

others it is necessary to maintain the compression for hours in order to achieve proper hemostasis.<sup>7</sup> In these cases, it is necessary to pack the cavity, which is usually done with gauze or dressings that are left in the cavity for at least 24–48 h. The main indication of packing is when a hemorrhage is not able to be controlled after having attempting proper hemostasis for a reasonable amount of time, and the patient is becoming hemodynamically unstable or presents coagulopathy. After 24–48 h, the coagulopathy improves with adequate treatment, and during the post-surgery follow-up it is often observed that the bleeding has completely ceased with compression.<sup>7,8</sup>

The main disadvantage to packing with gauze or surgical dressings is the need for a second intervention to remove these “foreign bodies”, even though in many cases the hemorrhage has already stopped. The possibility to pack a cavity with absorbable material could avoid a second intervention in many cases, especially when the patient is hemodynamically stable and there is no clinical or analytical evidence of persistent bleeding.

Surgicel<sup>®</sup> is a hemostatic agent made up of an oxidized cellulose polymer that is completely reabsorbed in 7–14 days. In the literature, there are few case reports of intraabdominal packing with oxidized cellulose polymers. Muguti et al.<sup>9</sup> describe a case of massive hemorrhage from a duodenal diverticulum that was controlled using local packing with Surgicel<sup>®</sup>. In retroperitoneal surgery, there is a series of 7 patients who presented with bleeding through the retroperitoneal veins, which was controlled with this method.<sup>10</sup>

#### REFERENCES

1. Etienne S, Pessaux P, Tuech J, Lada P, Lermite E, Brehant O, et al. Hemosuccus pancreaticus: a rare cause of gastrointestinal bleeding. *Gastroenterol Clin Biol*. 2005;29:237–42.
2. Gambiez LP, Ernst OJ, Merlier OA, Porte HL, Chambon JP, Quandalle PA. Arterial embolization for bleeding pseudocysts complicating chronic pancreatitis. *Arch Surg*. 1997;132:1016–21.
3. Bosman C, Sanhueza M, Schnettler D, Rossi R, Whittle C, Valderrama R. Hemorragia por rotura de pseudoaneurisma pancreático: caso clínico. *Rev Med Chil*. 2001;129:81–5.
4. Perrot M, Berney T, Bühler L, Delgadillo X, Mentha G, Morel P. Management of bleeding pseudoaneurysms in patients with pancreatitis. *Br J Surg*. 1999;86:29–32.
5. Benz C, Jakob P, Jakobs R, Riemann J. Hemosuccus pancreaticus – a rare cause of gastrointestinal bleeding: diagnosis and interventional radiological therapy. *Endoscopy*. 2000;32:428–31.
6. Lermite E, Regenet N, Tuech JJ, Pessaux P, Meurette G, Bridoux V, et al. Diagnosis and treatment of hemosuccus pancreaticus: development of endovascular management. *Pancreas*. 2007;34:229–32.
7. Zhao XG. Emergency management of hemodynamically unstable pelvic fractures. *Chin J Traumatol*. 2011;14:363–6.
8. Morgan K, Mansker D, Adams DB. Not just for trauma patients: damage control laparotomy in pancreatic surgery. *J Gastrointest Surg*. 2010;14:768–72.
9. Muguti G, Gandhi H, Ridgeway D. Successful treatment of active haemorrhage from a duodenal diverticulum using surgicel (absorbable haemostat): a case report. *Cent Afr J Med*. 2007;53:18–21.
10. Dryjski ML, Litwinski RA, Karakousis CP. Internal packing in the control of hemorrhage from large retroperitoneal veins. *Am J Surg*. 2005;189:208–10.

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## Chronic Intestinal Ischemia due to Multiple Severe Stenoses Treated by Endovascular Surgery in a High Risk Patient<sup>☆</sup>



### Isquemia intestinal crónica por estenosis severa múltiple resuelta mediante cirugía endovascular en paciente de alto riesgo

Chronic intestinal ischemia is a very rare condition, generally caused by occlusive atherosclerotic disease (95%). The main

symptom is postprandial abdominal pain, and diagnosis is based on symptoms and angiographic examinations of arterial lesions. Massive intestinal infarction is the most important complication.

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The patient is a 69-year-old male with a medical history that included active chronic smoking, left iliofemoral + left-right femoral-femoral bypass due to atherosclerosis in 1996, TURP for BPH and TURED because of a neoplasm one month

earlier. The patient was hospitalized in order to study a poorly defined abdominal pain in the left iliac fossa that had made him come to the emergency department on several occasions over the course of the previous 2 months. The patient reported no alteration in bowel habit, although the family stated that he had lost an important amount of weight.

We ordered several tests in order to rule out any possible neoplastic processes. Abdominal CT demonstrated a nodule in liver segment III. The abdominal ultrasound results recommended extending the study with MRI. Given the non-specific mass, FNA was suggested, which was negative for malignant cells. At the same time, chest radiography showed nodules in the right lung; thoracic CT was ordered, which was normal.

It should be mentioned that, while hospitalized, the patient did not comply with the *nil per os* treatment and committed dietary transgressions without either the knowledge or consent of the medical personnel. As a result, it was very difficult for us to establish the diet/onset of pain correlation, which was triggered 15–60 min after oral intake.

For this reason, we suspected possible intestinal ischemia. Abdominal aortoiliac CT angiography detected severe stenosis in the proximal end of the celiac trunk, complete obstruction of the proximal segment of the superior mesenteric artery and 70%–80% stenosis of the inferior mesenteric artery, which drained through the arc of Riolan. Colonoscopy showed the mucosa did not have an ischemic appearance, with isolated diverticula.

We arrived at the diagnosis of chronic intestinal ischemia affecting the 3 blood vessels.

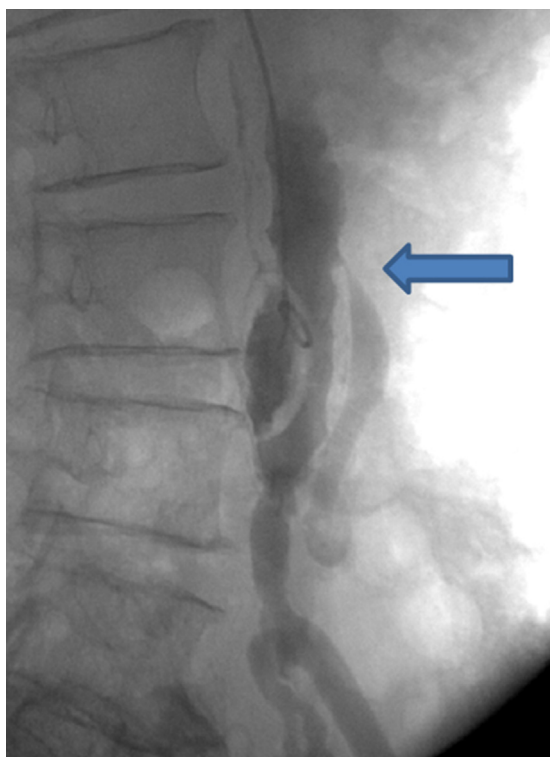
In a multidisciplinary session with vascular surgery, radiology and general surgery specialists, and while considering

the patient's high surgical risk, it was decided that we should perform angiography and attempt to place stents in the 3 affected blood vessels. However, only one stent was successfully inserted (7 mm×18 mm expandable balloon) in the inferior mesenteric artery, after which good permeabilization was achieved with quite an improvement in the patient's usual symptoms (Figs. 1 and 2). In case of failure, we had considered an inferior aortomesenteric bypass as it had a good caliber posterior to the stenosis and a good arc of Riolan, although this would have entailed very high surgical risk.

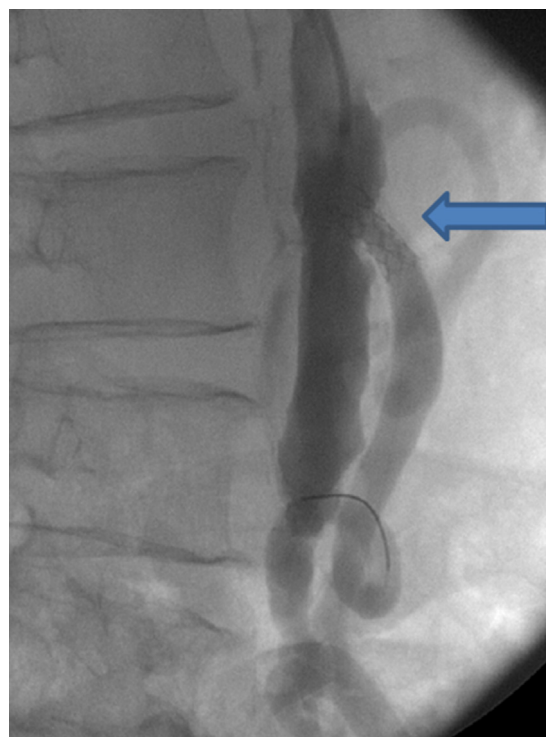
The patient reinitiated oral intake with no new episodes of abdominal pain. He was discharged with treatment including clopidogrel and pantoprazole. One year later, he has not returned to the emergency department, and periodic outpatient follow-up visits in the outpatient consultation have been satisfactory.

