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## Contents

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## EDITORIAL

de Carvalho JF, Lerner A, Benzvi C. Foot reflexology in autoimmune diseases: Effectiveness and mechanisms. *World J Clin Cases* 2025; 13(7): 97403 [DOI: [10.12998/wjcc.v13.i7.97403](https://doi.org/10.12998/wjcc.v13.i7.97403)]

Roganovic J. Late effects of the treatment of childhood cancer. *World J Clin Cases* 2025; 13(7): 98000 [DOI: [10.12998/wjcc.v13.i7.98000](https://doi.org/10.12998/wjcc.v13.i7.98000)]

Wu X, Min XH, Xu HF, Ud Din MJ, Zhang G. Intersection of two rare conditions: Clinical reflection on tuberous sclerosis combined with primary lymphedema. *World J Clin Cases* 2025; 13(7): 99903 [DOI: [10.12998/wjcc.v13.i7.99903](https://doi.org/10.12998/wjcc.v13.i7.99903)]

Lucke-Wold B, Karamian A. Effect of esketamine on reducing postpartum pain and depression. *World J Clin Cases* 2025; 13(7): 100422 [DOI: [10.12998/wjcc.v13.i7.100422](https://doi.org/10.12998/wjcc.v13.i7.100422)]

## ORIGINAL ARTICLE

## Retrospective Study

Kaw P, Behari A, Sharma S, Kumar A, Singh RK. Internal hernia as a rare cause of small bowel obstruction: An insight from 13 years of experience. *World J Clin Cases* 2025; 13(7): 92254 [DOI: [10.12998/wjcc.v13.i7.92254](https://doi.org/10.12998/wjcc.v13.i7.92254)]

Shi MQ, Chen J, Ji FH, Zhou H, Peng K, Wang J, Fan CL, Wang X, Wang Y. Prognostic impact of hypernatremia for septic shock patients in the intensive care unit. *World J Clin Cases* 2025; 13(7): 95430 [DOI: [10.12998/wjcc.v13.i7.95430](https://doi.org/10.12998/wjcc.v13.i7.95430)]

## SYSTEMATIC REVIEWS

Javid K, Akins X, Lemaster NG, Ahmad A, Stone AV. Impact of time between meniscal injury and isolated meniscus repair on post-operative outcomes: A systematic review. *World J Clin Cases* 2025; 13(7): 95004 [DOI: [10.12998/wjcc.v13.i7.95004](https://doi.org/10.12998/wjcc.v13.i7.95004)]

## CASE REPORT

Wang YL, Li J. Insulin-induced severe thyrotoxic periodic paralysis: A case report. *World J Clin Cases* 2025; 13(7): 101214 [DOI: [10.12998/wjcc.v13.i7.101214](https://doi.org/10.12998/wjcc.v13.i7.101214)]

Tsang HY, Yong CC, Wang HP. Mesenteric ischemia with intrasplenic gas: A case report. *World J Clin Cases* 2025; 13(7): 101901 [DOI: [10.12998/wjcc.v13.i7.101901](https://doi.org/10.12998/wjcc.v13.i7.101901)]

## LETTER TO THE EDITOR

Zhang L, Huang PJ, Deng X, Tang J, Zhai Y, Wang T. Physical rehabilitation for sensorineural hearing loss in childhood: Progress and challenges. *World J Clin Cases* 2025; 13(7): 97847 [DOI: [10.12998/wjcc.v13.i7.97847](https://doi.org/10.12998/wjcc.v13.i7.97847)]

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Retrospective Study

# Internal hernia as a rare cause of small bowel obstruction: An insight from 13 years of experience

Payal Kaw, Anu Behari, Supriya Sharma, Ashok Kumar, Rajneesh K Singh

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## Abstract

### BACKGROUND

Internal hernia (IH) is a rare culprit of small bowel obstruction (SBO) with an incidence of < 1%. It poses a considerable diagnostic challenge requiring a high index of suspicion to prevent misdiagnosis, improper treatment, and subsequent morbidity and mortality.

### AIM

To determine the clinico-demographic profile, radiological and operative findings, and postoperative course of patients with IH and its association with SBO.

### METHODS

Medical records of 586 patients with features of SBO presenting at a tertiary care centre at Lucknow, India between September 2010 and August 2023 were reviewed.

