World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

STRANGULATED OBTURATOR HERNIA WITH INTESTINAL PERFORATION IN A NONAGENARIAN: A CASE REPORT

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World Journal of Advanced Research and Reviews, 2026, 31(03), 750–755

Publication history: Received on 24 July 2026; revised on 10 September 2026; accepted on 12 September 2026

Article DOI: https://doi.org/10.30574/wjarr.2026.31.3.2377

ABSTRACT

Background: Obturator hernia is a rare pelvic hernia, accounting for less than 1% of abdominal wall hernias, and predominantly affects frail, elderly, multiparous women. Its insidious clinical presentation and high rate of strangulation make imaging, particularly computed tomography (CT) , central to timely diagnosis.

Case Presentation: We report the case of a 95-year-old woman with a four-day history of small bowel obstruction and left inner thigh pain, with a positive Howship-Romberg sign. Laboratory tests showed leukocytosis (14,000/mm^3) and elevated C-reactive protein (100 mg/L).

Imaging Findings: Contrast-enhanced CT of the abdomen and pelvis demonstrated dilated small bowel loops (up to 42 mm) with an abrupt transition point at the left obturator foramen, where a loop of bowel was incarcerated between the pectineus and obturator externus muscles, medial to the femoral vessels, through a narrow neck, findings diagnostic of a strangulated left obturator hernia. No CT sign of bowel ischemia (mural thickening, reduced enhancement, fat stranding, pneumatosis or free fluid) was identified.

Management and Outcome: Emergency laparotomy revealed an 8-cm segment of necrotic small bowel with a 1-cm perforation, despite the reassuring CT appearance, illustrating the limits of CT for predicting bowel viability. Segmental resection with primary manual anastomosis and hernia repair using a round ligament flap were performed. The postoperative course was complicated by a superficial surgical site infection and a fixed evisceration, both managed conservatively, with a favorable overall outcome.

Conclusion: CT is the imaging modality of choice for suspected obturator hernia, offering excellent sensitivity for hernia detection and anatomical characterization. However, its ability to predict bowel viability remains imperfect, and a

reassuring CT should not delay surgical exploration in a symptomatic elderly patient with biological signs of inflammation.

Keywords: Obturator Hernia; Computed Tomography; Small Bowel Obstruction; Howship-Romberg Sign; Bowel Strangulation; Geriatric Imaging.

1 INTRODUCTION

Obturator hernia is a rare surgical and radiological condition, with 600 cases reported by Chakhvadze et al. in 2010 and 351 by Burla et al. in 2023 [1,2]. It carries a high mortality rate, reported to reach 70% according to Shapiro et al. [3], largely attributable to delayed diagnosis. It occurs through the obturator canal, which transmits the obturator nerve and vessels, and is most frequently observed in thin, elderly women, in whom diminished pre-peritoneal fat and relaxed pelvic musculature create a wider and more vulnerable canal [4].

Because the hernia sac often contains only a portion of the bowel wall (Richter-type hernia) and lies deep within the pelvis without a palpable external bulge, clinical diagnosis is notoriously unreliable, leading to a high rate of strangulation (25–100%) [5]. In this setting, cross-sectional imaging, and CT in particular, has become indispensable, transforming obturator hernia from a diagnosis of exclusion made at laparotomy into one that can be anticipated and precisely characterized before surgery.

We report the CT and clinico-pathological findings of a strangulated and perforated obturator hernia in a 95-year-old woman, with emphasis on the imaging semiology, the differential diagnosis on cross-sectional imaging, and the diagnostic performance and limitations of CT in predicting bowel viability.

2 CASE PRESENTATION

2.1 Clinical History

A 95-year-old woman was brought to the emergency department with a four-day history of absolute constipation, abdominal pain and distension, and paresthesia of the inner left thigh. Her past medical history was significant for hypertension, managed with amlodipine, and a cardiac condition treated with beta-blockers.

On physical examination, vital signs were normal except for a heart rate of 95 beats per minute. The abdomen was significantly distended and tympanic on percussion, with no palpable external hernia. Pain and paresthesia were reproduced by passive abduction and medial rotation of the thigh, consistent with a positive Howship-Romberg sign. Laboratory findings revealed a white blood cell count of 14,000/mm^3 and a C-reactive protein level of 100 mg/L, indicating a significant inflammatory response.

