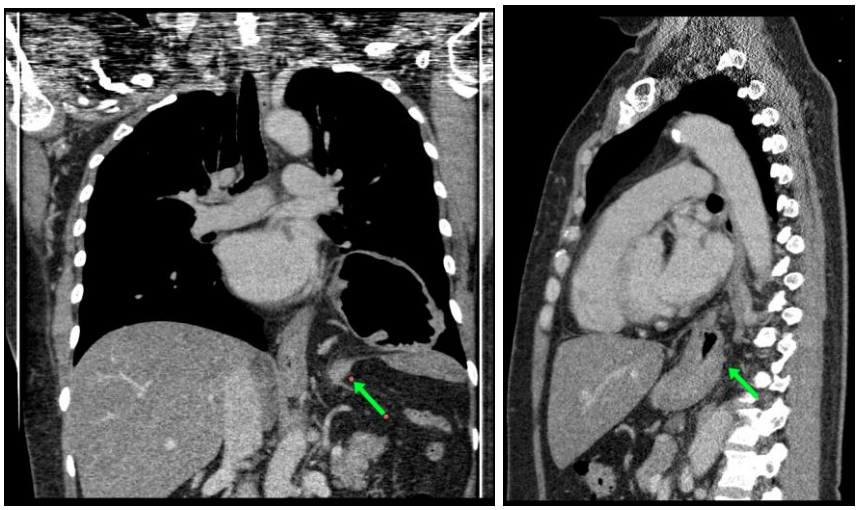


Figure 2. Chest CT scan Mrs.I showed herniation of the stomach, duodenum, and mesenteric fat into the left hemithoracic cavity through an esophageal hiatal defect measuring approximately 4×6 cm.

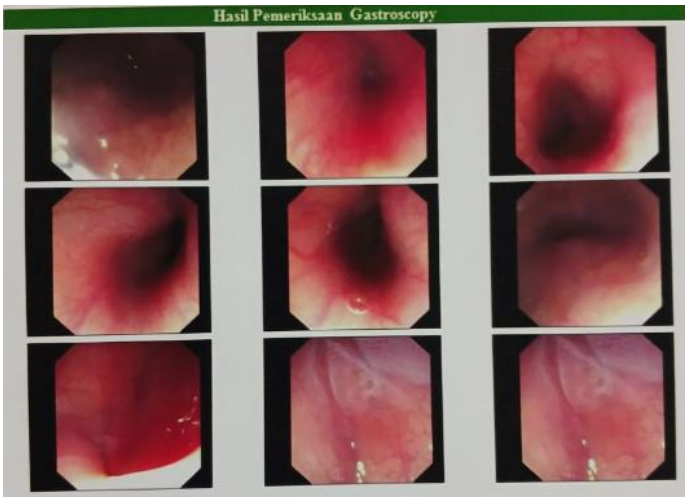


Figure 3. Endoscopy Child D was found esophageal stricture.

the patient was diagnosed with a Type III hiatal hernia (mixed sliding and paraesophageal hernia) (Figure 2).

Case 2

Child D, a 1-year-old girl, was brought to the hospital with dark-colored vomiting that started three days before admission, along with one episode of black stool (melena). There was no fever or repeated vomiting reported before. The child received intravenous fluids, a packed red cell transfusion, and intravenous ondansetron and omeprazole. An endoscopy was later performed and showed an esophageal stricture. A CT scan was recommended for further evaluation (Figure 3).

