



Revascularization of all Three Mesenteric Vessels With Open Surgery in Chronic Mesenteric Ischemia

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ÖZET

Kronik mezenterik iskemide tüm mezenterik damarların revaskülarizasyonu

Kronik mezenterik iskemi sıklıkla yanlış tanı konulan ve gecikmiş tedaviye bağlı olarak yaşamı tehdit eden bir tablodur. Endovasküler tedavi ve açık cerrahi tedavi gibi farklı ve etkin tedavi seçenekleri vardır. Tedavi seçimi genellikle merkezlere göre değişmektedir. Bu yazıda inferior ve superior mezenterik arterlere önceden implante edilen stentlerde oklüzyon gelişmesi nedeniyle, üç mezenterik artere bypass uyguladığımız bir olguyu sunduk. Hastanın üç mezenter arterine başarıyla revaskülarizasyon işlemi uygulandı ve hasta komplikasyonsuz olarak taburcu edildi. Cerrahi tedaviden üç ay sonra kontrol amacıyla çekilen bilgisayarlı tomografik anjiyografide greftlerin açık olduğu görüldü.

Anahtar kelimeler: Kronik mezenterik iskemi, endovasküler tedavi, açık cerrahi

ABSTRACT

Revascularization of all three mesenteric vessels with open surgery in chronic mesenteric ischemia

Chronic mesenteric ischemia is frequently misdiagnosed, and due to delayed treatment it is a life threatening disorder. Different effective treatment modalities exist, such as endovascular repair or open surgery. Selection of the revascularization procedure is often related to the center experience. We present a case that underwent revascularization of all three mesenteric vessels, after occlusion of the stents implanted previously in superior and inferior mesenteric arteries. Successful revascularization of the three main visceral branches was achieved and the patient was discharged uneventfully. Control computerized tomography angiography 3 months after the procedure revealed patent grafts, while the patient remained symptom free.

Key words: Chronic mesenteric ischemia, endovascular treatment, open surgery

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INTRODUCTION

Chronic mesenteric ischemia (CMI) is a disease consisting of stenosis or occlusion of one or more vessels of the three main intestinal arteries. The prevalence is unclear and probably underestimated, as autopsy series reveal stenosis up to 30% of patients who have had abdominal symptoms (1). It manifests with

postprandial abdominal pain, nausea, vomiting, diarrhea and weight loss and often is misdiagnosed due to presence of nonspecific symptoms. The treatment selection includes revascularization procedures such as endovascular stenting, angioplasty and open surgery. We present a case on open revascularization after total occlusion of all the three vessels.

CASE REPORT

A 57 year old male patient presented at our center with postprandial abdominal angina. He had previous treatment of chronic mesenteric ischemia with endovascular stent implantation in superior mesenteric artery (SMA) and inferior mesenteric artery (IMA). He was cachectic and physical examination revealed hypoaactive

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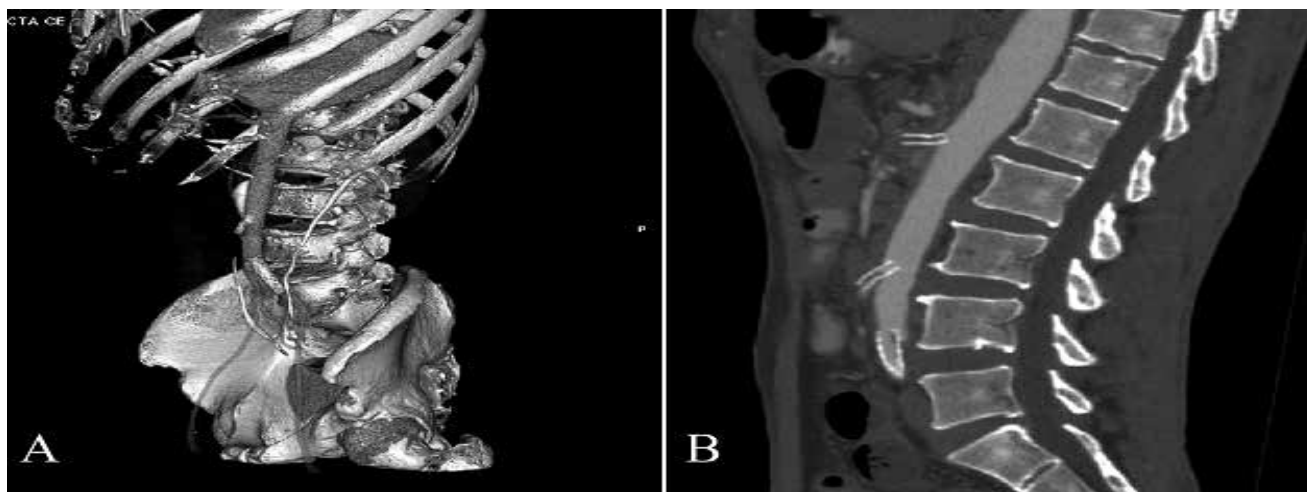


Figure 1: Preoperative 3 dimensional (A) and sagittal view (B) of CTA showing total occlusion of all the three main visceral vessels. Notice the patent stent in left common iliac artery.