2.2 Imaging Findings

An urgent contrast-enhanced CT scan of the abdomen and pelvis was performed, with axial acquisition and coronal and sagittal multiplanar reformations (Figure 1).

The CT scan demonstrated dilated, fluid-predominant small bowel loops reaching 42 mm in caliber, with an abrupt transition point at the level of the left obturator foramen (Figure 1). At this level, a loop of bowel was seen protruding between the pectineus and obturator externus muscles, medial to the femoral vessels, the characteristic anatomical location of an obturator hernia (Figure 1) through a narrow neck, a feature that favors incarceration and strangulation.

Comparison with the contralateral, normal right obturator foramen on the same axial sections (Figure 1) helped confirm the asymmetry and the diagnosis. No free intraperitoneal fluid was identified. Critically, none of the classical CT signs of bowel ischemia bowel wall thickening, diminished or absent mural enhancement, mesenteric fat stranding, or pneumatosis intestinalis were present at the incarcerated loop.

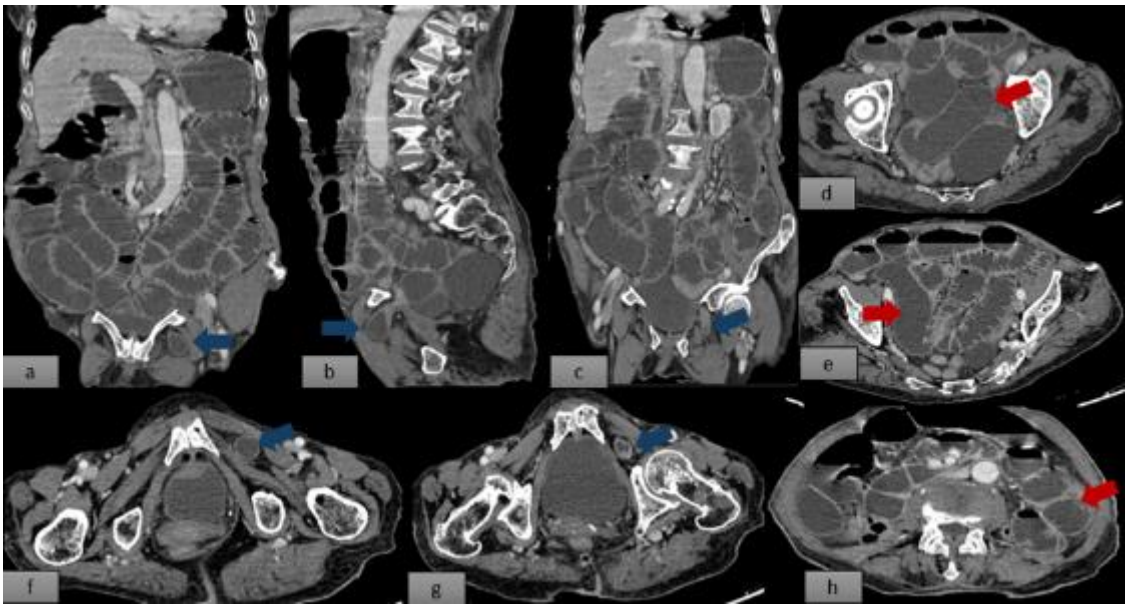

Figure 1: Contrast-enhanced CT, multiplanar views. Coronal (a) and sagittal (b) reformations and axial images (h) show marked distension of the proximal small bowel loops (red arrow) with air-fluid levels, predominantly fluid, upstream of an incarcerated loop (dark blue arrow) between the obturator externus and pectineus muscles, medial to the femoral vessels, with a narrow neck. Axial images at the level of the obturator foramina (d, e) show the herniated loop on the left (red arrow) compared with the normal contralateral side (f, g, blue arrow). These findings indicate a mechanical small bowel obstruction due to a strangulated left obturator hernia, without CT evidence of bowel ischemia.