After the child's condition became stable, an upper gastrointestinal fluoroscopy with water-soluble contrast was carried out. The results showed that the gastroesophageal junction (GEJ) was located at the level of T6–T7 vertebrae, which is above the diaphragm. The stomach appeared to be rotated, with the fundus positioned on the posterior left side, the corpus in the midline, and the antrum and pylorus at the level of T8–T10. A protrusion of the stomach through a midline diaphragmatic defect about 6 cm wide was seen. These findings suggested gastric protrusion into

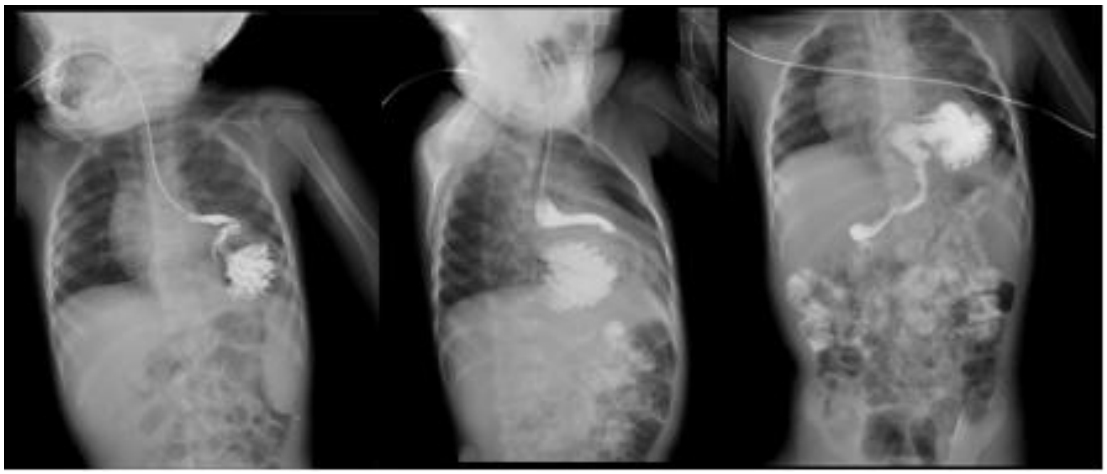


Figure 4. Gastrointestinal fluoroscopy Child D showed protrusion and rotation of the stomach through a midline diaphragmatic defect about 6 cm with kinking of the esophagus.

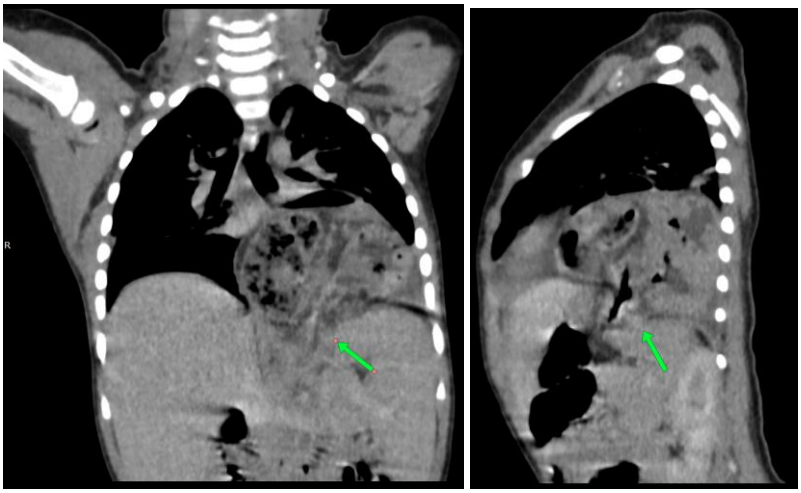


Figure 5. Chest CT scan Child.D showed a left-sided diaphragmatic hernia through a 4.6 cm defect in the posterior left diaphragm.

the left chest (hemithorax) and bending (kinking) of the esophagus (Figure 4).

Imaging Findings

Contrast-enhanced chest CT performed under anesthesia demonstrated a left-sided diaphragmatic hernia with a reported 4.6 cm defect along the posterior aspect of the left hemidiaphragm, resulting in predominant intrathoracic migration of the stomach into the left hemithorax; these findings were initially interpreted as consistent with Bochdalek hernia. Associated pneumonic changes were noted in the left lung (Figure 5).