### RESULTS

Out of 586 patients, 7 (1.2%) were diagnosed with IH. Among these, 4 had congenital IH and 3 had acquired IH. The male-to-female ratio was 4:3. The median age at presentation was 32 years. Contrast-enhanced computed tomography (CECT) was the most reliable investigation for preoperative identification, demonstrating mesenteric whirling and clumped-up bowel loops. Left para-duodenal hernia and transmesenteric hernia occurred with an equal frequency (approximately 43% each). Intraoperatively, one patient was found to have bowel ischemia and one had associated malrotation of gut. During follow-up, no recurrences were reported.

### CONCLUSION

IH, being a rare cause, must be considered as a differential diagnosis for SBO, especially in young patients in their 30s or with unexplained abdominal pain or



discomfort post-surgery. A rapid imaging evaluation, preferably with CECT, is necessary to aid in an early diagnosis and prompt intervention, thereby reducing financial burden related to unnecessary investigations and preventing the morbidity and mortality associated with closed-loop obstruction and strangulation of the bowel.

**Key Words:** Paraduodenal hernia; Internal hernia; Mesenteric whirling; Bowel obstruction; Computed tomography

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**Core Tip:** Internal hernia (IH) represents less than 1% of all causes of small bowel obstruction. Being rare, IH poses a considerable diagnostic challenge. Contrast-enhanced computed tomography is the most reliable investigation for preoperative identification. A rapid imaging evaluation is necessary to aid in an early diagnosis and prompt intervention, thereby reducing financial burden related to unnecessary investigations and preventing the morbidity and mortality associated with closed-loop obstruction and strangulation of the bowel. Laparoscopic surgery is a safe option for uncomplicated IHs.

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## INTRODUCTION

An internal hernia (IH) occurs due to the protrusion of an abdominal viscus within the abdominal or pelvic cavity through apertures in the peritoneum, mesentery, or omentum[1]. These apertures could be present congenitally or acquired following surgery or trauma. Congenital IH (CIH) can occur *via* normal anatomical foramen/fossa or abnormal congenital defects through the layer(s) of peritoneal reflections[2-4]. Congenital defects in the rotation of the intestine and peritoneal attachments are important factors predisposing to internal herniation[1,5]. Acquired IH (AIH) occurs through surgically created or post-traumatic defects in the mesentery[5].

Although with a relatively low overall incidence of < 1%, IH represents up to 5.8% of all small bowel obstructions (SBO). Despite being relatively rare, it significantly contributes to both acute and chronic SBO[2,3,6,7]. The proportion of patients with acquired hernias is on an increasing trend considering the growing popularity of surgeries involving Roux-en-Y reconstruction, like bariatric surgery[4,8].

IHs pose a considerable diagnostic challenge due to their ability to clinically mimic other abdominal conditions[4,7]. Thus, a high index of clinical and radiological suspicion is required to prevent misdiagnosis, improper treatment, and subsequent morbidity and mortality.

Here we share our experience of 13 years in dealing with IHs at a tertiary care hospital in Lucknow, India.

## MATERIAL AND METHODS

Medical records of 586 patients presenting at our centre with features of SBO between September 2010 and August 2023 were reviewed. All patients with IH detected either preoperatively based on radiographic evidence or at surgical exploration were included in the study. All patients underwent contrast-enhanced computed tomography (CECT) preoperatively. Details of demography, presentation, radiology, operative findings, and procedure were extracted and analysed.

## RESULTS

Out of 586 patients, 7 (1.2%) were diagnosed with IH. Among these, 4 had congenital IH and 3 had acquired IH. The male-to-female ratio was 4:3, whereas in the group with CIH, the ratio was equal. The age at presentation of patients with IH ranged between 26 years and 64 years, with a median age of 33.5 years in the CIH group and 31 years in the AIH group. The demographic profile, hallmark radiological feature, and type of IH observed are listed in Table 1.

