Overcoming Complex Superior Vena Cava Obstruction Using Body Flossing Technique: A Case Report

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Objective & Materials and Methods

A case report to demonstrate the utility of the body flossing technique in managing malignant superior vena cava obstruction (SVCO) with complex vascular anatomy.

Case background

A 65-year-old man with malignant SVCO presented with near-total SVC and left brachiocephalic vein obstruction on CT. He became hemodynamically unstable and underwent semi-urgent endovascular stenting.

Pre-operative CT

Fig 1a. Contrast CT axial

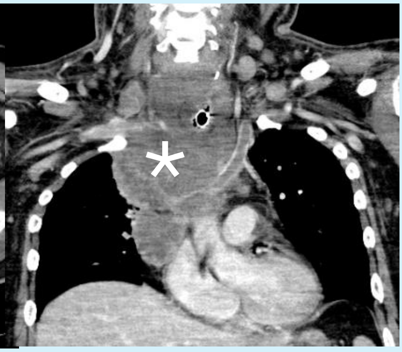


Fig 1b. Contrast CT Coronal

Pre-operative CT (Fig 1a & b) reveals a high-grade malignant obstruction in the superior mediastinum (Asterisk), with total occlusion of the brachiocephalic veins and superior vena cava (SVC).

Initial Left femoral vein access

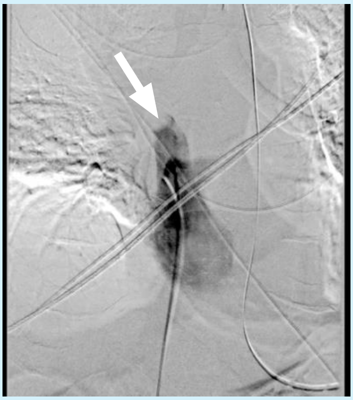


Fig 2a. Angiogram at superior mediastinum

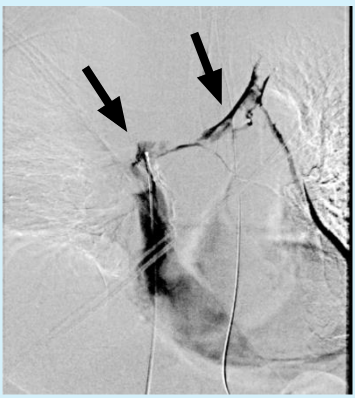


Fig 2b. Angiogram at superior mediastinum

Left femoral venous access was initially established under ultrasound (US) guidance. Despite successful SVC catheterization, venography revealed the challenge: tight stenoses in the bilateral brachiocephalic veins (black arrow) and lower SVC (white arrow), which is non-traversable, precluding the standard stenting approach.

Left basilic vein approach

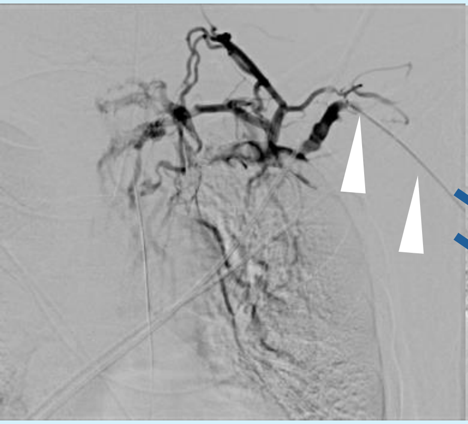


Fig 3a. Angiogram at superior mediastinum

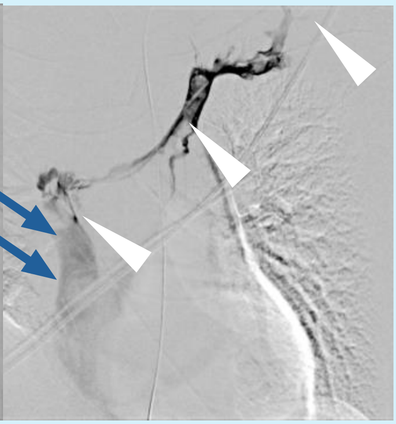


Fig 3b. Angiogram at superior mediastinum

The procedure was converted to a left upper limb approach. Under USG guidance, a 5Fr sheath was inserted via the left basilic vein.

From the SVC (blue arrow) , catheter (arrowhead) advancement to the IVC was unsuccessful due to significant venous tortuosity.

Multiple venous collaterals (shown in Fig 3a) are also seen due to chronic obstruction.

