Ten-Year Experience of Treating Patients with Acute Lower Gastrointestinal (GI) Tract Bleeding with N-butylcyanoacrylate (NBCA) Glue Embolization

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INTRODUCTION

- Treatment of non-variceal gastrointestinal (GI) tract bleeding is highly variables based on etiology of the bleed, clinician preference and experience, individual patient factors, and resource availability.
- These varied practice patterns do not consistently perform well long-term, with approximately 1 in 4 patients with GIB having recurrence of the bleeding that requires further treatment.[1]
- Current clinical guidelines from the American College of Gastroenterology for lower GIBs include dilute epinephrine injection, argon plasma coagulation, clipping, electrocoagulation, and topical sprays and powders. [2]
- N-butylcyanoacrylate (n-BCA) is a liquid embolic that is currently being used used under fluoroscopic guidance to treat GIBs in some institutions but has not been distinguished in national practice guidelines separately from coils and polyvinyl alcohol particles.
- There is a need for characterization of the efficacy and safety from a real-world cohort.
- **AIM: To assess the technical success, 30-day safety, and clinical outcomes of patients for the use of N-butyl-2-cyanoacrylate (n-BCA) to treat acute arterial lower gastrointestinal (GI) tract bleeding.**

METHODS

- From 4/1/2011 to 8/31/2021, **66 patients** (mean age 68.21, range 27 to 94, 37% female) underwent glue embolization for lower GI bleeds using N-butyl-2-cryanoacrylate at a single academic center.
- **Location of bleed:** 47 patients had lower GI bleed, and 19 were experiencing rectal bleeding
- **Etiology of GI bleed**: diverticular (36.4%), supratherapeutic INR (18.2%), ulcer (9.1%), and angiodysplasia (4.5%)
- **Glue Ratio**: Embolization was performed using 1:3 to 1:5 mixtures of n-BCA and iodized oil.
- Coagulopathy was defined as platelet count <80, INR > 1.5, or PTT > 45 seconds.
- Technical success (TS), clinical success (CS), rate of early recurrent bleeding requiring repeat embolization, adverse events (AEs) were recorded.
- Technical success was defined as the disappearance of angiographic findings of hemorrhage

RESULTS

66 patients — In the cohort

68.21 years — Mean age

98.1% — Rate of technical success

75.8% — Rate of clinical success

3% — Rate of re-bleed requiring re-embolization

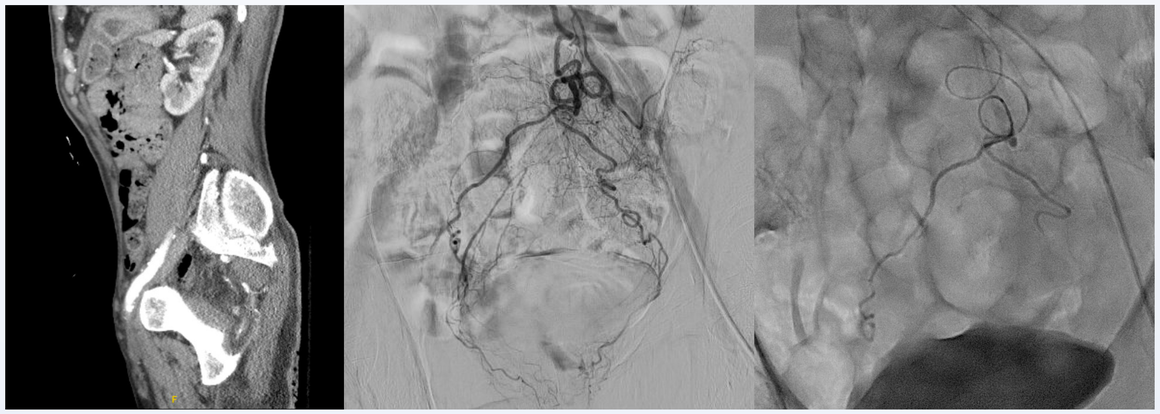

Figure 1. Case of a 73-year-old male treated for rectal bleeding caused by hemorrhoids. Middle image shows the active extravasation visualized during the procedure. Far right image shows administration of n-BCA and iodized oil.

Figure 2. Case of an 86-year-old female being treated for a colonic diverticular bleed. CTA showed bleeding in the splenic flexure, as pointed out by the yellow arrow. Far right image shows n-BCA and iodized oil being administered.

RESULTS

- **Technical success rate: 98.1%**
- **Clinical success rate: 75.8%**
- 13 patients had empirically treated bleeding, without active contrast extravasation seen on angiogram.
- Recurrent re-bleeding rate requiring repeat embolization occurred in 3.0% of cases.
- In-hospital mortality rate was 16.7%.
- Three of these major complications were due to bowel ischemia (4.5%)
- Coagulopathy was present in 31.8% (21 of 66) patients.

DISCUSSION

- We examined technical success and safety of glue embolization of lower GI tract bleeding using n-BCA in a real-world, diverse patient cohort.
- Study limitations: retrospective single center study design, short follow up period
- Future directions: Increased sample size, longer follow up periods, and comparison to other embolization types will help to delineate the long-term safety profile and define the patient population for which n-BCA glue is the most appropriate and effective.
- **CONCLUSION: In patients with lower GI tract bleeds, n-BCA is a durable embolic agent with low recurrent bleed rates. Distal penetration of embolic material my provide benefit over other embolics due to ability to occlude vessels beyond the catheter tip position.**

REFERENCES

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2. Strate LL, Gralnek IM. Acg clinical guideline: Management of patients with acute lower gastrointestinal bleeding. *American Journal of Gastroenterology*. 2016;111:459-474