

# Early CT Diagnosis of Strangulated Obturator Hernia in A 93-Year-Old Woman Followed by Laparoscopic TAPP Repair: Case Report

Minh Duc Pham<sup>1</sup>, Thanh Xuan Nguyen<sup>2</sup>, Duc Anh Le<sup>3\*</sup>, Duc Phu Tran<sup>4</sup>, Huu Son Nguyen<sup>5</sup>

<sup>1</sup>Department of Surgery, Hue University of Medicine and Pharmacy, Hue University, Hue, Viet Nam


<sup>2</sup>Department of Pediatric Surgery and Abdominal Emergency, Hue Central Hospital, Hue, Viet Nam

<sup>3</sup>Department of General Surgery, Hue Central Hospital – Branch 2, Hue, Viet Nam

<sup>4</sup>Thong Nhat Hospital, Ho Chi Minh city, Vietnam

<sup>5</sup>Pediatric Center, Hue Central Hospital, Hue, Vietnam

\*Correspondence: Duc Anh Le, Department of General Surgery, Hue Central Hospital – Branch 2; Thuong An 2, Phong Thai, Hue city, Vietnam; Tel: +84973148385

 drleducanh92@gmail.com

Radiology Case. 2026 January; 20(1):1-8 :: DOI: 10.3941/jrcr.5875

## AUTHORS' CONTRIBUTIONS

Minh Duc Pham contributed to the study design and drafted the manuscript. Thanh Xuan Nguyen contributed to the design and oversaw the manuscript drafting process. Duc Anh Le contributed to the admission and treatment of the patients. Duc Phu Tran contributed to confirming the authenticity of all the raw data. Huu Son Nguyen performed the collection and collation of data. All authors have written the manuscript and read and approved the final manuscript.

## ACKNOWLEDGEMENTS

None.

## DISCLOSURES

The authors declare that they have no competing interests.

## CONSENT

Written informed consent was obtained from the patient for publication of this case report and the accompanying images.

## HUMAN AND ANIMAL RIGHTS

All procedures performed were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments.

## ABSTRACT

**Background:** Obturator hernia is rare and accounts for less than 1% of all abdominal wall hernias. It represents a diagnostic challenge due to its non-specific signs and symptoms.

**Case Report:** We describe a 93-year-old woman presenting with 12 hours of lower abdominal pain. Computed tomography demonstrated a right strangulated obturator hernia causing small-bowel obstruction. Laparoscopic transabdominal preperitoneal repair was performed with mesh placement. The patient recovered uneventfully and was discharged on postoperative day 4.

**Conclusion:** Early CT diagnosis followed by laparoscopic repair allows rapid recovery and reduces morbidity in strangulated obturator hernia.

## CASE REPORT

### INTRODUCTION

Obturator hernia, first described in 1724, remains one of the rarest abdominal-wall hernias and carries the highest reported mortality (up to 40 %) because clinical manifestations are nonspecific and diagnosis is often delayed [1-3]. Early detection is therefore critical but challenging, particularly in nonagenarian patients who tolerate neither prolonged obstruction nor

extensive open surgery. Advances in multidetector CT permit rapid, unequivocal identification of the herniated bowel loop coursing between the pectineus and obturator externus muscles, raising preoperative diagnostic accuracy above 90% [4]. Parallel progress in laparoscopy has made minimally invasive trans-abdominal pre-peritoneal (TAPP) repair feasible even in emergency settings, offering excellent visualisation of the pelvis,

the opportunity to inspect bowel viability, and lower wound morbidity than open approaches [5]. The present report is—to our knowledge—the oldest Vietnamese patient successfully treated by laparoscopic TAPP for strangulated obturator hernia following CT diagnosis within 12 hours of symptom onset. It underlines two key messages: (i) CT should be promptly obtained in any frail, elderly female with bowel obstruction of unclear aetiology, and (ii) laparoscopic TAPP repair is safe and effective, even in nonagenarians, provided that strangulation is recognised early and bowel is viable.

