

# Supraclavicular Percutaneous Extra-Anatomical Recanalization (SPEAR) for Central Venous Occlusion

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## Purpose

To describe a novel endovascular technique for treating central venous occlusions while mitigating risk seen in traditional sharp recanalization techniques.

## Background

Standard techniques for venous recanalization may fail at crossing the CVO in up to 75% of cases [1,4]. When blunt recanalization techniques fail, advanced techniques such as sharp recanalization may be implemented. However, these techniques pose a potentially high risk for hemopericardium and hemothorax that limit widespread utilization [2,3,5-7]. SPEAR technique allows for safe, controlled access with continuous visualization of surrounding structures and increased confidence in appropriate access points across even the most severe CVO's.

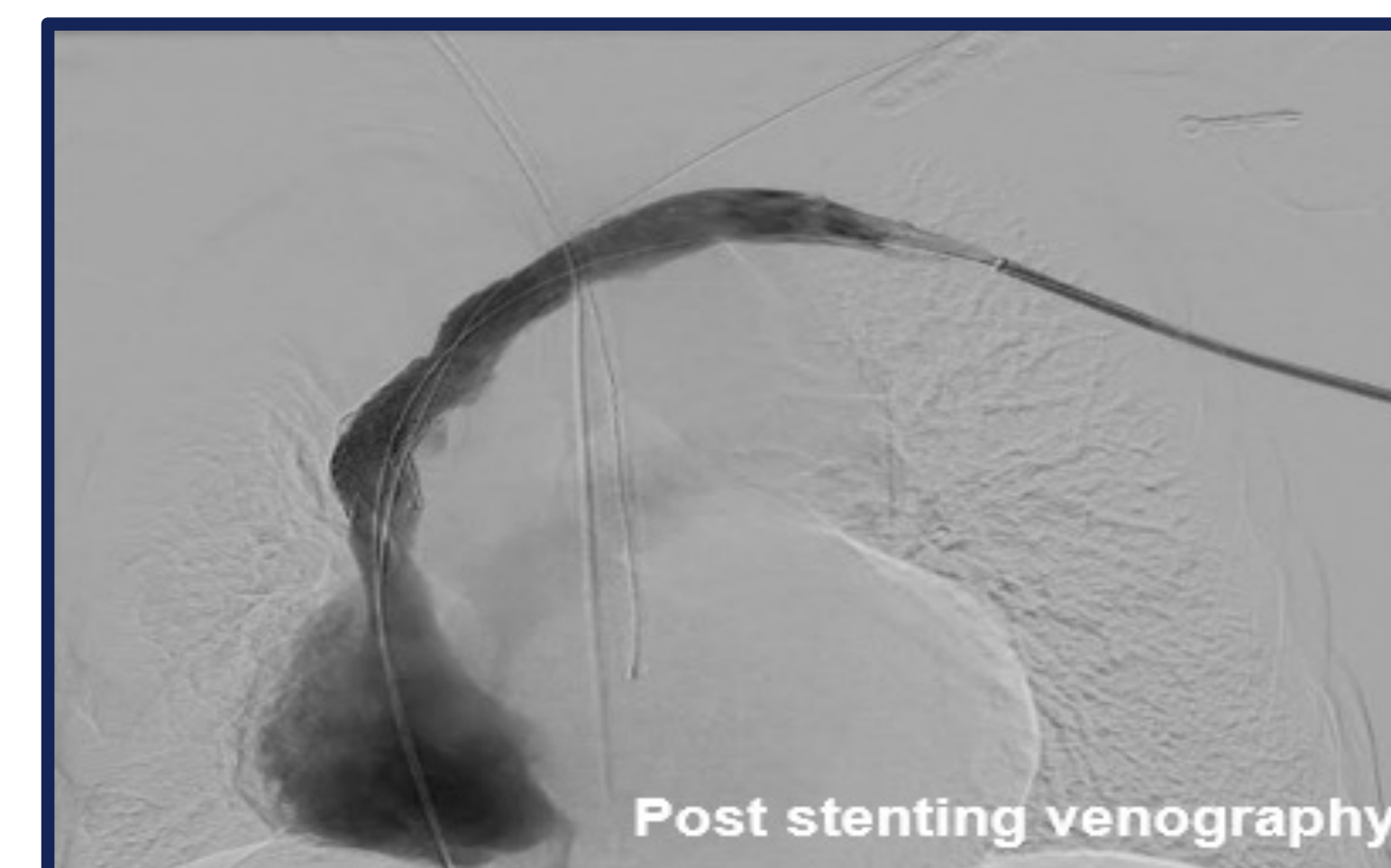
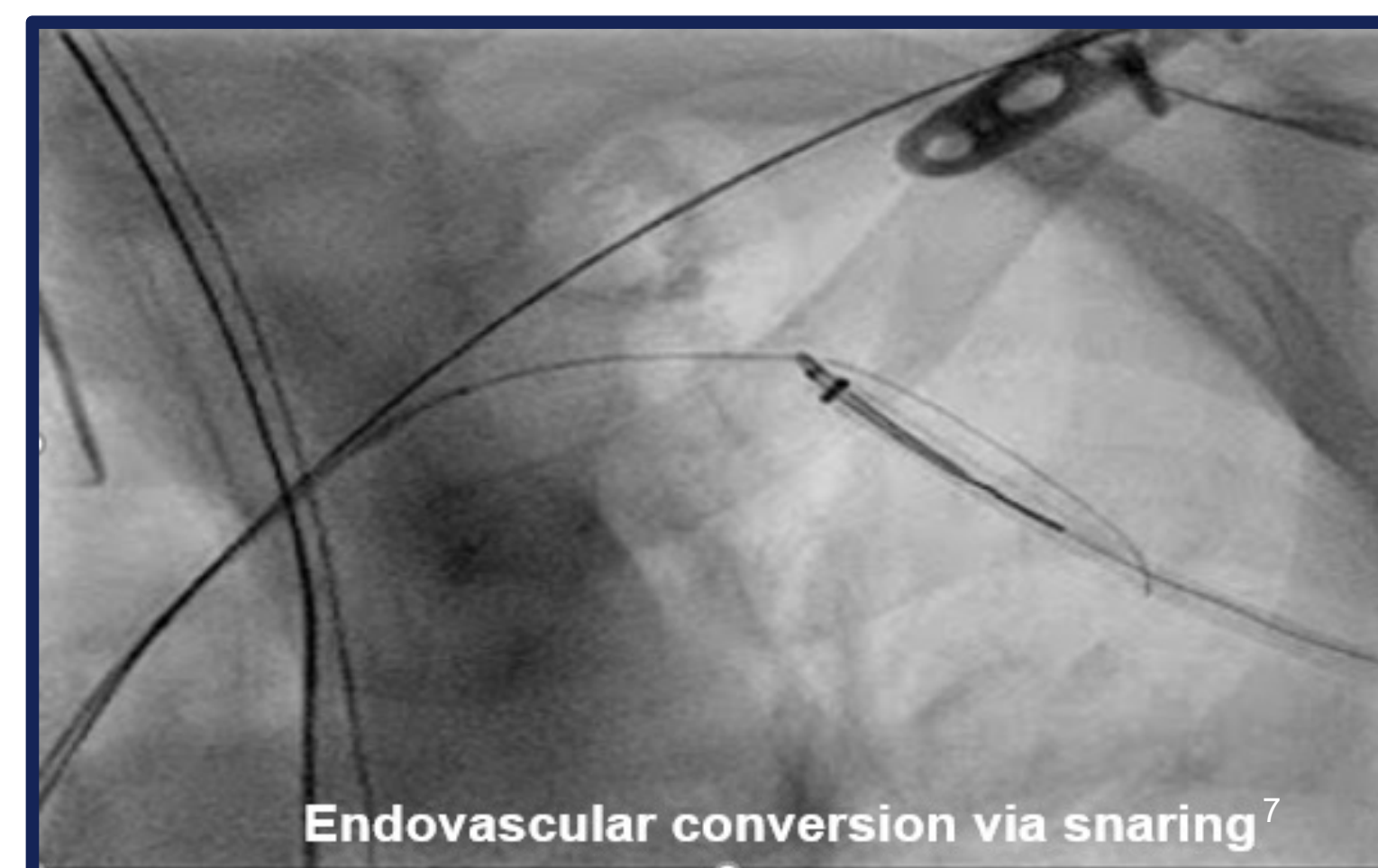
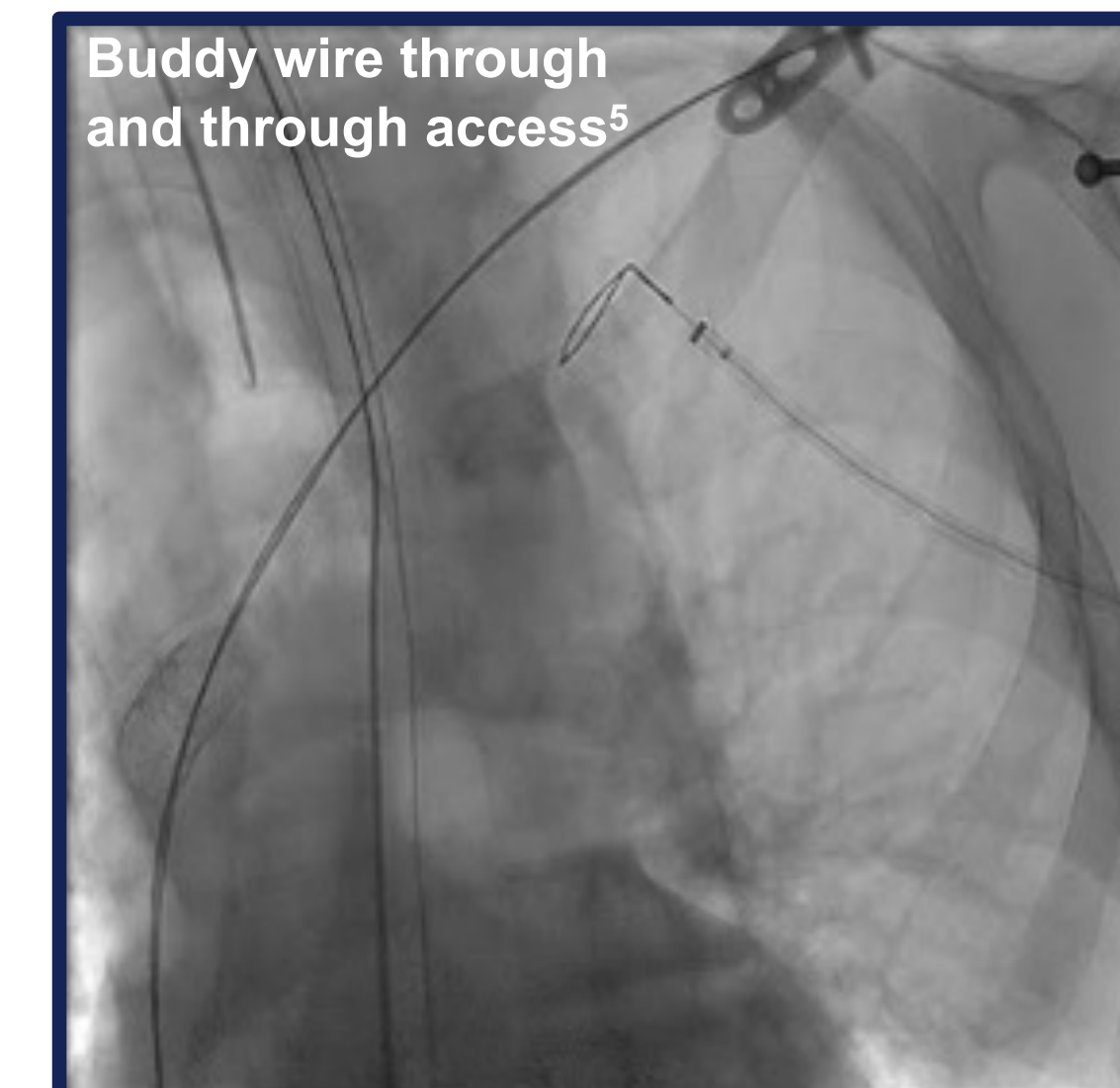
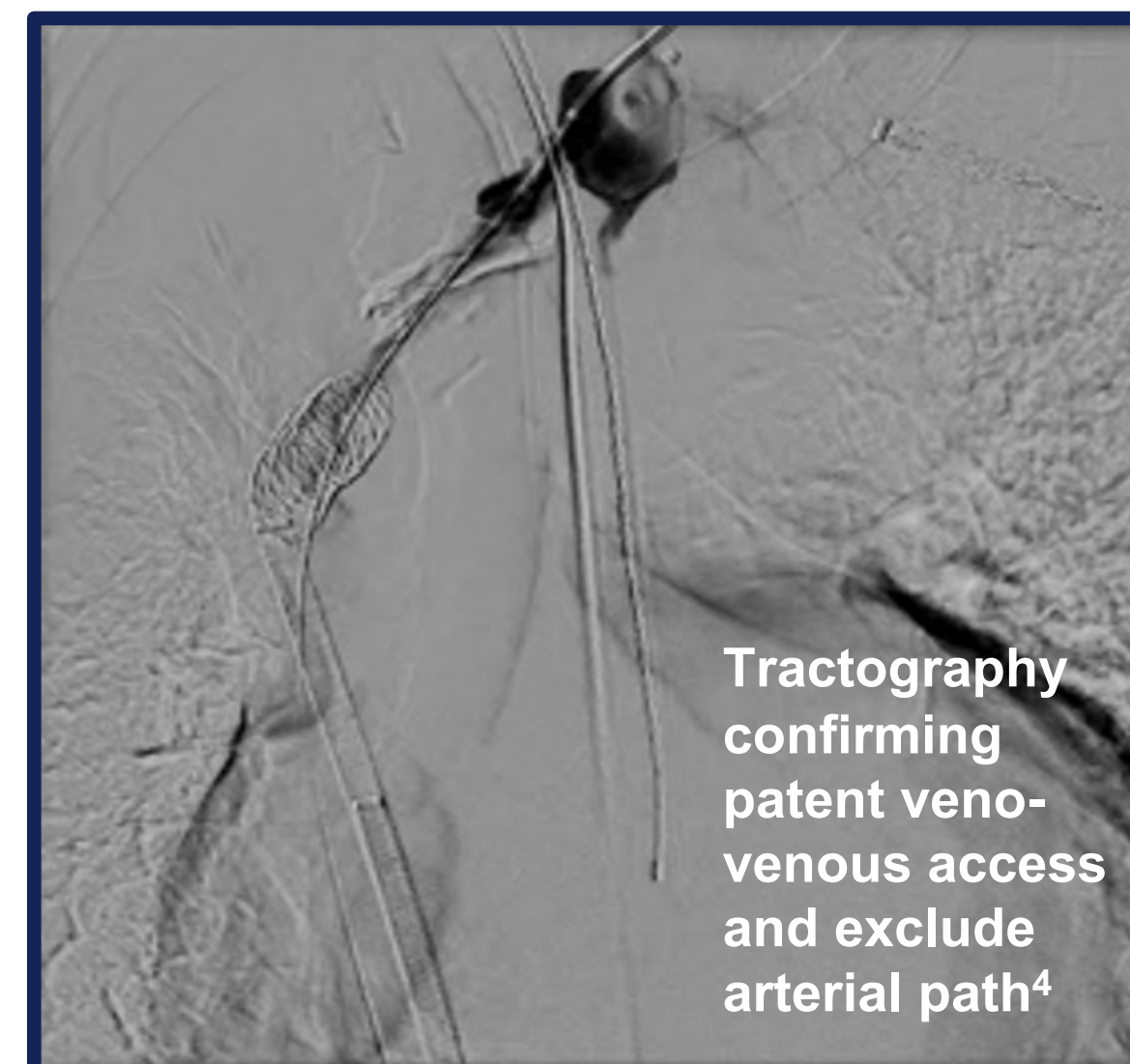
