



## A rare complication of aortobifemoral bypass operation: internal herniation

### Aortobifemoral baypas ameliyatının nadir bir komplikasyonu: İnternal herniasyon

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Intestinal brids are most common cause of postoperative ileus although there are various cause of ileus after abdominal operation. On the other hand internal herniation is a rare cause of ileus after abdominal operations. Diagnosis of this hernias are important because of strangulation and necrosis of its content due to circulatory disturbance. In this case report, we publish a patient with ileus due to a greft which has been used in a previous abdominal surgery for abdominal aort aneurysm.

**Key Words:** Aortobifemoral bypass; internal herniation/complication.

Karın operasyonları sonrası çeşitli nedenler dolayısıyla olmakla beraber, en sık intestinal yapışıklıklara bağlı mekanik intestinal tıkanıklık (MİT) görülebilmektedir. İnternal herniasyonlar ise karın operasyonları sonrası nadir bir MİT nedenidir. Bu hernilerde içeriğin boğulma ve nekroza kadar giden dolaşım bozukluğu nedeniyle doğru tanı konabilmesi önemlidir. Bu yazıda, karın aort anevrizma ameliyatı sonrası kullanılan greftin neden olduğu internal herniasyon sonucu oluşan MİT sunuldu.

**Anahtar Sözcükler:** Aortobifemoral baypas; internal herniasyon/ komplikasyon.

Internal herniation is a rare cause of intestinal occlusion. Internal herniation, either congenital or acquired, is responsible for 0.6-5.8% of all intestinal occlusions.<sup>[1]</sup>

Abdominal aortic aneurism (AAA) is a frequently encountered pathology with a prevalence of 1-4% of the entire population and is observed in 5-9% of men older than 65 years.<sup>[2]</sup> Currently, treatment for AAA is the interposition of vascular prosthesis by surgically reaching the aneurysmatic section of the aorta specifically through the abdomen.<sup>[2]</sup> Gastrointestinal complications such as ischemic colitis, mechanical ileus and aortoduodenal fistula incidence is 20% in the post-operative period and 16% to 67% of these complications may be mortal.<sup>[3]</sup>

We aimed to present a case that presented to our emergency surgical clinic one week after the aortobifemoral by-pass surgery with a complaint of the ileus.

### CASE REPORT

A 56-year-old male patient presented to our emergency unit with complaints of abdominal pain and inability to pass gas or move his bowels that was ongoing for 2 days. A midline incision was identified during his abdominal examination, and he explained that he had an operation for AAA in another healthcare institution one week prior. Abdominal distention was present and the patient described malodorous vomiting once before his presentation to the emergency unit. Bowel sounds were hypoactive. There was tenderness in the four abdominal quadrants. Formed stool was identified in the rectal touch. Air-fluid levels were observed on X-ray. Fecaloid content came out from the case after placement of the catheter for decompression. The computed tomography (CT) was unremarkable for the ileus. The patient was urgently admitted for surgery due to deterioration of his general condition and acute abdominal findings. Exploratory laparotomy revealed

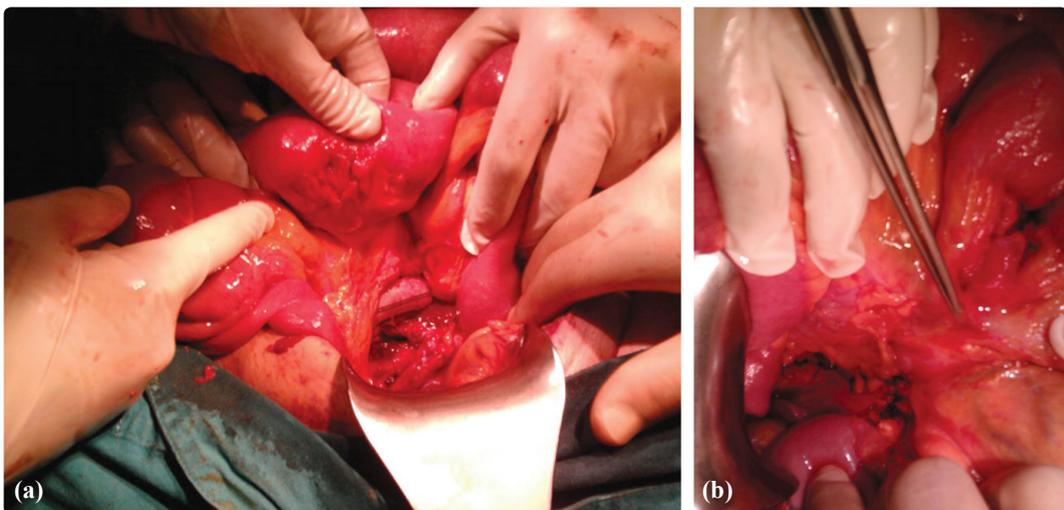
an opened retroperitoneum due to aortobifemoral by-pass and jejunal loop adhered to the graft, which caused the ileus by preventing the passage of intestinal content jejunum since it was not peritonized. Intestinal loops entered the open area and were struck due to adhesions (Fig. 1a). The retroperitoneum was peritonized after the adhesions were removed (Fig. 1b). There was no other pathology and the procedure was terminated. The post-operative period was uneventful and the patient was discharged in stable condition.