## CASE REPORT

### Clinical presentation

A 93-year-old female patient presented with lower abdominal pain radiating to the buttocks. The symptoms had been ongoing for the previous 12 hours, accompanied by constipation and nausea. The patient had a history of six vaginal deliveries and no prior abdominal surgeries. On examination in the emergency department, the patient exhibited significant tenderness in the lower abdomen, mild abdominal distension, with no signs of peritonitis, and a thin body frame, with a BMI of 16.2 kg/m<sup>2</sup>. Rectal examination showed no suspicious mass and no blood. There was no palpable mass in the groin area.

Laboratory tests revealed a white blood cell count of 14 x 10<sup>9</sup>/L. Abdominal X-ray (Figure 1) showed levels of air-fluid and no free air in the peritoneal cavity. Abdominal ultrasound revealed dilated small bowel loops with increased motility and minimal fluid between the loops, but no definitive cause of obstruction was identified. Contrast-enhanced abdominal CT scan (Figure 2) showed the cause of obstruction to be a loop of ileum herniating through the right obturator foramen. The previously dilated bowel loops were found to be congested with fluid, and the bowel loop posterior to the hernia was collapsed. The bowel wall at the site of the hernia showed reduced contrast enhancement compared to the bowel loops inside the abdominal cavity. The small bowel obstruction was evident, with no free air or fluid in the peritoneal cavity.

The patient underwent laparoscopic surgery. Intraoperatively, a loop of ileum herniating through the right obturator foramen was identified within the pelvic region, accompanied by dilated fluid-filled loops of small bowel proximal to the hernia site (Figure 3A). Examination of the contralateral side revealed no abnormalities, and femoral or inguinal hernias were absent. The incarcerated ileal segment was reduced back into the peritoneal cavity; the herniated bowel loop appeared edematous but viable without signs of ischemic necrosis and was thus preserved (Figure 3B). Subsequently, laparoscopic transabdominal preperitoneal (TAPP) hernioplasty was performed utilizing a synthetic mesh measuring 15×15 cm (Figure 3D). The mesh was positioned preperitoneally to cover the obturator, femoral, and deep inguinal rings, secured with Protack fixation, and the peritoneum was closed. Operative duration was 65 minutes. Postoperatively, the patient exhibited good recovery, resumed

oral intake on the second postoperative day, and reported pain of 3 points on the visual analog scale (VAS) at day 2. She was discharged on the fourth postoperative day.

### Imaging findings

Plain abdominal radiograph showed multiple air-fluid levels without free intraperitoneal air (Figure 1). Ultrasound revealed dilated, hyperperistaltic small-bowel loops with a small amount of free fluid. Contrast-enhanced CT of the abdomen and pelvis demonstrated a 3.0 × 2.0 cm loop of distal ileum herniating through the right obturator foramen with associated proximal obstruction (Figure 2A-2D). The incarcerated loop showed mild mural edema but preserved enhancement.

### Management & follow-up

Emergency laparoscopic exploration was undertaken via a transabdominal preperitoneal (TAPP) approach. After reduction of the ileal segment, its viability was confirmed and bowel resection was not required (Figure 3A-3B). A 15 × 15 cm lightweight polypropylene mesh was placed to cover the obturator, femoral and deep inguinal rings and fixed with absorbable tackers; the peritoneum was closed (Figure 3C-3D). Operative time was 65 minutes. The patient resumed oral intake on postoperative day 2 and was discharged on day 4. No recurrence was noted at 6-month follow-up.

## DISCUSSION

### Etiology & demographics

Obturator hernia is a protrusion of intra-abdominal content through the obturator canal. It represents <1 % of abdominal wall hernias and predominantly affects thin, multiparous women in the eighth to tenth decades [1,6]. Risk factors include chronic conditions that increase intra-abdominal pressure (chronic cough, constipation) and progressive loss of pre-peritoneal fat.

