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Thoracic central venous occlusion from the interventional radiology perspective

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HIGHLIGHTS

This article reviews the pathophysiology, indications, and endovascular interventions for thoracic central venous occlusions (CVOs). The authors highlight standard and advanced techniques to gain access across an occluded vessel, which often poses the biggest challenge to successful venous recanalization. In addition, the article discusses approaches to angioplasty and stenting, as well as the maintenance of vessel patency following recanalization.

- For patients with suspected CVOs, both clinical and imaging findings should be assessed prior to considering intervention.

- **Traditional Crossing Techniques:** Blunt recanalization is typically the first approach to cross a chronic occlusion; a mother-child catheter technique may be employed to add greater stability and manipulation to the system. For CVOs that are refractory to standard guidewires, sharp recanalization may be used, however, operators should be prepared to address potential complications.

- **Advanced Crossing Techniques**: As many as 18% of CVOs are refractory to traditional crossing techniques and may call for radiofrequency (RF) wire-guided recanalization with the PowerWire® RF Guidewire. The RF wire should be aimed toward a distal target (e.g. snare) and alignment should be verified in multiple fluoroscopic views before applying RF energy. Careful and incremental advancement of the wire under image-guidance can help prevent inadvertent perforations of the vessel wall.

- After crossing, angioplasty with or without stenting re-establishes vessel patency. Elective stenting is often warranted in cases unlikely to be maintained by angioplasty alone. Standard preventative stent placement techniques involve oversizing the stent by 10-20% relative to normal vessel diameter and selecting a stent at least 4cm in length.