

## A Rare Cause of Acute Abdomen in Pregnancy: Internal Herniation

### Gebelikte Nadir Bir Akut Batın Nedeni: İnternal Herniasyon

Ülkü METE URAL

0000-0001-6163-6756

Funda DAĞISTANLI

0000-0002-9915-8937

Bolu Abant İzzet Baysal University  
Faculty of Medicine Department of  
Obstetrics and Gynecology, Bolu,  
Turkey

Corresponding Author

Sorumlu Yazar

Funda DAĞISTANLI  
demirhan.fnd@gmail.com

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#### ABSTRACT

Internal herniation is one of the rare causes of intestinal obstruction. The most common causes of intestinal obstruction are adhesive bridges, volvulus, and invagination. The classic triad frequently seen in the clinic includes colic type abdominal pain, nausea/vomiting and absences of gas passage and defecation. It is very difficult to diagnose internal herniation during pregnancy due to the inability to see all clinical findings together, to confuse the findings with obstetric pain, and to the possible fetal side effects due to the application of radiological diagnostic methods. Because of high maternal and fetal mortality risk, it is important to make an early diagnosis and perform surgical intervention without any delay if necessary. In all pregnant women presenting with a diagnosis of acute abdomen, intestinal obstruction and the possibility of the internal herniation that may cause this clinical picture should be kept in mind.

**Keywords:** Pregnancy; intestinal obstruction; internal herniation.

#### ÖZ

İnternal herniasyon, intestinal obstrüksiyonunun nadir görülen nedenlerinden biridir. İntestinal obstrüksiyona en sık yol açan nedenler; adeziv bantlar, volvulus ve invajinasyondur. Klinikte sıklıkla görülen klasik triadı, kolik tarzında karın ağrısı, bulantı/kusma ve gaz gayta deşarjının olmamasıdır. Klinik bulguların hepsinin birlikte görülmeyebilmesi, bulguların obstetrik ağrılar ile karışabilmesi ve radyolojik tanı yöntemlerinin uygulanmasına bağlı oluşabilecek olası fetal yan etkiler nedeniyle gebelikte internal herniasyon tanısının konulması oldukça zordur. Yüksek maternal ve fetal mortalite riski nedeniyle erken tanı konulması ve cerrahi müdahale gerekli ise vakit kaybetmeden uygulanması önemlidir. Akut batın ön tanısı ile başvuran tüm gebelerde, intestinal obstrüksiyon ve bu klinik tabloya neden olabilecek internal herniasyon tanısı akılda tutulmalıdır.

**Anahtar kelimeler:** Gebelik; intestinal obstrüksiyon; internal herniasyon.

#### INTRODUCTION

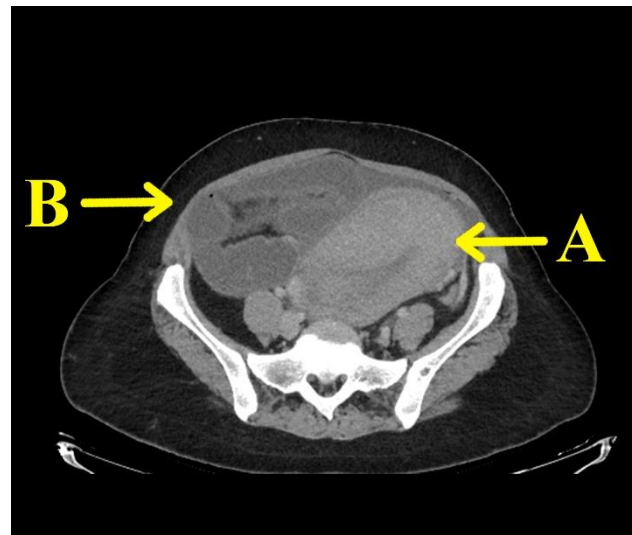
Internal herniation is defined as the protrusion of intestinal loops from fossa, foramen or mesenteric defects in the abdominal cavity and it is one of the uncommon causes of small bowel obstruction (1). The fusion defect of the mesentery and posterior parietal peritoneum creates the potential hernia orifice. It can occur congenitally or acquired depending on inflammation, trauma and previous surgery, like gastric bypass for bariatric treatment and liver transplantation (2). The most frequent causes of intestinal obstruction are adhesive bridges, volvulus, and invagination. Internal herniation accounts for 0.6-5.8% of intestinal obstruction (3). Paracaecal herniation is a rare type of internal hernia and it constitutes 2% of all internal herniation cases (4). Intestinal obstruction is most frequently seen; in the second trimester of the pregnancy when the uterus becomes an abdominal organ, at the end of the third trimester when fetal head engagement occurs and during the early postpartum period when the dimension of uterus changes abruptly. In this article, we aimed to present a 32-year-old pregnant woman diagnosed with internal herniation at the paracaecal region, which is a very rare cause of small bowel obstruction. Internal herniation must

be remembered in the differential diagnosis of intestinal obstruction, particularly for patients without a history of previous surgical intervention or trauma.

