Cureus
Part of SPRINGER NATURE

Open Access Case Report

Hidden Hernia: A Rare Coexistence of a Transomental Hernia With a Recurrent Umbilical Hernia

Review began 11/04/2026
Review ended 11/09/2026
Published 11/12/2026

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DOI: 10.7759/cureus.119553

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Abstract

For many years, diagnosing and managing hernias has been part of a surgeon's career. Diagnostic modalities and management strategies have evolved over the years to prevent complications. We report a rare case of a transomental hernia (TOH) presenting clinically as an irreducible umbilical hernia in a 57-year-old male. In view of the uncertain clinical presentation, exploratory laparotomy was performed. Intraoperatively, the herniating orifice was identified in the greater omentum, the herniated bowel was reduced, and the unhealthy omentum was resected. The patient was managed postoperatively with antibiotics and was discharged in a stable condition. The unusual presentation of TOH can lead to diagnostic dilemmas and delay timely surgical intervention, thereby increasing the risk of morbidity and mortality. This case highlights the importance of early diagnosis and prompt surgical management in patients with an atypical presentation of a TOH.

Categories: General Surgery, Geriatrics, Medical Education
Keywords: elderly hernia, internal abdominal hernia, recurrent umbilical hernia, transomental, transomental hernia

Introduction

Internal hernias are uncommon causes of intestinal obstruction, characterized by the protrusion of abdominal viscera through congenital or acquired defects within the peritoneal cavity. A transomental hernia (TOH) is a rare subtype, accounting for approximately 1-2% of all internal hernias [1]. It is associated with significant morbidity and mortality due to intestinal obstruction, strangulation, and ischemia. Hernias account for approximately 5.8% of intestinal obstruction cases [1], while internal hernias account for approximately 0.5-3% of cases of intestinal obstruction [2]. Internal hernias are classified into several subtypes, including paraduodenal hernias (53%), pericecal hernias (13%), hernias through the foramen of Winslow (8%), transmesenteric hernias (8%), hernias through pelvic organs or structures (7%), transmesosigmoid hernias (6%), and other less common types [1,2].

Transomental herniation occurs when bowel loops protrude through an abnormal defect in the greater omentum. These defects may be congenital or acquired secondary to trauma, inflammation, previous abdominal surgery, or age-related omental atrophy [3,4]. Despite their rarity, TOHs are clinically significant because they can cause acute small bowel obstruction, closed-loop obstruction, strangulation, and intestinal ischemia. Their nonspecific clinical manifestations, including abdominal pain, vomiting, and abdominal distension, often complicate preoperative diagnosis. Contrast-enhanced computed tomography (CECT) is the preferred imaging modality for identifying internal hernias and evaluating associated bowel complications. However, a definitive diagnosis may occasionally be established only during surgical exploration.

The coexistence of a TOH with an external abdominal wall hernia may further complicate diagnosis, as the clinical findings can be attributed to the more apparent abdominal wall pathology. We report an unusual case of transomental herniation of the small bowel in a patient presenting with an irreducible recurrent umbilical hernia and a history of previous intraperitoneal onlay mesh (IPOM) repair. The underlying internal hernia was unexpectedly identified during surgical exploration. This case highlights the importance of considering occult intra-abdominal pathology in patients with recurrent abdominal wall hernias who present with atypical or persistent abdominal symptoms, as well as the diagnostic challenges and surgical implications associated with this rare condition.

Case Presentation

A 57-year-old man presented with an irreducible swelling in the umbilical region for two years, associated with diffuse abdominal pain for three days. He reported intermittent episodes of abdominal pain over the preceding six months, which were initially relieved by over-the-counter medications but had progressively worsened in severity during the three days before presentation. He had undergone laparoscopic intraperitoneal onlay mesh (IPOM) repair for an umbilical hernia seven years earlier, following which he developed a recurrent umbilical swelling. He had no other known comorbidities.