Surgical Findings

During surgery, the diagnosis was revised to a type III hiatal hernia. The gastroesophageal junction, cardia, fundus, corpus, and part of the antrum were found herniating into the chest cavity through a defect in the diaphragmatic crus. A laparotomy was performed, followed by fundoplication and repair of the diaphragmatic crus. Surgical findings confirmed protrusion of the GEJ, cardia, fundus, corpus, and part of the antrum into the chest, consistent with a type III hiatal hernia (Figure 6).

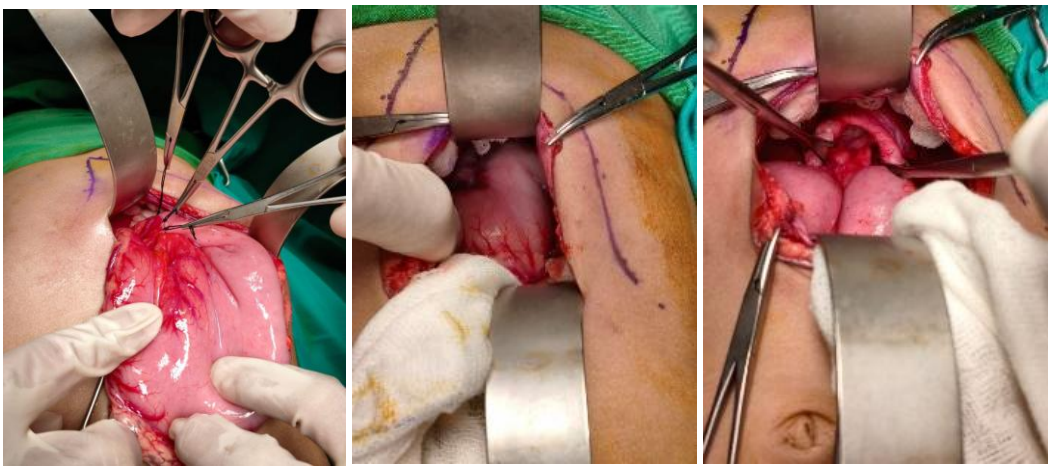


Figure 6. Surgical findings Child.D were found antrum herniation into the chest cavity through diaphragmatic crus.

Outcomes and Follow-Up

One month after surgery, Mrs.I stated that the abdominal wound had healed. The complaint of shortness of breath and vomiting had resolved. However, the patient still required medication to reduce nausea. Meanwhile, child D, one month after surgery, no longer experienced nausea or vomiting. Oral intake of food and fluids was normal, and the postoperative wound had healed.

DISCUSSION

The novelty of this report lies in presenting adult and pediatric cases that expose a clinically relevant diagnostic pitfall. Although hiatal and Bochdalek hernias are well described, extensive gastric herniation may obscure landmarks and complicate CT interpretation. In the pediatric case, a type III hiatal hernia was initially misdiagnosed as a Bochdalek hernia, showing how axial imaging alone can mimic a posterolateral diaphragmatic defect. Collectively, these cases highlight the importance of GEJ localization, crural assessment, and multiplanar reconstruction for accurate differentiation across age groups.

A hiatal hernia involves the herniation of abdominal viscera, most commonly the stomach, through the esophageal hiatus into the thoracic cavity, whereas a Bochdalek hernia represents a congenital posterolateral diaphragmatic defect. Clinical manifestations of hiatal hernia are often nonspecific and vary by age, ranging from feeding difficulties and recurrent respiratory symptoms in children to reflux, epigastric discomfort, nausea, and vomiting in adults [3,6]. Bochdalek hernia may present in infancy or remain undetected until later in life, sometimes manifesting with respiratory or abdominal symptoms [7]. Complications such as gastric volvulus, obstruction, or ischemia may occur and require prompt recognition [8,9]. Given the overlap in clinical presentation and anatomical distortion caused by herniation, imaging plays a crucial role in accurately distinguishing hiatal from congenital diaphragmatic defects.

