

# Clinical Outcomes of Patients with Posttraumatic Bleeding Treated with Selective Transcatheter Arterial N-butyl cyanoacrylate (nBCA) Liquid Embolization

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## PURPOSE

Transcatheter arterial embolization (TAE) is a useful endovascular technique for controlling hemorrhage in posttraumatic bleeding. However, there is limited data showing that N-butyl-2-cyanoacrylate (nBCA) alone is safe and effective for controlling hemorrhage in the setting of trauma. The purpose of this study is to assess 30-day clinical outcomes of selective transcatheter arterial embolization (TAE) with nBCA glue for patients with posttraumatic bleeding.

## METHODS

Retrospective review was performed of patients who underwent selective TAE with nBCA for posttraumatic bleeding from 2010-2021 at a single center. Procedural and clinical details including location of bleed, etiology of bleed, nBCA concentration used, and presence of coagulopathy, were recorded. Technical success (defined as disappearance of angiographic findings of hemorrhage on completion angiography), rebleeding (requiring additional treatment within 30 days of initial embolization), and adverse events (AEs) were recorded.

## RESULTS

- Nine patients with posttraumatic bleeding underwent embolization with nBCA.

### Parameters

• Males/Females	7/2 (78%/22%)
• Age (mean)	58.6 y (37y-83y)
• Lipiodol:nBCA dilution ratio	3:1 to 5:1
• Coagulopathy	2 patients

### Artery embolized (n=9)

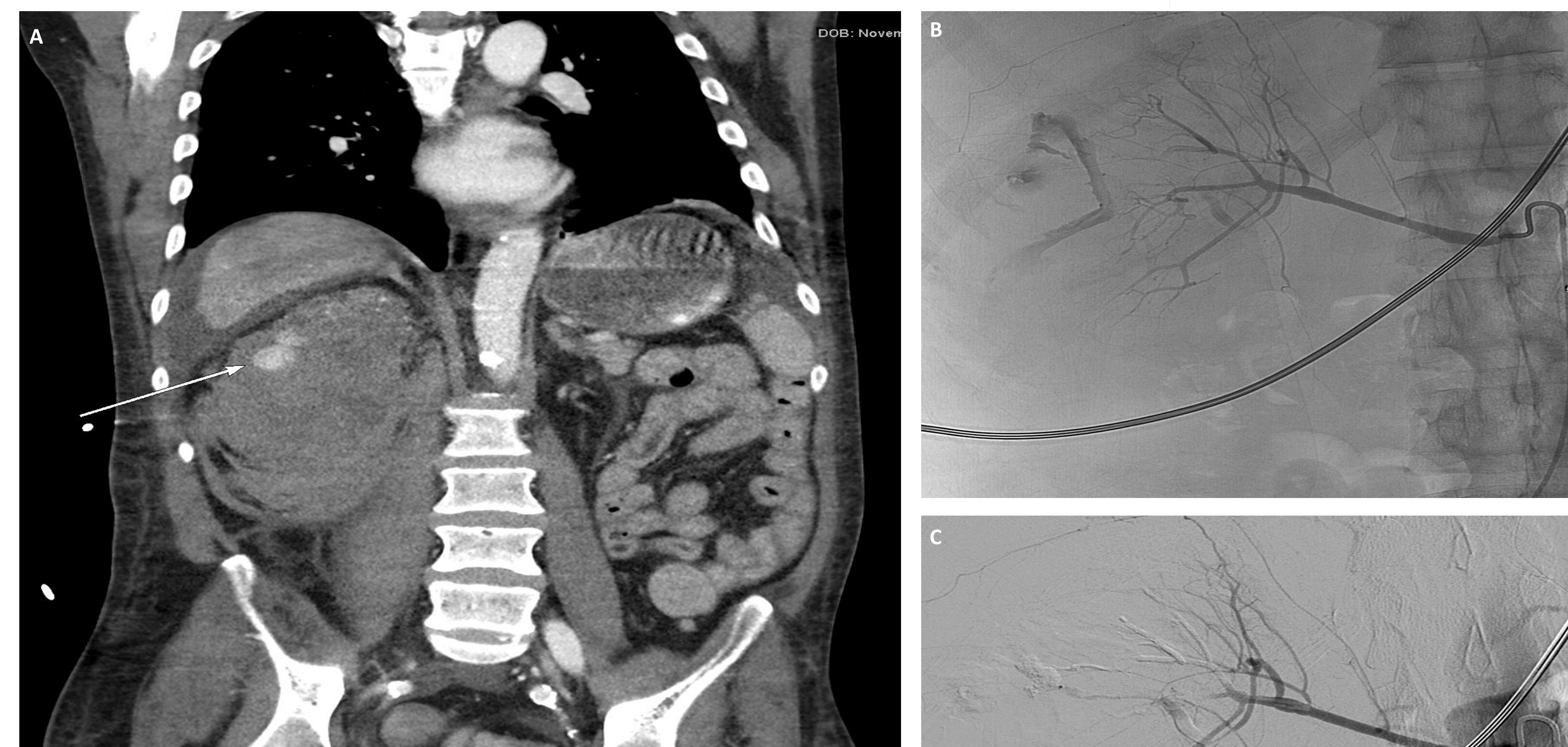
- Splenic artery (n=2)
  - Hepatic artery (n=1)
  - Renal artery (n=1)
  - Obturator artery (n=1)
  - Pancreatic artery (n=1)
  - Femoral artery (n=1)
  - Phrenic artery (n=1)
  - Epigastric artery (n=1)
- On an intention to treat basis, technical success (TS) was 100%.
  - There were no embolization related ischemic complications such as end organ infarction, nontarget embolization, or bowel infarction.
  - There was no episodes of rebleeding.
  - One patient had a small post-operative access site hematoma. One patient presented with an evolving liver lesion and had CTA done which showed stable hematoma. He had complete resolution with medical management.