How to cite this article
Chezhian S, Palraj K, Singh K, et al. (November 12, 2026) Hidden Hernia: A Rare Coexistence of a Transomental Hernia With a Recurrent Umbilical Hernia. Cureus 18(11): e119553. DOI 10.7759/cureus.119553

On physical examination, the patient was conscious, alert, and cooperative. His pulse rate was 106 beats/minute. Abdominal examination revealed an irreducible umbilical swelling with localized guarding in the umbilical region. Digital rectal examination was unremarkable. Initial laboratory investigations revealed a total leukocyte count of 7,860 cells/mm^3, with neutrophils accounting for 82%. The remaining laboratory parameters were within normal limits. Plain abdominal radiography showed no evidence of pneumoperitoneum or dilated bowel loops. Ultrasonography revealed a 1.3 cm umbilical fascial defect with divarication of the recti and minimal free intraperitoneal fluid.

Based on the clinical presentation and ultrasonographic findings, a provisional diagnosis of an irreducible recurrent umbilical hernia with suspected omental torsion was made. Preoperative contrast-enhanced computed tomography (CECT) was not performed, as the initial surgical plan was directed toward exploration and repair of the clinically apparent umbilical hernia. An open surgical approach was selected to facilitate direct assessment of the irreducible hernia contents, with consideration of possible adhesions related to the previous IPOM repair. Diagnostic laparoscopy was not attempted initially. The patient was therefore planned for open exploration and repair of the recurrent umbilical hernia.

Following initial resuscitation and nasogastric decompression, the patient was taken up for open exploration and repair of the irreducible recurrent umbilical hernia. An incision was made centered over the umbilicus, and the hernial sac was identified and carefully dissected to expose the fascial defect. On opening the hernial sac, unhealthy omentum was encountered. In view of the unexpected finding of compromised omentum and the need for further intra-abdominal assessment, the decision was made to proceed with exploratory laparotomy. The incision was extended cranially and caudally to facilitate adequate exploration.

Upon entering the peritoneal cavity, serosanguineous fluid was encountered. Further exploration revealed a bucket-handle-shaped segment of gangrenous omentum adherent to the anterior abdominal wall and small bowel mesentery. The entire small bowel had undergone transomental herniation through the defect formed by the bucket-handle configuration of the omentum (Figure *1*), resulting in a knot causing constriction at the root of the small bowel mesentery. This produced congestion of the bowel loops distal to it, consistent with mechanical small bowel obstruction. In addition, a large, narrow-necked jejunal diverticulum measuring approximately 5 × 3 × 5 cm was identified along the antimesenteric border of the jejunum, proximal to the constriction point (Figure *2*).