The patient described here was an elderly female presenting with bowel obstruction caused by a strangulated obturator hernia successfully treated by TAPP laparoscopic hernioplasty. Strangulated obturator hernia is uncommon, contributing to frequent delays in the diagnosis of intestinal obstruction. Thus, prompt identification and timely surgical intervention significantly enhance clinical outcomes. Obturator hernias are rare conditions known for diagnostic challenges [1,6]. The wider pelvic anatomy in women increases susceptibility to obturator hernias compared to men. Risk factors include advanced age, low body mass index, and multiparity. The clinical presentations are typically nonspecific, complicating early diagnosis. Two clinical examination signs aiding diagnosis include Howship–Romberg and Hannington–Kiff signs [4,7]. The Howship–Romberg sign, characterized by medial thigh pain exacerbated by adduction, extension, and internal rotation of the thigh, arises from obturator nerve compression; however, its sensitivity is below 50% [7]. The Hannington–Kiff sign involves intact patellar reflex concomitant with loss of adductor reflex due to

obturator nerve entrapment and resulting muscular weakness [8,9], but this sign is clinically rare. Neither of these signs was observed in our patient.

### Clinical & imaging findings

Symptoms are nonspecific and often mimic small-bowel obstruction. The Howship–Romberg sign—medial thigh pain due to obturator nerve compression—is present in <50 % of cases [7]. CT is the imaging modality of choice with >90 % sensitivity, revealing a bowel loop between the pectineus and obturator muscles below the pectineal line [4].

Computed tomography (CT) is essential in evaluating cases of bowel obstruction with unknown etiology [4,7]. CT imaging enables precise diagnosis of obturator hernia, first described by Meziere et al. in 1983 [4,10]. Subsequently, CT has improved preoperative diagnosis rates up to 90% [11]. Moreover, CT provides crucial information regarding incarcerated bowel loops, obstruction severity, and potential complications, guiding the surgical approach (open versus laparoscopic).

### Treatment & prognosis

Prompt surgical repair is mandatory owing to strangulation rates up to 50 % and mortality approaching 40 % in delayed cases [12,13]. Laparoscopic TAPP offers excellent visualization, lower wound morbidity and shorter hospital stay compared with open repair [5,14,15]. Mesh reinforcement covering the myopectineal orifice reduces recurrence.

Due to nonspecific clinical presentations, obturator hernias are associated with a high complication rate [12]. Strangulated obturator hernia exhibits the highest mortality rate among abdominal wall hernias, reaching approximately 40% [12,13], thus necessitating emergent surgical intervention. Compared with open surgery, laparoscopic techniques offer superior visualization, smaller incisions, reduced postoperative pain, and expedited recovery [5,14]. The transabdominal preperitoneal (TAPP) technique is frequently employed in cases of incarcerated inguinal or femoral hernias, demonstrating advantages and efficacy in the management of strangulated hernias [5,14]. Similarly, TAPP can be utilized effectively for strangulated obturator hernias [14,15]. However, mesh placement must be large enough to adequately cover both obturator and lacunar foramina to minimize recurrence risk [14,15].

### Differential Diagnoses

Differential considerations include femoral hernia, inguinal hernia, psoas abscess, pelvic lymphadenopathy and obturator foramen cysts. CT characteristics and the relation of the lesion to the obturator externus and pectineus muscles help discriminate these entities.

In this clinical case, early diagnosis with mild abdominal distension and absence of complications enabled successful laparoscopic management. During surgery, bowel segments

exhibiting ischemic necrosis require resection with subsequent obturator defect closure. In our patient, the reduced herniated bowel segment remained viable with good perfusion and was thus preserved. We proceeded with TAPP hernioplasty utilizing a 15×15 cm mesh to cover the obturator, femoral, and deep inguinal rings. Careful attention was given during mesh fixation to avoid injury to the obturator nerve. Laparoscopic management of strangulated obturator hernia offers benefits such as efficient reduction and assessment of incarcerated bowel, identification of concomitant hernias, reduced postoperative pain, and shorter recovery periods.

### CONCLUSION

Strangulated obturator hernia remains a rare, diagnostically challenging condition associated with significant complications. Clinical presentations are frequently atypical. CT imaging is critical for timely diagnosis. Delayed diagnosis can result in bowel necrosis, perforation, and peritonitis. TAPP hernioplasty represents a safe and effective approach for the management of non-necrotic strangulated obturator hernias.

### TEACHING POINT

Strangulated obturator hernia, though rare, should be suspected in elderly cachectic women with bowel obstruction; contrast-enhanced CT enables early diagnosis, and laparoscopic TAPP repair provides a safe, minimally invasive treatment.