Almost a third (29%) of the patients did not have any preoperative diagnosis or suspicion of IH and were identified intraoperatively. The majority of the patients (86%) had multiple symptomatic episodes over a median duration of 1 year, with pain in the abdomen and distension being the most frequent complaints. CECT was found to be the most reliable investigation for preoperative identification. The characteristic findings included the presence of mesenteric whirling and clumped-up bowel loops at an abnormal location (Figure 1). Laparoscopy was performed in 3 cases, while 4 patients underwent laparotomy. Left paraduodenal hernia and transmesenteric AIH occurred with an equal frequency of approximately 43% each (Figure 2). During follow-up, no recurrences were reported.

Table 1 Demographic profile, hallmark radiological feature, and type of internal hernia observed in our patients

Age (in years)/gender	Type/location	Symptom duration	Time of diagnosis	Characteristic imaging finding	Presentation	Intraoperative finding	Follow-up
Congenital internal hernia							
35/F	Left PDH	1 year	Intraoperative	None	AIO	Open repair (2013): No intra-peritoneal adhesions. Lenzert's defect identified. No bowel ischemia/malrotation	Discharged on POD14. No recurrence. Last follow-up in 2023
32/M	Right PDH	Childhood	Preoperative	Clumped-up bowel loops in right lumbar region	CIO	Laparoscopic repair (2014): Dilated stomach and proximal duodenum with duodeno-jejunal flexure to the right of midline suggesting malrotation. Entire small bowel formed the content of hernia and was lying behind the right mesocolon. No bowel ischemia	Discharged on POD 10. No readmission. Last follow-up in 2023
26/F	Left PDH	3 years	Preoperative	Clumped-up bowel loops in left anterior pararenal space behind IMV	CIO	Laparoscopic repair (2022): Lenzert's defect identified with small bowel loops about 10 cm distal to DJ flexure as content. No bowel ischemia/malrotation	Discharged on POD 3. Readmitted on POD 7 with recurrent vomiting, no recurrence found. Last follow-up in 2023
36/M	Left PDH	11 months	Preoperative	Clumped-up bowel loops in left anterior pararenal space behind IMV and ascending left colic artery with mesenteric fat stranding and oedema	CIO	Laparoscopic repair (2023): Lenzert's defect identified with small bowel loops about 20 cm distal to DJ flexure as content. No bowel ischemia/ malrotation	Discharged on POD 5. No recurrence. Last follow-up in 2023
Acquired internal hernia							
31/F	Trans-mesenteric <i>via</i> JJ site (post lateral pancreaticojejunostomy)	1 year	Preoperative	Mesenteric whirling	CIO	Open repair (2012): Omental/parietal adhesions. Distal jejunum and proximal ileum herniated through the JJ site mesenteric window. Small defect also noted in the mesocolic window of the Roux loop. No bowel ischemia	No recurrence of IH. However, required admission in view of primary disease (pain and brittle diabetes related to cervical chest pain). Last follow-up in 2022
64/M	Trans-mesenteric <i>via</i> mesocolon anterior to GJ site (post RYGJ)	1 year	Preoperative	Mesenteric whirling and clumping of bowel loops near GJ site	CIO	Open repair (2014): Mild free fluid in the peritoneal cavity. A 5 × 5 cm defect in the mesocolon anterior to GJ. No bowel ischemia	Required readmission 1 month postoperatively in view of melena. Developed hypoglycaemic seizures during the hospital admission. Was managed conservatively and discharged. Subsequently lost to follow-up

22/M	Trans-mesenteric <i>via</i> previous ileoileostomy site (post TPC with IPAA)	4 days	Intraoperative	None	AIO	Open repair (2021): Dense omental and interbowel adhesions present. One litre of serohemorrhagic fluid present. Small bowel loops herniated through mesenteric window of previous ileo-ileal anastomotic site-gangrenous. 1.5 feet gangrenous ileal segment resected. End ileostomy fashioned 8 feet distal to DJ site in right lower quadrant and distal mucus fistula in lower end of midline	Elective admission for restoration of bowel continuity 3 months later. Subsequently no readmission. No recurrence. Last follow-up in 2023
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F: Female; M: Male; PDH: Paraduodenal hernia; AIO: Acute intestinal obstruction; POD: Post-operative day; CIO: Chronic intestinal obstruction; IMV: Inferior mesenteric vein; RYGF: Roux en Y gastrojejunostomy; TPC with IPAA: Total proctocolectomy with ileal pouch anal anastomosis; JJ: Jejunostomy.



