Vascular ectasia



Dr Somayeh Bahrami
Gastroenterologist – Firoozgar Hospital

- Medical condition characterized by the presence of abnormally dilated , thin walled blood vessels in mucosa or submucosa of GI tract.

Angiodysplasia

- in patients older than 60 years
- the prevalence is not well known
- increased in patients with end-stage kidney disease

  von Willebrand disease, and possibly aortic stenosis
- synchronous lesions are found in approximately 20 percent

Conditions associated with angiodysplasia

- End-stage kidney disease
  - approximately 20 and 30 percent of episodes of upper and lower GI bleeding
  - associated with uremia-induced platelet dysfunction
- von Willebrand disease
- Aortic stenosis
  - Bleeding from angiodysplasia in patients with AS has been called Heyde syndrome
  - improves in most patients after aortic valve replacement (AVR)
- Left ventricular assist devices (LVAD)
  - acquired von Willebrand disease.

Pathophysiology

- **Morphology** — dilated vessels in the mucosa and submucosa, sometimes covered by only a single layer of surface epithelium
- **Venous obstruction** — often occurs in the right colon where wall tension is highest.
- **Angiogenic factors** —angiopoietin 1 and 2, as well as TNF in the development of lesions in the small bowel
- **Acquired von Willebrand disease**

Classification of gastrointestinal angiodysplasia

Classification of gastrointestinal angiodysplasia

Location
Gastric
Duodenal
Jejunal
Ileal
Colonic
Size
Minute (<2 mm in diameter)
Intermediate (2 to 5 mm)
Large (>5 mm)
Number of lesions
Unique (n = 1)
Multiple (n = 2 to 10)
Diffuse (n >10)

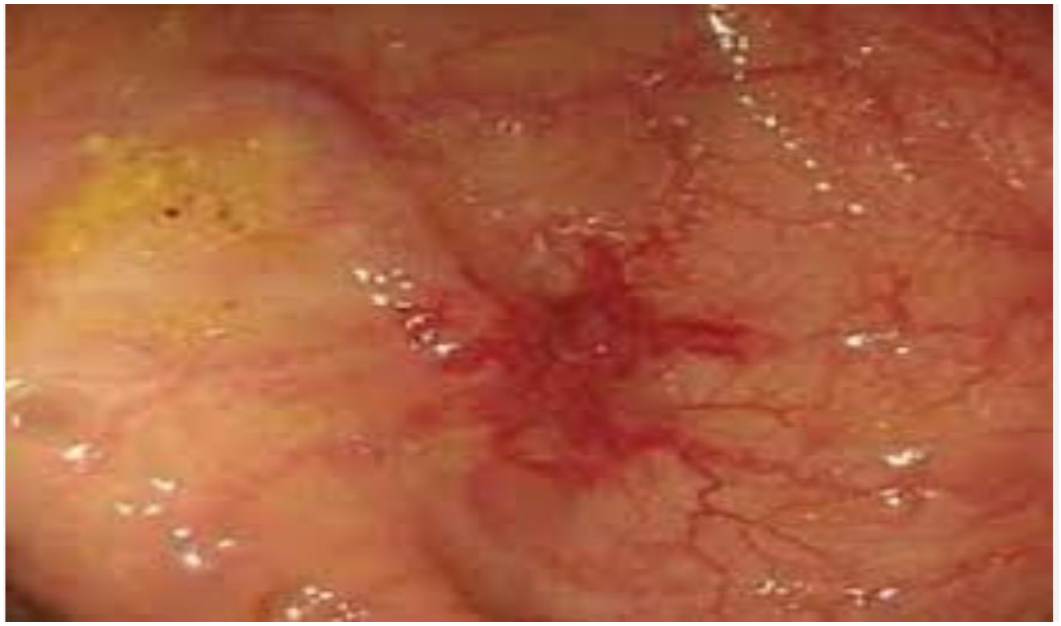
As an example. "J - S2 - N2," signifies multiple angiodysplasias of intermediate size in the jejunum.

Clinical Manifestation

- incidentally during an endoscopic evaluation
- recurrent and chronic bleeding
- marked acute bleeding is less common
- Colonic lesions are found most often in the right colon

Endoscopy

- Small (2 to 10 mm),flat
- Cherry-red lesions with a fern-like pattern of arborizing
- Ectatic blood vessels radiating from a central vessel



- Angiodysplasia may be difficult to visualize during colonoscopy :
  - not good preparation
  - lesions are situated behind a haustral fold
  - decreased mucosal blood flow due to the administration of opioid sedation or air insufflation

- Therefore, the administration of an opioid antagonist or the withdrawal of air during the examination may improve their detection.

Radiographic imaging

- CT angiography: sensitivity and specificity were 70 and 100%
- Angiography : recurrent GIB or persistent IDA

Intraoperative enteroscopy

- Negative endoscopic and radiographic evaluation, the bleeding will be significant enough to require further evaluation


MAKING A TREATMENT
DECISION

Incidentally found lesions

Angiodysplasia that is detected during screening colonoscopy should **not** be treated