### QUESTIONS

**Question 1:** Which of the following is NOT a typical risk factor for obturator hernia?

- A. Multiparity
- B. Obesity (applies)
- C. Low body mass index
- D. Chronic constipation
- E. Advanced age

**Explanation:** Obturator hernia occurs mainly in thin, elderly, multiparous women; obesity is not a risk factor [Etiology & demographics].

**Question 2:** The Howship–Romberg sign refers to:

- A. Loss of patellar reflex
- B. Medial thigh pain exacerbated by hip movement (applies)
- C. Lateral thigh numbness
- D. Groin swelling
- E. Absent adductor reflex

**Explanation:** Medial thigh pain due to obturator nerve compression characterises the Howship–Romberg sign [Clinical & imaging findings].

**Question 3:** What is the imaging modality of choice for diagnosing obturator hernia?

- A. Ultrasound
- B. Plain radiograph
- C. Computed tomography (applies)
- D. MRI T1

·E. PET-CT

**Explanation:** CT shows the herniated bowel loop and has >90 % sensitivity [Clinical & imaging findings].

**Question 4:** Regarding treatment of strangulated obturator hernia, which statement is correct?

- A. Non-operative management is first-line
- B. Laparoscopic TAPP repair reduces morbidity (applies)
- C. Mesh should not be used
- D. Mortality is <1 % even with delay
- E. Open approach is contraindicated

**Explanation:** Prompt laparoscopic repair with mesh lowers wound morbidity and speeds recovery [Treatment & prognosis].

