

Massive Rectal Hemorrhage from a Profunda Femoris–Mediated Collateral Pathway Successfully Treated with Transcatheter Arterial Embolization: A Rare Case Report

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Introduction

Transcatheter arterial embolization (TAE) is a crucial treatment for severe lower gastrointestinal bleeding, especially for high-risk patients. As for rectal bleeding, responsible arteries usually originates from branches of the inferior mesenteric or internal iliac arteries.

Here, we describe a rare case in which a collateral pathway from the profunda femoris artery, through the medial femoral circumflex artery (MFCA) and obturator artery, supplied the middle rectal artery and caused massive rectal hemorrhage.

Case Presentation

History of present illness:

- An 80-year-old man
- Sudden onset of acute myocardial infarction (Killip class IV) causing cardiogenic shock, and was hospitalized to cardiovascular intensive care unit.
- On hospital day 2, extracorporeal membrane oxygenation (ECMO) and mechanical ventilation were initiated.
- Minor hematochezia was noted on hospital day 7, and on hospital day 10 sudden massive hematochezia and hemodynamic collapse occurred.

Medical history :

Hypertension , post thyroidectomy for Graves' disease.

Physical examination (hospital day 10):

BP 77/60 mmHg (under norepinephrine infusion at 0.4 µg/kg/min) , HR 117 beats/min.

Laboratory tests on hospital day 10 demonstrated a rapid decline in hemoglobin (from 9.3 g/dL previous day to 8.0 g/dL) and worsening coagulopathy (platelet count $63 \times 10^3/\mu\text{L}$, PT-INR 1.47, and APTT 42.1 s).

Imaging Findings

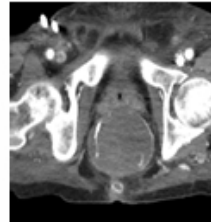


Fig. 1 Dynamic CECT of day 10. Multiple contrast extravasation in the rectum is shown

Contrast-enhanced CT demonstrated multiple sites of rectal extravasation. Colonoscopy showed circumferential friable ulceration in the lower rectum, and two bleeding points were treated with coagulation.

Further endoscopic therapy was discontinued because intestinal hypoperfusion was suspected and additional intervention carried a high risk of perforation. Several hours later, hematochezia recurred, prompting emergent TAE for rapid, minimally invasive hemostasis.

Under local anesthesia, a 4-Fr sheath was inserted via the right common femoral artery. Selective SMA, IMA and IIA angiography showed no active bleeding, and severe atherosclerosis was observed.

For further examination, right EIA angiography was performed and revealed rectal extravasation. Selective angiography identified a collateral pathway from the profunda femoris artery through the MFCA and obturator artery to the middle rectal artery as the bleeding source. Left-sided access was unavailable because of a 16.5-Fr ECMO arterial cannula in the left common femoral artery, so embolization was performed from the right common femoral approach. After ipsilateral selection using a 4-Fr catheter looped in the SMA, a triple-coaxial system was advanced to position the microcatheter tip near the bleeding point. Embolization was performed with a 1:3 mixture of NBCA and iodized oil.

Post-embolization angiography confirmed disappearance of extravasation. Hemodynamics improved promptly without recurrent bleeding, although the patient died 7 days after TAE from multiple organ failure due to NOMI.

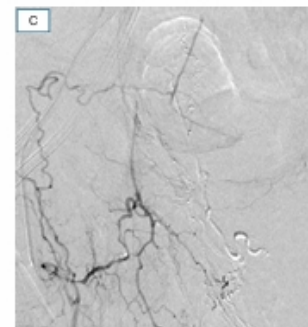
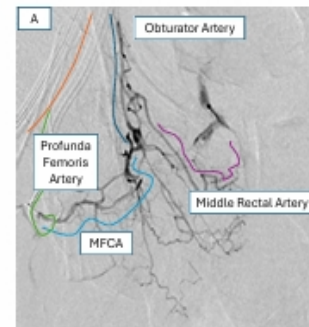


Fig Angiography before and after embolization: (A) (B) pre-embolization and (C) post-embolization. (A) (B) Injection from the right medial femoral circumflex artery (light blue) demonstrates extravasation via collateral flow through the obturator artery and middle rectal artery (purple). (C) Post-embolization angiography confirms a disappearance of extravasation.

Discussion

Endoscopic hemostasis is the first-line treatment for lower gastrointestinal bleeding because it allows minimally invasive diagnosis and therapy.

Rectal bleeding usually arises from the superior rectal artery from the IMA or the middle and inferior rectal arteries from the IIA. However, the middle rectal artery shows anatomical variation and may rarely originate from the obturator artery. Origin from the obturator artery has been reported in approximately 2.5–4% of anatomical studies, representing a relatively uncommon variant^{1,2}.

	Bilhim	Kim
Frequency of occurrence	35.9	-
Internal pudendal artery (%)	60	44
Inferior gluteal artery (%)	21.3	25
Gluteopudendal trunk (%)	16.2	8
Obturator artery (%)	2.5	4
Internal iliac artery (%)	-	4
Inferior vesical artery (%)	-	8
Prostatic artery (%)	-	4

Table 1. Origin and anatomical varieties of the middle rectal artery

In this case, severe atherosclerotic stenosis or occlusion of the right IIA likely contributed to the development of this collateral circulation. Previous studies have shown IIA interruption or occlusion promotes formation of multiple pelvic collateral pathways, among which the route from the MFCA to the obturator artery is recognized as a major collateral channel³.

This unusual external iliac–profunda femoris collateral pathway has rarely been reported as a dominant bleeding source⁴.

Conclusion

When rectal bleeding cannot be localized to the usual arterial sources, particularly in patients with severe atherosclerosis, collateral pathways from the EIA–profunda femoris system should be considered.

References

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