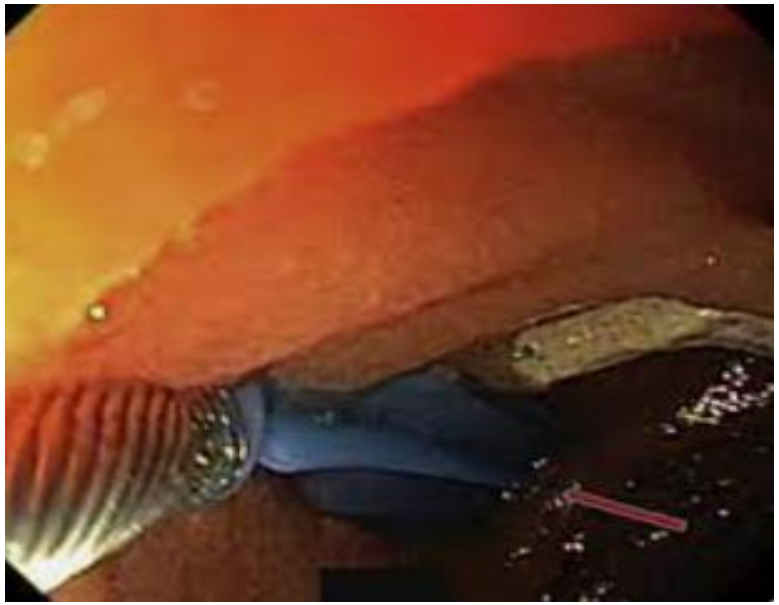
Nonbleeding angiodysplasias in patients with GI bleeding

- **Occult bleeding** — We suggest treating angiodysplasia found during upper endoscopy or colonoscopy in patients with occult bleeding or unexplained IDA, even if the lesions are not bleeding at the time of the endoscopy.
- **Overt bleeding** — we suggest that it be treated unless definitive bleeding is identified.

- **Multiple recurrent episodes of overt bleeding**
- **predisposes such as end-stage kidney disease**

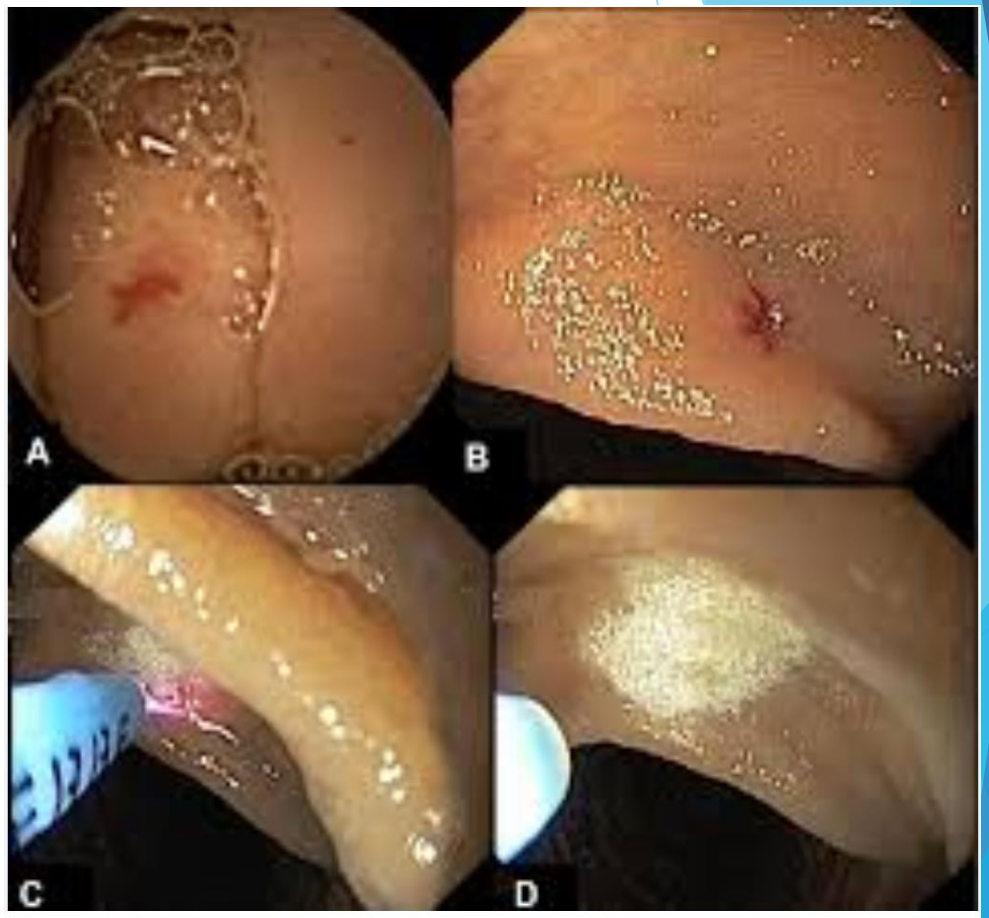
Endoscopic treatment





Argon plasma coagulation

- safe
- noncontact technique
- most successful method used to treat angiodysplasia, especially in the right colon
- Submucosal saline injection prior to treatment with APC may protect against deep wall injury
- risk of colonic gas explosion from inadequate preparation



Electrocoagulation

	Probe diameter ¶	Coaptive pressure	Electrogenerator settings*	
			Heater probe ¶	Bipolar probe ¶
Angiodysplasia	Large Δ	Light	10-15 J	10-15 W, 1 second pulses

Desired outcome	Special features
Bleeding stops/angiodysplasia obliterated	Periphery of lesion treated before center; caution with right-sided lesions

Mechanical hemostasis

- their efficacy is not established
- in patients taking anticoagulants and/or antiplatelet agents
- in patients with coagulation defects
- persistent bleeding after therapy using cautery
- Band ligation (stomach and small bowel)

Radiofrequency ablation

VideoGIE. 2020 Feb 6;5(4):162-167. doi: 10.1016/j.vgie.2019.11.014. eCollection 2020 Apr.