**Question 5:** Mortality rates of strangulated obturator hernia reported in literature approach:

- A. 5 %
- B. 10 %
- C. 20 %
- D. 40 % (applies)
- E. 60 %

**Explanation:** Delayed diagnosis can lead to mortality up to 40 % [Treatment & prognosis].

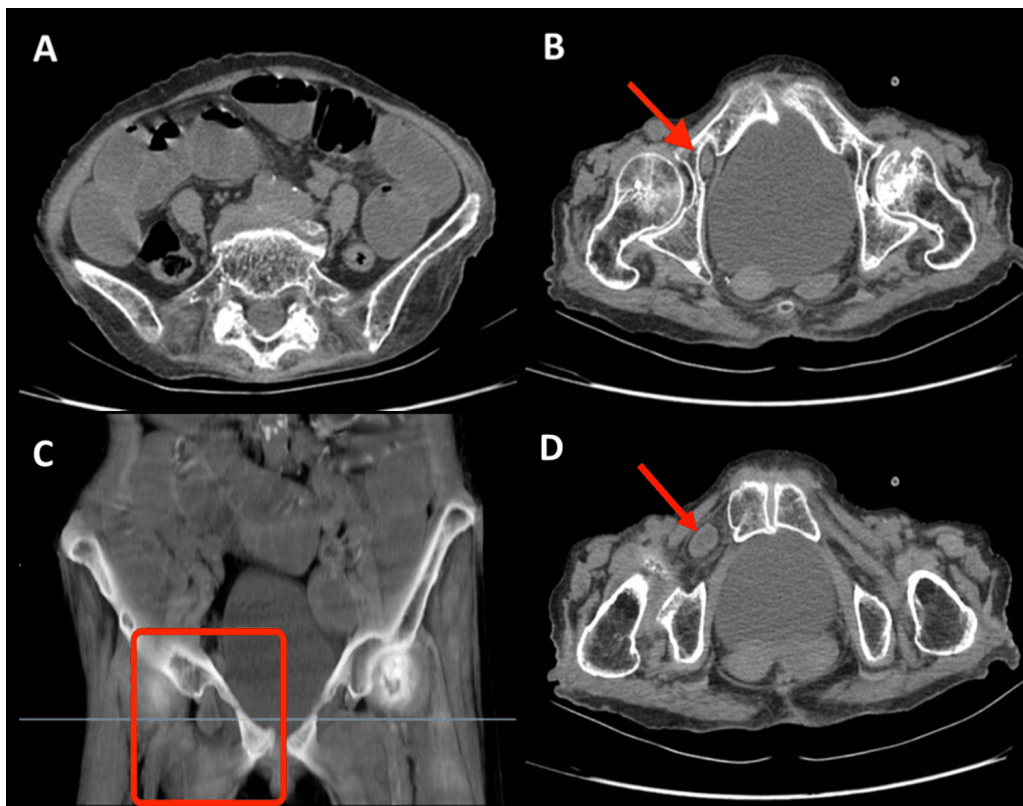
#### REFERENCES

- [1] Lo CY, Lorentz TG, Lau PW. Obturator hernia presenting as small bowel obstruction. *Am J Surg.* 1994; 167(4): 396-398. PMID: 8179083.
- [2] Rogers FA. Strangulated obturator hernia. *Surgery.* 1960; 48: 394-403.
- [3] Kammori M, Mafune K, Hirashima T, et al. Forty-three cases of obturator hernia. *Am J Surg.* 2004; 187(4): 549-552. PMID: 15041510.
- [4] Nishina M, Fujii C, Ogino R, Kobayashi R, Kohama A. Preoperative diagnosis of obturator hernia by computed tomography in six patients. *J Emerg Med.* 2001; 20(3): 277-280. PMID: 11267817.
- [5] Chihara N, Suzuki H, Sukegawa M, Nakata R, Nomura T, Yoshida H. Is the Laparoscopic Approach Feasible for Reduction and Herniorrhaphy in Cases of Acutely Incarcerated/Strangulated Groin and Obturator Hernia?: 17-Year Experience from Open to Laparoscopic Approach. *J Laparoendosc Adv Surg Tech A.* 2019; 29(5): 631-637. PMID: 30372373.
- [6] Kulkarni SR, Punamiya AR, Naniwadekar RG, et al. *Obturator hernia: A diagnostic challenge. Int J Surg Case Rep.* 2013; 4(7): 606-608. PMID: 23708307.
- [7] Mnari W, Hmida B, Maatouk M, Zrig A, Golli M. Strangulated obturator hernia: a case report with literature review. *Pan Afr Med J.* 2019; 32: 144. PMID: 31303916.
- [8] Hannington-Kiff JG. Absent thigh adductor reflex in obturator hernia. *Lancet.* 1980; 1(8161): 180. PMID: 6101635.
- [9] Shreshtha S. Obturator hernia: An uncommon cause of small bowel obstruction. *J Postgrad Med.* 2016; 62(4): 267-268. PMID: 27763487.
- [10] Liao CF, Liu CC, Chuang CH, Hsu KC. Obturator hernia: a diagnostic challenge of small-bowel obstruction. *Am J Med Sci.* 2010; 339(1): 92-94. PMID: 20057280.
- [11] Droukas DD, Zoland MP, Klein DA. Radiographic and surgical findings of type I obturator hernias in patients with refractory groin pain. *Clin Imaging.* 2019; 55: 35-40. PMID: 30739032.
- [12] Arif A, Abideen ZU, Zia N, Khan MA. Perforated obturator Littr hernia in an elderly woman. *Ann Saudi Med.* 2015; 35(4): 324-326.
- [13] Vitone L, Joel A, Masters A, Lea S. Obturator hernia - MRI image. *Indian J Surg.* 2013; 75(4): 322. PMID: 24426464.
- [14] Joe C, Gowda V, Koganti S. Laparoscopic assisted repair of strangulated obturator hernia-Way to go. *Int J Surg Case Rep.* 2019; 61: 246-249. PMID: 31387073.
- [15] Yang GP, Chan CT, Lai EC, Chan OC, Tang CN, Li MK. Laparoscopic versus open repair for strangulated groin hernias: 188 cases over 4 years. *Asian J Endosc Surg.* 2012; 5(3): 131-137. PMID: 22776668.

