



Annoyed with Haemorrhoids? Risks of the Emborrhoid Technique

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Accepted: 6 July 2021

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Abstract

Haemorrhoids, a common ailment afflicting mostly Western patients, can produce bothersome symptoms, in particular pain, pruritus, and bleeding. There is a wide choice of surgical treatment options available for haemorrhoids in patients that cannot be treated with medical therapy, such as those that are prolapsed. Many patients refuse surgery due to the fear of potential complications; to overcome this obstacle, novel alternative techniques have been developed in recent years that are focussed on ligation or occlusion of haemorrhoidal arterial blood flow. We describe a patient who developed recto-sigmoidal ischaemia after embolization of the haemorrhoidal arteries, known as the “emborrhoid” technique, with persistence of rectal bleeding and progressive rectal stenosis.

Keywords Haemorrhoid · Emborrhoid · Sigmoidal-rectal ischaemia · Stenosis · Dilation

Abbreviations

Hgb	Haemoglobin
N.V.	Normal value
RDW	Red blood cells distribution width
NPO	Nihil per os

Case Report and Evolution

Haemorrhoidal disease, frequently encountered in the Western world, can cause major discomfort and inconvenience due to rectal bleeding, pain, and pruritus. Though there is a wide choice of surgical options available for haemorrhoids, in particular prolapsed haemorrhoids that cannot be treated with medical therapy, many patients refuse surgery due to the fear of potential complications. New techniques have been developed in recent years and, among them, embolization of haemorrhoidal arteries termed the “emborrhoid”

technique is a feasible option, with no reported major life-threatening complications [1].

A 58-year-old male with haemorrhoidal prolapse underwent embolization of the haemorrhoidal arteries in a private clinic using the “emborrhoid” technique. The patient’s main symptom was rectal bleeding; he had required a blood transfusion for massive blood loss lasting one month, resulting in blood loss anaemia superimposed on longstanding iron deficiency anaemia (**Hgb** 6 gr/dL—N.V. = 13–17; **MCV** = 68 fL—N.V. 81–98; **RDW** = 15.5%—N.V. 11.5–14.5; **Iron**: 6.5 μmol/L—N.V. 7–28.5; **Ferritin** 13.55 μg/L—N.V. 20–120; **Transferrin** 1.8 g/L—N.V. 2.5–3.8). After transfusion, the patient was prescribed iron tablets (ferrous sulphate 330 mg per day) to treat his chronic iron deficiency. Gastroscopy and colonoscopy were negative other than bleeding haemorrhoids. Given the ongoing blood loss and history of severe anaemia, combined with haemorrhoidal prolapse that precluded conventional non-surgical therapy, his clinical team including interventional radiologists opted for emborrhoid treatment in a private clinic. Previously, the patient had refused surgical therapy such as haemorrhoidectomy, stapled trans-anal rectal resection and other surgical treatments, fearing of postoperative pain. Alternative outpatient treatments such as rubber band ligation or sclerotherapy had been declined by the patient.

At the time of the intervention, Hgb value was 11.1 gr/dL. The patient had no comorbidities or allergies. A 5-F catheter was placed in the femoral artery enabling angiography

A profile of Lisa Fralleone is available at <https://doi.org/10.1007/s10620-021-07209-6>.

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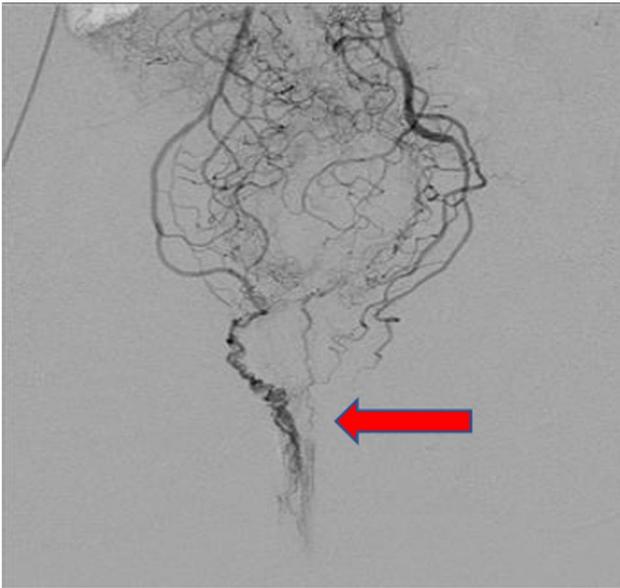