Multicenter case series of patients with small-bowel angiodysplasias treated with a small-bowel radiofrequency ablation catheter

Luis F Lara [1], Rogelio Silva [2], Shyam Thakkar [3], Peter P Stanich [1], Daniel Mai [4], Jason B Samarasena [4]

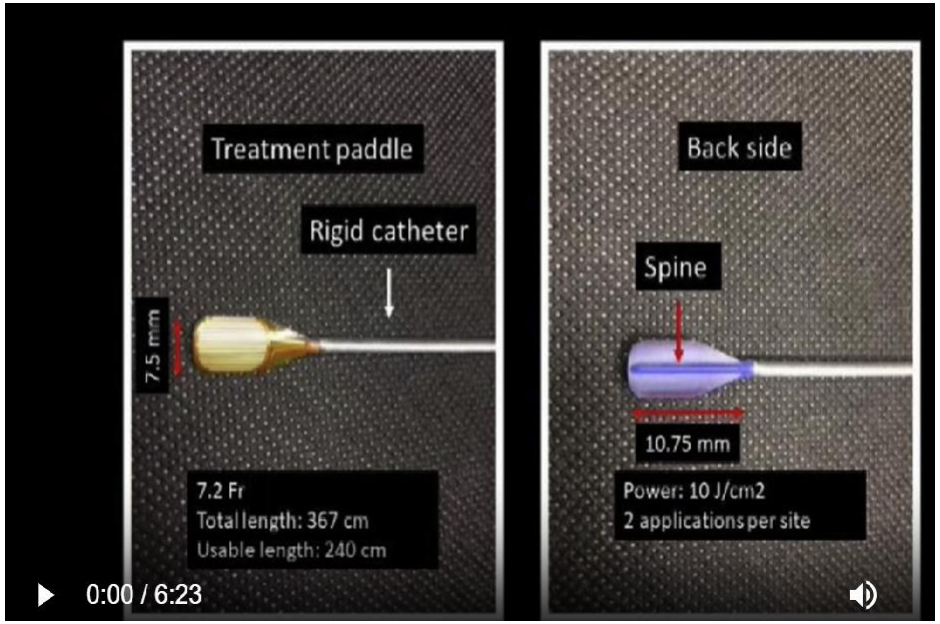
Affiliations + expand

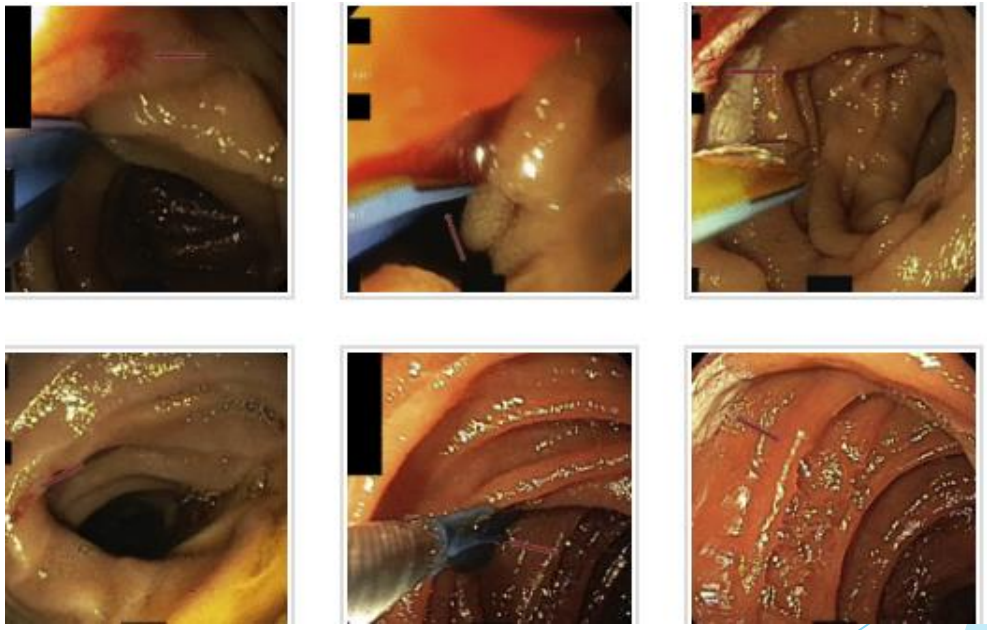
PMID: 32258850 PMCID: PMC7125393 DOI: 10.1016/j.vgie.2019.11.014

Abstract

Background and aims: GI angiodysplasia is the most common cause of small-bowel bleeding. Argon plasma coagulation (APC) is preferred for ablation because of its availability, ease of use, and perceived safety, but it has limitations. An instrument capable of repeated use through the enteroscope, which covers more area of intestinal mucosa per treatment with low risk of damage to healthy mucosa, and which improves ablation, is desirable. A series of patients treated with a through-the-scope radiofrequency ablation (RFA) catheter is reported.

Conclusions: In this case series, bleeding recurred in 20% of patients in a follow-up time of ≤240 days. Notably, 3 of the 4 patients who had recurrent bleeding had an LVAD. These rates compare favorably with reported bleeding recurrence after APC of SBA. More studies on the benefits of SBRFA, which may include reduced risk of recurrent bleeding or prolonging the time to recurrent bleeding, resource utilization, and factors associated with bleeding recurrence are needed.