Imaging Differentiation Criteria

Chest radiography and contrast studies serve as initial imaging modalities in suspected diaphragmatic or hiatal hernia. Radiographs may demonstrate intrathoracic bowel gas or thoracic opacity suggestive of herniation [10], while upper gastrointestinal contrast studies help delineate gastric orientation and identify complications such as volvulus or obstruction [4]. Endoscopy can provide complementary evaluation of the GEJ, although its role in acute diaphragmatic hernia assessment is limited [11].

CT plays a central role in the anatomical evaluation of diaphragmatic and hiatal hernias, as it provides detailed visualization of the defect location, herniated contents, and associated complications [11]. CT with or without contrast

generally offers comparable diagnostic information, depending on the clinical context [12]. Multiplanar reconstruction (coronal and sagittal views) is particularly valuable for accurately localizing the hernia orifice, assessing displacement of the GEJ, and evaluating diaphragmatic crural integrity [9]. In acute settings, CT may also demonstrate gastric malposition, volvulus, obstruction, or ischemic complications [13,14]. However, despite its high diagnostic utility, atypical thoracic presentation of hiatal hernia may lead to interpretative challenges. Ajij et al. (2017) described pediatric cases in which hiatal hernia presented predominantly with thoracic radiographic findings, including absent gastric bubble and intrathoracic air–fluid levels, which initially raised suspicion of primary thoracic pathology. Such dominant intrathoracic gastric migration may obscure the precise origin of the diaphragmatic defect [9].

Accurate differentiation between hiatal and Bochdalek hernia relies on precise anatomical localization. Hiatal hernia arises at the esophageal hiatus, with GEJ displacement and crural involvement, whereas Bochdalek hernia is a true posterolateral defect typically without GEJ displacement. Identifying the hernia orifice on multiplanar CT, rather than relying solely on herniated viscera position, is essential to avoid misclassification [8].

To improve diagnostic accuracy, a systematic imaging approach should be applied. This includes careful evaluation of the GEJ position, assessment of diaphragmatic crural integrity, and identification of the true hernia orifice using multiplanar CT reconstruction. In addition, the use of oral contrast during CT may further aid differentiation by enhancing visualization of the esophagus and stomach, thereby facilitating more accurate localization of the hernia origin and reducing diagnostic ambiguity.

Diagnostic Pitfall: CT–Surgical Discrepancy and Anatomical Misclassification

In Case 1, CT examination was performed using a 64-slice multidetector scanner with a detector configuration of 0.625 mm, providing a maximum z-axis coverage of approximately 40 mm per gantry rotation. Images were reconstructed with thin slices and multiplanar reformations in axial, coronal, and sagittal planes. Thoracic CT was acquired in pre-contrast and post-contrast phases following intravenous contrast administration, with image acquisition in the venous phase. No arterial or delayed phases were obtained, and oral contrast was not administered. Imaging findings were consistent with intraoperative results and demonstrated the typical radiological features of a type III hiatal hernia. Contrast-enhanced CT showed intrathoracic migration of the stomach from the fundus to the pylorus, with displacement of the gastroesophageal junction (GEJ) above the diaphragm and rotation of the gastric fundus. These findings are consistent with a type III hiatal hernia, characterized by combined herniation of the stomach and upward displacement of the GEJ [8]. Gastric volvulus is a known complication of large hiatal hernias and may present with nonspecific thoracoabdominal symptoms, often requiring prompt surgical intervention [15].

Multiplanar CT reconstruction facilitates accurate localization of the hernia orifice and visualization of GEJ displacement, particularly in differentiating hiatal defects from other diaphragmatic abnormalities [16]. In this case, identification of the hiatal defect and crural involvement on cross-sectional imaging corresponded with operative findings, confirming Type III hiatal hernia without evidence of a separate posterolateral diaphragmatic defect. This concordance underscores the value of systematic anatomical assessment in achieving accurate preoperative classification.