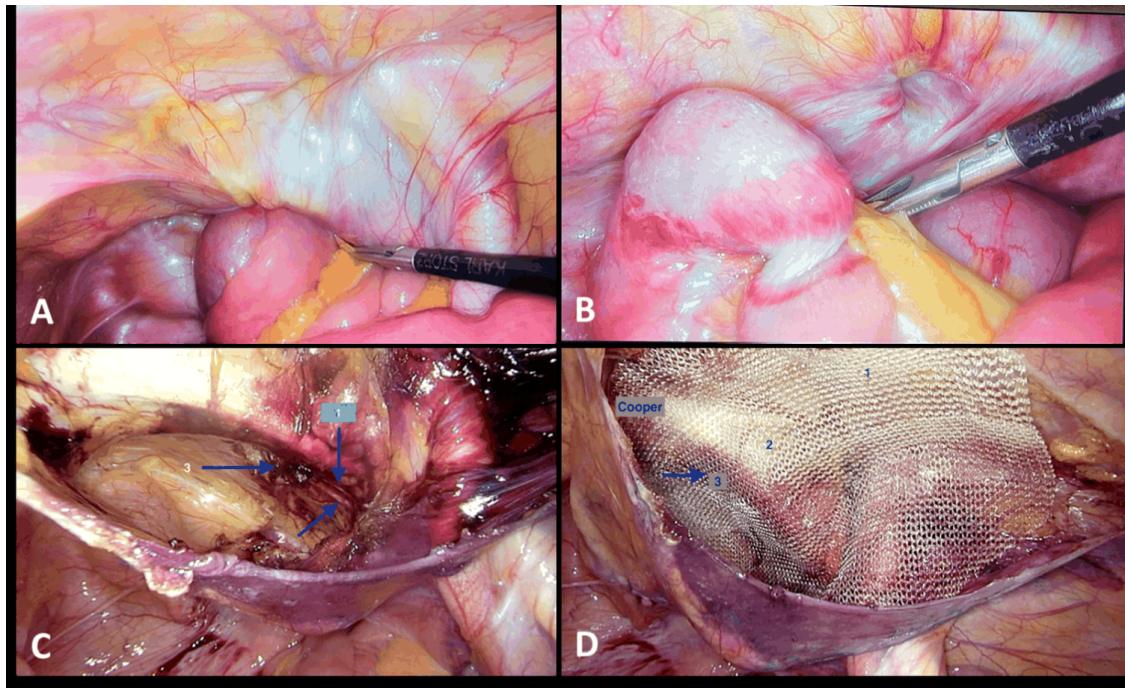
FIGURES



**Figure 1:** 93-year-old female with strangulated obturator hernia. FINDINGS: Supine abdominal radiograph shows multiple dilated small-bowel loops with air-fluid levels; no free air. TECHNIQUE: Portable digital plain film (100 kV, 4 mAs, 0.8-mm focal spot).



**Figure 2:** Same patient. FINDINGS: Axial (A) and coronal (B) contrast-enhanced CT images (portal-venous phase) demonstrate a loop of distal ileum (arrow) passing through the right obturator canal between the pectineus and obturator externus muscles with proximal obstruction. TECHNIQUE: 128-slice CT; 120 kV, automated mAs; 1-mm slice; 80 mL iodinated contrast at 3 mL/s, images at 70 s.



**Figure 3:** Laparoscopic views. (A) Incarcerated ileal loop at the right obturator foramen. (B) Viable bowel after reduction. (C) Creation of preperitoneal space. (D) Polypropylene mesh covering obturator, femoral and inguinal rings. TECHNIQUE: Three-port laparoscopy, 30-degree telescope.