Hormonal therapy

A multicenter, randomized, clinical trial of hormonal therapy in the prevention of rebleeding from gastrointestinal angiodysplasia

F Junquera [1], F Feu, M Papo, S Videla, J R Armengol, J M Bordas, E Saperas, J M Piqué, J R Malagelada

Methods: Seventy-two noncirrhotic patients bleeding from gastrointestinal angiodysplasia confirmed by endoscopy or angiography were randomized to receive in double-blind conditions treatment with ethinylestradiol (0.01 mg) plus norethisterone (2 mg) (1 tablet/d), or placebo (1 tablet/d) for a minimum period of 1 year (range: 1-2 years).

Results: Four patients could not be assessed because they did not attend the first follow-up visit. Failure of treatment occurred in 13 of 33 (39%) patients in the treatment group and in 16 of 35 (46%) patients in the placebo group (P = NS). No significant differences between groups were found according to number of bleeding episodes (0.7 +/- 1.0 vs. 0.9 +/- 1.5) and transfusional requirements (0.9 +/- 1.9 vs. 0.7 +/- 1.5 units). Treatment received was not an independent predictor for rebleeding prevention in the multivariate regression analysis. Severe adverse events (2 vs. 1) and mortality (0 vs. 1 patient, respectively) were similar between the treatment and placebo groups.

Conclusions: Continuous estrogen-progestagen treatment is not useful in the prevention of rebleeding from gastrointestinal angiodysplasia.

Angiogenesis inhibitors

- **Thalidomide** -patients with recurrent or refractory bleeding who have failed to respond to other therapies.
- 50 mg twice daily for a four-month duration
- adverse events are including:
- teratogenicity, fatigue, constipation, dizziness, somnolence, peripheral edema, dry mouth, rash, venous thrombosis, peripheral neuropathy, liver toxicity, and acute hepatic failure
- **Bevacizumab** — Bevacizumab is a humanized monoclonal antibody against vascular endothelial growth factor that has been used in case reports and small case series to treat refractory bleeding from small bowel angiodysplasia with some success

Standard of Care Versus Octreotide in Angiodysplasia–Related Bleeding (the OCEAN Study): A Multicenter Randomized Controlled Trial

Lia C M J Goltstein [1], Karina V Grooteman [1], Lucas H P Bernts [1], Robert C H Scheffer [2], Robert J F Laheij [3], Lennard P L Gilissen [4], Ruud W M Schrauwen [5], Nynke C Talstra [5], Abraham T Zuur [6], Henri Braat [7], Muhammed Hadithi [8], Johannes T Brouwer [9], Wouter B Nagengast [10], Frank A Oort [11], Jacco Tenthof van Noorden [12], Wietske Kievit [13], Erwin J M van Geenen [1], Joost P H Drenth [14]

Affiliations + expand

PMID: 38158089 DOI: 10.1053/j.gastro.2023.12.020

Methods: The study was designed as a multicenter, open-label, randomized controlled trial. Patients with angiodysplasia bleeding were required to have had at least 4 red blood cell (RBC) units or parental iron infusions, or both, in the year preceding randomization. Patients were allocated (1:1) to 40-mg octreotide long-acting release intramuscular every 28 days or standard of care, including endoscopic therapy. The treatment duration was 1 year. The primary outcome was the mean difference in the number of transfusion units (RBC + parental iron) between the octreotide and standard of care groups. Patients who received at least 1 octreotide injection or followed standard of care for at least 1 month were included in the intention-to-treat analyses. Analyses of covariance were used to adjust for baseline transfusion requirements and incomplete follow-up.

Results: We enrolled 62 patients (mean age, 72 years; 32 men) from 17 Dutch hospitals in the octreotide (n = 31) and standard of care (n = 31) groups. Patients required a mean number of 20.3 (standard deviation, 15.6) transfusion units and 2.4 (standard deviation, 2.0) endoscopic procedures in the year before enrollment. The total number of transfusions was lower with octreotide (11.0; 95% confidence interval [CI], 5.5-16.5) compared with standard of care (21.2; 95% CI, 15.7-26.7). Octreotide reduced the mean number of transfusion units by 10.2 (95% CI, 2.4-18.1; P = .012). Octreotide reduced the annual volume of endoscopic procedures by 0.9 (95% CI, 0.3-1.5).

Conclusions: Octreotide effectively reduces transfusion requirements and the need for endoscopic therapy in patients with angiodysplasia-related anemia.