**Figure 1** Contrast-enhanced computed tomography in a case of left paraduodenal hernia. A: Clumped-up bowel loops in left anterior renal space; B: Presence of mesenteric whirling.

## DISCUSSION

IH as a cause of SBO largely remains under-diagnosed, with an overall incidence of < 1% and up to 5.8% among patients presenting with SBO[1,9,10-12]. In our study, IH accounted for only 1.2% ( $n = 7/586$ ) of all the causes of SBO.

Welch[13] traditionally classified IH based on the anatomical location of the hernia defect into several main types: (1) Paraduodenal (left > right) (53%); (2) Pericecal hernia (13%); (3) Through the foramen of Winslow (8%); (4) Transmesenteric (8%); (5) Intersigmoid (6%); (6) Supravesical and pelvic (6%); and (7) Transomental (1%-4%). Doishita *et al*[14] classified the IH in three main groups according to the type of hernia orifice: (1) Herniation through a normal foramen; (2) An unusual peritoneal fossa or recess into the retroperitoneum; and (3) An abnormal opening in a mesentery or peritoneal ligament.

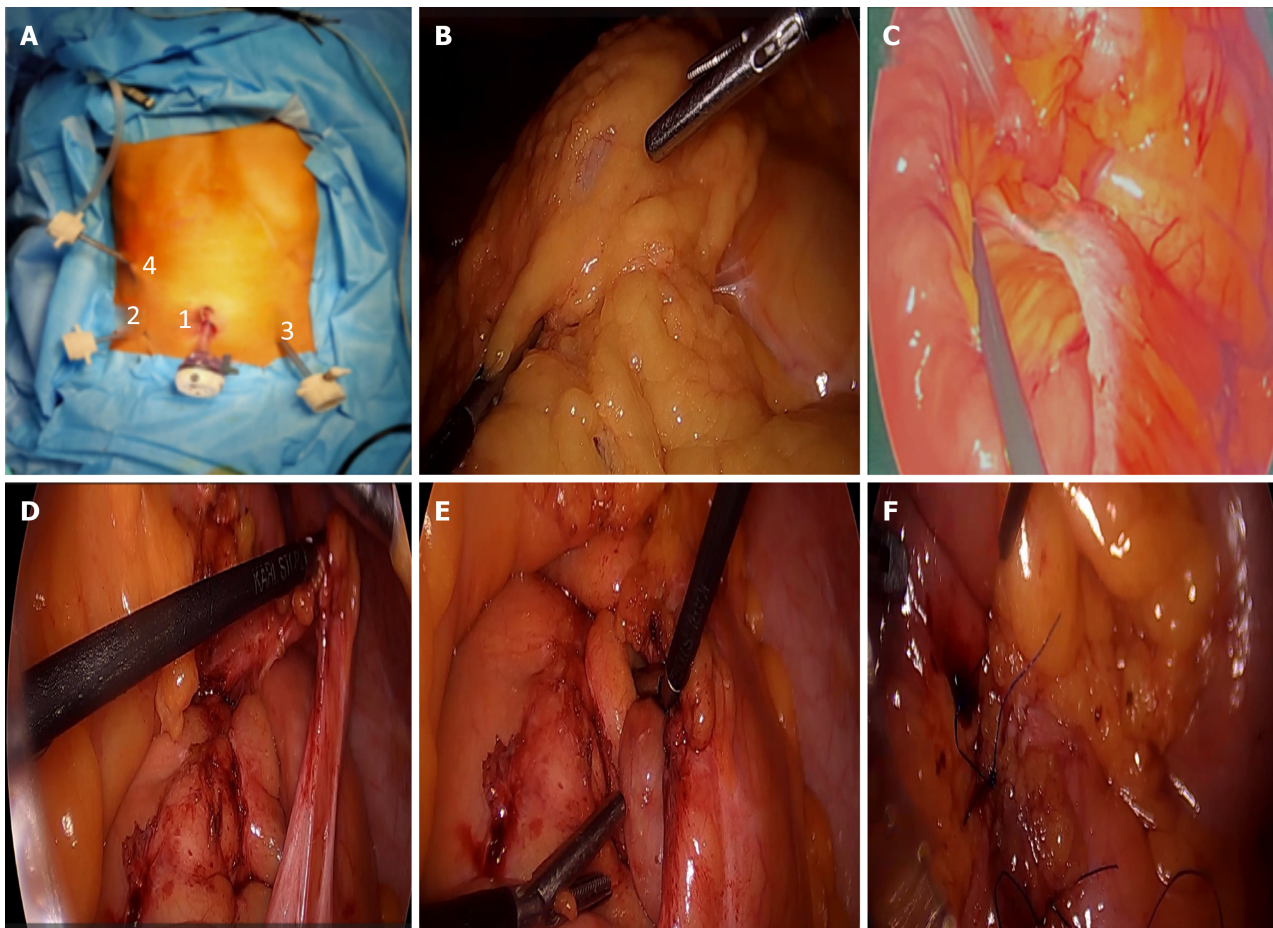
With the growing popularity of surgeries involving Roux-en Y reconstruction and an improvement in diagnostic modalities like computed tomography (CT) scans, the incidence of transmesenteric AIH is on the rise[15,16].