Figure 2: Perioperative view showing the proximal anastomosis site at infrarenal aorta. (A) Two retrograde saphenous veins are anastomosed to TC and SMA, while IMA is reimplemented at the same origin. All grafts are patent at control CTA. (B)

intestinal peristalsis. Blood tests were normal except for lactate dehydrogenase (LDH: 657 mg/dl), high density cholesterol (HDL: 23 mg/dl) and albumine levels (Alb: 3.2 mg/dl). Low mesenteric blood flow was seen with duplex ultrasound and computerized tomography angiography (CTA) scan showed total occlusion of both SMA and IMA stents, and truncus coeliacus (TC) (Figure 1A and Figure 1B). Balloon angioplasty was attempted by experienced interventional radiologists but it was impossible to pass the lesions with the guide wire. After obtaining the informed consent from the patient, then it was decided for open revascularization as the final choice. He had two by-passes from abdominal aorta to TC and SMA with saphenous veins, and IMA re-implantation. The patient

underwent median laparotomy and serious and diffuse calcifications were observed at TC and SMA. By-passing of the long segments was thought to be the right choice, while the part of IMA after the occlusion was found healthy and not calcified. IMA was resected at the origin and re-implanted at the same site after exclusion of the obliterated stented segment (Figure 2A). Proximal anastomosis of saphenous veins were performed at infrarenal level under partial clamp occlusion of aorta. The patient had an uneventful postoperative course and passed to oral diet soon without any symptom. He was discharged 8 days later and control CTA performed at the 3rd postoperative month revealed patent grafts. (Figure 2B).

DISCUSSION

Chronic mesenteric ischemia is a disease that presents with non-specific intestinal symptoms leading to delayed diagnosis and treatment. The main cause is atherosclerosis affecting the ostial region while fibromuscular dysplasia, vasculitis, dissection, trauma, embolization are less common etiologic factors (2). Different imaging techniques including duplex ultrasound, computerized tomography angiography, magnetic resonance angiography and arteriography have been described as diagnostic tools, and a complete visualization of the vessels is mandatory in planning the intervention strategy. Revascularization is required in clinically symptomatic cases which are also under risk of intestinal ischemia (3).

Percutaneous angioplasty has a background of nearly three decades as a treatment modality in CMI, with a 6-24 month patency rate of 50-80% (4,5). Development of stents and new technologies in percutaneous interventions led to achievement of excellent results and patient satisfaction. Several studies report data of 80-100% of successful clinical interventions (6).

In our case, the patient had recent SMA and IMA stenting at another center and was discharged free of symptoms. One month later he presented at our department as new onset of postprandial abdominal pain occurred. Total occlusion of all the branches was noticed and was decided for open revascularization, as percutaneous intervention could not be performed.

Open revascularization in CMI involves by-passing of the vessel lesions. The bypass can be of antegrade or retrograde nature, due to selection of different proximal anastomosis sites such as supraceliac or infrarenal aorta and iliac artery. We preferred the infrarenal site as the

most suitable because of serious supraceliac calcification and past history of left iliac stenting.

Graft selection presents another dilemma to be solved. Synthetic, bifurcated or single graft and saphenous vein grafts usage has been successfully reported (7). We think that saphenous veins of an adequate diameter are a good option. Special care must be shown in saphenous length adjustment in order to prevent kinking. We used two retrograde saphenous vein bypasses to superior mesenteric artery and celiac truncus. Furthermore, reimplantation of IMA was possible after resection of the stented ostial part.

A recent study that compared percutaneous balloon angioplasty (PTA) and surgery outcomes, reported significantly the higher patency rates (bypass: 81%, 69%; PTA: 54%, 32%) and survival (bypass: 85%, 63%; PTA: 67%, 31%) at 1 and 5 year checkpoints in primary bypass patients (8). Patients that underwent PTA also required more subsequent revascularizing interventions. In addition, a recent study conducted by Gupta et al. reported better patency rates and 5 year symptom-free survival in open surgery versus endovascular interventions, especially in the procedures performed during the last decade (9). We think that the experience of the center in managing this disorder is decisive in selection of the treatment modality.

In conclusion, although we are in an endovascular repair era, open surgery still remains as a main option in CMI treatment. Access to all visceral arteries and a full revascularization are possible and it assures relief of symptoms with good patency rates. In our opinion, it is the best modality in cases complicated with bowel infarction that requires intestinal resection, or in presence of percutaneously hard-to-manage severe stenotic lesions.

REFERENCES

1. Moawad J, Gewertz BL. Chronic mesenteric ischemia. Clinical presentation and diagnosis. *Surg Clin North Am* 1997; 77: 357-369.
2. Oderich GS, Malgor R, Ricotta JJ 2nd. Open and endovascular revascularization for chronic mesenteric ischemia: A tabular review of the literature. *Ann Vasc Surg* 2009; 23: 700-712.
3. Wilson DB, Mostafavi K, Craven TE, Ayerdi J, Edwards MS, Hansen KJ. Clinical course of mesenteric artery stenosis in elderly Americans. *Arch Intern Med* 2006; 166: 2095-2100.
4. Maspes F, Mazzetti di Pietralata G, et al. Percutaneous transluminal angioplasty in the treatment of chronic mesenteric ischemia: Results and 3 years of follow-up in 23 patients. *Abdom Imaging* 1998; 23: 358-363.
5. Odurny A, Sniderman KW, Colapinto RF. Intestinal angina: Percutaneous transluminal angioplasty of the celiac and superior mesenteric arteries. *Radiology* 1988; 167: 59-62.
6. Silva JA, White CJ, Collins TJ, et al. Endovascular therapy for chronic mesenteric ischemia. *J Am Coll Cardiol* 2006; 47: 944-950.

7. Oderich GS, Gloviczki P, Bower TC. Open surgical treatment for chronic mesenteric ischemia in the endovascular era: when it is necessary and what is the preferred technique? *Semin Vasc Surg* 2010; 23: 36-46.
8. Rawat N, Gibbons CP. Surgical or endovascular treatment for chronic mesenteric ischemia: a multicenter study. *Ann Vasc Surg* 2010; 24: 935-945.
9. Gupta PK, Horan SM, Turaga KK, Miller WJ, Pipinos II. Chronic mesenteric ischemia: endovascular versus open revascularization. *J Endovasc Ther* 2010; 17: 540-549.