Fig. 1 Arteriography showing diffuse rectal bleeding (red arrow) during emborrhoid procedure

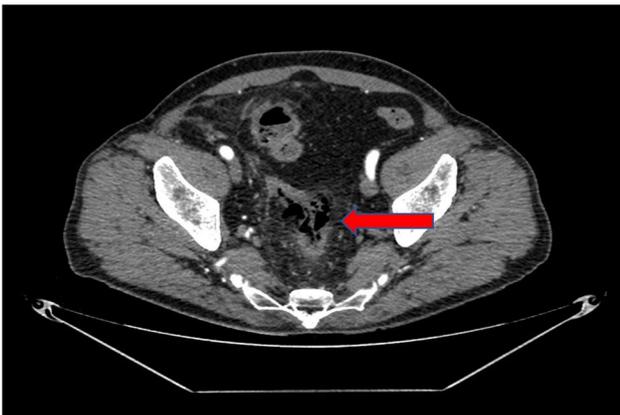


Fig. 2 Post-procedural CT scan showing recto-sigmoid ischaemia, with pneumatosis and peri-sigmoid oedema (red arrow)

of the lower mesenteric artery. Selective embolization of the four terminal branches of the superior rectal artery was then performed using micro-particles (Fig. 1). The procedure lasted 60 min, with no reported intraoperative complications. A compressive dressing on the site of the puncture was removed the day after with instructions to return, one month later, for follow-up and the prescription of antibiotic oral therapy for 4 days.

After 3 days, the patient complained of lower abdominal/pelvic pain associated with rectal bleeding and difficulties with stool evacuation. A CT scan suggested recto-sigmoid ischaemia with peri-sigmoid oedema, pneumatosis of the sigma rectum and a “covered” sigmoidal perforation (Fig. 2). An endoscopic examination revealed circumferential ulcers covered by fibrin with erythema and oedema from 6 cm

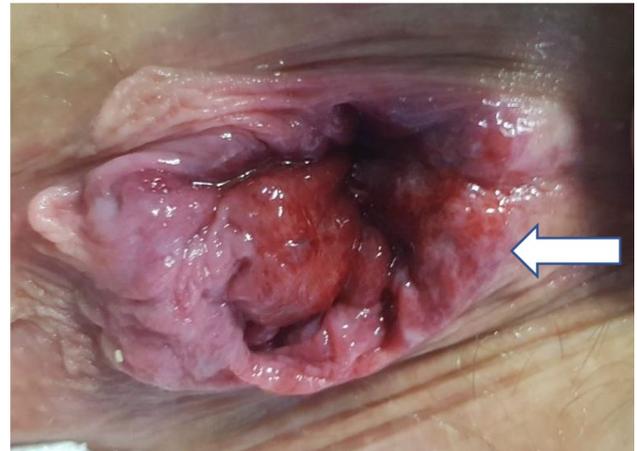


Fig. 3 Persistent haemorrhoidal prolapse (white arrow) after the emborrhoid technique

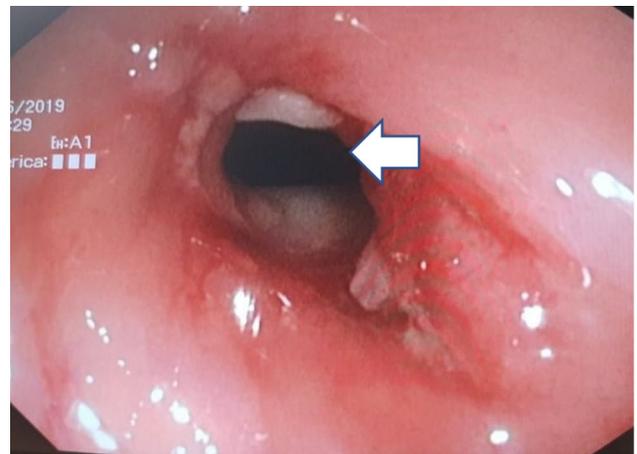


Fig. 4 Severe post-procedural recto-sigmoid stenosis (white arrow) as seen by a gastroscop

above the anal verge up to 14 cm. Three follow-up CT scans performed over a 3-week period confirmed ischaemic damage, with a progressive decrease in oedema and inflammation. The patient was treated conservatively on an outpatient basis with antibiotics, fluids and NPO.

