

# Concealed cause, critical consequences: Internal hernias and small bowel obstruction



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## ABSTRACT

**Background:** Internal hernias are potentially devastating condition that can manifest as intestinal obstruction and often present with nonspecific symptoms. This vagueness can lead to delayed diagnosis and management challenges. Therefore, clinical vigilance, prompt recognition, and timely intervention are crucial in preventing catastrophic complications associated with this under-recognized condition. **Aims and Objectives:** The objective is to underscore the imperative of prompt diagnostic interventions in patients presenting with intestinal obstruction. Moreover, fostering awareness among nascent surgeons regarding this clinical entity is essential, as it can precipitate a paradigm shift in the long-term prognosis. **Materials and Methods:** A retrospective analysis of data extracted from the emergency operative room register at GMC Thrissur, spanning a 5-year period. **Results:** Sixteen cases underwent emergency laparotomy, with internal hernias diagnosed either preoperatively through contrast-enhanced imaging or encountered intraoperatively as an unexpected finding. Conversely, two patients underwent elective laparotomy. For all patients, the hernia was reduced and internal defect repaired. Six patients had the need for resection of gangrenous bowel segment with primary anastomosis, while none required the need for ileostomy. Post-operative period for all of the patients was uneventful. **Conclusion:** The non-specific nature of clinical presentations inherent to internal hernias renders diagnosis exceedingly challenging. Prompt surgical intervention and early detection remains the sole viable treatment modality for this pathology. Early diagnosis is significantly facilitated by a comprehensive understanding and awareness of this rare yet formidable cause of intestinal obstruction. This cognizance serves as a catalyst for expedited decision-making and action, thereby playing a pivotal role in mitigating complications and profoundly influencing the outcome.

**Key words:** Internal hernia; Laparotomy; Bowel obstruction; Contrast computed tomography abdomen

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## INTRODUCTION

Internal hernias are characterized by the protrusion of abdominal viscera, predominantly small bowel loops, through a pre-existing or acquired peritoneal or mesenteric defect into the abdominal or pelvic cavity. The hernial orifice may be an anatomical defect, such as the Foramen of Winslow, or a pathological defect of congenital or acquired origin.

Internal hernias constitute one of the rarest and most insidious causes of small bowel obstruction, frequently remaining undetected until catastrophic complications arise. The clinical presentation is often nebulous, manifesting as a wide range of non-specific symptoms, thereby rendering this condition a “silent iceberg.” The indeterminate nature of internal hernias poses a significant diagnostic challenge, leading to delayed recognition and, consequently, a high incidence of strangulated small bowel obstruction.<sup>1</sup>

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This potentially devastating outcome often necessitates major resections and stomas, which could be avoided with early diagnosis. Here, we present a series of nine cases, wherein patients initially presented with vague abdominal complaints, only to ultimately develop full-blown small intestinal obstruction, culminating in a diagnosis of internal hernia.

This series analyzed 16 cases operated at the department of surgery medical college. Thrissur was undertaken to create awareness among young surgeons and patients about this entity and highlight the necessity of early investigations in patients with intestinal obstruction with no significant history. This retrospective series analyzed the clinical presentation, investigations and varying presentations and to emphasize the need for early intervention to avoid long-term complications.

### Aims and objectives

The aim of this study is to highlight the significance of early diagnosis and timely surgical intervention in managing internal hernias causing small bowel obstruction, thereby improving patient outcomes and minimizing morbidity. The objectives include analyzing the clinical presentation and diagnostic challenges associated with internal hernias, assessing the role of contrast-enhanced CT imaging in early detection, and evaluating surgical management strategies and their outcomes. Additionally, this study seeks to raise awareness among young surgeons about internal hernias as a rare but critical cause of intestinal obstruction and emphasize the importance of early intervention in preventing complications such as bowel strangulation and necrosis.

## MATERIALS AND METHODS

A retrospective analysis of data extracted from the emergency operative room register at GMC Thrissur, spanning a 5-year period, yielded a cohort of 18 patients. Sixteen of these patients, devoid of any prior laparotomy history, underwent emergency laparotomy for internal hernias, either pre-diagnosed through contrast-enhanced imaging or encountered intraoperatively as an unexpected finding. Conversely, two patients underwent elective laparotomy for pre-diagnosed internal hernias, identified on contrast-enhanced computed tomography (CECT) scans performed to investigate chronic abdominal pain.