In Case 2, CT examination was performed using a 64-slice multidetector scanner with thin-slice reconstruction and multiplanar reformations in axial, coronal, and sagittal planes. Thoracic CT was acquired in pre-contrast and post-contrast phases following intravenous contrast administration, with image acquisition in the venous phase. No arterial or delayed phases were obtained, and oral contrast was not administered. CT demonstrated a 4.6 cm defect along the posterior aspect of the left hemidiaphragm, with near-complete intrathoracic migration of the stomach into the left hemithorax. The herniated stomach appeared rotated and predominantly occupied the posterior thoracic cavity, creating a

radiologic impression of a posterolateral diaphragmatic defect consistent with Bochdalek hernia. However, intraoperative findings revealed that the defect was located at the level of the diaphragmatic crus, corresponding to the esophageal hiatus rather than a true posterolateral diaphragmatic discontinuity. The gastroesophageal junction (GEJ) was displaced above the diaphragm, and the cardia, fundus, corpus, and part of the antrum were identified within the thoracic cavity. These operative findings established the final diagnosis of a type III hiatal hernia.

Similar diagnostic confusion has been reported in the literature. Taher et al. (2025) described a neonatal case in which extensive intrathoracic migration of abdominal organs on CT resulted in an initial diagnosis of congenital diaphragmatic hernia, although intraoperative findings ultimately confirmed a large hiatal hernia without true diaphragmatic discontinuity [17]. Likewise, Selvakumar et al. (2017) reported a paraesophageal hernia mimicking Bochdalek hernia due to predominant posterior thoracic extension of herniated viscera. These reports parallel the imaging pattern observed in our case and highlight a shared mechanism of misclassification: reliance on axial CT appearance and posterior localization of herniated contents without precise identification of the hernia orifice. Collectively, these findings emphasize that systematic evaluation of GEJ position, diaphragmatic crural integrity, and multiplanar reconstruction is critical to accurately differentiate hiatal from Bochdalek hernia [18].

To minimize the risk of misdiagnosis, a systematic imaging approach is essential. This includes precise localization of the gastroesophageal junction (GEJ), careful assessment of diaphragmatic crural integrity, and identification of the true hernia orifice using multiplanar CT reconstruction rather than relying solely on axial images. In addition, the use of oral contrast with appropriate preparation and timing prior to CT acquisition may improve delineation of the esophagus and stomach, thereby facilitating more accurate classification of the hernia. Incorporating a structured CT protocol, including adequate phase selection and multiplanar evaluation, may further reduce diagnostic ambiguity, particularly in cases with extensive intrathoracic gastric migration [18].

In addition, upper gastrointestinal imaging with oral contrast may provide complementary information for identifying and classifying hiatal hernias by clearly delineating the relationship between the esophagus, stomach, and diaphragmatic hiatus. Contrast opacification of the gastrointestinal lumen can help demonstrate the position of the gastroesophageal junction (GEJ) and gastric configuration, which may reduce diagnostic ambiguity in cases with extensive intrathoracic gastric migration [19].

In clinical practice, oral contrast is typically administered prior to CT acquisition to achieve adequate luminal opacification. Patients may be instructed to ingest oral contrast in divided doses several hours before examination, with an additional portion consumed immediately prior to scanning to optimize gastric distension. CT imaging is then performed following intravenous contrast administration, commonly in the venous phase, with or without additional arterial or delayed phases depending on clinical indication [19].

In our cases, CT was performed without oral contrast preparation, which may have limited optimal visualization of the gastroesophageal junction (GEJ) and contributed to diagnostic ambiguity, particularly in the pediatric case. To minimize the risk of misdiagnosis, contrast-enhanced thoracic CT combined with oral contrast administration should be considered. In this approach, patients are instructed to ingest oral contrast prior to and/or immediately before scanning, allowing adequate opacification of the esophagus and stomach during image acquisition [19]. This facilitates clearer visualization of the GEJ, gastric configuration, and the true hernia orifice, thereby improving differentiation between hiatal and Bochdalek hernia.