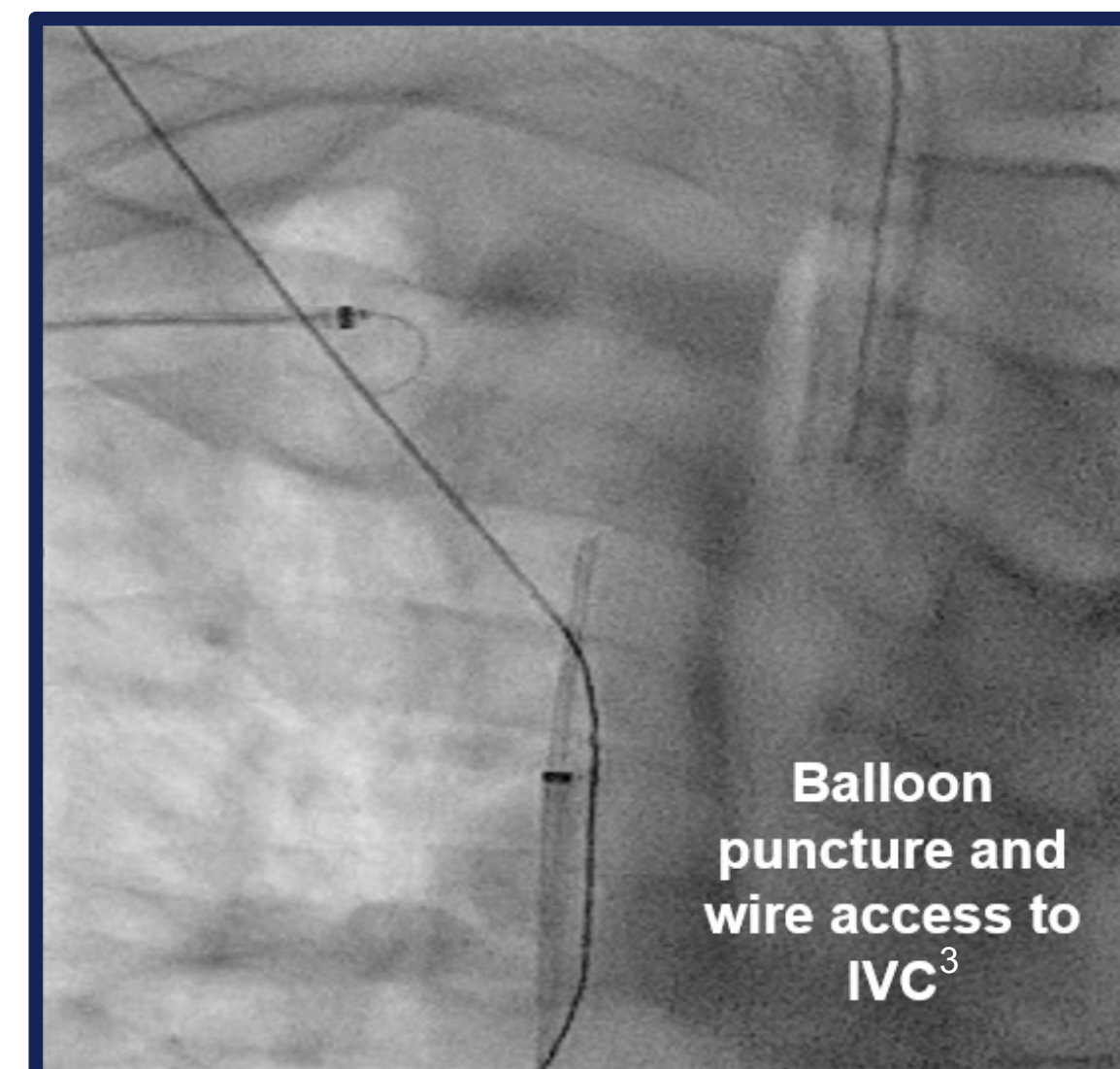
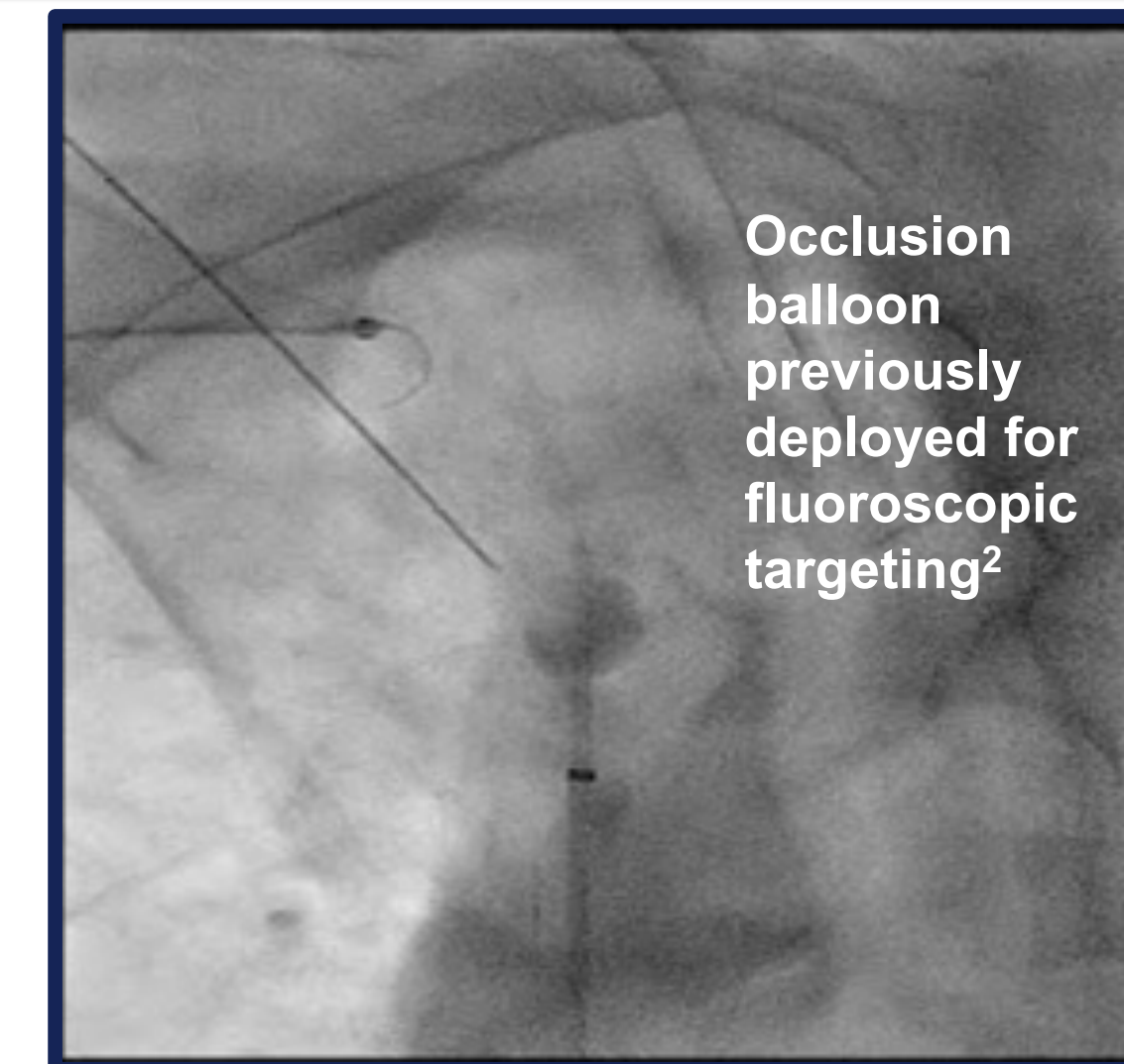
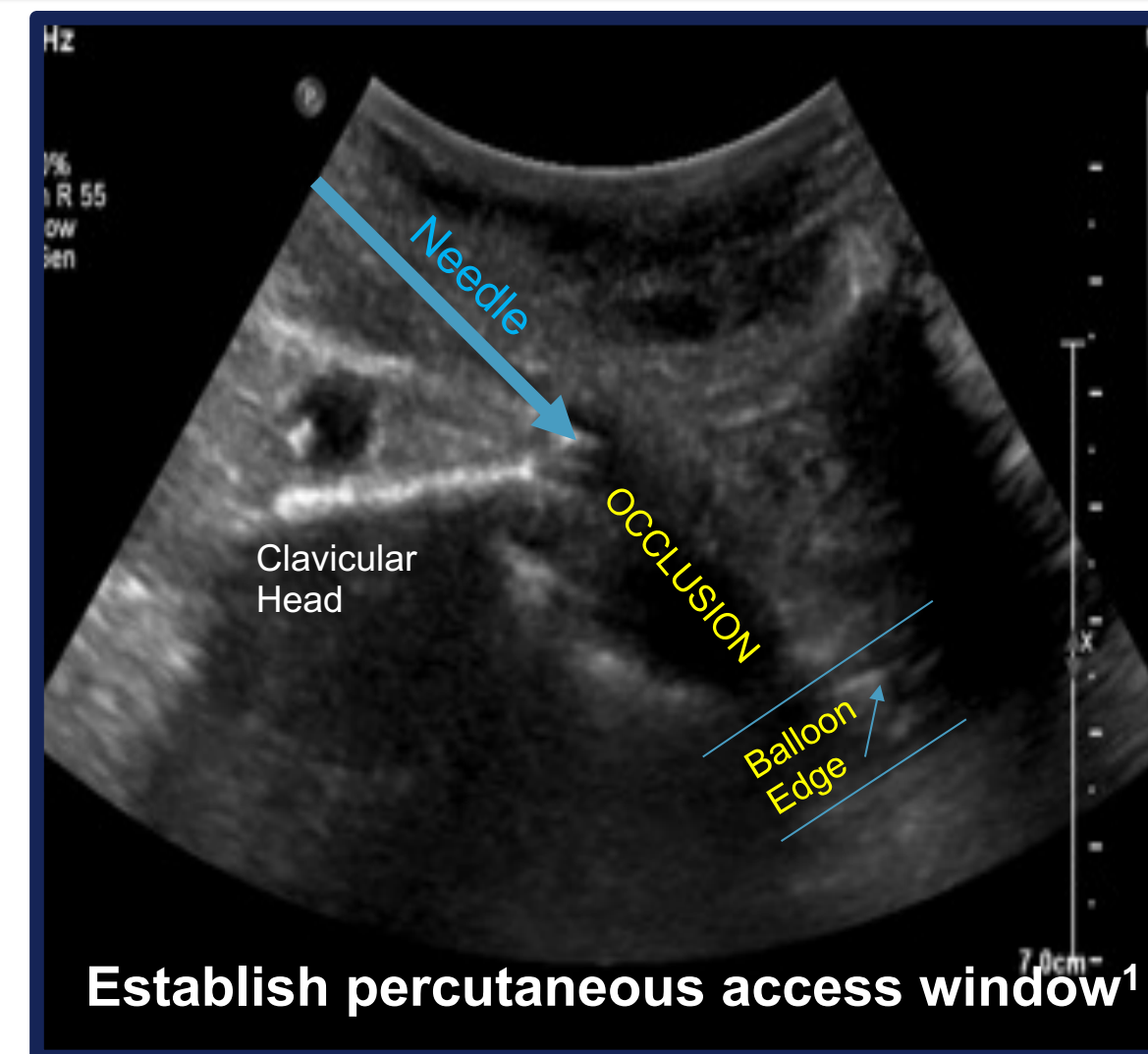
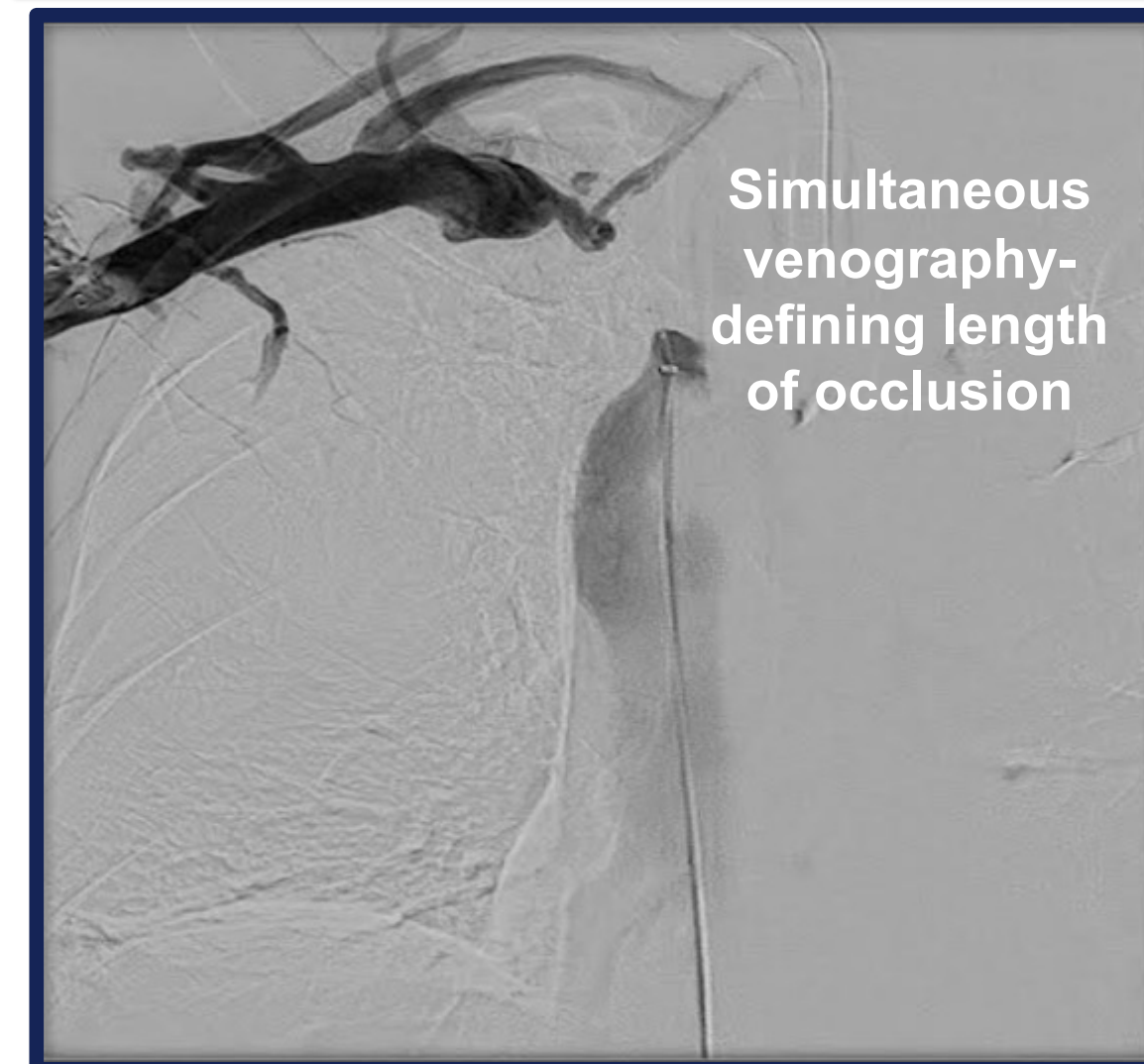
## Learning Objectives