IH has a wide spectrum of presentation, varying from being asymptomatic to chronic abdominal pain or even life-threatening closed-loop obstruction with bowel ischemia[1,16]. In the present study, one patient with an initial presentation of acute SBO was found to have bowel ischemia intraoperatively, and the remaining six patients had chronic SBO. Out of these patients, two underwent surgery in an acute setting, and one experienced bowel ischemia.

Despite preoperative imaging in the acute setting, a definitive diagnosis remains elusive. The presence of an acute episode is more predictive of bowel ischemia while a history of chronic abdominal pain suggests that patients have episodic spontaneous reducible IH with a lower risk of incarceration of the small bowel[16].

This non-specific clinical presentation often leads to a delayed diagnosis and, consequently, inappropriate treatment [7]. One patient in our study with no evidence of IH preoperatively was empirically given a full course of anti-tubercular





**Figure 2 Steps of laparoscopic left paraduodenal hernia repair.** A: Port placement includes a 10 mm optical port via the umbilicus (1), two working ports (2 and 3) of 5 mm, and an assistant port (4) of 5 mm. The port placement may vary as per surgeon's preference; B and C: Laparoscopic view of left paraduodenal hernia repair demonstrating entrapped bowel loops below the mesocolon; D: As the mesocolon is lifted, Lenzert's hernia defect can be demonstrated with small bowel loops as content; E: The contents are reduced by gentle traction; F: Defect is closed using non absorbable sutures.

treatment in a peripheral centre, considering that abdominal tuberculosis is a very common differential diagnosis for recurrent subacute intestinal obstruction in a virgin abdomen in our country[17]. Another patient was given a diagnosis of gastroparesis before being diagnosed with an IH on a CT scan.

With the improved radiological armamentarium and wider availability, CT scanning has become the first-line imaging technique in the detection of SBO, with a sensitivity and specificity of 94%-100% and 90%-95%, respectively[9,15,18]. In our study, it was found that CT scans played an important role in the preoperative diagnosis of IH with a sensitivity of 71.4% ( $n = 5/7$ ). Although one out of five patients required a CT scan twice before being diagnosed, this could be explained by the intermittent herniation of the bowel into the herniated sac. The key findings pointing towards IH include the presence of a cluster of dilated small bowel loops within an abnormal anatomic location in the setting of SBO, displacement of key mesenteric vessels, convergence of vessels and mesenteric fat at the hernia orifice, engorgement, crowding, twisting, displacement of surrounding structures around the hernia sac, stretching of mesenteric vessels and mesenteric fat heterogeneity, and signs of intestinal ischemia like bowel wall thickening and altered or absent perfusion if strangulation is present[2,7,14,16]. In older literature, the gastrointestinal (GI) contrast series has been considered to be the most diagnostic, with hallmark features including sacculization and crowding together of loops of small bowel contained in the herniated sac; disturbed arrangement and abnormal location of the small intestine within the confines of the peritoneal cavity; and segmental dilatation and prolonged stasis of barium in the herniated bowel[5,19].