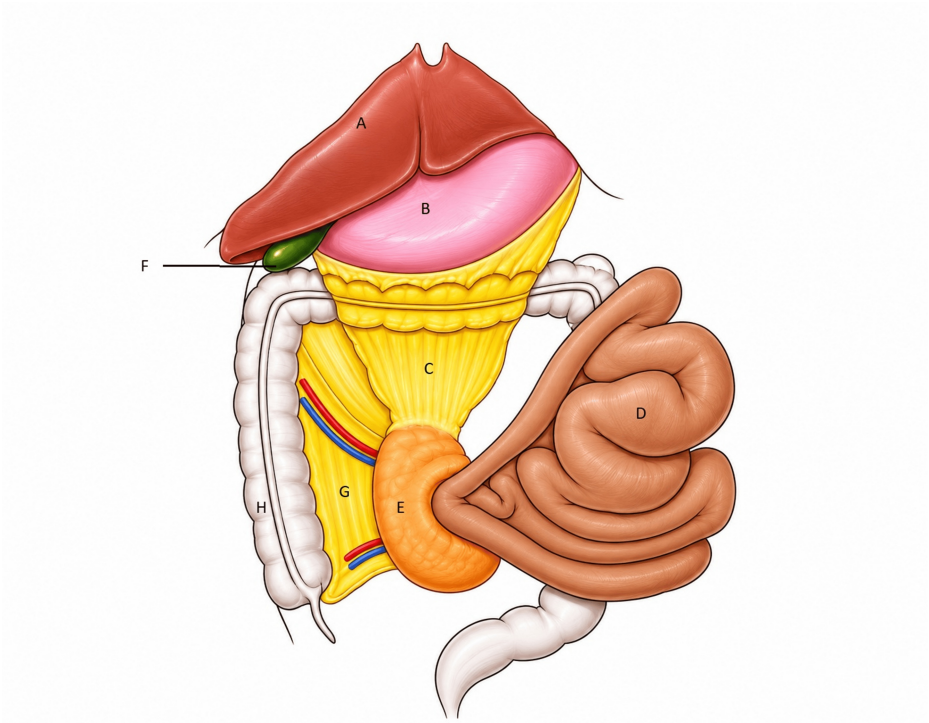


FIGURE 1: Diagram explaining the intraoperative finding of the transomental hernia

A: liver, B: stomach, C: greater omentum, D: congested small bowel through the defect in the greater omentum, E: defect in the greater omentum (bucket-handle shape), F: gallbladder, G: small bowel mesentery with blood vessel, H: large bowel.

Image produced by the authors using Goodnotes (Goodnotes Limited, UK) + Microsoft Paint (Microsoft Corp., USA) software

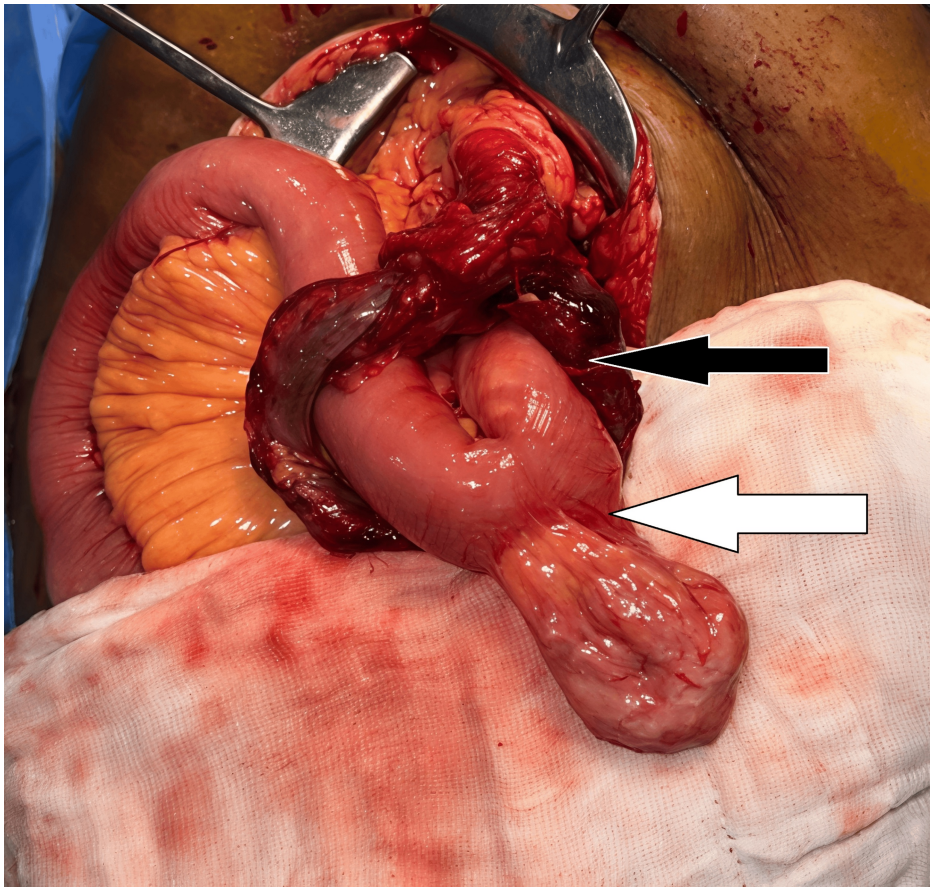


FIGURE 2: The image depicts a segment of the jejunum intestine protruding through a defect in the omentum, with a diverticulum arising from the side of the jejunum closest to the free edge of the mesentery. The defect in the omentum creates an opening through which the small bowel herniation occurred.

