CASE REPORT

Olgu Sunumu

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Transmesosigmoid Hernia Presenting with Small Bowel Obstruction: Case Report and Results of Literature Review

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# Transmesosigmoid Hernia Presenting with Small Bowel Obstruction: Case Report and Results of Literature Review

# İnce Bağırsak Obstrüksiyonu ile Başvuran Transmesosigmoid Hernisi: Olgu Sunumu ve Literatür Derleme

## ABSTRACT
Internal hernias account for 1% to 6% of small bowel obstructions. The most common types of internal hernias include paraduodenal, transomental, transmesenteric, retro-anastomotic, and foramen of Winslow hernias. Among these, transmesosigmoid hernia, as seen in the presented case, causes small bowel obstruction in approximately 6% of internal hernias. In transmesosigmoid hernias, there is a full-thickness defect on both peritoneal surfaces of the mesocolon, and strangulation is common. Diagnosis is typically made through physical examination and imaging modalities. In this case, a transmesosigmoid hernia that presented to the clinic with symptoms of ileus will be presented, and the relevant literature on the subject will be discussed.

## Key Words
Transmesosigmoid hernia, Internal hernia, Small bowel obstruction

## ÖZ
İnternal herniler, ince bağırsak tıkanıklıklarının %1 ila %6'sını oluşturur. En yaygın internal herni türleri arasında paraduodenal, transomental, transmezenterik, retro-anastomotik ve foramen Winslow hernileri bulunur. Transmezosigmoid herniler, internal herniler arasında yaklaşık %6 oranında ince bağırsak tıkanıklığına neden olurlar. Transmezosigmoid hernilerde, mezokolonun her iki periton yüzeyinde tam kat bir defekt bulunur ve strangülasyon yaygındır. Tanı genellikle fizik muayene ve görüntüleme yöntemleri ile konur. Bu olguda, ileus semptomları ile kliniğe başvuran bir transmezosigmoid herni vakası sunulacak ve konuyla ilgili literatür tartışılacaktır.

## Anahtar Kelimeler
Transmezosigmoid herni, İnternal herni, İncebağırsak obstrüksiyonu

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## INTRODUCTION

Internal hernias refer to the protrusion of an internal organ through a mesenteric or peritoneal aperture. Internal hernias can occur due to congenital anatomical defects, history of previous abdominal surgery, trauma, increased intra-abdominal pressure or tumors (1). Congenital hernias usually occur in childhood. They are very rarely seen in adulthood (2). Internal hernias are named according to their location. The most common types of internal hernias include paraduodenal, transomental, transmesenteric, foramen of Winslow, pericecal, sigmoid mesocolon, retro-anastomotic, supravesical, and pelvic hernias (2, 5).

Internal hernias related to the sigmoid colon are divided into three groups. In the intersigmoid type, the intestines herniate into the intersigmoid fossa and are easily reducible. This condition is usually congenital. The other two types are transmesosigmoid and intermesosigmoid hernias. In intermesosigmoid hernia, there is a defect in a single surface of the mesocolon, and in this type of hernia, a hernia sac is present. In transmesosigmoid hernia (as in our case), there is a full-thickness defect in both peritoneal surfaces of the mesocolon. The clinical presentation is often featureless until frank obstruction or strangulation occurs. Patients typically present to emergency departments with abdominal pain, nausea, vomiting, and an inability to pass gas and stool (3, 4).

Delayed cases may present with septic shock. Contrast-enhanced computed tomography (CT) plays an important role, especially in the diagnosis of cases presenting with acute obstruction. A C-shaped dilated loop seen on CT is a significant finding for small bowel obstruction. Additionally, a newly described radiological finding, the ‘omega sign’ on CT, is specific for transmesosigmoid hernia (4, 5, 11). Hernias associated with the sigmoid colon are rare, and information about these hernias is limited in the literature. In this case, a transmesosigmoid hernia presenting with ileus symptoms will be presented, and the relevant literature on the subject will be discussed.