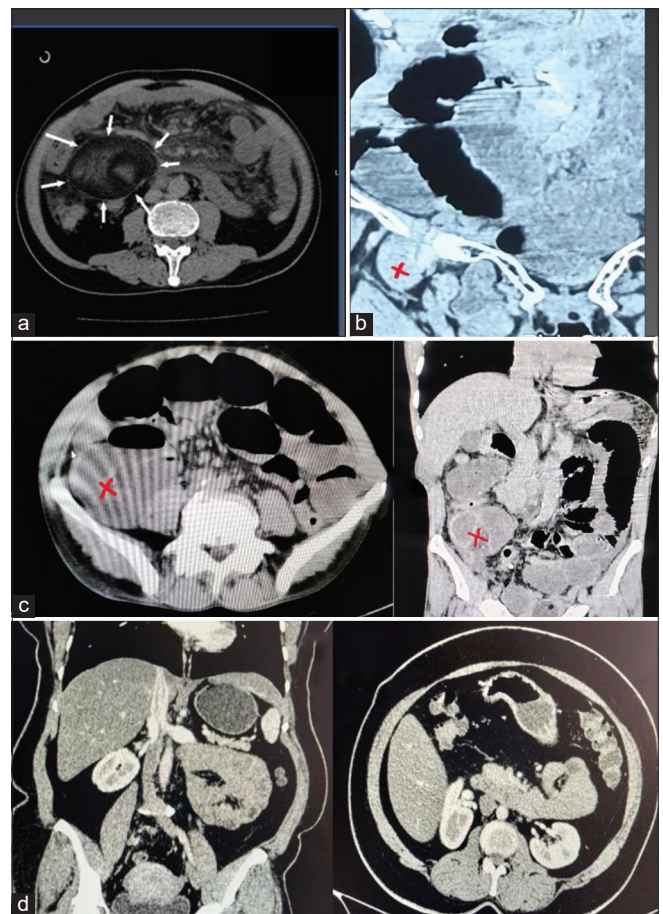
## RESULTS

In the emergency setting, all 16 patients who underwent emergency laparotomy presented with a primary complaint of obstipation, lasting 4–7 days, accompanied by vomiting and reduced appetite for 2–3 days. Notably, six out of eight

patients with the left paraduodenal and transmesenteric hernias reported a 6-month history of intermittent bloating and nausea. Two patients with the right preduodenal hernias presented with a 4-month history of chronic periumbilical pain, without any significant medical history. In addition, two patients with paracecal hernias had undergone evaluations for recurrent right iliac fossa pain at a local hospital over 3 months.

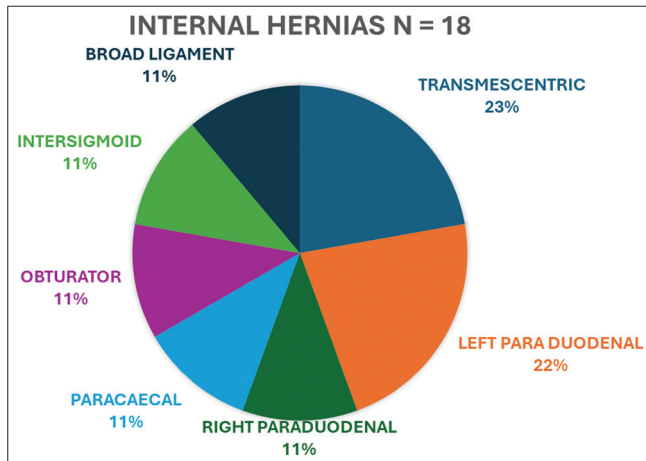
In contrast, the patient who underwent elective laparotomy presented with a 2-month history of dyspepsia and upper abdominal pain, which persisted despite treatment with proton-pump inhibitors and analgesics. Preliminary investigations, including ultrasound and upper gastrointestinal endoscopy, yielded normal results.