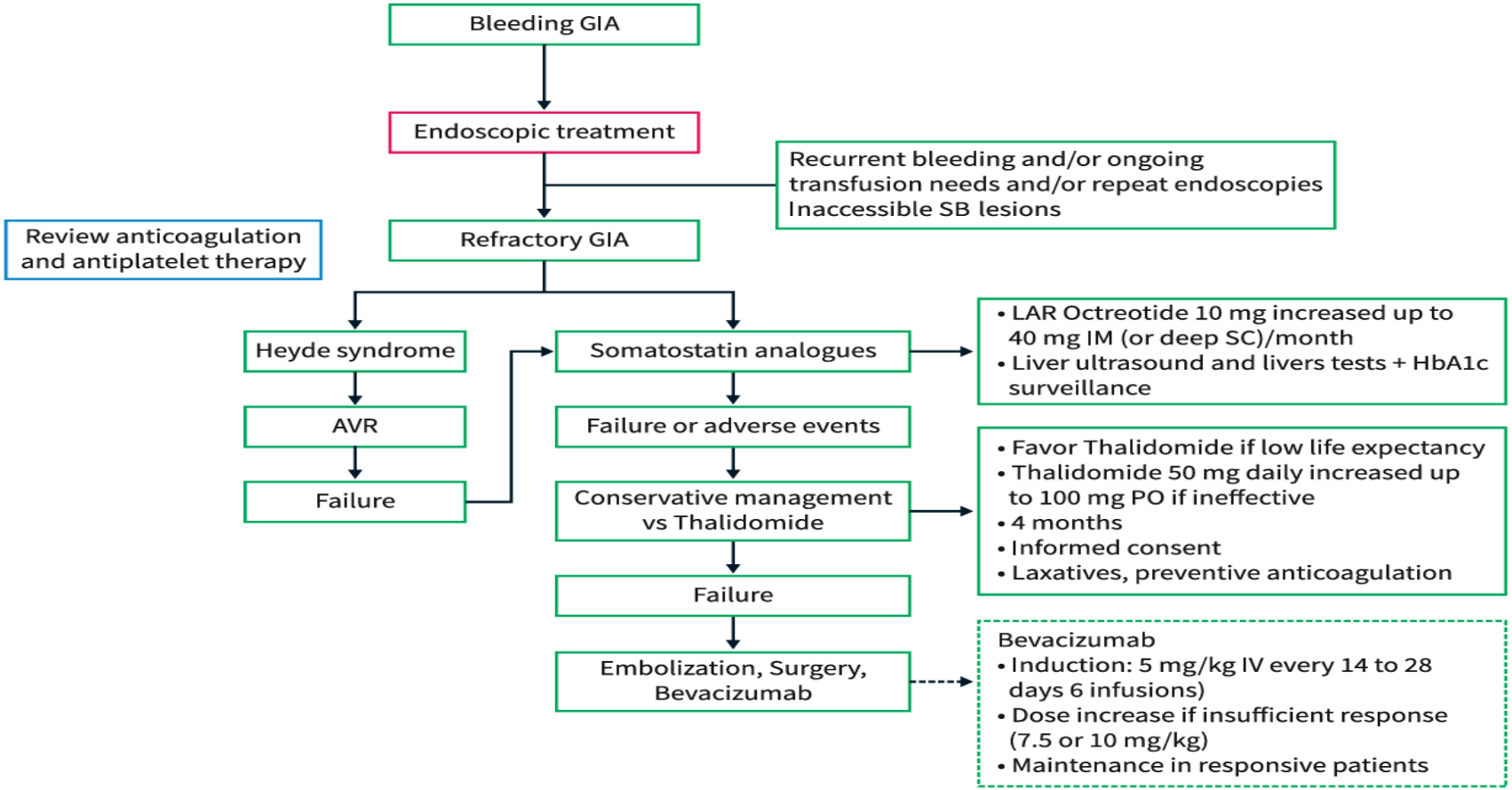
Received: 1 May 2024 | Accepted: 17 July 2024