**CASE REPORT**

A 32-year-old pregnant woman, gravida 5, para 4, applied to the emergency department with severe abdominal pain at 39 2/7 gestational week. The patient whose pregnancy controls had been followed up in another health center had common abdominal pain especially located in the epigastric area. The patient did not have a prior history of abdominal surgery. In the ultrasonographic examination; single and live fetus was determined and its biometric measurements were compatible with 37 gestational weeks. The amniotic index was normal and placental pathology was not detected. Routine laboratory tests were performed. Vaginal examination revealed a 2 cm cervical opening, nonstress test (NST) was reactive and minimal irregular contractions were observed. Blood pressure measurements were within normal limits. Liver enzymes, cardiac enzymes, other biochemical parameters and complete blood count results were within normal limits. Echocardiography and electrocardiography were evaluated as normal. The patient stated that nausea and vomiting complaints began following severe abdominal pain and she had never experienced such excruciating abdominal pain before. It was thought that the complaints of the patient were neither obstetric nor cardiac, but were likely to be due to gastrointestinal system pathology. The patient's oral intake was stopped and intravenous hydration and anti-acid treatment were initiated. Upon a little regression of her complaints, the decision was made for the initiation of the birth process and induction was performed. The patient whose previous deliveries were vaginal, followed-up with continuous NST monitoring. Approximately 5 hours after the onset of induction, a 2860-gram girl baby with a 7/9 Apgar score was delivered through normal vaginal delivery.

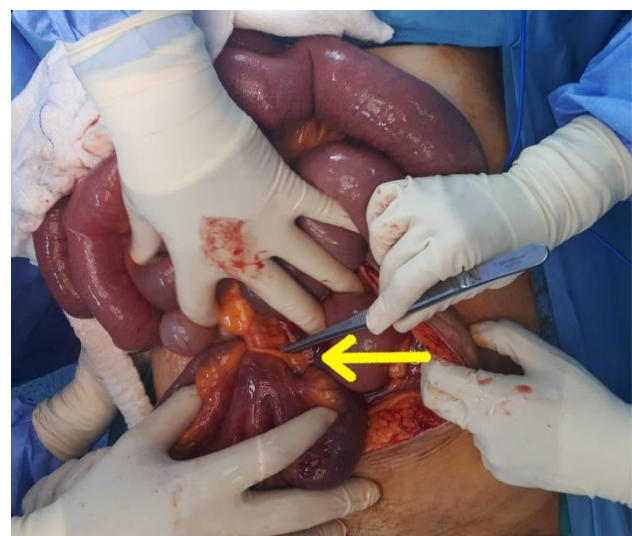
Due to the aggravation of abdominal pain after delivery, the whole abdominal ultrasonography was performed and dilated jejunal loops were noted. In the direct abdominal radiograph, dilated jejunal loops were also observed. The patient was consulted with the general surgery department. On abdominal examination, abdominal distension and defense were detected while rebound was negative. The patient underwent a contrast-enhanced computed tomography (CT) scan and the ileocecal region was found to be switched to the upper right quadrant and an ileus image which developed probably due to a co-existent internal herniation was observed (Figure 1). A plain radiograph of the abdomen was repeated due to the increase of nausea and vomiting and the persistence of abdominal pain. Evaluation of the radiograph confirmed the diagnosis of ileus (Figure 2). Since CRP values kept increasing and the clinical findings of the patient did not improve, the decision was made for surgical intervention 48 hours after delivery. A lower abdominal median incision was made and intestines were exposed. During the intraoperative observation, dilated jejunal loops were noted. A 15-cm intestinal segment at the 5-6 cm proximity of terminal ileum was strangulated between the ring-like foramen in the mesentery, and its blood supply was deteriorated (Figure 3). After the band in mesentery was



**Figure 1.** A) Postpartum uterus, B) Dilated jejunal loops



**Figure 2.** Direct abdominal radiograph showed air-fluid levels in small bowel



**Figure 3.** Strangulated intestinal segment between the ring-like foramen in mesentery and deteriorated blood supply

excised, the intestines were repositioned in their natural configuration. Heat was applied to the intestines for a time and they were re-evaluated for the restoration of vascular circulation. After observation of restoration of the circulation and blood supply, intestinal peristalsis restarted, and its color began to be clearer, the segmental intestinal recession was not performed. After insertion of a drain in the abdomen, the surgical procedure was finished. On the 2<sup>nd</sup> postoperative day, the intestinal gas passage occurred. The patient's clinical and laboratory values improved in the follow-up, and she was discharged from the hospital on the 6<sup>th</sup> postoperative day. The informed consent form was obtained from the patient.

## DISCUSSION

Internal herniation is described as the protrusion of small bowel loops and the mesentery through visceral defects or peritoneal and mesenteric aperture into a compartment in the abdominal and pelvic cavity (3). Internal herniation is one of the rare causes of intestinal obstructions and it is seen in men three times as often as in women (2). Peritoneal or mesenteric defects may not only be congenital but may be acquired due to inflammation, trauma or surgery. The history of previous surgery should remind of acquired causes. An internal herniation, congenital or acquired, accounts for 0.6-5.8% of the small intestine obstructions (3).

