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Title: Embolization of the hemorrhoidal arteries (the emborrhoid technique): a new concept and challenge for interventional radiology

Summary:
First published report of HAE - a 2014 French case series demonstrating the feasibility and safety of endovascular coil embolization to treat symptomatic hemorrhoids, particularly in patients unsuitable for surgery.

Abstract:
Elective transanal Doppler-guided hemorrhoidal artery ligation (DG-HAL) has recently been shown to be effective in hemorrhoidal disease. It consists of ligating the terminal branches of the superior rectal artery under Doppler guidance, in order to reduce the hemorrhoidal arterial blood flow and improve the symptoms. By analogy, we propose performing this arterial occlusion using the "emborrhoid" technique (embolization of the hemorrhoidal arteries), in which arterial occlusion is achieved via the endovascular route using coils placed in the terminal branches of the superior rectal arteries. Three patients have been treated by this new technique, and the observations show that it is feasible and reproducible, with no ischemic complications or pain. Additional studies are needed to evaluate the efficacy of this technique for the treatment of hemorrhoidal disease.

Reference:

Vidal V, Louis G, Bartoli JM, Sielezneff I. Embolization of the hemorrhoidal arteries (the emborrhoid technique): a new concept and challenge for interventional radiology. Diagn Interv Imaging. 2014 Mar;95(3):307-15. doi: 10.1016/j.diii.2014.01.016. Epub 2014 Feb 28. PMID: 24589187.
https://pubmed.ncbi.nlm.nih.gov/24589187/

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2

Title: Catheter-directed hemorrhoidal embolization for rectal bleeding due to hemorrhoids (Goligher grade I-III): prospective outcomes from a Spanish emborrhoid registry

Summary:

Catheter-directed hemorrhoidal embolization achieved 100% technical success in 80 patients with grade I–III hemorrhoids and persistent bleeding. At 12 months, 69% had complete resolution of bleeding; 21% required a second embolization. No major complications were observed, and patient satisfaction remained high, highlighting HAE as a safe, well-tolerated, sphincter-preserving outpatient option.

Abstract:
Objectives: To evaluate the safety and efficacy of catheter-directed hemorrhoidal embolization (CDHE) by microcoil embolization for rectal bleeding due to hemorrhoids classified as Goligher grade I-III.
Methods: Eighty patients (62.5% males) with a mean age of 48 ± 9 years were recruited prospectively. All patients had symptomatic bleeding hemorrhoids. All patients were classified according to Goligher classification: grade I (13.7%), grade II (71.1%), grade III (15%), and no grade IV were recruited in this study. In all cases, microcoils were used to embolize the superior rectal artery(SRA), and microspheres if recurrence of bleeding occurred. Follow-up evaluation (1, 3, 6, and 12 months) included clinical examination and anoscopy. A questionnaire was conducted to determine improvement regarding bleeding, quality of life before, and the degree of patient satisfaction of each participant.
Results: Technical success was achieved in 100% of the cases. Fifty-five (68.7%) participants had the absence of rectal bleeding after 12 months of embolization. VAS and QL improved 4 points and 1.5 respectively after embolization. A total of 25/80 (31.3%) had a recurrence in rectal bleeding. Seventeen (21.3%) patients underwent a second embolization, and four patients (5%) were treated with open hemorrhoidectomy. No major complications were observed. Sixteen participants had minor complications. Subjective post-treatment symptom and QL surveys showed significant differences from the baseline survey. Likewise, the degree of satisfaction in the telephone survey at 12 months revealed a high degree of patient satisfaction (8.3±1.1).
Conclusions: The present study demonstrates that CDHE is a feasible, well-tolerated, ambulatory, anal sphincter-sparing procedure for the treatment of internal hemorrhoids.
Clinical relevance statement: CDHE is a simple procedure, well tolerated and accepted by patients, that preserves the anal sphincter and presents few complications when metal devices or microspheres are used as embolic agents.