DOI: 10.1002/ueg2.12648

REVIEW ARTICLE

UNITED EUROPEAN GASTROENTEROLOGY ueg journal WILEY

Recent advances in the treatment of refractory gastrointestinal angiodysplasia



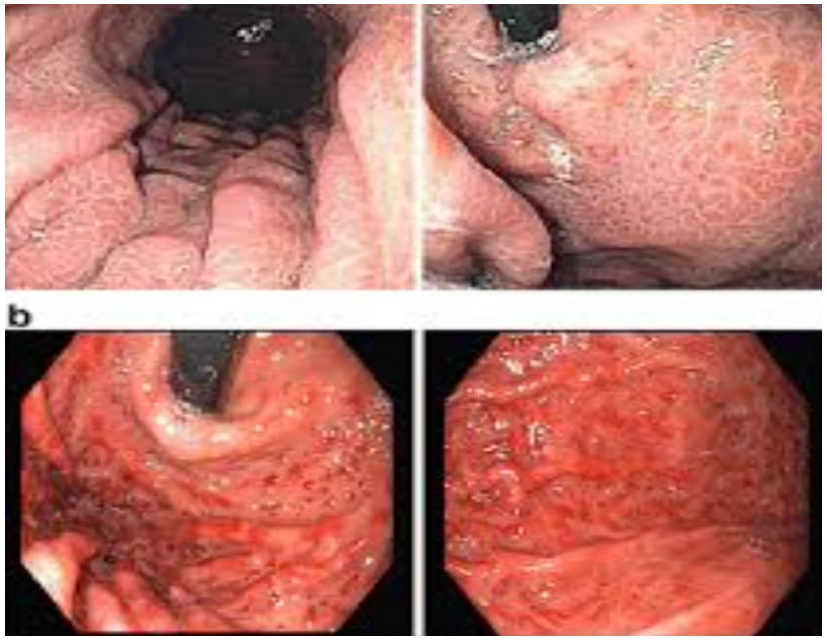
Gastric antral vascular ectasia



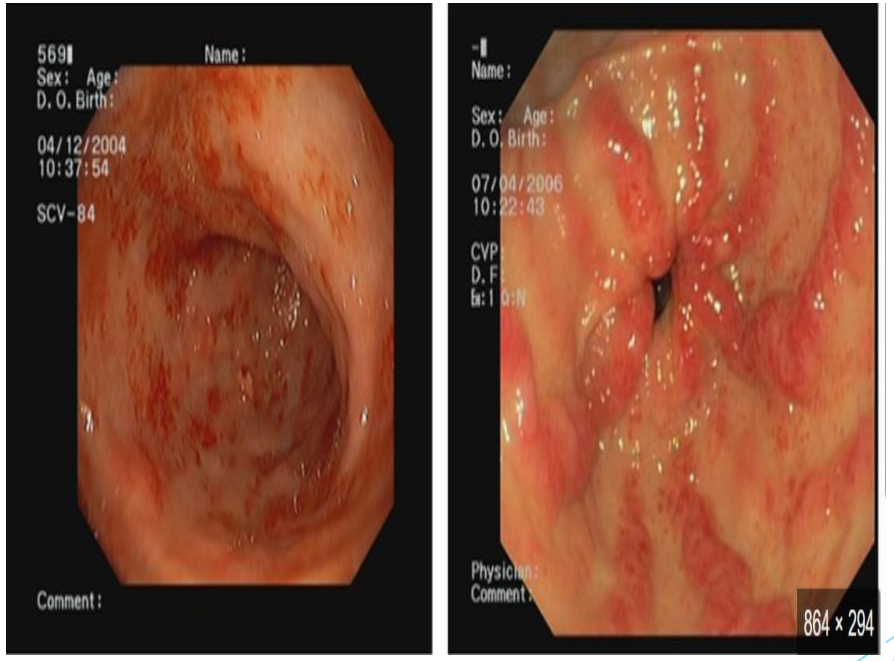
- watermelon stomach (Ectatic and sacculated mucosal vessels)
- uncommon cause of UGIB
- low-grade GI bleeding is more common
- often with iron deficiency anemia.
- uncommon for patients to present with acute and massive bleeding.

- usually an isolated problem
- associated with cirrhosis and systemic sclerosis
- patient with GAVE is an older (>70 years old) woman

- Differentiation from portal hypertensive gastropathy is important as efforts to reduce portal pressures do not usually impact GAVE



Portal hypertensive gastropathy

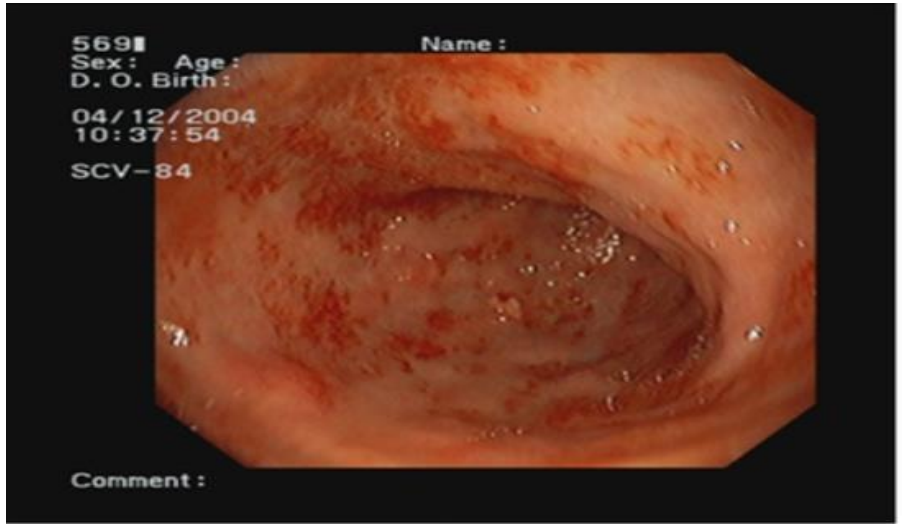


GAVE

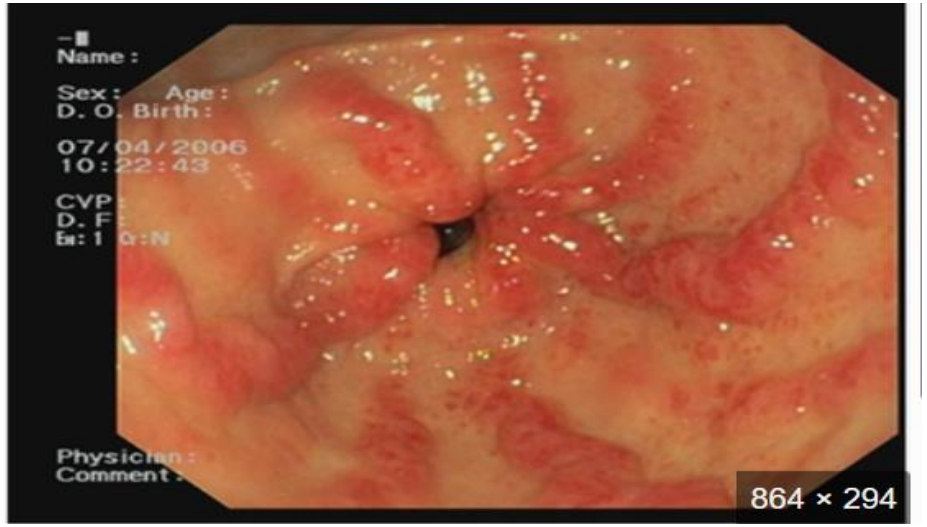
Differential consideration

Features	Portal hypertensive gastropathy	Gastric antral vascular ectasia
Site	Fundus-corpus	Antrum
Endoscopic pattern	Combination of mosaic like pattern Red point lesions cherry red spots Black brown spots	Striped Pattern (Watermelon stomach) Punctate pattern
Histological pattern	Not specific	Highly Specific
Response to reduce Portal Pressure	Present	Abscent

Gastric antral vascular ectasia



Punctate



Striped

characteristic endoscopic appearance

- longitudinal rows of flat, reddish stripes radiating from the pylorus into the antrum that resemble the stripes on a watermelon
- The red stripes represent ectatic and sacculated mucosal vessels
- A punctate form to be more common in patients with underlying cirrhosis