In our study, 3 out of 7 patients underwent GI contrast series, and none were conclusive of IH, probably because the series was done during the asymptomatic phase of patients with chronic intestinal obstruction. In our series, patients with acute presentations underwent open surgery, while those with chronic presentations, preferably, underwent laparoscopic repair. The first ever laparoscopic repair of IH was reported in 1998, and ever since, minimally invasive operations have been popularized as a safe procedure in non-obstructed cases[20,21]. However, the upcoming literature suggested an increased popularity and safety of laparoscopic surgery even in selected cases of bowel obstruction[22-24]. The main limiting factors being complex aetiology of bowel obstruction and lack of sufficient technical skill and experience[22-24]. At our institution we prefer to use open surgical technique in patients with bowel obstruction presenting in the acute setting where the suspicion of perforation or bowel ischemia is high.

There was no intraoperative complication like a visceral injury, inferior mesenteric vein injury, or hernia recurrence recorded in our series. Various series report a complication rate of approximately 7%[21,22]. Table 2 compares the results

**Table 2 Comparison of results of various studies available in the literature**

Ref.	Number of patients with IH	Presentation	Preoperative diagnosis	Type of surgery (laparoscopic/open)	Outcome
Newsom <i>et al</i> [25], (1986)	14 [CIH ( <i>n</i> = 8), AIH ( <i>n</i> = 6)]	AIO ( <i>n</i> = 14), CIO ( <i>n</i> = none)	None (based on roentgenogram)	All open; operated as emergency surgery; 9 required bowel resection	Postoperative mortality: 31%
Ghiassi <i>et al</i> [26], (2007)	49 [CIH ( <i>n</i> = 15), AIH ( <i>n</i> = 34)]	AIO ( <i>n</i> = 37), CIO ( <i>n</i> = 11)	4 (based on computed tomography scan)	Open ( <i>n</i> = 31); laparoscopy ( <i>n</i> = 13); laparoscopy converted to open ( <i>n</i> = 5). All operated as emergency surgery; 11 required bowel resections	Postoperative mortality: 2%. Morbidity: 12%
Poves <i>et al</i> [27], (2014)	6 [CIH ( <i>n</i> = 2), AIH ( <i>n</i> = 4)]	AIO ( <i>n</i> = 6), CIO ( <i>n</i> = none)	NA	Laparoscopy ( <i>n</i> = 4), laparoscopy converted to open ( <i>n</i> = 2). All 6 operated as emergency surgery; 2 required bowel resections	NA
John <i>et al</i> [28], (2016)	6 [CIH ( <i>n</i> = 4), AIH ( <i>n</i> = 2)]	AIO ( <i>n</i> = 6), CIO ( <i>n</i> = none)	1	All open; operated as emergency surgery; 3 required bowel resections	Postoperative mortality: None. Morbidity: NA
Present Study	7 [CIH ( <i>n</i> = 4), AIH ( <i>n</i> = 3)]	AIO ( <i>n</i> = 2), CIO ( <i>n</i> = 5)	5	Open ( <i>n</i> = 3), laparoscopy ( <i>n</i> = 4). The 2 operated as emergency and 5 as semi-elective surgery; 1 required bowel resection	Postoperative mortality: None. Morbidity: 14%

IH: Internal hernia; CIH: Congenital internal hernia; AIH: Acquired internal hernia; AIO: Acute intestinal obstruction; CIO: Chronic intestinal obstruction; Open: Laparotomy; Laparoscopy: Laparoscopic surgery.

of various studies available in the literature for the IH with a focus on CIH[25-28]. Patients with severe abdominal pain should be promptly investigated for hernia recurrence.

## CONCLUSION

IH, being a rare cause, must be considered as a differential diagnosis for bowel obstruction, especially in young patients in their 30s or with unexplained abdominal pain or discomfort post-surgery. A rapid imaging evaluation, preferably with CECT, is necessary to aid in an early diagnosis and prompt intervention, thereby reducing the financial burden related to unnecessary investigations and preventing the morbidity and mortality associated with closed-loop obstruction and strangulation of the bowel.

## FOOTNOTES

**Author contributions:** Kaw P collected the data, reviewed the literature, and contributed to conceptualization and manuscript writing; Behari A designed the research study, supervised the process of data collection and manuscript writing, and critically reviewed the study; Sharma S, Kumar A, and Singh RK were responsible for critical review of the manuscript; all of the authors read and approved the final version of the manuscript to be published.