Paraduodenal herniations are the most frequent form of internal herniations, and they constitute about 53% of all internal hernias (5). The other types of internal herniations are trans-mesenteric, paracaecal, transomental and foramen Winslow herniations. Paracaecal herniation comprises 2% of all the internal herniation cases (4). Even though classical paraduodenal hernia has been defined as the most frequent form of internal herniation, transmesenteric hernias have recently gained a higher incidence, presumably due to the increasing frequency of surgical interventions in which a Roux-en-Y loop is constructed (6).

Pregnancy does not increase the incidence of intestinal obstruction. Although intestinal obstruction is a common condition seen by general surgeons, it is extremely challenging to establish the diagnosis during pregnancy. The diagnosis may be masked due to some circumstances that can be seen during pregnancy such as abdominal distension, nausea and vomiting, tension pain of the ligamentum rotundum, uterine contractions, and leukocytosis. Colic type pain due to intestinal obstruction may be mistaken for uterus contractions.

Avoiding examinations involving radiation such as direct radiography and computerized tomography in pregnancy may cause a delay in the diagnosis. The findings in intestinal obstruction do not exhibit any remarkable differences between pregnant and non-pregnant women. Classical triad is colic type abdominal pain, nausea and vomiting, and the absence of intestinal gas passage and defecation. All of these three findings may not be seen together. These findings may be accompanied by increased bowel sounds and abdominal tenderness during the physical examination.

Intestinal obstruction most commonly occurs in the second trimester of the pregnancy when the uterus becomes an abdominal organ, at the end of the third trimester when the

fetal head is engaged, and in the early postpartum period when the size of the uterus decreases abruptly (5). In our case, symptoms appeared at the end of the third trimester and the severity increased in the early postpartum period. In the diagnosis, abdominal ultrasonography, direct radiography and computerized tomography can be utilized. The fact that radiological imaging methods involving radiation are not preferred during pregnancy also causes a delay in diagnosis. However, the risk of maternal and fetal mortality due to delayed diagnosis is higher than the risks associated with radiation exposure. Abdominal ultrasonography can be considered as the first choice diagnostic modality since it is a noninvasive method devoid of radiation risk. When the final diagnosis cannot be established, the other imaging methods must be utilized at once. Abdominal tomography is the imaging modality of choice for the investigation of acute abdominal conditions (7). The accuracy of CT in the detection of small bowel obstruction possesses a sensitivity and specificity of 94-100% and 90-95%, respectively (8). Thereby, it accelerates the therapeutic processes due to its high potential to establish the diagnosis and to document the severity and the etiology of the illness correctly. The direct signs of a closed-loop at CT are a U- or C- shaped, fluid filled, distended intestinal loop or a radial array of distended loops with stretched and thickened mesenteric vessels converging to a central point. Thus, a cluster of dilated loops or a 'sac-like appearance' of crowded small bowel loops must recall internal herniation (9). Identification of air-fluid levels, diminished or absent colon gas, dilated small intestinal loops and dilatation of caecum are significant radiological findings (8). In our case, we evaluated the patient initially with abdominal ultrasonography before methods based on radiation and determined the pre-diagnosis observing dilated jejunal loops. After the delivery, our diagnosis was confirmed with tomography.

During the treatment, firstly dehydration and electrolyte imbalance must be restored while the patient is under observation with nasogastric decompression. Owing to the rare occurrence, treatment for internal herniation following surgery is still under debate. The recent Bologna guidelines imply conservative management for 48-72 h in an otherwise healthy patient who do not display any signs consistent with strangulation or peritonitis. Nevertheless, if there is no improvement in the clinical picture during an observation period of 48-72 hours, patients with strangulation or CT findings consistent with intestinal ischemia must be treated with urgent open surgery (10).

Its prognostic mortality rate is more than 50% unless treated (3). In laparotomy, a lower abdominal median incision should be preferred, and an appropriate surgical technique should be performed considering the underlying causes. Any delay in the diagnosis can lead to incarceration and a serious situation that can result in bowel necrosis. The fundamental principles of the treatment are both reduction of herniation and repair of the defect. Following the restoration of bowel passage, intestinal loops are expected to return to their natural color. Very rarely, in the event of the development of ischemia, bowel resection may be necessary. Laparoscopic surgery is a technically challenging procedure with relatively low success rates, particularly without clear preoperative

diagnosis and imaging for recognition of the orifice of the hernia (11).

In every pregnant woman presenting with an acute abdomen, the intestinal obstruction must be kept in mind in the differential diagnosis. As in our case, even in patients who had not undergone any abdominal surgery before, internal herniation, one of the rare causes of intestinal obstruction, should be considered in the presumptive diagnosis. In the absence of all clinical findings of intestinal obstruction, radiological imaging methods must be used appropriately to overcome the diagnostic challenge. Avoidance of the delay of surgical treatment in patients with persistent symptoms after decompression will help to decrease the maternal and fetal mortality rates.

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