

## Free bowel perforation after off-pump coronary artery bypass graft surgery: a rare complication of Crohn's disease

*Atan kalpte koroner arter baypas greft cerrahisi sonrasında serbest bağırsak perforasyonu:  
Crohn hastalığının nadir bir komplikasyonu*

Kaan Kaya,<sup>1</sup> Doğan Kahraman,<sup>1</sup> Anar Emrah,<sup>1</sup> Levent Enver,<sup>1</sup> Ümit Özeturda<sup>2</sup>

<sup>1</sup>Department of Cardiovascular Surgery, Kavaklıdere Umut Hospital, Ankara, Turkey

<sup>2</sup>Department of Cardiovascular Surgery, Medical Faculty of Ankara University, Ankara, Turkey

Although the incidence of gastrointestinal complications during cardiac surgery is low, delayed recognition of these complications may result in prolonged hospitalization with a high mortality rate. The diagnosis is usually difficult, as the patient may not describe symptoms due to sedation and analgesia early after surgery. A 56-year-old male patient who was diagnosed with acute coronary syndrome underwent an urgent off-pump coronary artery bypass graft (CABG) surgery. The patient with a normal early postoperative period had a severe abdominal pain followed by hemodynamic corruption. He underwent a diagnostic laparotomy with a preliminary diagnosis of acute mesenteric ischemia. Surgical examination revealed Crohn's disease with bowel perforation. The diagnosis was confirmed by serologic tests (positive result for Anti-Saccharomyces Cerevisiae Antibody and negative result for anti-neutrophil cytoplasmic antibody) and pathologic examination. The bowel perforation is a rare complication of Crohn's disease. This is the first reported case in the literature associated with coronary artery disease.

**Key words:** Bowel perforation; Crohn's disease; off-pump coronary artery bypass graft surgery.

The incidence of gastrointestinal complications, such as intestinal ischemia, hepatic insufficiency, pancreatitis, paralytic ileus, and gastrointestinal bleeding during cardiac surgery is low (0.4-2.9%),<sup>[1]</sup> but delayed recognition of these complications can cause prolonged hospitalization with a high mortality rate.<sup>[2]</sup> In addition,

Kardiyak cerrahi sırasında gastrointestinal komplikasyon görülme sıklığı düşük olmakla birlikte, bu komplikasyonların geç tanısı yüksek mortalite oranı ile hastanede yatiş süresinin uzamasına neden olmaktadır. Erken ameliyat sonrası dönemde sedasyon ve analjeziye bağlı olarak hastalar semptomlarını tarif edemedikleri için, tanı koymak genellikle zordur. Akut sendrom tanısı konmuş 56 yaşında erkek hastaya atan kalpte koroner arter baypas greft (KABG) ameliyatı yapıldı. Erken ameliyat sonrası dönemi sorunsuz geçen hastada şiddetli bir karın ağrısı ile birlikte hemodinamik bozulma meydana geldi. Akut mezenterik iskemi ön tanısı ile tanı amaçlı laparotomi yapıldı. Ameliyat sırasında konulan tanı bağırsak perforasyonu ile birlikte Crohn hastalığı idi. Tanı serolojik testler (pozitif Anti-Saccharomyces Cerevisiae antibody ve negatif anti-nötrofil sitoplazmik antikor) ve patolojik inceleme ile doğrulandı. Bağırsak perforasyonu Crohn hastalığının nadir bir komplikasyonudur. Bu, koroner arter hastalığı ile birlikteliği literatürde bildirilen ilk olgudur.

**Anahtar sözcükler:** Bağırsak perforasyonu; Crohn hastalığı; atan kalpte koroner arter baypas greft cerrahisi.

the incidence rate was similar whether on-pump and off-pump surgery was performed.<sup>[3]</sup> Diagnosis of these complications is usually difficult since the patient may not be aware of them due to sedation and analgesia in the early postoperative period. We present a case in which the patient had acute abdominal pain 36 hours



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Correspondence: Kaan Kaya, M.D. Kavaklıdere Umut Hastanesi, Kalp ve Damar Cerrahisi Kliniği, 06660 Kavaklıdere, Ankara, Turkey.  
Tel: +90 312 - 466 38 38 e-mail: drkaankaya@yahoo.com

after off-pump coronary surgery, but the etiology was unusual because of previously undiagnosed Crohn's disease.

