

## Akut İskemide Mezenterik Arter Trombektomisi, Balon ile Genişletme ve Stent Uygulaması Olgusu

### A Case of Mesenteric Artery Thrombectomy, Balloon Inflation, and Stenting in Acute Ischemia with Collaboration

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## ÖZET

Bu vaka raporu, açık ameliyatın yüksek riskli bir seçenek olduğu birden fazla komorbiditesi olan bir hasta için endovasküler yaklaşımla tedavi edilen akut mezenterik tromboz ve iskemide (AMI) vakasını tanımlamaktadır. Hastanın öncelikle USG ve CT anjiyografi ile değerlendirilmesi sonrasında, tanı doğrulandıktan sonra, trombu çıkarmak için brakial yaklaşım ile mezenterik anjiyografi yapıldı. Ancak, orta-distal mezenterik arterde %80 daralma ile yüksek trombus yükü hala gözlemlendiği için, perkütan translüminal anjiyoplasti ve stent yerleştirilmesi yapıldı. Tatmin edici sonuçlar elde edildikten sonra, hasta şikayetsiz olarak taburcu edildi.

**Anahtar Kelimeler:** Akut mezenterik iskemide, girişimsel tedavi, işbirliği

## ABSTRACT

This case report describes the treatment of a 75-year-old female patient with acute mesenteric thrombus and ischemia (AMI) using an endovascular approach due to multiple comorbidities that made open surgery a high-risk option. The patient underwent initial evaluation with ultrasound (USG) and CT angiography, and after the diagnosis was confirmed, mesenteric angiography was performed via a brachial approach to extract the thrombus. However, a high thrombus burden with 80% narrowing in the middle-distal mesenteric artery was still observed, and therefore, percutaneous transluminal angioplasty with stenting was performed. After satisfactory results were achieved, the patient was discharged with no complaints.

**Keywords:** Acute mesenteric ischemia, interventional treatment, collaboration

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## INTRODUCTION

Acute mesenteric thrombosis and ischemia (AMI) occur in 1-2% of all abdominal emergencies with a 50-70% mortality rate. The pathogenesis of AMI stems from inadequate blood supply, inflammation, and necrosis of the intestinal wall due to arterial embolism, arterial thrombosis, mesenteric venous thrombosis, and non-occlusive causes. Clinically, AMI usually presents with an abrupt onset of severe abdominal pain, vomiting, diarrhea, nausea, abdominal distension, fever, and rectal bleeding. Moreover, peritonitis and septicemia may develop once the ischemia and necrosis have progressed. [1,2]

Although ultrasound (USG) and computed tomography angiography (CTA) are widely used diagnostic tests, mesenteric angiography, which is recommended by the American Gastroenterological Association, is the best way to diagnose AMI. [3] After confirming the diagnosis of AMI, surgery is the most acceptable choice if there are no contraindications. However, since AMI always occurs in elderly patients with multiple comorbidities and poor nutritional status, open surgery is not the best option. [1,3]

As a result of advancements in endovascular strategies such as percutaneous aspiration of thrombus, thrombolysis, balloon thrombectomy, percutaneous transluminal angioplasty, primary superior mesenteric artery (SMA) stenting, and a combination of these therapies are becoming more popular and becoming an alternative strategy to surgical interventions. Sometimes these endovascular strategies are followed by endoscopic laparotomy for the evaluation of the intestines and, if necessary, resection of the infarcted bowel segments. [4,5].

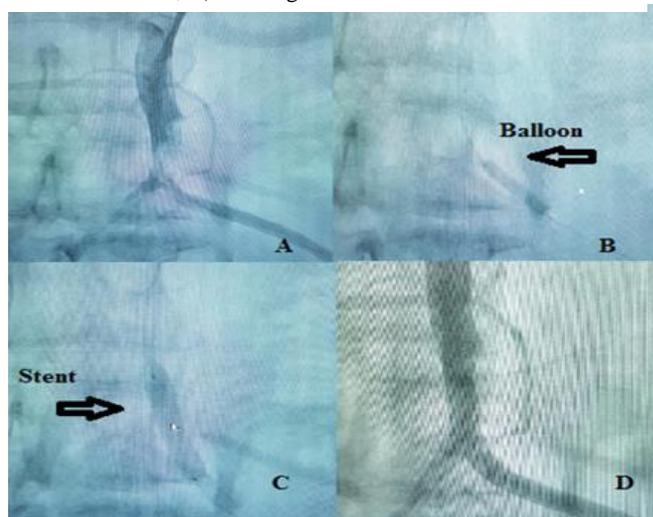
## CASE REPORT

We present here a case of a 75-year-old female patient who was admitted to our general surgery department with acute mesenteric thrombus and ischemia after experiencing 2 days of abdominal pain and vomiting, as well as elevated levels of leukocytes and CRP. The patient had several comorbidities including high blood pressure, type II diabetes, and morbid obesity, making her unsuitable for open surgery. The patient was suspected to have developed acute mesenteric ischemia due to a thrombus formed on the background of chronic systemic atherosclerosis. As a result, an endovascular treatment strategy was chosen after consulting with cardiology and vascular surgery departments.