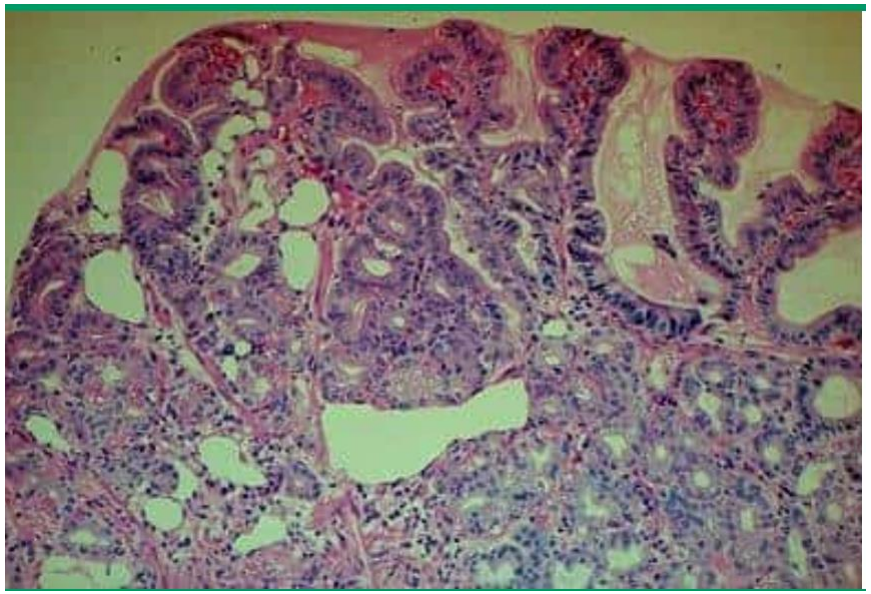
Diagnosis

- Classic endoscopic appearance

- It may be confirmed with :
  - endoscopic biopsy
  - endoscopic ultrasound
  - tagged red blood cell scan
  - computed tomography (CT) scan

GAVE Histology

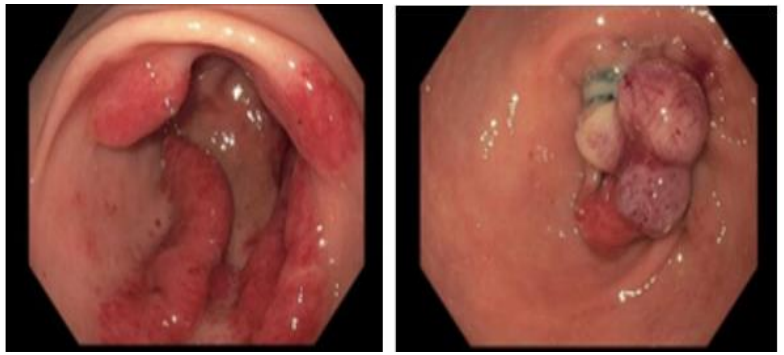
- vascular ectasia
- spindle cell proliferation
- Fibrohyalinosis



Endoscopic coagulation

- Argon plasma coagulator
- Band ligation
- Heater probe
- Bipolar probe
- laser therapy
- Radiofrequency ablation



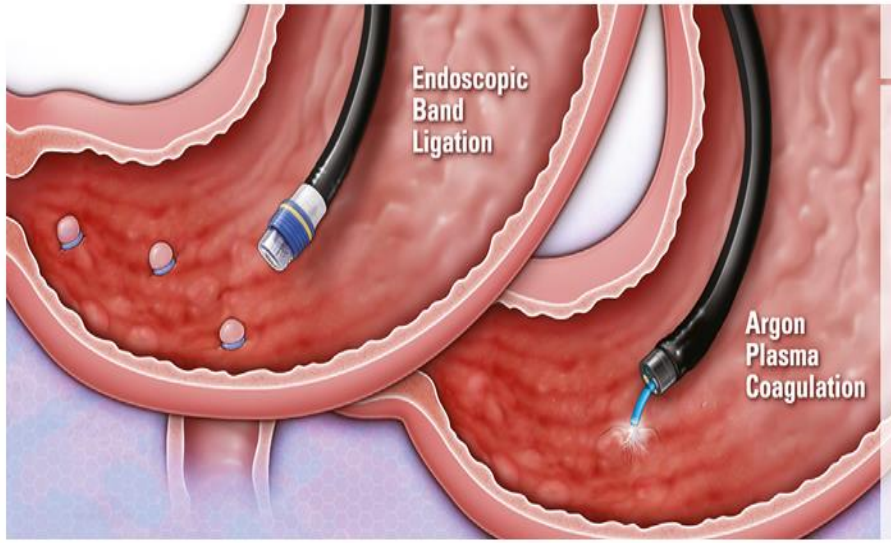


Endoscopic band ligation versus argon plasma coagulation in the treatment of gastric antral vascular ectasia: systematic review and meta-analysis

Archit Garg, MD,[1,*] Vishali Moond, MD,[1,*] Khyati Bidani, MD,[1] Aashi Garg, MPH,[2]
Arkady Broder, MD, FACG, FASGE,[3] Babu P. Mohan, MD,[4] Douglas G. Adler, MD, FACG, AGAF, FASGE[5]

New Brunswick, New Jersey; Boston, Massachusetts; Orlando, Florida; Denver, Colorado, USA

GRAPHICAL ABSTRACT



RESULTS: 10 Studies involving 476 subjects

	EBL	APC	
GAVE pooled eradication rate	88.6% [CI 79.9-81.5; I2=13.5%]	57.9% [CI 43.7-71; I2= 59%]	RR 1.52 [1.16-2.02; I2=72%; p<0.001]
Bleeding recurrence	6.6% [CI 3.4-12.5; I2=0%]	39.7% [CI 26.9-54.15; I2=55%]	RR 0.21 [0.09-0.44; I2=0%; p< 0.001]
GAVE recurrence	7.3% [CI 3.8-13.6; I2=0%]	38.5% [CI 24.4-54.9; I2=64%]	RR 0.22 [0.109-0.446; I2= 0%; p<0.01]

© ASGE / GIE

Methods: Multiple databases were searched for articles on APC versus EBL for GAVE treatment. Preferred outcomes were subjected to systematic review and meta-analysis.