Regarding the emergency management, ten out of 16 patients underwent direct emergency exploratory laparotomy due to the presence of toxic clinical features, including tachycardia, dehydration, hypotension, low urine output, and significant air-fluid levels on plain



**Figure 1:** (a) Cluster of bowel loops in the right lumbar region-transmesenteric hernia; (b) cluster of bowel loops through obturator foramen-obturator hernia; (c) cluster of bowel loops in RIF-paracecal hernia; and (d) cluster of bowel loops in continuation with jejunal loops in the anterior pararenal space on the left side-left paraduodenal hernia





**Figure 2:** Distribution of cases

X-ray abdomen in erect and supine positions. In contrast, six out of 16 patients with stable vital signs underwent emergency CECT scan of the abdomen, which revealed evidence of internal hernia, followed by exploratory laparotomy.

All patients were investigated with contrast CT scan and the findings came in concordance with the pre-operative findings confirming the sensitivity and specificity of contrast (Figure 1).

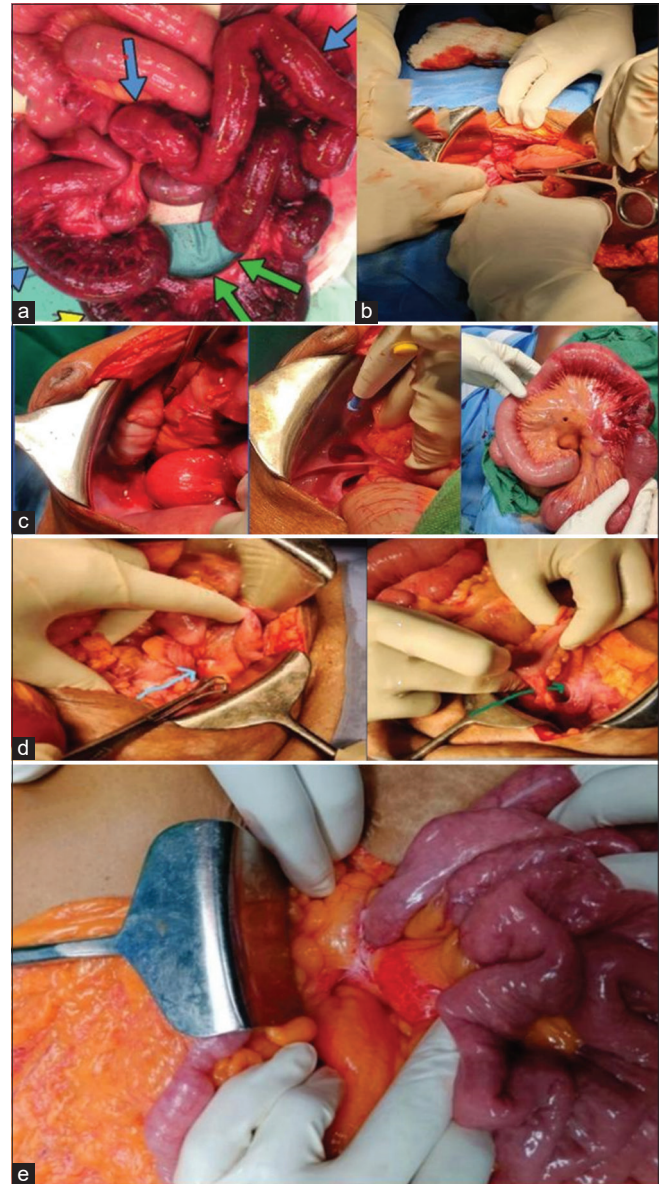
The distribution of cases is depicted in Figure 2.

All 18 patients underwent exploratory laparotomy and the primary identification of hernial sac, reduction was done in all cases 6/16 cases developed gangrene of the small bowel and needed resection and anastomosis 37.5% of the total emergency cases. The elective cases needed just the release of the sac, reduction, and repair of the internal defects (Figure 3).

## DISCUSSION

Internal hernias are a rare yet potentially devastating cause of intestinal obstruction, accounting for approximately 1–4% of all cases.<sup>2,3</sup> Despite their rarity, internal hernias pose a significant diagnostic challenge due to their non-specific clinical presentation.

