Evaluation of Safety and Efficacy of Bronchial Artery Embolization Using NBCA Glue for Patients with Hemoptysis: A Single Center Experience

Lap Yin Wu[1], Nin Yuan Pan[1], Fung Him Ng[1], Ka Hon Stephen Wong[1], Ho Lim Wong[1], Stephanie Cheri Woo[1], Hoi Ming Kenneth Kwok[1], Lik Fai Cheng[1]
[1]Department of Radiology, Princess Margaret Hospital, Hong Kong SAR

RATIONALE & OBJECTIVE

Massive hemoptysis is potentially life-threatening. **Bronchial artery embolization (BAE)** has become the therapy of choice for massive hemoptysis after initial stabilization.
Why NBCA glue? While particulate agents are commonly used, NBCA glue provides rapid, permanent occlusion and can embolize small-diameter vessels.
Potential concerns: Regarding technical complexity, and increased risk of severe complications (e.g. non-target embolisation and tissue necrosis) of NBCA glue.
Study objective: To evaluate technical success, clinical efficacy, and safety of NBCA glue BAE

STUDY DESIGN

RETROSPECTIVE REVIEW of clinical notes, CT and angiographic images, and procedural records of BAE cases, from 01 Jan 2018 to 31 May 2026 in Princess Margaret Hospital

Inclusion: BAE using NBCA glue as the embolic agent
Exclusion: BAE using other embolic agents / NBCA glue in combination with other agents

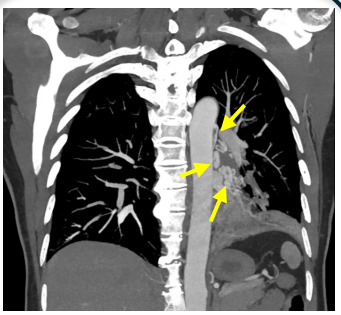
PROCEDURE WORKFLOW

1. **Identify source**
Bronchial arteries identified on CTA are selectively catheterized with 4-Fr catheters (S1, C2, or SHK)

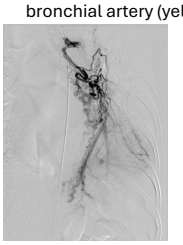
2. **Vessel cannulation**
Co-axial microcatheters (2.0-2.5Fr) are advanced to the target vessel with microguidewires, aiming to target diseased vasculature and maintaining safe distance from potential spinal feeders to avoid non-target embolization.

3. **Prepare NBCA glue**
NBCA / Lipiodol ratio is adjusted from 1:2 to 1:4 according to vessel diameter and vascularity

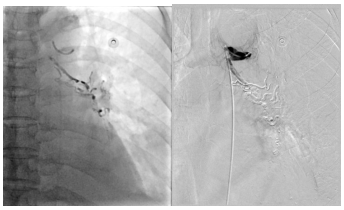
4. **Embolization of targeted vessel**
Mixture was injected via the microcatheter, and injection was terminated once the distal vascular bed was completely opacified, maintaining approximately a 2-cm safety margin from the microcatheter tip.
Real time fluoroscopy was used to prevent reflux or catheter adherence.



CTA of a 52-year-old female with massive hemoptysis, which revealed dilated left bronchial artery (yellow arrows)



Angiogram via left bronchial artery confirmed dilated tortuous artery supplying diseased left lung parenchyma



1:4 NBCA: Lipiodol mixture (total 1ml) injected. Post procedural angiogram showed complete occlusion of targeted vessel

KEY RESULTS

- **21** patients
- **26** bronchial arteries embolized
- **100%** technical success
- **100%** immediate clinical success

Median follow up period: 14 months
Most common NBCA/Lipiodol ratio: 1:3

SAFETY & DURABILITY

1 minor complication	Only 1 patient with transient pleuritic chest pain post procedure, resolved with analgesics
No major complication	No major complication (spinal cord infarction, bronchial wall necrosis, esophago-bronchial fistula, myocardial infarction, ischemic colitis, or stroke)
Only 1	Recurrent case required re-intervention at 36 months

FINDINGS AT A GLANCE

Technical success
Complete angiographic occlusion of target vessel: 100%

Clinical success
Immediate cessation of hemoptysis within 24 hours: 100%

Recurrence
Five patients (23.8%) developed recurrent hemoptysis (median: 6 months). Four of them were self limiting and resolved with medical treatment alone. Only one required re-intervention

Safety
Only one minor complication. No major morbidity or mortality observed.

Clinical takeaway
NBCA glue BAE achieved excellent immediate control of hemoptysis with favorable safety profile in this single center cohort

CONCLUSION

NBCA glue BAE can be an effective and safe treatment option, with excellent immediate success and minimal major complications.