Chronic intestinal ischemia is an uncommon condition, given the large quantity of collateral arteries and variant vessels that supply blood to the intestine. It is associated with high morbidity and mortality as its main complication is massive intestinal infarction. Its main etiology is occlusive atherosclerotic disease (95%), especially in the ostia of the 3 main trunks that supply the intestines: celiac trunk, superior mesenteric artery and inferior mesenteric artery.

The most common symptom is postprandial abdominal pain that appears 10–30 minutes after oral intake and lasts 1–3 h. As the pain progressively increases, the patient eats less and loses weight as a result.<sup>1–4</sup> The diagnosis is based on symptoms and the angiographic examinations of the arterial lesions. The differential diagnosis includes gastroesophageal reflux disease, irritable bowel syndrome, peptic ulcer or gastritis, chronic pancreatitis, visceral cancer and vasculitis, such as polyarteritis nodosa.



**Fig. 1 – Stenosis at the beginning of the inferior mesenteric artery.**



**Fig. 2 – Repermeabilization after stent placement.**

In chronic intestinal ischemia, angiography, which can be therapeutic, is still the exploration of choice. It should be mentioned, however, that in many instances the diagnostic suspicion arises from abdominal CT, CT angiography or MRA.

Traditionally, the treatment of this disease has been surgical revascularization of the visceral arteries. Endarterectomy and artery implants have also been used. Each of these treatments has important morbidity and mortality associated with advanced age, cardiovascular state and, to a lesser degree, failed revascularization.<sup>2,5,6</sup> It is still the treatment of choice for patients who are fit or whose physical condition can be improved before surgery.

In the 1980s, this disease started to be treated with balloon angioplasty and stents, a minimally invasive percutaneous technique with lower morbidity and mortality rates than traditional surgery. When the literature is reviewed, the results obtained give mean success rates above 90% and good immediate clinical results in 85%. There has been greater success obtained in non-ostial than in ostial lesions. Stent implantation should always be considered the first option after successful angioplasty.<sup>2,3,6-9</sup> The technique is performed with local anesthesia and the patient can be discharged 24 h later, which reduces hospitalization times and increases patient comfort.<sup>2,10</sup> Nevertheless, even though the results are initially good, there is a greater percentage of restenosis and higher symptoms recurrence than in revascularization surgery.

When treating such cases, it is very important to understand the natural history of the disease while taking into account patient age, comorbidities and surgical risk. The decision-making process should be multidisciplinary and aimed at finding the best possible therapeutic option.<sup>3,10</sup>

## REFERENCES

1. Moawad J, Gewertz BL. Chronic mesenteric ischemia. Clinical presentation and diagnosis. *Surg Clin North Am.* 1997;77:357-69.
2. Hamdan SN, Gomez SG, Castro CP, Calderón L, Hurtado OE, Estrada G. Estenosis de la arteria mesentérica superior como

- causa de isquemia intestinal crónica. Tratamiento con angioplastia e implante de stent. *Medicrit.* 2005;2:21-4.
3. Keese M, Schmitz-Rixen T, Schmandra T. Chronic mesenteric ischemia. Time to remember open revascularization. *World Gastroenterol.* 2013;19:1333-7.
4. Debus ES, Müller-Hülsbeck S, Kölbl T, Iarena-Avellaneda A. Intestinal ischemia. *Int J Colorectal Dis.* 2011;26:1087-97.
5. Allen R, Martin G, Rees CH, Rivera F, Talkington C, Garret W, et al. Mesenteric angioplasty in the treatment of chronic intestinal ischemia. *J Vasc Intervent Radiol.* 1996;24:415-23.
6. Aschenbach R, Bergert H, Klerl M, Zangos S, Neumeister A, Schlosser A, et al. Stenting of stenotic mesenteric arteries for symptomatic chronic mesenteric ischemia. *Vasa.* 2012;41:425-31.
7. Baxter B, Pearce WH. Diagnosis and surgical management of chronic mesenteric ischemia. In: *Vascular Diseases: Surgical and Interventional Therapy.* 1994;795-802.
8. Rose S, Quigley T, Raker E. Revascularization for chronic mesenteric ischemia: comparison of operative bypass grafting and percutaneous transluminal angioplasty. *J Vasc Intervent Radiol.* 1995;6:339-49.
9. White CJ. Chronic mesenteric ischemia: diagnosis and management. *Prog Cardiovasc.* 2011;54:36-40.
10. Marín Manzano E, Haurie Girelli J, González de Olano D, Sánchez Del Corral J, Redondo López S, Núñez de Arenas Baeza G, et al. Endovascular therapy as an alternative treatment in chronic mesenteric ischemia. *Gastroenterol Hepatol.* 2007;30:340-2.

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