Results: We analyzed 10 studies involving 476 subjects (47.47% men and mean age of 56.25 years). The number of sessions required for the obliteration of lesions was higher with APC. The pooled eradication rate of GAVE with EBL was 88.6% (95% CI, 79.9-81.5; I^2 = 13.5%) and with APC was 57.9% (95% CI, 43.7-71; I^2 = 59%; relative risk [RR], 1.52; 95% CI, 1.16-2.02; I^2 = 72%; P < .001). EBL had a lower bleeding recurrence (6.6%; 95% CI, 3.4-12.5; I^2 = 0%) compared with APC (39.7%, 95% CI, 26.9-54.15; I^2 = 55%; RR, 0.21; 95% CI, 0.09-0.44; I^2 = 0%; P < .001). GAVE recurrence with EBL was 7.3% (95% CI, 3.8-13.6; I^2 = 0%) and with APC was 38.5% (95% CI, 24.4-54.9; I^2 = 64%; RR, 0.22; 95% CI, 0.109-0.446; I^2 = 0%; P < .01). Transfusion requirements and hospitalizations were lower with EBL compared with APC. Adverse events associated with EBL were 16.8% (95% CI, 6.6-36.7; I^2 = 83%) compared with APC at 9.3% (95% CI, 5.6-15.1; I^2 = 19%; RR, 2.11; 95% CI, 0.8-5.46; I^2 = 58%; P = .1).

Conclusions: EBL demonstrated better eradication with fewer treatment sessions, recurrent bleeding, hospitalizations, and transfusion requirements as compared with APC. It is time that EBL be used as the first-line endoscopic treatment for GAVE.

TABLE 2. Summary of pooled rates and outcomes

Outcomes	Pooled rates; I^2 (%)	
	EBL	APC
Eradication	88.6 (79.9-81.5); 13.5	57.9 (43.7-71); 59
Bleeding recurrence	6.6 (3.4-12.5); 0	39.7 (26.9-54.1); 55
Adverse events	16.8 (6.6-36.7); 83	9.3 (5.6-15.1); 19
Mean difference in hemoglobin before	7.83 (6.9-8.7); 93	7.90 (7.05 - 8.75); 95
Mean difference in hemoglobin after	9.9 (9.1-10.7); 96	9.84 (9.05-10.64); 96
Recurrence	7.3 (3.8-13.6); 0	38.5 (24.4-54.9); 64
Hospitalizations	0.67 (0.31-1.04); 99	1.673 (0.13-3.48); 99
Mean no. of sessions	2.31 (1.99-2.63); 94	3.95 (3.14-4.76); 97
Transfusion requirements	1.24 (0.82-1.66); 98	3.098 (1.19-5.0); 99

Adverse events EBL

In the 10 studies analyzed, adverse events were significantly more frequent among patients treated with EBL 16.8% in comparison with those treated with APC 9.3%.

The most common adverse event was postprocedural abdominal pain, occurring in about 16.2% of patients treated with EBL as compared with 2.5% of patients treated with APC.

Around 1% of patients in the EBL group had post ligation minor bleeding; howev er, it did not require any transfusion.

Another common adverse event was postprocedural ulcers and polyps, with an incidence of 6.1% in the EBL treatment group as compared with 1.8% with the APC group.

Comparative Study > J Clin Gastroenterol. 2025 Jul 1;59(6):555-561.

doi: 10.1097/MCG.0000000000002057.

Comparing Endoscopic Treatment Modalities for Gastric Antral Vascular Ectasia: Efficacy, Safety, and Outcomes in a Network Meta-analysis

Manesh Kumar Gangwani [1], Hossein Haghbin [2], Fariha Hasan [3], Julia Dillard [4], Fouad Jaber [5], Dushyant Singh Dahiya [6], Hassam Ali [7], Faisal Kamal [8], Umar Hayat [9], Wade Lee-Smith [10], Amir Sohail [11], Sumant Inamdar [1], Muhammad Aziz [4] [12], Douglas G Adler [13]

Affiliations + expand

PMID: 39312519 DOI: 10.1097/MCG.0000000000002057

Methods: All studies that involved adults and children with endoscopic characteristics of GAVE undergoing treatment with APC, EBL, radiofrequency ablation, or a combination of 2 treatment modalities were included.

Results: There was no statistical difference in the rate of adverse events and the number of red blood cell transfusions across all 3 groups (APC, EBL, and APC + EBL). However, statistical differences were noted for outcomes of bleeding recurrence, length of hospitalization, and change in hemoglobin status.

EBL exhibited a significant decrease in bleeding recurrence when compared with APC. Moreover, shorter hospitalization stays were seen in APC + EBL and EBL groups compared with APC, and a beneficial change in hemoglobin status was also more often seen in APC + EBL and EBL groups compared with APC.

Conclusions: Based on this study, EBL was found to have superior efficacy when compared with APC for the treatment of GAVE; however, there was no significant difference in rates of adverse events between APC, EBL, and combination therapy.

Antrectomy prevents recurrent bleeding but is usually reserved for patients who fail endoscopic therapies.

Combination estrogen/progesterone therapy may decrease bleeding, although the ectatic vessels appear to persist

THANK YOU