Black arrow: transomental defect, white arrow: jejunum herniating through the transomental defect, with a diverticulum arising from its antimesenteric border that remains proximal to the herniating orifice

The small bowel was reduced through the transomental defect (Figure *3*) after adhesiolysis; small bowel viability was assessed, and the gangrenous omentum was excised. Postoperatively, the patient developed superficial surgical site infection (SSI), which was managed with antibiotics. The patient was discharged on postoperative day 7, and the sutures were removed on postoperative day 14. At the most recent follow-up, ~3 months after the day of surgery, the patient was enjoying good health and had no major complaints.



FIGURE 3: The image shows the hernial defect in the greater omentum with proximal healthy omentum and gangrenous distal part contributing to the "bucket-handle shape" defect.

Discussion

The incidence of internal hernia varies from 0.2% to 0.9% [3]. Compared with other types of hernias, these hernias have increased morbidity and mortality. Internal hernias can present in the form of acute small bowel obstruction. Among internal hernias, TOHs constitute 1-2% of all hernias and can present as bowel obstructions involving the small or large bowel [1,3]. In our scenario, the presentation was in the form of an irreducible umbilical hernia, making it rare.

The etiology of a TOH can be congenital, traumatic, iatrogenic, or age-related [1-5]. Iatrogenic transomental herniation can occur following open or laparoscopic surgery, which seems to be the cause in our case. Another probable cause is senile atrophy leading to degenerative changes in the greater omentum, ultimately resulting in transomental herniation [3,4]. Yamaguchi et al. (Figure *4*) classified TOHs into three types based on the anatomical pathway of herniation. Type A involves herniation through the greater

omentum, with the bowel remaining within the peritoneal cavity. Type B involves herniation through the greater omentum into the omental bursa, followed by re-entry into the peritoneal cavity. Type C involves herniation into the omental bursa [3-6]. Type C is further subclassified into C0, C1, and C2. In type C0, the small bowel enters the lesser sac and remains confined within it. In type C1, the herniated bowel passes through the lesser sac and exits into the peritoneal cavity via the foramen of Winslow. In type C2, the bowel enters the lesser sac and subsequently re-enters the peritoneal cavity through a defect in the lesser omentum.