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## REFERENCES

- 1 **Ghahremani GG.** Internal abdominal hernias. *Surg Clin North Am* 1984; **64**: 393-406 [PMID: 6729672 DOI: 10.1016/s0039-6109(16)43293-7]
- 2 **Kelahan L, Menias CO, Chow L.** A review of internal hernias related to congenital peritoneal fossae and apertures. *Abdom Radiol (NY)* 2021; **46**: 1825-1836 [PMID: 33128101 DOI: 10.1007/s00261-020-02829-4]
- 3 **Amberg JR.** Dynamic radiology of the abdomen: Normal and pathologic anatomy. *Jama* 1983 [DOI: 10.1001/jama.1983.03330430071041]
- 4 **Martin LC, Merkle EM, Thompson WM.** Review of internal hernias: radiographic and clinical findings. *AJR Am J Roentgenol* 2006; **186**: 703-717 [PMID: 16498098 DOI: 10.2214/AJR.05.0644]
- 5 **Johnson JR.** Internal hernia; review of literature and report of an obstructed transmesenteric hernia and of an intersigmoid hernia. *Arch Surg (1920)* 1950; **60**: 1171-1182 [PMID: 15414121 DOI: 10.1001/archsurg.1950.01250011196014]
- 6 **Ghahremani GG.** Abdominal and pelvic hernias. Textbook of gastrointestinal radiology 2000
- 7 **Lanzetta MM, Masserelli A, Addeo G, Cozzi D, Maggioletti N, Danti G, Bartolini L, Pradella S, Giovagnoni A, Miele V.** Internal hernias: a difficult diagnostic challenge. Review of CT signs and clinical findings. *Acta Biomed* 2019; **90**: 20-37 [PMID: 31085971 DOI: 10.23750/abm.v90i5-S.8344]
- 8 **Karcz WK, Zhou C, Daoud M, Gong Z, Blazejczyk K, Keck T, Matlok M, Zimmermann M, Kuehling A, Fink J.** Modification of internal hernia classification system after laparoscopic Roux-en-Y bariatric surgery. *Wideochir Inne Tech Maloinwazyjne* 2015; **10**: 197-204 [PMID: 26240619 DOI: 10.5114/wiitm.2015.52160]
- 9 **Takeyama N, Gokan T, Ohgiya Y, Satoh S, Hashizume T, Hataya K, Kushiro H, Nakanishi M, Kusano M, Munechika H.** CT of internal hernias. *Radiographics* 2005; **25**: 997-1015 [PMID: 16009820 DOI: 10.1148/rg.254045035]
- 10 **Hassani KI, Aggouri Y, Laalim SA, Toughrai I, Mazaz K.** Left paraduodenal hernia: A rare cause of acute abdomen. *Pan Afr Med J* 2014; **17**: 230 [PMID: 25170374 DOI: 10.11604/pamj.2014.17.230.3546]
- 11 **Gore RM, Ghahremani GG, Marn CA.** Hernias and abdominal wall pathology. In: Core RM, Levine MS. Textbook of Gastrointestinal Radiology (Third Edition). Saunders, 2007: 2149-2175 [DOI: 10.1016/B978-1-4160-2332-6.50119-6]
- 12 **Hansmann GH, Morton SA.** Intra-abdominal hernia: report of a case and review of the literature. *Arch Surg* 1939; **39**: 973-986 [DOI: 10.1007/BF01993375]
- 13 **Welch CE.** Intestinal obstruction. *Acad Med* 1958; **33**: 90
- 14 **Doishita S, Takeshita T, Uchima Y, Kawasaki M, Shimono T, Yamashita A, Sugimoto M, Ninoi T, Shima H, Miki Y.** Internal Hernias in the Era of Multidetector CT: Correlation of Imaging and Surgical Findings. *Radiographics* 2016; **36**: 88-106 [PMID: 26587890 DOI: 10.1148/rg.2016150113]
- 15 **Blachar A, Federle MP, Brancatelli G, Peterson MS, Oliver JH 3rd, Li W.** Radiologist performance in the diagnosis of internal hernia by using specific CT findings with emphasis on transmesenteric hernia. *Radiology* 2001; **221**: 422-428 [PMID: 11687686 DOI: 10.1148/radiol.2212010126]