Role of CT vs Fluoroscopy

CT and fluoroscopic contrast studies provided complementary information in our pediatric case, yet yielded differing diagnostic impressions. Upper gastrointestinal fluoroscopy demonstrated supradiaphragmatic displacement of the GEJ at the T6–T7 level and visualized gastric rotation

with protrusion through a midline diaphragmatic defect. These findings suggested a hiatal origin of herniation, as GEJ migration above the diaphragm is characteristic of Type III hiatal hernia. In contrast, contrast-enhanced CT demonstrated a defect described along the posterior left hemidiaphragm with predominant intrathoracic gastric migration, leading to initial interpretation as Bochdalek hernia. The discrepancy likely reflects the static axial representation on CT, in which extensive posterior thoracic extension of the stomach may obscure the true orifice location.

While CT remains central for anatomical mapping and preoperative planning, its diagnostic accuracy depends on careful localization of the hernia orifice and multiplanar evaluation. Multislice CT with coronal and sagittal reformations has been shown to improve visualization of diaphragmatic integrity and defect origin, reducing the risk of misinterpretation seen with axial imaging alone [16]. In our case, fluoroscopy provided dynamic assessment of GEJ position and gastric axis, whereas CT defined the extent of herniation and associated pulmonary findings. These findings underscore that integration of dynamic contrast studies with systematic multiplanar CT assessment may enhance diagnostic precision and minimize anatomical misclassification.

Clinical Implications

Accurate anatomical classification of diaphragmatic defects is not merely a radiologic distinction but directly influences surgical decision-making. Mislabeling a hiatal hernia as a congenital posterolateral defect may alter the presumed pathogenesis, affect preoperative counseling, and influence the planned operative approach. Reports in the literature demonstrate that large hiatal or paraesophageal hernias may initially be interpreted as congenital diaphragmatic defects, only to be reclassified intraoperatively, necessitating modification of the surgical strategy [17,18]. Multislice CT with sagittal and coronal reformatted images has been shown to improve visualization of diaphragmatic integrity and the relationship between herniated organs and the true defect site, thereby enhancing preoperative anatomical localization [16]. In our pediatric patient, definitive intraoperative identification of a crural hiatal defect led to hiatal repair with fundoplication rather than repair of a true posterolateral discontinuity.

In addition, the adult case underscores the importance of timely recognition of gastric volvulus associated with Type III hiatal hernia, as delayed intervention may result in obstruction, ischemia, or perforation. Early and accurate anatomical assessment supports appropriate operative preparation and reduces the likelihood of unexpected intraoperative findings. Together, these cases emphasize that precise preoperative classification, supported by careful multiplanar imaging evaluation, optimizes surgical planning and may prevent diagnostic delay or procedural misdirection.

Learning Points

1. Extensive intrathoracic migration of the stomach on axial CT can mimic a posterolateral diaphragmatic defect, leading to misclassification as Bochdalek hernia.
2. Precise localization of the GEJ relative to the diaphragm is essential for distinguishing type III hiatal hernia from congenital posterolateral defects.
3. Assessing crural integrity and identifying the true hernia orifice are essential to avoid reliance solely on the position of herniated viscera.
4. Routine multiplanar CT reconstruction (coronal and sagittal) should be performed, especially in pediatric patients with large intrathoracic herniation.
5. Radiologic–operative correlation remains fundamental for accurate classification and appropriate surgical planning.
6. Oral contrast during CT may help identify the gastroesophageal junction and reduce misdiagnosis between hiatal and Bochdalek hernia.