## CASE REPORT

A 59-year-old female patient presented to the emergency department with abdominal pain that had started two days prior. The patient also reported nausea and vomiting. On physical examination, there was abdominal distension and tenderness, with guarding and rebound tenderness in the lower abdominal quadrants. The patient's hemodynamic parameters, as well as cardiovascular and respiratory system examinations, were normal. Contrast-enhanced abdominal CT revealed a closed loop appearance in a 10 cm segment of the ileum (Figure 1).

**Figure 1.** C-shaped loop image in the tomography (Axial and coronal plane).

Dilatation was observed in the proximal part of this segment. Laboratory tests showed a white blood cell count of 12,000/mm³ and a C-reactive protein level of 61 mg/L. Other blood tests were unremarkable. The patient had a history of hysterectomy for uterine fibroids five years ago and had no known systemic diseases. A nasogastric tube was placed in the patient. Bile drainage occurred. Given the current findings, the patient was diagnosed with an acute abdomen and taken to surgery. During exploration, a loop of the ileum was found herniated through a full-thickness defect in the sigmoid mesocolon, consistent with a transmesosigmoid hernia without a sac (Figure 2).

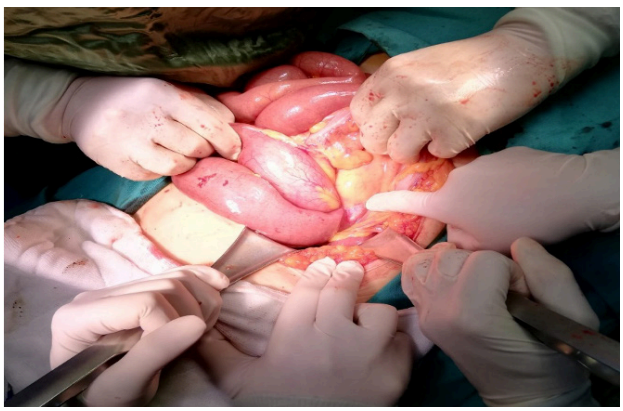

**Figure 2.** A loop of an ileum had herniated through a full-thickness defect in the sigmoid mesocolon.

Dilatation was observed in the small intestinal loops proximal to this level. The ileal loop in the sigmoid colon meso defect was reduced. Although ecchymotic areas were noted on the intestinal wall, there were no signs of necrosis. A warm compress was applied to this area intraoperatively for 10 minutes. Peristalsis was observed, and no resection was performed. The defect in the mesocolon was 3 cm in diameter (Figure 3).

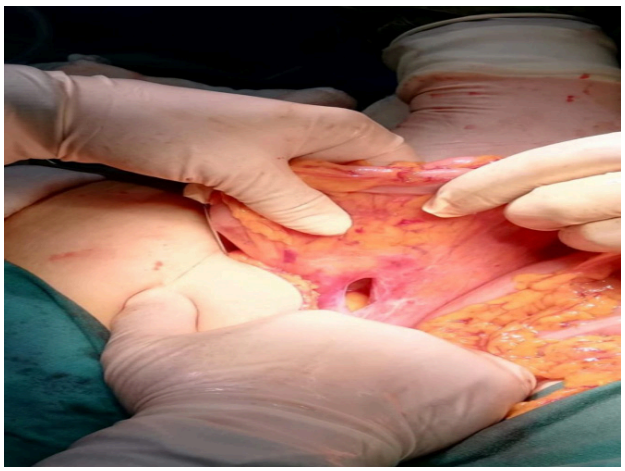

**Figure 3**.Sigmoid mesecolon full thickness defect.

The defect was repaired with 3-0 non-absorbable sutures. A nasogastric tube was removed on the first postoperative day. Clear liquids were started on the first postoperative day. However, during follow-up, the patient developed hospital-acquired pneumonia and received antibiotic therapy. She was discharged on the 9th postoperative day.