- 16 **Fan HP, Yang AD, Chang YJ, Juan CW, Wu HP.** Clinical spectrum of internal hernia: a surgical emergency. *Surg Today* 2008; **38**: 899-904 [PMID: 18820864 DOI: 10.1007/s00595-007-3756-5]
- 17 **Ionescu S, Nicolescu AC, Madge OL, Marincas M, Radu M, Simion L.** Differential Diagnosis of Abdominal Tuberculosis in the Adult- Literature Review. *Diagnostics (Basel)* 2021; **11**: 2362 [PMID: 34943598 DOI: 10.3390/diagnostics11122362]
- 18 **Boudiaf M, Soyer P, Terem C, Pelage JP, Maissiat E, Rymer R.** Ct evaluation of small bowel obstruction. *Radiographics* 2001; **21**: 613-624 [PMID: 11353110 DOI: 10.1148/radiographics.21.3.g01ma03613]
- 19 **Nuño-Guzmán CM, Arróniz-Jáuregui J, Hernández-González C, Reyes-Macías F, Nava-Garibaldi R, Guerrero-Díaz F, Martínez-Chávez J, Solís-Ugalde J.** Right paraduodenal hernia in an adult patient: diagnostic approach and surgical management. *Case Rep Gastroenterol* 2011; **5**: 479-486 [PMID: 21960952 DOI: 10.1159/000331033]
- 20 **Uematsu T, Kitamura H, Iwase M, Yamashita K, Ogura H, Nakamuka T, Oguri H.** Laparoscopic repair of a paraduodenal hernia. *Surg Endosc* 1998; **12**: 50-52 [PMID: 9419303 DOI: 10.1007/s004649900591]
- 21 **Giri OA, Bhat SN, Kuppusamy B.** Lessons learnt in the management of paraduodenal hernias: a case series. *Surg Endosc* 2024; **38**: 443-448 [PMID: 38010410 DOI: 10.1007/s00464-023-10513-z]
- 22 **Khalaileh A, Schlager A, Bala M, Abu-Gazala S, Elazary R, Rivkind AI, Mintz Y.** Left laparoscopic paraduodenal hernia repair. *Surg Endosc* 2010; **24**: 1486-1489 [PMID: 20054582 DOI: 10.1007/s00464-009-0794-7]
- 23 **Harvitkar RU, Kumar PH, Joshi A.** Role of Laparoscopy in the Surgical Management of Acute Small Bowel Obstruction: Fact or Fiction? *Cureus* 2021; **13**: e18828 [PMID: 34804685 DOI: 10.7759/cureus.18828]
- 24 **Szeliga J, Jackowski M.** Laparoscopy in small bowel obstruction - current status - review. *Wideochir Inne Tech Maloinwazyjne* 2017; **12**: 455-460 [PMID: 29362663 DOI: 10.5114/wiitm.2017.72330]
- 25 **Newsom BD, Kukora JS.** Congenital and acquired internal hernias: unusual causes of small bowel obstruction. *Am J Surg* 1986; **152**: 279-285 [PMID: 3752377 DOI: 10.1016/0002-9610(86)90258-8]
- 26 **Ghiassi S, Nguyen SQ, Divino CM, Byrn JC, Schlager A.** Internal hernias: clinical findings, management, and outcomes in 49 nonbariatric cases. *J Gastrointest Surg* 2007; **11**: 291-295 [PMID: 17458600 DOI: 10.1007/s11605-007-0086-2]
- 27 **Poves I, Sebastián Valverde E, Puig Companyó S, Dorcaratto D, Membrilla E, Pons MJ, Grande L.** Results of a laparoscopic approach for the treatment of acute small bowel obstruction due to adhesions and internal hernias. *Cir Esp* 2014; **92**: 336-340 [PMID: 24035528 DOI: 10.1016/j.ciresp.2013.05.008]
- 28 **John RJ, Ulahannan SE, Kurien JS, Joseph A, Kurien AS, Varghese SA, Thomas B, Varghese F.** Rare Hernias Presenting as Acute Abdomen- A Case Series. *J Clin Diagn Res* 2016; **10**: PR01-PR04 [PMID: 27134943 DOI: 10.7860/JCDR/2016/17356.7401]



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