Body flossing technique for securing stent delivery tract

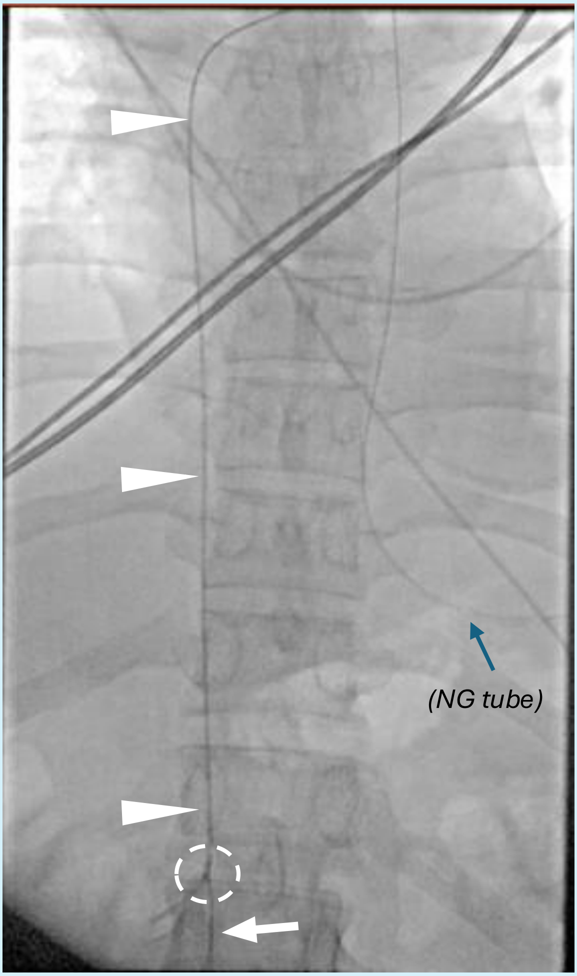


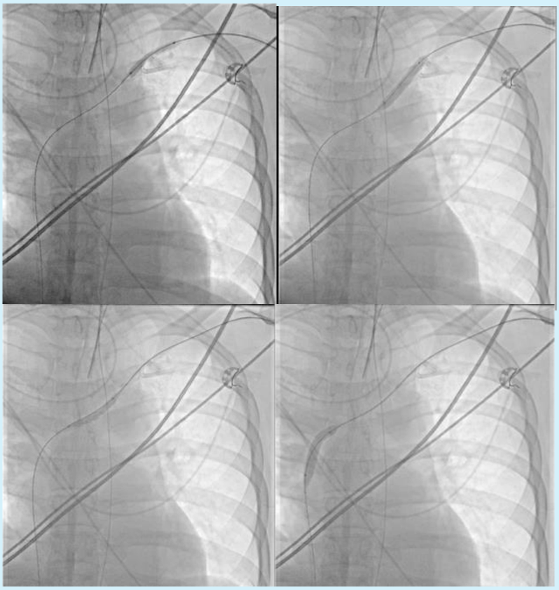
Fig 4. Spot image on central Thoracolumbar region

A snare (arrow) was introduced via the left femoral vein to capture (circle) and retrieve the guidewire (arrowhead) from the upper extremity access, establishing a through-and-through wire.

This **"body flossing" technique** secured the wire at both access points, the technique enables enhanced traction and countertraction along the wire, providing a stable scaffold for subsequent interventions. In this case, this provides a stable platform for subsequent stent delivery.

This approach is particularly advantageous in managing complex SVCO.

Pre-dilatation with balloon angioplasty



After establishing through and through access, left basilic vein access was exchanged to a 9Fr sheath for subsequent procedure.

As the stent could not cross the stenosis, pre-dilatation with balloon angioplasty (left side figures) was undertaken in the upper SVC and left brachiocephalic vein.

Fig 5. Spot images on serial ballon angioplasty

Technical success

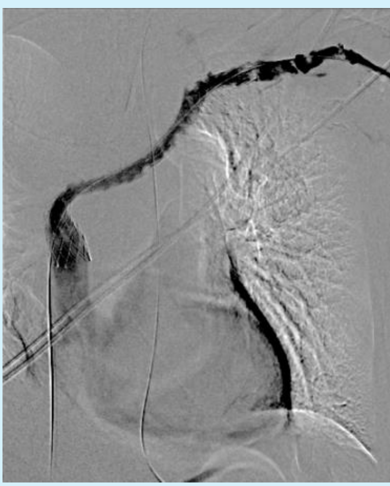


Fig 6. Post procedural venography

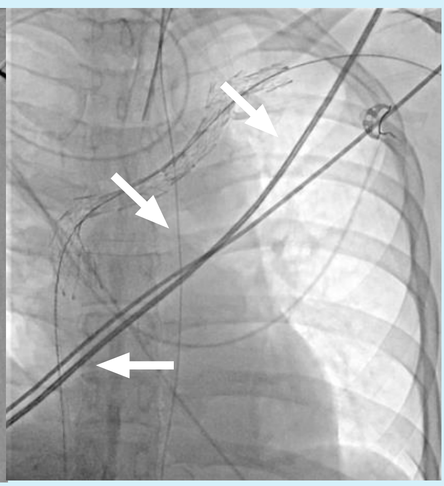


Fig 7. Spot image after stent deployment

Technical success was achieved, with post-procedural venography confirming optimal stent positioning (white arrow), restoration of physiologic flow, and only minimal residual stenosis (<30%). The procedure was completed without immediate complications.

Conclusion

The body flossing technique utilizes a dual-access approach, typically involving the right femoral vein and left basilic vein access. The dual-access method improves control and manoeuvrability, allowing precise navigation through tight or tortuous vessels. It ensures accurate stent placement, which is especially critical in cases where traditional single-access techniques are ineffective. The through-and-through tract further enhances stability, minimizing procedural complications and improving overall accuracy.

References:

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