## CONCLUSIONS

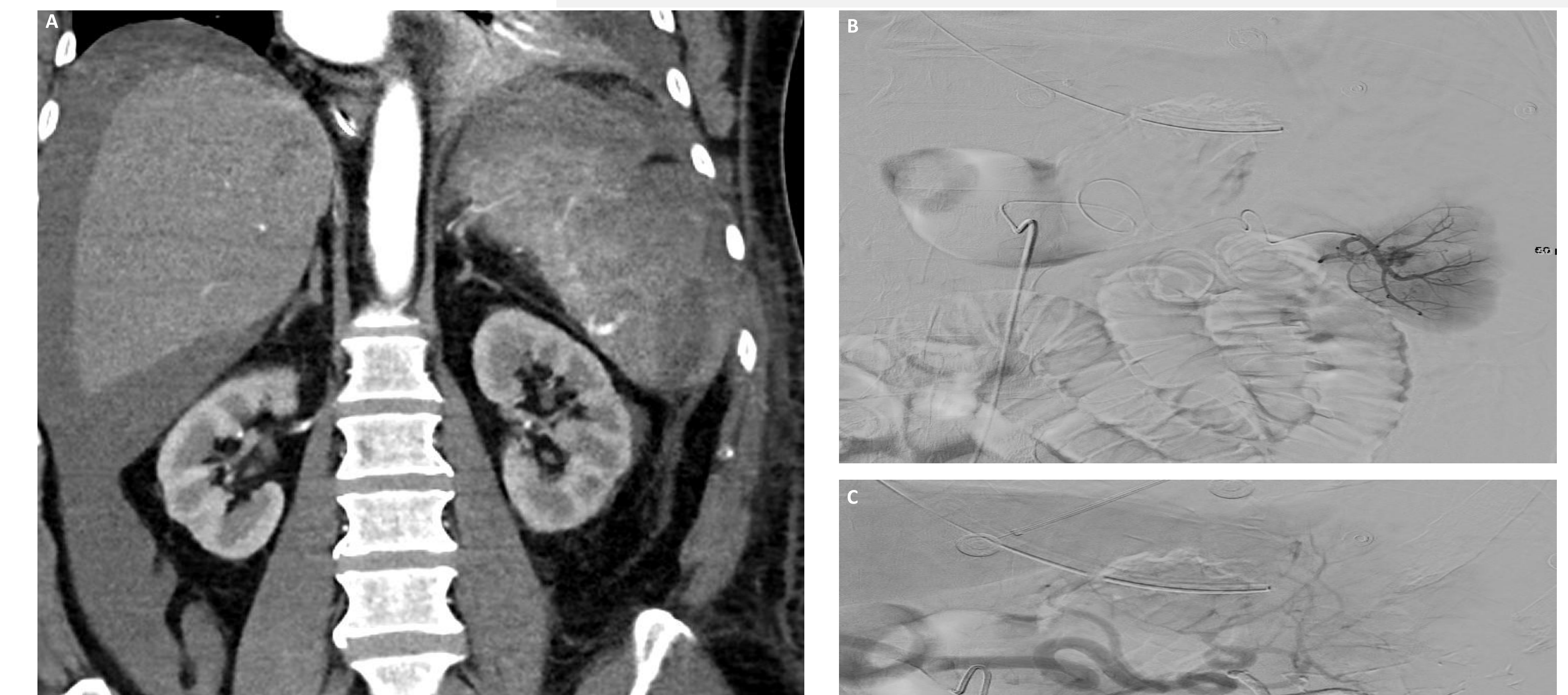
- Interventional radiologists play an important role in the management of trauma patients.
- Selective TAE with nBCA liquid embolic in patients with post traumatic bleeding is safe, durable, and effective and warrants further close study.

## REFERENCES

1. Velmahos GC, Chahwan S, Falabella A, Hanks SE, Demetriades D. Angiographic embolization for intraperitoneal and retroperitoneal injuries. *World J Surg.* 2000;24:539–545.
2. Gould JE, Vedantham S. The role of interventional radiology in trauma. *Semin Intervent Radiol.* 2006 Sep;23(3):270-8. doi: 10.1055/s-2006-948766. PMID: 21326773; PMCID: PMC3036376.



**Figure 1 :** Active extravasation is well seen on CT (A) surrounding/below the right kidney. Angiogram confirms the extravasation (B), which was successfully treated with n-BCA in the lower pole and mid pole branches as well as the main right renal artery(C).



**Figure 2:** Splenic laceration is well seen on CT (A). Angiography confirms the active extravasation within the inferior branch of the splenic artery(B), which was successfully treated with n-BCA embolization(C).