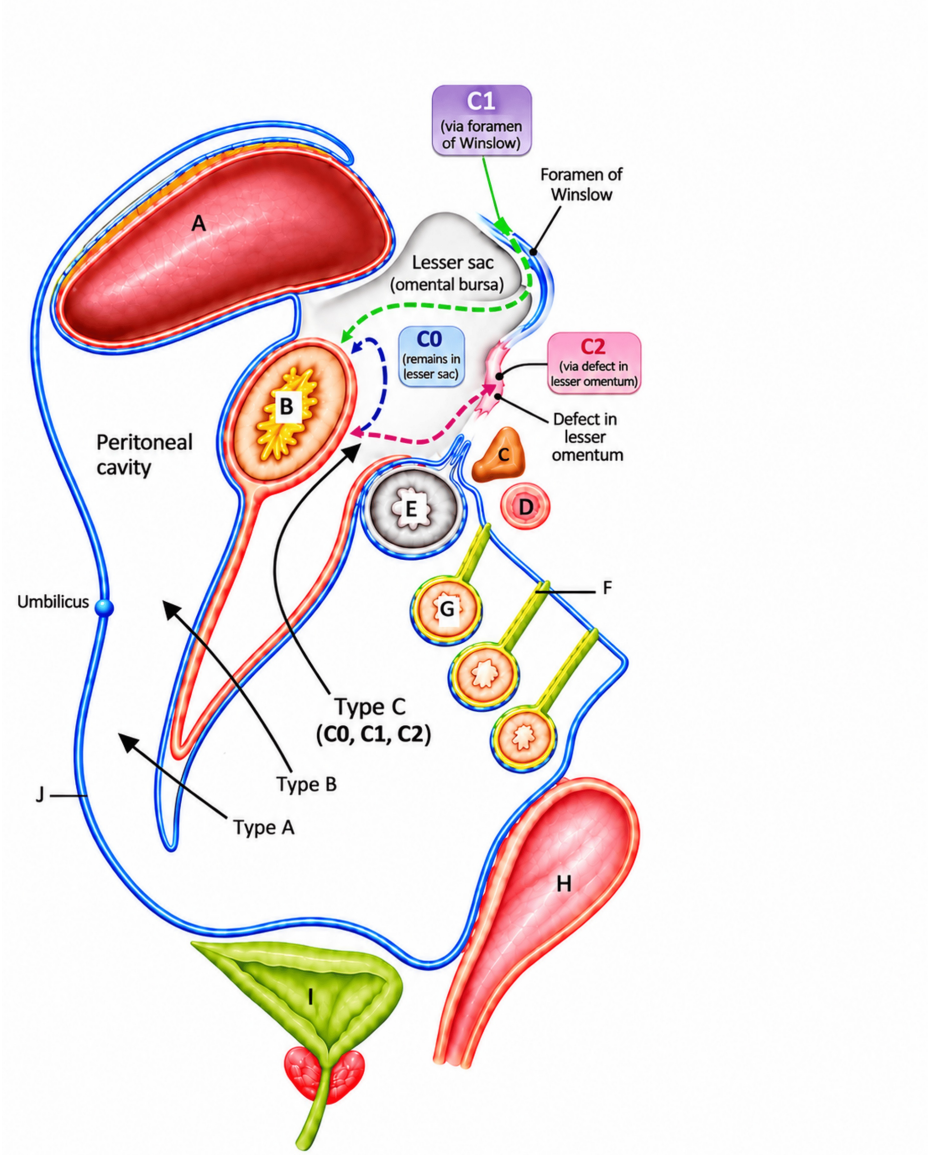


FIGURE 4: Diagram illustrating the types of transomental hernias in accordance with the Yamaguchi classification

A: liver, B: stomach, C: pancreas, D: duodenum, E: transverse colon, F: small bowel mesentery, G: small bowel, H: rectum, I: bladder, J: greater omentum

Type A: herniation through the greater omentum, with the bowel remaining within the peritoneal cavity; Type B: involves herniation through the greater omentum into the omental bursa, followed by re-entry into the peritoneal cavity; Type C: involves herniation of the small bowel into the lesser sac through a defect in the greater omentum and is further subdivided according to the destination of the herniated bowel. In type C0, the bowel remains confined within the lesser sac; in type C1, it exits through the foramen of Winslow into the peritoneal cavity; and in type C2, it exits through a defect in the lesser omentum into the peritoneal cavity.

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Our case falls under type A of the Yamaguchi classification. Early diagnosis and prompt surgical management are crucial, as TOHs are associated with a high mortality rate of approximately 30% [7]. Transomental herniation of the small bowel carries an increased risk of strangulation and intestinal ischemia. However, early diagnosis remains challenging and requires a high index of clinical suspicion.

The small bowel diverticulum identified proximal to the site of herniation may represent an acquired pulsion diverticulum secondary to chronically increased intraluminal pressure resulting from intermittent bowel obstruction. However, a causal relationship between the formation of a diverticulum and transomental herniation cannot be established.

Computed tomography (CT) is the preferred diagnostic modality for TOHs. It may reveal clustered, dilated small bowel loops with air-fluid levels, characteristic signs such as the beak sign indicating obstruction with a transition point and whirl sign, which suggest mesenteric twisting and possible intestinal ischemia. Specific CT findings of TOHs include posterior displacement of the transverse colon, with a reported sensitivity and specificity of 71% and 94%, respectively. Additional features include swirling of the omental fat, convergence of mesenteric vessels, and the absence of intervening fat planes. These radiological findings may aid in differentiating TOHs from other causes of intestinal obstruction, including volvulus [5,7].

In the present case, preoperative CECT was not performed because the initial clinical assessment and ultrasonographic findings suggested an irreducible recurrent umbilical hernia with suspected omental torsion, for which open surgical exploration was planned. The underlying transomental herniation of the small bowel was unexpectedly identified intraoperatively. Nevertheless, given the patient's history of previous abdominal surgery and recurrent abdominal pain, preoperative CECT could have provided valuable information regarding the underlying intra-abdominal pathology and facilitated surgical planning. The absence of cross-sectional imaging represents a diagnostic limitation of this case and highlights the importance of considering internal hernias in patients presenting with atypical symptoms despite an apparent external abdominal wall hernia.

Diagnostic laparoscopy is a valuable modality for the early diagnosis of suspected internal hernias [5]. Although diagnostic laparoscopy could have been considered in our hemodynamically stable patient, an open surgical approach was preferred to facilitate direct exploration and assessment of the hernia contents. In the present case, the patient presented with an irreducible recurrent umbilical hernia and a history of laparoscopic intraperitoneal onlay mesh (IPOM) repair performed seven years earlier. Considering the possibility of intra-abdominal adhesions associated with the previous mesh repair, open umbilical hernia repair was planned, and diagnostic laparoscopy was not selected as the initial approach. Intraoperatively, the unexpected finding of unhealthy omentum within the hernia sac necessitated extension of the incision to perform an exploratory laparotomy. This provided adequate exposure for comprehensive bowel assessment, reduction of the herniated small bowel, and management of the gangrenous omentum. Although both laparoscopic and open approaches are feasible, exploratory laparotomy remains an important surgical option in complex or diagnostically uncertain cases, particularly when extensive bowel assessment is required. Timely surgical intervention, including reduction of the herniated bowel and division or excision of the omental defect, is essential to prevent complications such as bowel strangulation, ischemia, and necrosis.

Conclusions

Previous abdominal surgery, particularly procedures involving intraperitoneal mesh placement, may be associated with omental adhesions and the development of defects that can predispose to transomental herniation of the small bowel. Such herniation may result in mesenteric twisting, bowel constriction, and intestinal obstruction. Although the causal relationship between the previous IPOM repair and the transomental defect remains uncertain in the present case, this possibility highlights the importance of considering internal hernias in patients with prior abdominal surgery presenting with atypical abdominal symptoms or recurrent abdominal wall hernias. Early recognition and timely surgical intervention are essential to prevent bowel strangulation and ischemic complications.

Our experience highlights the diagnostic challenges associated with TOHs, which require a high index of clinical suspicion for early diagnosis. Early recognition and prompt surgical intervention are the cornerstones of effective management. The greater omentum should be regarded as a distinct anatomical organ, and careful inspection should be performed following open or laparoscopic procedures to identify any iatrogenic defects and facilitate their appropriate management. Such measures may help prevent internal herniation and improve patient outcomes.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: S Chezhian, Karuppasamy Palraj

Acquisition, analysis, or interpretation of data: S Chezhian, Kanta Singh , Fyaz Shafi, Rajat S. Ingle

Drafting of the manuscript: S Chezhian, Fyaz Shafi, Rajat S. Ingle

Critical review of the manuscript for important intellectual content: S Chezhian, Karuppasamy Palraj, Kanta Singh

Supervision: S Chezhian, Karuppasamy Palraj

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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