1. Describe a case report where a novel percutaneous approach (SPEAR) provided successful and safe recanalization of a brachiocephalic occlusion
2. Suggest that this new approach provides efficacy in sharp recanalization, in addition to augmented proceduralist device control, thus increasing its safety profile

## Background References

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6. Horikawa M, Quencer KB (2017) Central Venous Interventions. Tech Vasc Interv Radiol 20:48-57. doi: 10.1053/j.tvir.2016.11.006
7. McDevitt JL, Srinivasa RN, Gemmete JJ, et al. (2019) Approach, technical success, complications, and stent patency of sharp recanalization for the treatment of chronic venous occlusive disease: experience in 123 patients. Cardiovasc Intervent Radiol 42:205-212. doi: 10.1007/s00270-018-2090-1

## Procedure Details



### The SPEAR technique :

*\*\*Please note images 1-4 and 5-8 represent two different SPEAR cases (opposite-sided occlusions) and are the most representative images of the technical descriptions below\*\**

### ULTRASOUND ACCESS WINDOW<sup>1</sup> :

- Steep cranio-caudal angle in supraclavicular fossa
- Visualize patent lumens peripheral and central to CVO
- Take note of arterial orientation as well

### PERCUTANEOUS ACCESS:

- A 20-gauge needle advanced percutaneously into peripheral patent lumen<sup>1</sup>
- When needle is unable to be visualized further, convert to fluoroscopic advancement<sup>2</sup>
- Previously placed balloon in central patent lumen used to guide needle to central access<sup>2</sup>
- Wire advanced centrally into Inferior vena cava<sup>3</sup>

### ACCESS EVALUATION<sup>4</sup>:

- Confirm veno-venous access via tractography through micro introducer kit
- Exclude trans-arterial path during this as well.

### ENDOASCULAR CONVERSION

- Percutaneous to groin through and through access with action wire and safety wire<sup>5</sup>
- Endovascular conversion via careful wire manipulation while withdrawing catheter from groin<sup>7</sup>
- Intravascular ultrasound (IVUS) to further evaluate trajectory and measure for stenting
- Venoplasty, and stenting with completion venography<sup>8</sup>

## Results

This technique has been used successfully to treat three patients with CVO, specifically the brachiocephalic vein. Device selection varied slightly between each case. However, the standard protocol was reproduced with each case. Technical success was achieved in 100% of patients and defined as recanalization with patent flow through the previous occlusion. All three patients showed marked clinical improvement in the acute follow-up period. Unfortunately, they were lost to long-term follow-up.

## Contact Info

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