Two months later, the patient came to our outpatient clinic complaining of persistent haemorrhoidal prolapse, rectal bleeding, and difficulties with evacuation together with liquid stool and bloating. Proctologic exam revealed grade IV bleeding haemorrhoids (Fig. 3). A preoperative red blood cell count showed chronic iron deficiency anaemia (Hgb: 7.5 gr/dL; MCV = 70 fL; **RDW** = 15%; **Iron**: 7.5 $\mu\text{mol/L}$; **Ferritin** 15 $\mu\text{g/L}$; **Transferrin** 2.1 g/L). Endoscopy revealed severe sigmoidal stenosis 15 cm from the ano-cutaneous line, with 1 cm proximal extension that could not be traversed with the colonoscope, requiring careful attempts with a gastroscop (Fig. 4). A 3D CT scan confirmed segmental recto-sigmoid stenosis, without any residual perforation

(Fig. 5a, b). Three endoscopic dilation sessions were performed using a balloon dilator (Boston Scientific): 14 mm in diameter during the first session, 18 mm in the second session 3 weeks later and 20 mm in the third session 1 month after the second session.

At the time of the second endoscopic dilation procedure, due to severe persistent iron deficiency anaemia, the haemorrhoids were treated by surgery using the Milligan–Morgan technique with LigaSure™ small jaw. After a 6-month follow-up, the patient had no functional rectal stricture, with no abdominal pain or bloating and solid stools. There was no residual haemorrhoidal prolapse, and his haemoglobin value was almost normal (Hbg: 12.3 gr/dL).

Discussion

A minimally invasive approach has been proposed in recent years for the treatment of haemorrhoidal disease in order to avoid complications associated with the traditional surgical technique. Many studies have demonstrated the efficacy of embolization of the superior rectal arteries for acute rectal bleeding of all origins, using coils or micro-particles. In 2014, Vidal et al. [1] were the first to describe the use of arterial embolization of the superior rectal arteries as a treatment for haemorrhoids in three patients using the “emborrhoid” technique. A clear advantage of this technique is the ability to map the superior rectal arterial vascular network. They selected three patients who were not suitable for conventional surgery due to comorbidities or a history of rectal operations, embolizing with micro-coils. The only complication was anal irritation, similar to the results of the second study published in 2015 [2]. In 2018 [3], Tradi et al. described their experience among 25 patients with haemorrhoidal disease treated with embolization, using micro-coils

in all cases. In their study, 11 patients underwent a second embolization during the first year of follow-up due to symptom persistence, without complications. Other authors [4] reported tenesmus (probably due to a transient rectal inflammation due to ischaemia) or complete success, with the same percentage described by another report from the Vidal group [5]. A common complication reported in almost all the studies performed by Vidal’s group [1–5] was the need for a second or third embolization in order to resolve the recurrence of bleeding occurring within a short period after the first embolization. In other reports, the procedure was also unsuccessful in a large percentage of cases, i.e. 28% of patients in the series by Moussa et al. [6].

Zakharchenko et al. [7] reported a study including 40 patients, where embolization was performed using polyvinyl alcohol (PVA) particles and metallic coils. They evaluated blood flow via a Doppler exam defining success as the cessation of rectal discharge and a reduction in measured haemorrhoidal size 1 month after embolization. They reported no major complications, underlining the importance of using micro-particles in order to increase effectiveness without increasing the risk of ischaemia. More recent research [8] has evaluated the success of the emborrhoid technique based on instrumental and clinical criteria, reporting no complications. In contrast, Han et al. [9] reported fever as a common complication (11/32 patients—32.4%) after the procedure. A review of the literature [10] revealed no major complications of embolization using the emborrhoid technique when the persistence of rectal bleeding and the need for additional embolization procedures were excluded as complications (Table 1).