The patient underwent mesentery angiography via brachial approach with a 7F Amplatz L2 guiding catheter. A thrombosed lesion was identified and passed with a PT-2® 0.014 guide wire, followed by administration of 10,000 units of heparin. Initially, a Capturer® 6F thrombus extraction catheter was used to remove the thrombus, but high thrombus burden with 80% narrowing in the middle-distal mesentery artery was still observed. Therefore, percutaneous transluminal angioplasty (PTA) with stenting was planned. A

4.0-20 mm NC Coronary Balloon was used for debulking and a 4.5-24 mm Bare metal coronary stent was delivered. (Figure 1B, C)

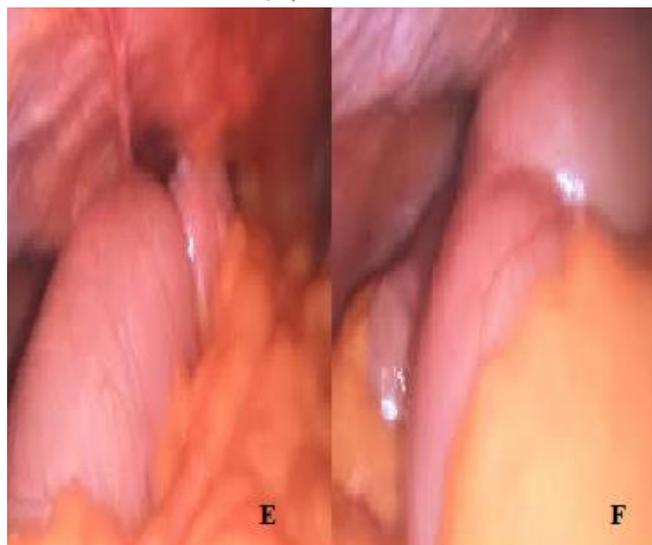
**Figure 1.** A) Angiography and thrombus aspiration, B) Balloon inflation, C) Stenting and result.



The procedure was completed after satisfactory results were obtained and bleeding was controlled. The patient was given 1 mg/kg Enoxaparin twice a day, tirofiban infusion calculated by weight, and crystalloid infusion during the follow-up period, as recommended by the general surgery department.

After one day of follow-up in the cardiology intensive care unit, the patient underwent an explorative laparoscopy to evaluate intestinal injury, and it was found that the intestinal segments and abdominal cavity were healthy. (Figure 2E, F)

**Figure 2.** E) Laparoscopic view of affected segment of intestine after intervention, F) Close view of intestine.



Gas and feces discharge were observed on the third day, and the patient was started on a daily dose of 75 mg clopidogrel and 81 mg acetylsalicylic acid after consulting with the cardiology department. The patient was discharged in good health and did not experience any complaints or symptoms during routine follow-up visits at 1 week and 1 month later.

## DISCUSSION

AMI and thrombus with arteriosclerotic plaque are surgical emergencies with high mortality rates. The major finding is severe abdominal pain, which is resistant to antispasmodic agents. Physical examination may reveal little findings, accompanied by gastrointestinal emptying symptoms such as vomiting and diarrhea in AMI [1, 2]. Although abdominal radiography and ultrasonography can help with diagnosis, negative results of the USG and X-ray cannot rule out the possibility of AMI. Angiography and CT scans may provide a clear and sensitive diagnosis [2, 3].

Endovascular approaches are becoming increasingly popular in both diagnosis and treatment [4, 5], and the presence of bowel infarction and risk factors can determine a planned treatment approach [5]. Successful treatment depends on early clinical recognition based on a detailed history and physical examination along with diagnostic tests. Treatment of AMI requires close collaboration between general surgery and invasive cardiology [4, 5]. Our case highlights the importance of this collaboration, as recent studies have shown [4].

During the diagnostic period of AMI, the surgery department requested CT angiograms and USG from the radiology department based on clinical and laboratory findings, following current guidelines [1, 2]. Surgery then decided on clinical observation and IV medication because there were no signs of perforation or necrosis. However, the patient's general status deteriorated, and invasive cardiology and vascular surgery consultations were requested by the general surgery team for a joint decision.

Cardiology performed mesenteric angiography to confirm the diagnosis and plan therapy. Angiography revealed partial obstruction of the jejunal-ileal and distal terminal branch of the superior mesenteric artery by thrombus and atherosclerotic plaque. Again, rapid consultations were made with general surgery and vascular surgery due to the necessity of interventional therapy, as shown in current publications [5]. An interventional therapy was undertaken using available coronary equipment. Due to the possibility of intestinal injury, follow-up treatment was planned by surgery and cardiology, which included a low molecular weight heparin and tirofiban infusion until bowel movements resumed [1,5].

## REFERENCES

1. Mastoraki A, Mastoraki S, Tziava E, Touloumi S, Krinos N, Danias N, et al. Mesenteric ischemia: pathogenesis and challenging diagnostic and therapeutic modalities. *World J Gastrointest Pathophysiol.* 2016;7:125-130.
2. Bala M, Kashuk J, Moore E, Kluger Y, Biffi W, Gomes CA, et al. Acute mesenteric ischemia: guidelines of the World Society of Emergency Surgery. *World J Emerg Surg.* 2017;12:1-11.
3. Ahmed M. Ischemic bowel disease in 2021. *World J Gastroenterol.* 2021;27:4746-4762.
4. Savlania A, Tripathi RK. Acute mesenteric ischemia: current multidisciplinary approach. *J Cardiovasc Surg.* 2017;58:339-350.
5. Resch TA, Acosta S, Sonesson B. Endovascular techniques in acute arterial mesenteric ischemia. *Semin Vasc Surg.* 2010;23:29-35.