Strength and Limitation

This report has several strengths and limitations. Its strengths include the inclusion of both adult and pediatric cases, allowing age-related comparison of imaging features, the use of multimodal imaging (chest radiography, fluoroscopy, and CT), and the availability of surgical confirmation with clear radiologic–

operative correlation. However, the study is limited by the small number of cases, which restricts generalizability, the short follow-up period that precludes assessment of long-term outcomes, and the absence of formal interobserver imaging analysis to evaluate diagnostic reproducibility.

CONCLUSION

Accurate differentiation between hiatal and Bochdalek hernia requires careful anatomical assessment beyond the position of herniated viscera. Our cases show that extensive intrathoracic gastric migration can mimic a posterolateral defect on axial CT, leading to misclassification. Systematic GEJ localization, crural integrity evaluation, and routine multiplanar reconstruction are essential to correctly identify the hernia orifice, especially in pediatric patients. In selected cases, CT examination with oral contrast may further improve visualization of the esophagus and stomach, helping clarify the relationship between the gastroesophageal junction and the diaphragmatic hiatus. Radiologic–operative correlation remains fundamental for diagnosis and surgical planning.

ACKNOWLEDGMENT

The completion of this research paper was made possible with the support of colleagues from the Department of Radiology.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

REFERENCES

1. Spellar, K., Lotfollahzadeh, S., Sharma, S., & Gupta, N. Diaphragmatic hernia. In StatPearls. NCBI Bookshelf. 2025. https://www.ncbi.nlm.nih.gov/books/NBK459251
2. Ríos, P., Constenla, D., Cristi, J., Alegría, J., Silva, C., & Schiappacasse, G. Diaphragmatic hernias: classifications and spectrum of presentations in computed tomography, magnetic resonance and plain radiography. In Austral Journal of Imaging. 2025, (Vol. 31, Issue 2, pp. 92–103). Sociedad Chilena de Radiologia. https://doi.org/10.24875/AJI.24000035
3. Fuchs, K. H., Kafetzis, I., Hann, A., & Meining, A. Hiatal Hernias Revisited—A Systematic Review of Definitions, Classifications, and Applications. In Life. Multidisciplinary Digital Publishing Institute (MDPI). 2024; Vol. 14, Issue 9 https://doi.org/10.3390/life14091145
4. Callaway, J. P., & Vaezi, M. F. Hiatal and Paraesophageal Hernias. Clinical Gastroenterology and Hepatology, 2018; 16(6), 810–813. https://doi.org/10.1016/j.cgh.2017.12.045
5. Naanani, I., Adyel, R., Kihal, Z., Hafoud, S., Bentaleb, D., Laouidyi, D., Chbani, K., & Salam, S. Imaging of Congenital Diaphragmatic Hernias. SAS Journal of Medicine, 2025; 11(04), 308–315. https://doi.org/10.36347/sasjm.2025.v11i04.009
6. Garodia, S., Basu, R., Kundu, T., & Halder, P. K. Esophageal hiatal hernia: A report of two cases. The Journal of Association of Chest Physicians, 2025; 13(1), 27–31. https://doi.org/10.4103/jacp.jacp_42_24
7. Akita, M., Yamasaki, N., Miyake, T., Mimura, K., Maeda, E., Nishimura, T., Abe, K., Kozuki, A., Yokoyama, K., Kominami, H., Tanaka, T., Takamatsu, M., & Kaneda, K. Bochdalek hernia in an adult: two case reports and a review of perioperative cardiopulmonary complications. Surgical Case Reports, 2020; 6(1). https://doi.org/10.1186/s40792-020-00833-w
8. Ayyildiz, V. A., Özgökçe, M., Türkoğlu, S., Dündar, I., Durmaz, F., Özkaçmaz, S., & Türko, E. Radiological Appearance of Hiatal Hernias on Computed Tomography. Eastern Journal of Medicine, 2022; 27(1), 11–15. https://doi.org/10.5505/EJM.2022.33341
9. Ajij, M., & Gupta, S. Atypical presentations of hiatal hernia in two pediatric patients. The Nigerian Journal of General Practice, 2017;