## DISCUSSION

Herniation of the intestinal loops and mesentery to openings in the visceral peritoneum or recesses are rare causes of intestinal obstructions, which stand for 1% of all cases. Symptoms include localized sensitivity, epigastric mass and increased peristaltic motion.<sup>[4]</sup> Severe forms may manifest with dehydration and leucocytosis.<sup>[4,5]</sup> Abdominal X-ray may show dilated intestinal loops and air-fluid levels.<sup>[5]</sup> Abdominal X-ray can only show obstruction.<sup>[5]</sup> Abdominal CT shows displaced, tensed, dilated and overlapping intestinal segments. Displacements of the mesenteric vascular structures perfusing these intestinal segments can also be observed. CT is the most important non-invasive radiological method that facilitates an absolute diagnosis.<sup>[5]</sup> In our case, abdominal X-ray revealed air-fluid levels; however, the CT was unremarkable. Complaints may deteriorate if the patient develops incarceration or strangulation. Pathology may progress and may cause perforation if no definitive diagnosis can not be reached and patient is usually admitted for surgery with the presumptive diagnosis of acute abdomen.<sup>[6,7]</sup> In a study by Akyıldız et al.,<sup>[6]</sup> which excluded perforations secondary to trauma, colorectal tumor, adhesions, mesenteric ischemia and iatrogenic fac-

tors, they identified perforation secondary to internal herniation in 4 patients (10%). In treatment, intestinal loops stuck in the hernia sac are removed. If the patient develops strangulation or perforation, segmentary intestinal resection and end-to-end anastomosis should be performed.<sup>[8]</sup> In our case, intestinal loops were herniated towards the non-peritonized area and compression occurred due to adhesions in that region; however, no additional intervention was considered necessary since perfusion was not impaired.

Aortobifemoral bypass with prosthetic graft is commonly used in aorto iliac occlusive vascular diseases and AAA as well as the lesions effecting the iliac segments.<sup>[9]</sup> There is no ideal material for production of vascular prosthesis and dacron and polytetrafluoroethylene (PTFE) are the most commonly used materials. PTFE was identified to be superior to dacron graft in the femoropopliteal bypass grafting. However, there is no exact consensus on the superiority of each treatment for aortobifemoral bypass. Cintora et al.<sup>[10]</sup> did not find any statistical difference between PTFE and dacron graft in 312 aortofemoral cases, but they noted that the rate of complications were higher in the Dacron group. Abdominal adhesions are a dynamic, fibro-proliferative and inflammatory defense mechanism occurring as a response to trauma to the peritoneum. Intraperitoneal adhesion develop due to ischemia on the peritoneal surface and trauma and continues with extravasation and inflammation at the cellular level. The features of a prosthetic material are as follows: it must not physically interact with tissue fluids, must be chemically inert, must not lead to inflammation or foreign object reaction, must not be carcinogenic, must not cause allergy or hypersensitivity and be resistant to mechanical stress.<sup>[11]</sup> Dacron graft was used in our case, and the omentum adhered to the graft as a result of the interac-



**Fig. 1.** (a) Jejunal loop adhered to the graft since it was not peritonized, blocked the bowel passage and caused to ileus. (b) The retroperitoneum was peritonized after the adhesion was opened.

