

## CLINICAL IMAGE

## OBTURATOR HERNIAS

Alexander Molinari, DO, MPH

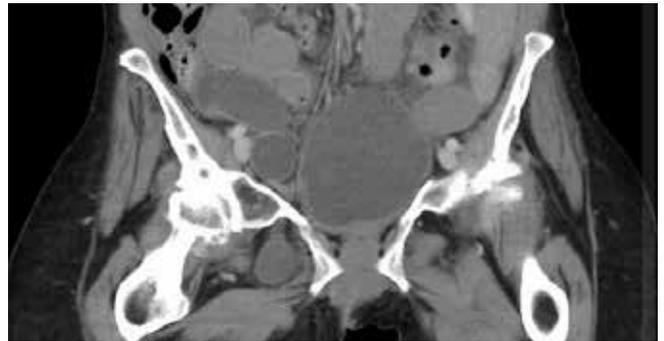
University of the Incarnate Word School of Osteopathic Medicine, San Antonio, TX

A healthy 81-year-old female with a body mass index (BMI) of 21 and past medical history consisting of only hypertension and osteoarthritis presented to the emergency department with a one-week history of worsening fevers, nausea, vomiting, diarrhea, constipation and intermittent right-sided groin pain. The patient noted she had been feeling the groin pain for more than a month, but it was thought to be secondary to worsening arthritis in her hip, for which she was started on meloxicam. She noted the pain typically resolved with the medication but would recur a few days later. Her only surgical history consisted of two vaginal deliveries and one C-section 50 years ago.

The patient denied smoking cigarettes, significant alcohol history or drug use while admitting to an inactive lifestyle. She denied chest pain, shortness of breath, dizziness, weight loss and dysuria. She admitted to a family history of only hypertension and noted her parents lived into their 90s. The patient's vitals were notable for a temperature of 99.8°F (37.67°C), heart rate of 123 beats per minute, respiratory rate of 19 breaths per minute, blood pressure of 103/67 and pulse oximeter of 97%. The physical exam was notable for minimal pelvic tenderness described as crampy and diminished bowel sounds in the right and left lower quadrants of the abdomen. Notable lab values included a white blood cell count of 16,000, a sodium level of 132 and a lactic acid level of 2.3. A computed tomography (CT) scan of the abdomen was ordered due to concerns of ischemia, which showed the bowel protruding anteriorly through the right side of the pelvis. A general surgeon was called, and the patient was prepped for further investigation.

## FIGURE 1:

Coronal view of abdominal/pelvis CT with oral contrast depicting a portion of the distal small bowel protruding through the right pelvis and accompanying dilatation<sup>1</sup>



## FIGURE 2:

Axial view of abdominal/pelvis CT with oral contrast depicting a portion of the distal small bowel protruding through the right pelvis and accompanying dilatation<sup>1</sup>



## QUESTIONS:

1. What is the patient's most likely diagnosis based on clinical exam findings and radiographic findings?

- A. Indirect inguinal hernia
- B. Femoral hernia
- C. Obturator hernia
- D. Incisional hernia

## CORRESPONDENCE:

Alexander Molinari, DO, MPH | ahm11b@gmail.com

## 2. What is the definitive method of diagnosis for this patient?

- A. Computed tomography of the abdomen and pelvis
- B. Exploratory laparoscopy
- C. Inguinal ultrasound
- D. Kidney, ureter and bladder x-ray

## 3. What type of patient is classically most at risk for this diagnosis?

- A. Males over the age of 70 with BMI greater than 40
- B. Patients with history of more than one abdominal surgery
- C. Patients who regularly weightlift with BMI less than 25
- D. Females over the age of 70 with BMI less than 25

### ANSWERS:

#### 1. What is the patient's most likely diagnosis based on clinical exam findings and radiographic findings?

**Correct Answer:**

*C. Obturator hernia*

Obturator hernias are a rare form of ventral wall herniation that involves contents of the peritoneum, most commonly the small bowel, protruding through the obturator canal, the narrow passage within the obturator foramen that houses the obturator nerve, artery and vein.<sup>2</sup> It is estimated this type of hernia makes up less than 0.1% of all total hernia repairs, revealing how rarely they may appear on a differential diagnosis.<sup>3</sup> Similarly to other hernias, obturator hernias can become incarcerated or strangulated, creating a medical emergency; however, contrary to other hernias, difficulty diagnosing can cause them to remain hidden for an extended period of time with minimal or vague symptoms, increasing the likelihood of more advanced sequelae to occur.<sup>4</sup>

Obturator hernias typically present with a wide array of symptoms that may range from specific to questionably related, creating difficulty in making a diagnosis clinically without imaging. Severe symptoms may include sharp groin pain secondary to obturator nerve compression or excessive vomiting, but more nonspecific and intermittent signs that may present include crampy abdominal pain or a change in bowel patterns.<sup>5</sup>

#### 2. What is the definitive method of diagnosis for this patient?

**Correct Answer:**

*B. Exploratory laparoscopy*

Given the potentially nondescript history and physical exam signs combined with the location of the hernia itself, obturator hernias are challenging to diagnose without imaging. Cases that appear reminiscent of a bowel obstruction may begin with an x-ray of the abdomen, potentially showing dilated loops of bowel in more advanced stages or providing normal results in less severe cases.<sup>6</sup> With a sensitivity of nearly 90%, a CT scan of the abdomen is

essential in regard to being the quickest and most effective way of initially identifying the herniation, with most imaging clearly showing herniation through the canal.<sup>7</sup> However, the most definitive form of visualization to confirm a diagnosis coincides with definitive treatment, typically beginning with an exploratory laparoscopy. Once identified, the hernia can be treated surgically, similar to other ventral wall hernias.<sup>5</sup>

#### 3. What type of patient is classically most at risk for this diagnosis?

**Correct Answer:**

*D. Females over the age of 70 with BMI less than 25*

Obturator hernias are known as “the little old lady’s hernia” due to their common appearance in females who are generally thin and elderly.<sup>5</sup> The reason for this appears to be multifactorial but is potentially related to weakness in the pelvic floor, atrophy of preperitoneal fat and widened foramen secondary to wider hips.<sup>5</sup> Additionally, obturator hernias are noted to more commonly appear on the right side secondary to the presence of the sigmoid colon potentially overlying the obturator foramen on the left, creating another barrier for the peritoneum.<sup>8</sup>

### DISCUSSION:

Obturator hernias are a particularly rare form of ventral wall hernias involving peritoneal contents protruding through the obturator canal. The obturator canal is the small 2 x 1-cm passage within the obturator foramen that contains the obturator nerve and vessels.<sup>2</sup> The obturator foramen—the largest foramen in the body—comprises the rami of the ischium and pubis bones on each side of the body.<sup>2</sup> The physiology of the herniation is thought to be initially caused by a weakness in the pelvic floor muscles, causing an encapsulation of preperitoneal fat.<sup>3</sup> This “fat plug” forms the passage for the actual herniation to occur, most commonly in the small intestine, which can lead to strangulation of the bowel—and ultimately obstruction—if left untreated.<sup>9</sup>

Obturator hernias are very rarely seen in clinical practice, with the Mayo Clinic estimating they make up 0.07% of hernia repairs performed at their institutions over a 15-year study.<sup>3</sup> They are most commonly seen in thin, elderly females, likely secondary not only to the frailty of their pelvic floor and wider foramen compared to men, but also to atrophy of preperitoneal fat around obturator vessels within the canal, creating a habitat primed for herniation.<sup>5,6</sup> It has been estimated that obturator hernias are 9 times more likely to occur in women than men for the above-noted reasons, which is a stark contrast to the more common inguinal hernia, which is nearly 9 times more likely to occur in men.<sup>6</sup> Unlike more common herniations, obturator hernias are essentially never seen externally on physical examination and only rarely are palpable.<sup>3</sup> Due to the difficulties in making a diagnosis with the subterfuge of symptoms and the typical elderly ages in the cases, these herniations have a mortality rate thought to be as high as 47%, with worsening mortality present in later detection.<sup>3</sup>

Because of the scarce occurrence of obturator hernias, suspicion for and general workup of the problem can be challenging; however,

given the high mortality, they cannot afford to be missed. Suspicion should be given for patients who present with unexplained symptoms that may occur and resolve intermittently, including nausea, vomiting, and constipation that may be associated with lower right abdominal pain that radiates to the groin over a period of days to weeks to months.<sup>5</sup> Review of literature shows that up to 80% of cases involve symptoms consistent with bowel obstructions.<sup>5</sup> These are typically partial obstructions secondary to the high proportion presenting with Richter herniation through the canal, which accounts for the common presentation of intermittent symptoms.<sup>5</sup> Right-sided abdominal pain is referenced to the higher right of hernias occurring on the right side, as opposed to the left, likely secondary to the presence of the barrier-forming sigmoid colon on the left; however, a variety of locations of abdominal pain may be reported regardless of hernia location.<sup>6</sup>

Physical examination of these patients should include thorough inspection of the abdomen, including deep palpation and auscultation of all four quadrants. A rectal exam may be indicated if there is concern to rule out potential fecal impaction.<sup>6</sup> The Howship-Romberg Sign is a technique involving hip flexion and external rotation to reproduce medial thigh pain in patients with the hernia; however, these results may only be seen in around 50% of cases and typically only in those where the hernia sac has progressed down the anterior branch of the obturator nerve.<sup>10</sup> The results of this test may be further obfuscated by patients with concurrent osteoarthritis of the hip, which may also produce medial hip and groin pain upon eliciting.<sup>2</sup> The workup may involve general labs, such as a complete blood count and metabolic panel pending the patient's history and presentation; however, radiography is typically essential in creating an initial diagnosis. Abdominal x-rays may be ordered, which can show nonspecific obstruction signs, such as bowel dilatation, but the gold standard for initial diagnosis via radiography is a CT scan of the abdomen.<sup>6</sup>

While imaging is a necessary step and helpful in creating a diagnosis when an obturator hernia is suspected, the only definitive evaluation involves intraoperative exploration and visualization, with some reports stating up to two-thirds of obturator hernias are diagnosed in the operating room.<sup>3</sup> This visualization will lead to the definitive treatment for these patients, as they will require surgical repair of the hernia via either laparoscopy or laparotomy once the defect is identified.<sup>6</sup> Ultimately, initial detection is paramount to positive outcomes for patient treatment, which stresses the importance of having a high index of suspicion for obturator hernias as early as possible.<sup>5</sup>

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