15(1), 10-12. 10.4103/1118-4647.201051

10. Millsep Sieroka, F. A. R. A., Allo, F. A. R., Oktavianto, A., Tedjo, S. G., Imannuel, E. V., Gunawan, R., Insyara, F. C., Giovanni Hutasoit, I. Y., Koirunisa, S. S., & Mathias. X-ray chest in congenital diaphragmatic hernia: A case report. Medical Clinical Update, 2023; 2(1), 28–31. https://doi.org/10.58376/mcu.v2i1.28
11. Giuffrida, M., Perrone, G., Abu-Zidan, F., Agnoletti, V., Ansaloni, L., Baiocchi, G. L., Bendinelli, C., Biffl, W. L., Bonavina, L., Bravi, F., Carcoforo, P., Ceresoli, M., Chichom-Mefire, A., Coccolini, F., Coimbra, R., de'Angelis, N., de Moya, M., de Simone, B., Di Saverio, S., Catena, F. Management of complicated diaphragmatic hernia in the acute setting: A WSES position paper. World Journal of Emergency Surgery, 2023; 18(1). https://doi.org/10.1186/s13017-023-00510-x
12. RadiologyInfo.org. Hernia. 2025 https://www.radiologyinfo.org/en/info/pelvus
13. Láinez Ramos-Bossini, A. J., Ruiz Carazo, E., & Rabadán Caravaca, M. D. 'Back-and-Forth Stomach' CT Imaging Findings of a Pathophysiologic Entity Causing Acute Gastric Volvulus. Tomography, 2022; 8(1), 245–256. https://doi.org/10.3390/tomography8010019
14. Nugraha, H. G., Agustina, M., & Nataprawira, H. M. Diagnostic challenges of hiatal hernia Type IV: An imaging perspective. Radiology Case Reports, 2025; 20(1), 437–441. https://doi.org/10.1016/j.radcr.2024.09.147
15. Alomari, M. M., Shahen, R. B., Makhlouf, T. Z., Farah, R. E., Farah, R. E., & Maraqa, M. A. Gastric volvulus as a rare complication of hiatal hernia: A rare case report. International journal of surgery case reports, 2025; 133, 111582. https://doi.org/10.1016/j.ijscr.2025.111582
16. Eren, S., Ceviz, N., & Alper, F. Congenital diaphragmatic eventration as a cause of anterior mediastinal mass in the children: imaging modalities and literature review. European journal of radiology, 2004; 51(1), 85–90. https://doi.org/10.1016/S0720-048X(03)00143-8.
17. Taher, R. A., Kiswani, S. A., Na'seh, M. A., Banihani, H. A., Sawafta, O., Awashra, A., Rajab, I., & Othman, R. Grade IV hiatal hernia in a neonate: A radiologic mimic of congenital diaphragmatic hernia. Radiology case reports, 2025; 20(12), 6128–6133. https://doi.org/10.1016/j.radcr.2025.08.066Taher, R. A., Kiswani, S. A., Na'seh, M. A., Banihani, H. A., Sawafta, O., Awashra, A., Rajab, I., & Othman, R. Grade IV hiatal hernia in a neonate: A radiologic mimic of congenital diaphragmatic hernia. Radiology case reports, 2025; 20(12), 6128–6133. https://doi.org/10.1016/j.radcr.2025.08.066
18. Selvakumar, D., Sian, K., Iyengar, A. J., & Mejia, R. An unusually large paraesophageal hernia mimicking a Bochdalek hernia. Journal of thoracic disease, 2017; 9(8), E682–E684. https://doi.org/10.21037/jtd.2017.07.08
19. Chaturvedi, A., Rajiah, P., Croake, A., Saboo, S., & Chaturvedi, A. Imaging of thoracic hernias: types and complications. Insights into imaging, 2018; 9(6), 989–1005. https://doi.org/10.1007/s13244-018-0670-x