

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

Clinical Paper Review

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Purpose

To assess the efficacy and safety of a catheter-directed hemorrhoidal dearterialization (CDHD) technique for management of hemorrhoidal bleeding

Methods

- Systematic review and meta-analysis of clinical studies reporting on CDHD for rectal bleeding
- Search of PubMed, Cochrane, and Scopus databases
- Followed the 2009 Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines
- Characteristics of included studies:
 - Human patients who had rectal bleeding as a result of confirmed hemorrhoidal disease in an acute or elective setting
 - Treatment with CDHD
 - Recruited 5 or more patients
 - Reported on clinical outcomes after CDHD

Results

- Of 141 studies identified, 14 studies (N = 362 participants) met all inclusion criteria (8 prospective studies and 6 retrospective studies)
- A variety of embolization materials were used: coils alone in 6 studies, combination of coils and particles, with or without other agents, in 7 studies, and spherical embolics in 1 study
- All patients underwent superior rectal artery embolization until complete lack of contrast opacification of all superior rectal artery (SRA) branches on fluoroscopy
- There was no statistically significant difference in technical success between patients treated with coils alone vs coils and particles

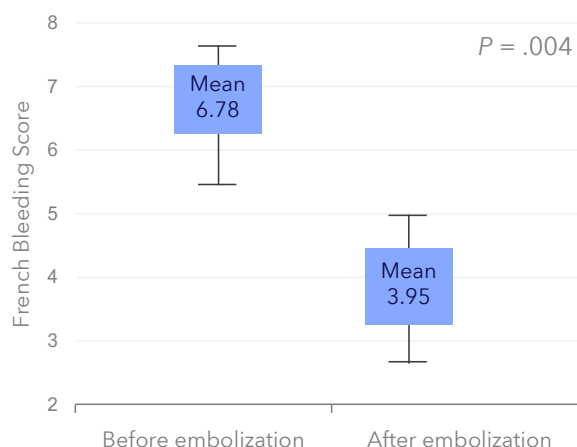
Results (continued)

Procedure and follow-up characteristics

Mean maximum follow-up duration	12.1 months (SD, 7.3) range, 1-28
Mean length of hospital stay	1.53 days (SD, 1.1) range, 0-2.5
Mean technical success	97.8% (SD, 3.5%) range, 90%-100%
Mean clinical success	78.9% (SD, 10.6%) range, 66%-96.9%

French bleeding score before and after rectal artery embolization

Author	Mean French Bleeding Score		
	No. of patients	Before embolization	After embolization
Giurazza et al, 2020	5	7.6	5
Moussa et al, 2017	30	7	4
Moussa et al, 2020	38	7	4
Tradi et al, 2018	25	5.5	2.8



Bleeding, pain, and hemorrhoid size

- Four studies (n = 98 patients) reported bleeding scores before and after embolization
- Mean bleeding score decreased from 6.78 (SD, 0.90; range, 5.5-7.6) before embolization to 3.95 (SD, 0.90; range, 2.8-5) after embolization
- Recurrence of bleeding was described in 11 studies:
 - On average, bleeding recurred in 22.5% of patients (range, 5.4%-44%)
 - Of these, 5%-43% required embolization of additional vessels (7 studies)
- The average rebleeding rate was 21.5% (n = 111; SD, 18.2; range, 0%-44%) for coils-only compared with 10.1% (N = 108; SD, 4.8; range, 5%-15.7%) for coils and particles ($P < .0001$)
- In the 6 studies that reported the effect of CDHD on pain, all reported significant pain relief
- In the 4 studies that assessed hemorrhoid size, all reported hemorrhoid size was reduced to a significant degree after embolization

Results (continued)

Complications

- Minor complications were reported, including mild postoperative pain, bleeding, fever, constipation, and tenesmus, which resolved with conservative treatment
- One study reported one major complication of thrombosis at the puncture site in the right common femoral artery for endovascular access. Another study reported a single incident of inferior mesenteric artery dissection with no bowel ischemia. There were no reports of major complications such as bowel infarction or ischemia or anal canal stenosis

Discussion

- The majority of studies included patients with Grade II-III hemorrhoids in their 60s or younger, mostly males, who were not good surgical candidates
- The success rate of embolizing superior rectal arteries was nearly 100% in most studies
- A large contributing inferior rectal artery or middle rectal artery was a common cause of recurrent bleeding that typically resolved with embolization of these other feeding vessels
- Safety profiles were similar for embolization with coils only and coils plus particles

Limitations

- Small number of patients in each study
- Only 2 studies were comparative and these were not randomized or blinded
- 10 of the 14 studies did not quantify change in bleeding before and after embolization
- Follow-up periods were variable and were not as long as follow-up in studies of surgical treatments
- Various embolization techniques and embolic agents were used
- Various questionnaires were used to quantify pain
- Potential publication bias, whereby negative results are less likely to be published

Authors' Conclusion

This meta-analysis found preliminary evidence that CDHD is safe and effective for chronic rectal bleeding from hemorrhoids. Standardization of the technique is needed and further research is needed to compare this minimally invasive procedure with surgical options for grades I-III hemorrhoids and chronic bleeding.

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