## Literature Rewiew

PubMed and Cochrane databases were searched without time limitations using the keywords "transmesosigmoid" and "mesosigmoid hernias." No research studies were found on this subject. In total, 27 patients, including the present case, were analyzed. Twelve (44%) of the patients were female, and fifteen (55%) were male. The median age was 59 years. Previous abdominal surgery was present in 7 (25%) of patients. Hysterectomy was performed on four of these patients. All patients were admitted to the hospital with symptoms of ileus. Chronic abdominal pain was present in 4 (14%) of patients. No information was available regarding chronic abdominal pain in two of the patients examined. 15 (71%) of patients underwent surgery in the first 72 hours. No information could be obtained regarding the time taken to surgery for the six patients examined. The small intestine was herniated in all patients. Intestinal resection was performed in 16 (61%) of patients. A maximum of 160 cm and a minimum of 5 cm small intestine resections were performed. The median defect size in the sigmoid colon meso was 3.5 cm (range 2-5). In five patients, information on defect size could not be obtained. Sepsis developed in five patients. The diagnosis of sepsis was made in two patients at 12 hours, in one patient at 4 days, and in one patient at 10 days after the onset of symptoms. The sepsis development data for the other patient was not found (Table I).

**Table I.** Case reports of transmesosigmoid hernia

| Referrans | Age/Sex | History of surgery or inflamation | Time from on set tooperation | Acute bowel obstruction | Chronic abdominal pain | Sepsis | Diagnosed preoperatively | Diameter of defect (cm) | Bowel resection (cm) | Exploratory laparatomy |
|---|---|---|---|---|---|---|---|---|---|---|
| Papanikolaou et al [7] | 3/F | No | 12h | Yes | Yes | Yes | SBO | 5 | 60 | Yes |
| Collins et al [8] | 60/M | No | 48h | Yes | No | No | SBO | 4 | 0 | Yes |
| Van der Meeren et al [9] | 32/F | No | Early | Yes | No | No | SBO | Data not found | 0 | Yes |
| Yang et al [10] | 66/M | No | 48h | Yes | No | No | SBO | Data not found | 0 | Yes |
| Yu et al [11] | 81/F | No | 12h | Yes | Yes | No | SBO | 5 | 5 | Yes |
| Sasaki et al [12] | 63/M | Appendectomy | Data not found | Yes | No | No | SBO | 3,5 | 30 | Yes |
| Johnson et al [13] | 20/F | No | 1wk | Yes | No | No | SBO | 5 | 160 | Yes |
| Benson et al [2] | 42/F | No | 1wk | Yes | No | No | SBO | 2 | 0 | Yes |
| Lie et al [6] | 59/M | No | 5d | Yes | Yes | No | SBO | 2,5 | 0 | Yes |
| Yao et al [14] | 60/M | No | 7h | Yes | No | No | SBO | 4 | 30 | Yes |
| Guo et al [15] | 39/M | No | 9h | Yes | No | Yes | SBO | 4 | 65 | Yes |
| Yang et al [16] | 62/M | No | 9h | Yes | No | No | SBO | 5 | 20 | Yes |
| Bao et al [17] | 62/F | No | 37h | Yes | No | No | SBO | 3 | 12 | Yes |
| Zhou et al [18] | 57/M | No | 48h | Yes | No | No | SBO | 3 | 20 | Yes |
| Yang et al [10] | 50/M | No | 48h | Yes | No | No | SBO | 2 | 0 | Yes |
| He et al [19] | 55/M | No | 72h | Yes | No | No | SBO | 3 | 100 | Yes |
| Luo et al [20] | 69/F | Hysterectomy | 24h | Yes | No | No | SBO | 3 | 40 | Yes |
| Zhang et al [21] | 51/M | No | 37h | Yes | No | No | SBO | 3 | 40 | Yes |
| Mo et al [22] | 59/M | No | 10d | Yes | Yes | No | SBO | 3 | 40 | Yes |
| Lie et al [23] | 69/F | No | 6h | Yes | No | Yes | SBO | 4 | 30 | Yes |
| Lie et al [24] | 62/F | Hysterectomy | 4d | Yes | No | No | SBO | 2 | 30 | Yes |
| Kojima et al [25] | 43/F | No | Data not found | Yes | No | Yes | SBO | Data not found | 0 | Yes |
| Steele et al [26] | 49/F | Hysterectomy | Data not found | Data not found | Data not found | Data not found | SBO | Data not found | 0 | Yes |
| Perez et al [27] | 54/M | Cholecyctectomy | Data not found | Data not found | Data not found | Data not found | SBO | Data not found | Data not found | Yes |
| Bandawar et al [28] | 42/M | No | Data not found | Yes | No | Yes | SBO | 3,5 | 25 | Yes |
| Farrah et al [29] | 44/M | Left segmental colectom | Data not found | Yes | No | No | SBO | 4,5 | 0 | Yes |
| Argin et al (Our case) | 59/F | Hysterectomy | 48h | Yes | No | No | SBO | 3 | 0 | Yes |