Even in the case of gastrointestinal bleeding, major complications are not uncommon in cases of interventional radiology or embolization as described in literature. Yap et al. [11], in a review of the outcomes among 95 patients

Fig. 5 **a** and **b** Post-procedural 3D-CT scan, showing segmental recto-sigmoid stenosis (red arrows)

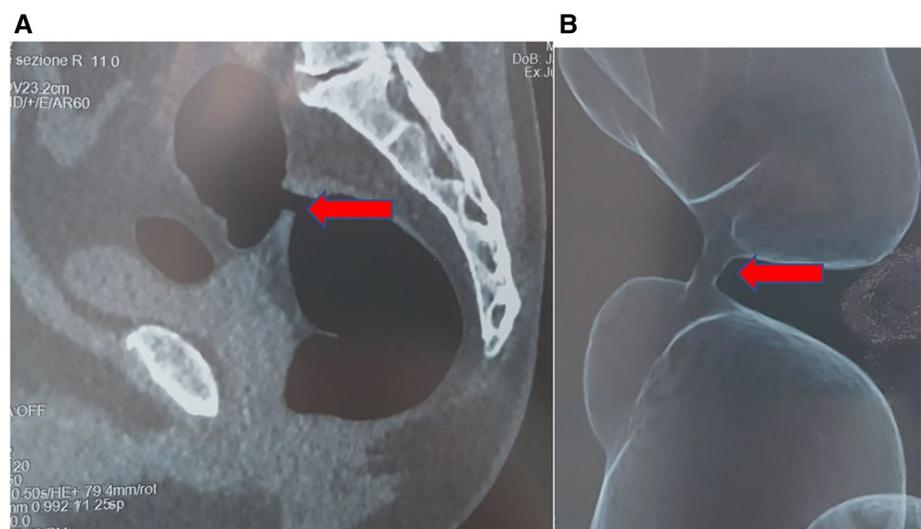


Table 1 Review of complications associated with the emborrhoid technique

Author (ref)	Vidal (1)	Vidal (2)	Moussa (6)	Zakharchenko (7)	Tradi (3)	Moggia (5)	Iezzi (8)	Han (9)
Year	2014	2015	2015	2016	2018	2021	2021	2021
Number of patients	Pts 3	Pts 14	Pts 30	Pts 40	Pts 24	Pts 16	Pts 12	Pts 32
Anal irritation/tenesmus	1	1	–	–	4	–	–	17
Recurrence of bleeding	1	4	8	–	7	2	1	5
Rectal ischaemia	0	0	0	0	0	0	0	0
Fever	0	0	0	0	0	0	0	11

treated with trans-catheter embolization for gastrointestinal bleeding, reported a respective incidence of 4% and 3% of bowel ischaemia and coil migration. In our case the patient, a relatively young male affected by severely bleeding haemorrhoids and consequent blood loss anaemia, was immediately treated with emborrhoid technique. He had previously refused outpatient treatments such rubber band ligation or sclerotherapy fearing recurrence, as well as excisional surgery such as haemorrhoidectomy fearing complications. The option of emborrhoid, usually reserved to selected patients with proven contraindications to surgery, was the first line of chosen treatment in the private clinic, despite recommendations otherwise in the literature [12]. The patient experienced recto-sigmoid ischaemia as a complication shortly after the procedure, as well as rectal stenosis 2 month later. At the time of the late complication, our clinical group (composed by gastroenterologists, endoscopists and surgeons) cared for the patient in the hospital. We presumed that migration of micro-particles after the emborrhoid procedure caused the ischaemic damage due to the delayed onset of complications. To avoid the need for major rectal resection and a stoma, the patient underwent endoscopic dilation in three separate sessions, with a surgical haemorrhoidectomy performed during the second session in order to control severe anaemia.

Conclusions

The safety and efficacy of the emborrhoid technique, relative to more established procedures such as band ligation and sclerotherapy in patients considered inappropriate for or refusing surgical therapy, is unknown. The technique, though promising, should be used only in carefully selected cases after a full discussion of its pros and cons with the prospective patient, including the possibility of life-threatening complications such as rectal ischaemia, and informing the patient that the procedure is considered to be experimental according to the UK National Institute for Health and Care Guidance [13]. Larger studies will be required to define the efficacy, recurrence rate and complications associated with the procedure.

Key Messages

- The emborrhoid technique is an alternative to the traditional non-surgical and surgical treatments of haemorrhoids.
- The procedure should be limited to patients in whom no other treatment is possible or to research studies, due to limited experience and potential risks associated with this technique.

Declarations

Conflict of interest All authors declare that they have no conflict of interest pertinent to this case presentation.

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