There are numerous classifications of internal hernias, and one of the most acceptable ones is suggested by Welch, who divides internal hernias into eight types. The clinical manifestations of internal hernias can vary widely, but often include symptoms such as abdominal pain, nausea, vomiting, and obstipation.<sup>4,5</sup> In our series, all 16 patients presented with obstipation, accompanied by vomiting and reduced appetite. Notably, six out of eight



**Figure 3:** (a) Gangrenous bowel after reduction of transmesenteric hernia, (b) obturator hernia, (c) gangrenous bowel after reduction of paracecal hernia, (d) intersigmoid hernia reduction, and (e) mesenteric defect through which small bowel herniating-paraduodenal hernia

patients with the left paraduodenal and transmesenteric hernias reported a 6-month history of intermittent bloating and nausea.

The diagnosis of internal hernias is often delayed due to their non-specific presentation and the lack of pathognomonic signs.<sup>6</sup> Imaging studies, such as CECT scans, can aid in the diagnosis, but may not always be conclusive.<sup>7</sup> In our series, 16 out of 16 patients underwent emergency CECT scans, which revealed evidence of internal hernia. Due to limited clinical awareness, internal hernias are frequently underdiagnosed, leading to small bowel obstruction, which remains the most common clinically diagnostic manifestation.

CECT of the abdomen is the imaging modality of choice for diagnosing internal hernias, offering a sensitivity of 94–100% and specificity of 90–95%. Characteristic features on CECT include: Cluster of dilated loops or a “sac-like appearance” of crowded small bowel loops within the hernia sac at an abnormal anatomic location.

Diagnostic laparoscopy is a supportive diagnostic modality, particularly when CECT fails to detect any anomalies. Laparoscopy offers both diagnostic and therapeutic benefits, enabling repair of internal defects in the same sitting, if present.

The management of internal hernias is primarily surgical, with emergency laparotomy being the treatment of choice.<sup>8,9</sup> In our series, ten out of 16 patients underwent direct emergency exploratory laparotomy due to the presence of toxic clinical features.

Early diagnosis and prompt surgical intervention are crucial in preventing complications and improving outcomes.<sup>10,11</sup> In our series, two patients with the right preduodenal hernias presented with a 4-month history of chronic periumbilical pain, highlighting the importance of considering internal hernias in the differential diagnosis of chronic abdominal pain.

Internal hernias are a rare yet potentially devastating cause of intestinal obstruction. A high index of suspicion, combined with prompt imaging studies and surgical intervention, is essential in preventing complications and improving outcomes.

#### Limitations of the study

The limitations of this study include its retrospective design, which may introduce selection bias and limit the completeness of data collection. The relatively small sample size restricts the generalizability of findings to a broader population. Additionally, as the study was conducted at a single tertiary care center, variations in surgical expertise and institutional protocols may affect the reproducibility of outcomes in different settings. The reliance on imaging for preoperative diagnosis, while effective, may have led to underdiagnosis in cases where subtle internal hernias were missed. Furthermore, long-term follow-up data on patient outcomes, recurrence rates, and post-operative complications were not extensively analyzed, limiting the assessment of long-term prognosis.

## CONCLUSION

The blurry nature of this disease makes it difficult for physicians to diagnose it at an early stage, leading to furthermore complexities in managing the condition in

the form of major resections and stomas that can be possibly avoided with more clinical awareness and upscaling the diagnostic investigations in patients with recurrent nonspecific abdominal complaints.

Prompt recognition and timely intervention are crucial in mitigating the morbidity associated with internal hernias, underscoring the imperative of heightened clinical vigilance, expedited imaging evaluation, and judicious employment of diagnostic laparoscopy to facilitate optimal patient outcomes.

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**Authors' Contributions:**


**PM**- Definition of intellectual content, literature survey, prepared first draft of manuscript, implementation of study protocol; **NCR**- Data collection, data analysis, manuscript preparation and submission of article; **RC**- Concept, design, clinical protocol, manuscript preparation, editing, and manuscript revision; **SVS**- Design of study, statistical analysis and interpretation; **APR**- Review manuscript; **AS**- Review manuscript; **DM**- Literature survey and preparation of figures, coordination and manuscript revision.

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