## DISCUSSION

In the literature review, twelve (44%) of the patients with transmesosigmoid hernia were female and fifteen (55%) were male. The median age was 59 years. There were no significant differences in the gender distribution of the disease between men and women. However, given the limited number of patients, it is not appropriate to draw definitive conclusions about the relationship between the disease and gender.

Transmesosigmoid hernias are a rare cause of acute small bowel obstruction. A case series of 34 patients was first published in 1964 by Benson et al. They classified hernias associated with the sigmoid colon into three groups according to their anatomical location: intersigmoid, transmesosigmoid, and intramesosigmoid hernias. In this case series, they found that the majority of patients had intersigmoid hernias (88.2%), while a smaller number had transmesosigmoid (8.8%) and intramesosigmoid (3.0%) hernias (2). Kayano et al. reported that the intrasigmoid subtype accounted for approximately 50.0-57.3% of sigmoid mesocolon hernias, while intersigmoid and transmesosigmoid hernias were responsible for 24.5-35.0% and 15.0-18.0%, respectively (30). The patient in this study presented to the emergency department with symptoms of ileus. In the literature review, it was found that all cases of transmesosigmoid hernia were admitted to the hospital with ileus symptoms. Chronic abdominal pain was present in 14% of patients; however, the patient in this study did not report any such history. Additionally, 25% of patients had a history of previous abdominal surgery. Chronic abdominal pain in these patients may be attributed to adhesions secondary to prior surgery. However, internal hernias should be considered in the differential diagnosis of patients with chronic abdominal pain and a history of previous abdominal surgery. In the differential diagnosis, if the patient has had an antecolic or retrocolic gastroenterostomy in previous abdominal surgery, retroanastomotic hernias should be considered. However, half of the retroanastomotic hernias occur within the first month after surgery, and the other half within first year after surgery. Very rarely, retroanastomotic hernias are seen after first year (31).

Early diagnosis and surgery are crucial in internal hernias, particularly in cases presenting with acute small bowel obstruction. Morbidity and mortality increase with delayed diagnosis. In our literature review, it was found that most patients with transmesosigmoid hernia (67%) underwent bowel resection. Additionally, septic shock due to ileus developed in five of the patients we analyzed. Abdominal tomography is frequently used in diagnosis. In the literature, C-shaped dilated loops of small bowel with collapsed distal segments on abdominal tomography are suggested as indicative of a potential internal hernia (5, 30). In a case report, the omega sign appearance was described on CT in a patient presenting with obstruction due to a transmesosigmoid hernia. The appearance of the omega sign on abdominal CT was thought to be specific for transmesosigmoid hernia (4). However, there are no data on the specificity and sensitivity of this imaging finding because there are not enough reported cases. In our case, a closed-loop appearance was present in a 10 cm segment on the abdominal CT. The omega sign was not observed. According to the literature, the diameter of the mesocolon defect in transmesosigmoid hernias varies from 2 to 5 cm. In our case, the diameter of the defect in the mesocolon was 3.4 cm. This study suggests that the small diameter of the defect in the mesocolon and the absence of a hernia sac are risk factors for incarceration.

## CONCLUSION

Transmesosigmoid hernias are a rare cause of small bowel obstruction. Early diagnosis and surgery can significantly reduce mortality and morbidity. In this literature review, it is emphasized that internal hernias should be considered, especially in patients presenting with acute small bowel obstruction and a history of previous abdominal surgery.

**Patient consent form:**
Patient consent was obtained.

**Conflict of Interest:**
The authors declared no conflict of interest.

**Financial Disclosure:**
The authors declared no financial disclosure.

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