**Table 1:** Summary table – Strangulated obturator hernia

Field	Key facts
<b>Etiology</b>	Herniation of small-bowel (occasionally omentum or colon) through the obturator canal; precipitated by loss of protective pre-peritoneal fat and chronically raised intra-abdominal pressure RCR-Manuscript
<b>Incidence</b>	< 1 % of all abdominal-wall hernias; rises to ≈ 1.6 % among elderly women presenting with bowel obstruction
<b>Gender ratio</b>	Marked female predominance (≈ 6–14 : 1 F : M) owing to wider pelvis and larger obturator foramen
<b>Age predilection</b>	Peak in 70- to 90-year-olds (“little-old-lady hernia”)
<b>Risk factors</b>	Low body-mass index, multiparity, chronic cough/constipation, chronic illness, rapid weight loss, malnutrition
<b>Treatment</b>	Urgent surgical repair—now most often laparoscopic TAPP mesh hernioplasty; bowel resection if necrotic RCR-Manuscript
<b>Prognosis</b>	Mortality 12 – 40 % (may reach 70 % with delay); early CT diagnosis + laparoscopic repair lowers morbidity/mortality
<b>Typical imaging findings</b>	<b>X-ray:</b> small-bowel obstruction (dilated loops, air–fluid levels). <b>CT (gold-standard):</b> closed-loop of ileum wedged between pectineus & obturator externus below pectineal line; proximal dilatation; possible mural edema or decreased enhancement if strangulated. <b>US:</b> dilated bowel ± herniated loop deep to pectineus (operator-dependent). <b>MRI:</b> same anatomy as CT; T1 iso-, T2 hyper-intense bowel; restricted diffusion if ischemic. <b>PET/Scintigraphy:</b> rarely used, may show focal FDG uptake or be normal RCR-Manuscript

**Table 2:** Differential-diagnosis imaging table

Entity	X-Ray	US	CT	MRI-T1	MRI-T2	MRI-DWI	Contrast enhancement	Scintigraphy	PET
<b>Obturator hernia</b>	SBO pattern, no groin mass	Dilated loops; may visualize herniated bowel deep to pectineus	Bowel loop in obturator canal between pectineus & obturator externus; ± wall edema/low enhancement	Iso-intense bowel	Hyperintense fluid/ edematous wall	Restricted if ischemic	None / reduced (ischemia) → heterogeneous	Not used	Mild FDG uptake if inflammation
<b>Femoral hernia</b>	SBO if incarcerated	Sac medial to femoral v. below inguinal lig.	Hernia sac inferior to inguinal lig.; medial to femoral v.	Fat / bowel signal	Fluid / bowel	Usually none	Viable loop = homog.; strangulated = heterog.	Not used	Usually none
<b>Inguinal hernia</b>	SBO if incarcerated	Herniated bowel/fat in inguinal canal	Sac through deep inguinal ring; follows inguinal canal	As above	As above	None	Variable; decreased if strangulated	Not used	None
<b>Psoas abscess</b>	Obscured psoas border	Hypochoic/ complex mass	Rim-enhancing fluid collection in psoas, may track to canal	Low	High	Marked restriction	Thick, peripheral rim (“ring”)	Ga-67 uptake	Intense FDG uptake
<b>Pelvic lymphadenopathy</b>	Normal	Oval hypochoic node	Enlarged nodes along obturator chain	Iso-soft-tissue	Mildly hyper	Restricted	Homogeneous soft-tissue enhancement	Sentinel-node mapping	FDG-avid
<b>Obturator-foramen cyst</b>	Usually normal	Anechoic cystic lesion	Well-defined fluid-attenuation cyst in obturator foramen	Very low	Very high	None	None or thin rim	Not used	No uptake

## KEYWORDS

*Obturator hernia; strangulated hernia; laparoscopic hernia repair; small bowel obstruction; case report*

## ABBREVIATIONS

BMI = Body Mass Index  
CT = Computed Tomography  
MDCT = Multidetector Computed Tomography  
MRI = Magnetic Resonance Imaging  
PET-CT = Positron Emission Tomography–Computed Tomography  
TAPP = Transabdominal Preperitoneal (laparoscopic hernia repair)  
VAS = Visual Analog Scale  
SBO = Small-Bowel Obstruction  
lig. = Ligament  
v. = Vein  
FDG = Fluoro Deoxy Glucose

**Online access**

This publication is online available at:  
[www.radiologycases.com/index.php/radiologycases/article/view/5875](http://www.radiologycases.com/index.php/radiologycases/article/view/5875)

**Peer discussion**

Discuss this manuscript in our protected discussion forum at:  
[www.radiolopolis.com/forums/JRCR](http://www.radiolopolis.com/forums/JRCR)

**Interactivity**

This publication is available as an interactive article with scroll, window/level, magnify and more features.  
Available online at [www.RadiologyCases.com](http://www.RadiologyCases.com)

Published by EduRad



[www.EduRad.org](http://www.EduRad.org)