Reference:
De Gregorio MA, Guirola JA, Serrano-Casorran C, Urbano J, Gutiérrez C, Gregorio A, Sierre S, Ciampi-Dopazo JJ, Bernal R, Gil I, De Blas I, Sánchez-Ballestín M, Millera A. Catheter-directed hemorrhoidal embolization for rectal bleeding due to hemorrhoids (Goligher grade I-III): prospective outcomes from a Spanish emborrhoid registry. Eur Radiol. 2023 Dec;33(12):8754-8763. doi: 10.1007/s00330-023-09923-3. Epub 2023 Jul 17. PMID: 37458757.
https://pubmed.ncbi.nlm.nih.gov/37458757/

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3

Title: Common design and data elements on rectal artery embolization for treatment of symptomatic internal hemorrhoidal disease: an interactive systematic review of clinical trials

Summary:
A systematic review of 15 studies on HAE for internal hemorrhoids shows promising safety and efficacy, with high technical success (72–100%) and clinical success rates (83–93%). HAE is particularly suitable for high-risk surgical candidates and bleeding-predominant internal hemorrhoids.

Abstract:
Background: Internal hemorrhoids (IH) is a common medical condition that can result in morbidity secondary to bleeding and discomfort. Treatment for IH has traditionally consisted of dietary and conservative medical management, focal treatments including banding and sclerotherapy or hemorrhoidectomy. Recently, rectal artery embolization (RAE) has been studied as a potential treatment for bleeding predominant IH. We performed a common design and data element analysis of studies that report on RAE.
Materials and methods: We conducted a qualitative systematic literature review for rectal artery embolization (RAE) for symptomatic hemorrhoidal disease. The screening process involved five online databases (PubMed, Embase, Google Scholar, DOAJ, and Scopus). Additionally, ClinicalTrials.gov was examined for active, unpublished completed studies. The initial search yielded 2000 studies, with 15 studies meeting the inclusion criteria after screening and assessment. The included studies comprised one RCT, one case series, one pilot study and 12 cohort studies.
Results: The population analysis revealed a male predominance across all studies, with varying cohort sizes. The baseline Goligher hemorrhoid grade was utilized in 80% of studies. The majority (73.3%) employed a transfemoral approach, and coils were the primary embolic material in 60% of studies, 26.6% were combination of coils and particles, and 6.6% were particles only. Patient selection criteria highlighted RAE's applicability for high surgical risk patients and those with anemia, chronic hematochezia, or treatment-refractory cases. Exclusion criteria emphasized factors such as previous surgeries, colorectal cancer, rectal prolapse, acute hemorrhoidal complications, and contrast allergy. Study designs varied, with cohort studies being the most common (12/15; 80%). Procedural details included the use of metallic coils and detachable micro-coils, with a high technical success rate reported in most studies ranging from 72 to 100%. The follow-up ranged from 1 to 18 months. The majority of studies reported no major immediate or post-procedural complications.
Conclusion: While all studies focused on RAE as a treatment for IH, there was a great degree of heterogeneity among included studies, particularly regarding inclusion criteria, exclusion criteria, outcomes measures and timeframe. Future literature should attempt to standardize these

design elements to help facilitate secondary analyses and increase understanding of RAE as a treatment option.

Reference:

Morsi S, Linares Bolsegui M, Kobeissi H, Ghozy S, Kallmes DF, Kelley SR, Mathis KL, Dozois EJ, Loftus CG, Bendel EC, Vidal V, Thompson SM. Common design and data elements on rectal artery embolization for treatment of symptomatic internal hemorrhoidal disease: an interactive systematic review of clinical trials. CVIR Endovasc. 2024 May 11;7(1):45. doi: 10.1186/s42155-024-00458-2. PMID: 38733497; PMCID: PMC11088570. https://pubmed.ncbi.nlm.nih.gov/38733497/

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4

Title: Hemorrhoid embolization: A review of current evidences

Summary:
Systematic review of 14 studies (≈250 patients, Grades I–III):

- Technical success 93–100%; clinical success 63–94%.
- The Emborrhoid technique—endovascular embolization of the superior rectal arteries—safely reduces hemorrhoidal bleeding while preserving anal tone and avoiding postoperative pain.
- No major complications reported; minor effects limited to transient abdominal discomfort or tenesmus.