Several CT features deserve systematic assessment, both for the positive diagnosis of obturator hernia and for the evaluation of bowel viability. The most specific sign is a loop of bowel, or occasionally only properitoneal fat, protruding between the pectineus and obturator externus muscles, medial to the femoral vessels: this is a pathognomonic location, and the key landmark distinguishing obturator hernia from femoral or inguinal hernia; it was present in our case. A narrow hernial neck, also observed here, is a recognized predictor of incarceration and strangulation. Upstream dilatation of the small bowel with a clear transition point confirms the mechanical nature of the obstruction and localizes it; it reached 42 mm in this case. Conversely, the signs suggestive of bowel ischemia bowel wall thickening or diminished/absent mural enhancement (suggesting ischemia), mesenteric fat stranding adjacent to the incarcerated loop (suggesting inflammation or early ischemia), pneumatosis intestinalis or portal venous gas (a later, more specific sign of transmural necrosis), and free intraperitoneal fluid (non-specific but potentially indicating perforation or strangulation) were all absent in our patient, even though surgery revealed established bowel necrosis.

2.3 Correlation with Surgical and Pathological Findings

Given the clinical, biological and CT findings, the patient was taken emergently to the operating room. A sub-umbilical midline laparotomy revealed dilated small bowel proximal to a loop firmly incarcerated in the left obturator foramen. Despite the absence of CT signs of ischemia, careful extraction of the loop revealed an 8-cm segment of necrotic, non-viable small bowel with a 1-cm perforation on its antimesenteric border (Figure 2) a discordance between the preoperative imaging and the intraoperative findings that is discussed below.

A segmental small bowel resection with a manual, end-to-end, single-layer anastomosis was performed, and the obturator defect was repaired by closing the peritoneum with an inverted suture reinforced with a pedicled flap of the ipsilateral round ligament. Postoperatively, transit resumed on day 4; the course was complicated by a superficial surgical site infection on day 5 and a fixed evisceration on day 8, both managed conservatively with local dressings and skin-approximation sutures. The patient was discharged in good condition on postoperative day 14, with satisfactory healing confirmed at the three-week clinical follow-up.

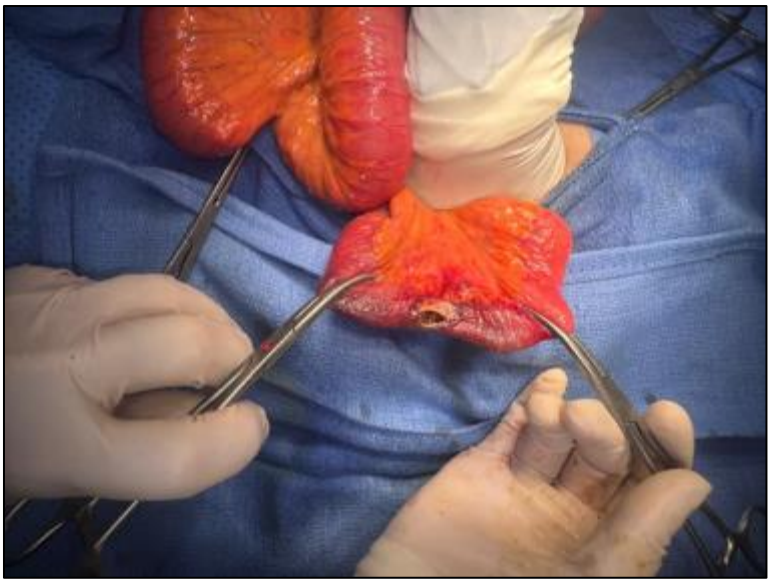

Figure 2: Intraoperative specimen showing the extracted incarcerated small bowel loop with the necrotic, perforated segment, correlating with the transition point identified on the preoperative CT.

3 DISCUSSION

This case illustrates the classical clinical and imaging presentation of a strangulated obturator hernia: an elderly, frail woman with small bowel obstruction of initially unclear cause [6]. Clinical diagnosis alone is notoriously unreliable. The Howship-Romberg sign pain along the medial thigh reproduced by extension, abduction, or medial rotation, due to compression of the obturator nerve within the canal is considered pathognomonic but is present in only 15–56% of cases [7,8]; it was, however, elicited in our patient and appropriately raised clinical suspicion, prompting cross-sectional imaging.

CT has become the gold-standard imaging modality for suspected obturator hernia, with high sensitivity and specificity, as reported in the Mayo Clinic series by Nasir et al. [9] and in the diagnostic algorithm proposed by Rodríguez-Hermosa et al. [5]. The first radiological description of an obturator hernia diagnosed by CT dates back to Cubillo in 1983 [10], and its diagnostic value has since been widely confirmed, notably by Ijiri et al., who highlighted the usefulness of CT in establishing this otherwise difficult preoperative diagnosis [11]. The key CT finding is a loop of bowel, or occasionally only properitoneal fat, protruding through the obturator canal between the pectineus and obturator externus muscles, medial to the femoral vessels a location that reliably distinguishes obturator hernia from the more common femoral hernia (which lies lateral to the pubic tubercle, anterior to the pectineus muscle) and from inguinal hernia (which lies superior to the inguinal ligament). Comparison with the asymptomatic contralateral obturator foramen, as performed in this case, is a simple and useful technique to confirm asymmetry, particularly for radiologists less familiar with this rare entity.

A more challenging issue, and the central teaching point of this case, is the limited sensitivity of CT for predicting bowel ischemia in an incarcerated obturator hernia. In our patient, none of the recognized CT signs of strangulation bowel wall thickening, reduced or absent mural enhancement, mesenteric fat stranding, pneumatosis, or free fluid were present, yet the intraoperative finding was a necrotic, perforated bowel segment. This discordance is in keeping with the findings of Zhang et al., who identified, in a series of patients evaluated by multidetector CT, several clinical and CT risk factors associated with bowel obstruction in obturator hernia, while emphasizing the difficulty of reliably predicting the viability of the incarcerated segment from imaging alone [12]. It likely reflects the small volume of bowel trapped within a narrow, tightly constricting neck, where early ischemic changes may be subtle, segmental, and below the spatial or contrast resolution of CT, particularly in a single-phase emergency protocol. It underscores that a reassuring CT does not exclude strangulation and should not, on its own, delay surgery in a patient with a four-day history of obstruction and marked biological inflammation (leukocytosis, elevated C-reactive protein) clinical and laboratory findings that, in this case, correctly predicted bowel compromise despite the absence of overt CT ischemic signs.

Ultrasound has been described as an adjunct in thin patients, potentially demonstrating the hernia sac and its contents at the obturator foramen, but it is limited by overlying bowel gas, is highly operator-dependent, and cannot reliably assess for ischemia; it therefore has no established role as a first-line modality in the emergency setting and CT remains the investigation of choice when obturator hernia is suspected clinically or found incidentally during work-up of unexplained small bowel obstruction in an elderly patient.

From a reporting standpoint, the radiologist's role extends beyond simply identifying the hernia: a structured report should specify the exact anatomical location and side, the hernia contents, the width of the neck, the caliber of upstream dilated bowel and the level of the transition point, and should explicitly comment on the presence or absence of each of the CT signs of ischemia discussed above, since this information directly guides the urgency and planning of surgical management.

The surgical management itself laparotomy versus laparoscopy, primary anastomosis versus stoma, and the choice of hernia repair technique, including the use of the round ligament as an autologous, well-vascularized flap in a potentially contaminated field [13–16] remains an important determinant of outcome, but is guided first and foremost by the anatomical roadmap that CT provides, reaffirming the pivotal role of imaging in the management pathway of this rare and life-threatening hernia.

4 CONCLUSION

This case demonstrates that a strangulated obturator hernia can be clinically suspected in an elderly patient with an unexplained small bowel obstruction and a positive Howship-Romberg sign, but is reliably diagnosed and characterized by CT, which should be obtained promptly whenever this rare hernia is suspected. However, the absence of CT signs of ischemia does not rule out bowel strangulation, and clinical and biological parameters must be integrated with imaging findings when deciding on the timing of surgical exploration. Increased awareness among radiologists of the specific CT location and semiology of obturator hernia is essential to shorten the time to diagnosis and reduce the historically high morbidity and mortality associated with this condition.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Acknowledgments

The authors would like to express their sincere gratitude to all those who contributed to this work. Their support and valuable advice were essential to the completion of this study.

Funding Source

The authors received no specific funding for this work.

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Written informed consent was obtained from the patient's next of kin for publication of this case report and any accompanying images.

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