(Color figures can be viewed in the online issue, which is available at [www.tjtes.org](http://www.tjtes.org)).

tion between the omentum and graft, which caused the ileus due to suppression on the jejunum.

The vascular grafting process is either retroperitoneal (RP) or transperitoneal (TP). There are several studies discussing the superiority of the RP or TP approaches in the surgical treatment of aorto-iliac occlusive vascular disease.<sup>[12]</sup> In a study with two groups of 55 cases, Başel et al.<sup>[12]</sup> did not find a significant difference between TP and RP, although they reported gastrointestinal problems to be more common in TP. In our study, the transperitoneal approach was preferred and as a result of the unclosed retroperitoneum, interaction of the omentum and the graft led to an internal herniation.

Aortobifemoral bypass with prosthetic graft is commonly used in aorto iliac occlusive vascular diseases and abdominal aortic aneurism as well as the lesions effecting the iliac segments. Complications may develop related to the graft due to an unclosed peritoneum. It should be noted that the ileus in AAA cases may be secondary to adhesions due to the graft used in surgery.

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## REFERENCES

1. Newsom BD, Kukora JS. Congenital and acquired internal hernias: unusual causes of small bowel obstruction. *Am J Surg* 1986;152:279-85.
2. García-Madrid C, Josa M, Rimbau V, Mestres CA, Muntaña J, Mulet J. Endovascular versus open surgical repair of abdominal aortic aneurysm: a comparison of early and intermediate results in patients suitable for both techniques. *Eur J Vasc Endovasc Surg* 2004;28:365-72.
3. Huddy SP, Joyce WP, Pepper JR. Gastrointestinal complications in 4473 patients who underwent cardiopulmonary bypass surgery. *Br J Surg* 1991;78:293-6.
4. Tekin A, Şahin M, Küçükkartallar T, Kaynak A. Nadir bir ileus nedeni: Paradoudenal hernia. *Genel Tıp Derg* 2007;17:111-4.
5. Uluşan Ş, Koç Z. İnternal herniasyonun radyolojik bulguları. *Türkiye Klinikleri J Med Sci* 2007;27:311-2.
6. Akyıldız HY, Akcan AC, Sözüer E, Küçük C, Yılmaz N, Artış T. Unusual causes of intestinal perforation and their surgical treatment. *Ulus Travma Acil Cerrahi Derg* 2009;15:579-83.
7. Akcakaya A, Sahin M, Coskun A, Demiray S. Comparison of mechanical bowel obstruction cases of intra-abdominal tumor and non-tumoral origin. *World J Surg* 2006;30:1295-9.
8. Ozkan E, Fersahoğlu MM, Dulundu E, Ozel Y, Yıldız MK, Topaloğlu U. Factors affecting mortality and morbidity in emergency abdominal surgery in geriatric patients. *Ulus Travma Acil Cerrahi Derg* 2010;16:439-44.
9. Türköz R, Deniz B, Kestelli M, Özbek C, Akçay A, Tonguç E ve ark. Aortobifemoral bypass olgularında Dakron ve politetrafloroetilen greftin karşılaştırılması. *Türk Göğüs Kalp Damar Cerrahisi Dergisi* 1997;5:212-7.
10. Cintora I, Pearce DE, Cannon JA. A clinical survey of aorto-bifemoral bypass using two inherently different graft types. *Ann Surg* 1988;208:625-30.
11. Alimoğlu O, Akcakaya A, Sahin M, Unlu Y, Ozkan OV, Sanli E, et al. Prevention of adhesion formations following repair of abdominal wall defects with prosthetic materials (an experimental study). *Hepatogastroenterology* 2003;50:725-8.
12. Başel H, Aydın Ü, Kutlu H, Özsoy SD, Dostbil A, Taşdemir M ve ark. Aortoiliyak tıkaçıcı arter hastalıklarının cerrahi tedavisinde retroperitoneal ve transperitoneal yaklaşımların karşılaştırılması. *Türk Göğüs Kalp Damar Cerrahisi Dergisi* 2009;17:249-53.