## CASE REPORT

A 56-year-old male suffering from chest pain was admitted to the emergency room. His clinical history indicated nothing out of the ordinary, and the results of a physical examination were normal with no apparent gastric problems. After an evaluation of the cardiac enzymes, including creatine kinase (CK), creatine kinase myocardial band (CK-MB), and cardiac troponin I (cTnI), the patient was diagnosed with acute coronary syndrome (ACS). We performed urgent two-vessel off-pump coronary artery bypass (CABG) since emergent coronary angiography had revealed the total occlusion of the left anterior descending (LAD) artery and 98% proximal stenosis of the right coronary artery (RCA). The early postoperative period was normal. The patient was extubated at the sixth postoperative hour and monitored in ward after leaving the intensive care unit (ICU). At approximately the postoperative 36<sup>th</sup> hour, the patient had severe abdominal pain with acidosis in an arterial blood gases analysis (ABG) followed by hemodynamic corruption. We suspected mesenteric ischemia and recommended general surgery to perform an urgent diagnostic laparotomy. However, the operative diagnosis was different than we expected as we detected Crohn's disease with bowel perforation. The diagnosis was made via visual assessment by the general surgeon and then confirmed by serological tests. A pathology report showed positive results for the anti-*Saccharomyces cerevisiae* antibody (ASCA) and negative results for the anti-neutrophil cytoplasmic antibody (ANCA). The affected part of intestine was resected (Figure 1), but the patient died at the postoperative 48<sup>th</sup> hour as



**Figure 1.** The “regional ileitis” pattern in the patient’s intestine with the classic appearance of skipped lesions.

a result of a deadly cascade consisting of peritonitis, sepsis, and multi-organ failure.

## DISCUSSION

Crohn's disease, originally known as regional ileitis, was firstly described by Crohn in 1932.<sup>[4]</sup> This clinical syndrome may involve the entire gastrointestinal tract and is pathologically characterized by transmural and segmental inflammation of the intestines along with granulomas. In addition, it also has a cobblestone appearance. Furthermore, this disease can manifest in an ulcerative, stenotic, perforating, and fistulizing manner. Today, Crohn's disease is neither medically nor surgically curable and is diagnosed based on a composite of endoscopic, radiographic, clinical, and pathological findings. Serological tests (ANCA and ASCA) support the diagnosis, but they are not sufficiently sensitive and specific. In the literature, it was reported that only 1-3% of patients with Crohn's disease present with the rare complication of a free bowel perforation.<sup>[5]</sup>

Haapamäki et al.<sup>[6]</sup> reported that patients with Crohn's disease tend to have coronary artery disease (CAD) as well as immune-mediated diseases like ankylosing spondilitis and arthritis. They also hypothesized that chronic inflammation is a predisposing factor for atherosclerosis. Meanwhile, Roifman et al.<sup>[7]</sup> demonstrated microvascular endothelial dysfunction in patients with Crohn's disease. In addition, inflammatory cytokines, which were shown to increase low-density lipoproteins and decrease high-density lipoproteins by lowering the level of lipoprotein lipase, may increase the risk for CAD.<sup>[8]</sup>

Sanisoglu et al.<sup>[3]</sup> reported that during off-pump coronary surgery, manipulations on the heart may depress cardiac functions and induce low cardiac output. On the other hand, off-pump coronary surgery reduces the risk of embolism due to cannulation and aortic clamping, which can theoretically lead to less distal organ malperfusion. Additionally, proximal anastomosis can cause embolization to distal organs, although this is a less common cause of mesenteric ischemia.

Nishiyama et al.<sup>[9]</sup> reported that proximal saphenous vein graft anastomosis to an aorta with inflammatory disease should be avoided. However, in our case, the patient was diagnosed with Crohn's disease postoperatively, and the ascending aorta was normal. Therefore, we performed proximal anastomosis on the ascending aorta.

We have performed 2,867 CABG operations in last five years at our clinic (512 off-pump and 2,355 on-pump), and only seven (0.22%) of those patients

underwent a laparotomy for mesenteric ischemia. The combined stress of anesthesia, surgery, and hypothermia can trigger a hormonal stress response and a massive defense reaction, which as a whole can lead to organ damage. Unfortunately, all seven of those patients died between postoperative days one and eight, resulting in a mortality rate of 100% at our clinic for those with the rare complication of acute mesenteric ischemia who underwent cardiac surgery.

It is hard to judge whether Crohn's disease accompanied by CAD is a coincidence. Recently, possible immune-mediated interactions, dyslipidemia, endothelial dysfunction, inflammatory cytokines, and chronic inflammation in the area of Crohn's disease have been mentioned as factors that may cause CAD. If this is true, then coronary artery disease accompanied by Crohn's disease may in fact be coincidental. On the other hand, it would not be wise to draw this conclusion solely based on our single case, which to our knowledge is the first reported case of its type in the literature.

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