Abstract: Hemorrhoids are local vascular structure dilations in the lower rectum, associated with morbidity and reduced quality of life. Endovascular coil or particle embolization of the superior rectal arteries, known as Emborrhoid technique, is a minimally invasive, image-guided therapy that targets the hemorrhoidal plexus and reduces hemorrhage. The purpose of this review was to analyze the results of published studies to determine the efficacy, clinical outcomes, and morbidities associated with the endovascular occlusion of hemorrhoidal arteries for the treatment of internal hemorrhoids. Current evidences suggest that hemorrhoids treated by Emborrhoid technique using microcoils, embolic particles or a combination is safe with no reported serious complications. Hemorrhoid embolization can preserve the anal tone without direct anorectal trauma and maintain the hemorrhoidal tissue in place requiring minimal local wound care on an outpatient basis. However, due to the paucity of high-quality trials, further research is warranted to evaluate its long-term outcomes, compare its efficacy with other treatment modalities, and fully assess its role in the treatment of hemorrhoid.

Reference: Talaie, Reza et al. “Hemorrhoid embolization: A review of current evidences.” *Diagnostic and interventional imaging* vol. 103,1 (2022): 3-11. doi:10.1016/j.diii.2021.07.001

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Title: Catheter-Directed Hemorrhoidal Dearterialization Technique for the Management of Hemorrhoids: A Meta-Analysis of the Clinical Evidence

Summary:
Meta-analysis of 14 studies (n=362, mean 12-month follow-up):

- Technical success 98%; clinical success 79%.
- Confirms feasibility, safety, and sustained efficacy of HAE for treatment of hemorrhoidal bleeding.

Abstract:
Purpose: To assess the efficacy and safety of a catheter-directed hemorrhoidal dearterialization technique for the management of hemorrhoidal bleeding.
Materials and Methods: A systematic review and meta-analysis of pubmed, cochrane, and scopus databases was conducted according to the preferred reporting items for systematic reviews and meta-Analysis (PRISMA) guidelines. Clinical studies reporting on catheter-directed hemorrhoidal dearterialization for rectal bleeding were analyzed.
Results: Fourteen studies (n = 362) were identified. The mean maximum follow-up duration was 12.1 months (SD, 7.31; range, 1–28; median, 12), and the mean length of hospital stay was 1.5 days (SD, 1.1; range, 0–2.5). The mean technical success was 97.8% (SD, 3.5), and the mean clinical success was 78.9% (SD, 10.5). A statistically significant reduction in the french bleeding score before and after embolization was noted (P = .004). In subgroup analysis, when the coils-only group was compared with the coils and particles group, the average rebleeding rate was 21.5% (n = 111; SD, 18.2; range, 0%–44%) versus 10.05% (N = 108; SD, 4.8; range, 5%–15.7%), respectively (P < .0001). No bowel ischemia/necrosis or anorectal complications were reported.
Conclusions: The current preliminary clinical evidence suggests that catheter-directed hemorrhoidal dearterialization is an effective and safe procedure for the treatment of hemorrhoidal bleeding. The standardization of the technique and the generation of higher level evidence will be required to compare this minimally invasive procedure with more invasive surgical options for patients with grades I–III hemorrhoids and chronic bleeding.

Reference:

Makris GC, Cousins C, Little MW, Boardman P, Belli AM. Catheter-directed hemorrhoidal dearterialization technique for the management of hemorrhoids: a meta-analysis of the clinical evidence. J Vasc Interv Radiol. 2021;32(8):1119-1127.

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Title:

Summary:

Abstract:

Reference: