Superior Rectal Artery Embolization for Hemorrhoid Management

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PURPOSE & BACKGROUND

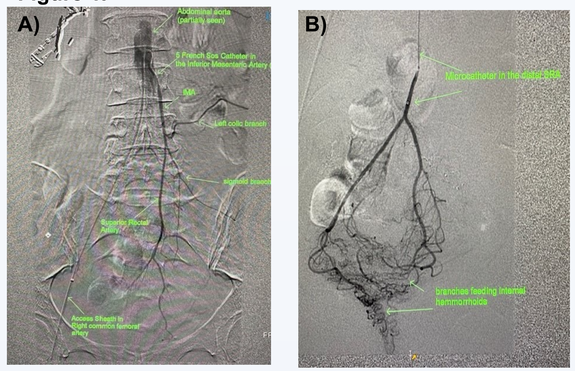
Superior rectal artery (SRA) embolization holds promising potential in sufficient management of complex hemorrhoids. Hemorrhoids are characterized by dilated arteriovenous blood vessels and connective tissue along the anal wall resulting from increased strain or intra-abdominal pressure[1]. The SRA is located at the end branch the inferior mesenteric artery, which courses into the pelvic cavity in the sigmoid mesocolon. Trifurcating into the upper rectal and bilateral terminal branches, the left and right branches further divert into smaller branches supplying blood to the rectal wall, therefore contributing to internal hemorrhoids etiology. It is important to note that these hemorrhoids are not varicose veins and should not be confounded with anorectal varicose veins typical of portal hypertension.

Diagnosis requires careful clinical examination, with hemorrhoids presenting in three major types: internal (above the dentate line), external (below the dentate line), or mixed (above and below dentate line). Anal and rectal endoscopy allows for determination of the degree of protrusion and grading for appropriate clinical action. Internal hemorrhoids are classified into four grades dependent on the degree of prolapse. Typically, grades 1 and 2 are treated conservatively (anal hygiene and anti-inflammatory ointment), while grades 3 and 4 are treated surgically (Milligan-Morgan hemorrhoidectomy)[1]. However, in recurrent cases or when the patient does not qualify as a surgical candidate, alternative endovascular treatments should be utilized for the embolization of the SRA and occlusion of hemorrhoids.

MATERIAL AND METHODS

We present the case of a 57-year-old female with history of intermittent bleeding and several visits to the ER for blood transfusion. The surgical team reported that the hemorrhoids were not in an area surgically accessible. In accordance, interventional radiology proceeded with coil embolization of the superior rectal artery. To begin, a 21-gauge micropuncture needle was advanced into the common femoral artery under direct ultrasound guidance. The needle was exchanged for a 0.018 wire for a 5 French coaxial dilator. A 5 French sauce catheter was then advance over the wire before the wire's removal, forming the catheter within the abdominal aorta. Selective catheterization of the inferior mesenteric artery was then performed. Digital subtraction angiography was performed of the left colic artery and sigmoid branches, and the superior rectal artery was identified.

Figure 1.



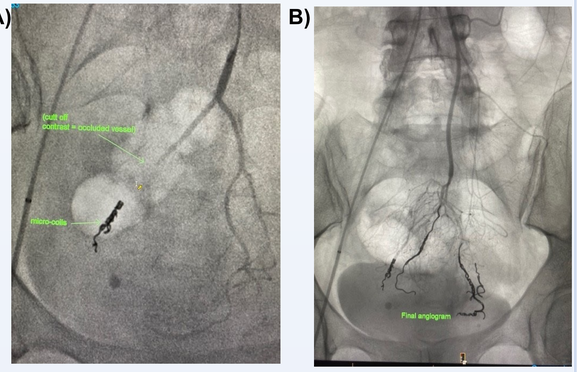
A) *Accessory pathway to reach the SRA.* ***B)*** *Initial angiography of internal hemorrhoid and supplying vasculature.*

A 2.6 French microcatheter was advanced into the inferior mesenteric artery for cannulation of the left and right branches of the superior gluteal artery. Advancing distally into selective branches of the SRA, coil embolization via repeat coils was preformed on the primary right branches. Retracting into the left superior gluteal artery the catheter was advanced over the wire into the distal branches of the SRA to perform coil embolization, working distal to proximal. Bilaterally, a total of nine ruby coils were deployed, varying in size between 2 and 3 mm. The catheter was retracted into the distal inferior mesenteric artery (IMA).

RESULTS

Contrast injected into the primary SRA branches demonstrated decreased flow into the rectal and perirectal regions. In addition, the patient's final angiogram in the distal inferior mesenteric artery similarly displayed decreased vascular flow into the rectal region. When contrast was introduced through the guide catheter demonstrated flow into the IMA and branches was demonstrated, with intentional and successful decreased flow identified in the coiled segment. Confirmatory hemostasis was attempted with a minx closure device and failed. However, using manual compression the desired hemostasis was achieved. Fluoroscopy time totaled 23.7 minutes with an overall sedation time of one hour. The patient tolerated the procedure with no immediate complications. The patient's original indication was persistent rectal bleeding resulting from multiple internal hemorrhoids. Post-operatively, the final impression was the coil embolization of the superior rectal artery to obstruct vascular supply and ultimately successful occlusion of multiple internal hemorrhoids.

Figure 2. ***A)*** *SRA primary branches with contrast displaying successful occlusion of vessels and* ***B)*** *Final angiogram highlighting all nine ruby coils deployed and successful occlusion to obstruct supplying vasculature feeding the patient's internal hemorrhoids.*



CONCLUSIONS

SRA embolization is a minimally invasive endovascular treatment for symptomatic hemorrhoids refractory to conventional surgical intervention. This procedure provides an alternative for internal hemorrhoids non-manageable from conservative treatment and has shown effective reduction of rectal bleeding and irritative symptoms. Although first described in 1994, SRA embolization is not a widespread treatment of symptomatic hemorrhoids, despite the procedure's high success rate, no reported serious early complications, and increased patient satisfaction[2]. In this report, the methodologies, outcomes, and radiologic imaging of the successful occlusion and management of internal hemorrhoids were outlined. Moving forward, larger comparative and long-term studies are needed to more accurately characterize this promising treatment in relation to current open-surgery hemorrhoidectomies.

REFERENCES

1 Sirakaya, M., Sharma, R. Superior rectal artery embolization. Reference article, Radiopaedia.org. (accessed on 28 Dec 2021) https://doi.org/10.53347/rID-78284