

CERAB: A New Frontier for Extensive Aortoiliac Occlusive Disease

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PURPOSE

- To delineate the feasibility and safety of the Covered Endovascular Reconstruction of the Aortic Bifurcation (CERAB) technique for the treatment of extensive aortoiliac occlusive disease (AIOD) via a review of current literature.

METHODS

- A literature search was performed using multiple databases (MEDLINE, Cochrane Library, EMBASE).
- Three recent studies with CERAB were found¹⁻³
- Pooled meta-analysis was gathered for the number of patients treated, patient Trans-Atlantic Inner-Society Consensus (TASC-II) lesion type, 30-day morbidity and mortality, and 3-year patency rates.
- A description of CERAB technique will be provided.

RESULTS

- 247 patients were analyzed across three studies¹⁻³.
- Lesions included TASC-II D (n=216, 87.4%), TASC-II C (n=17, 6.9%), and TASC-B (n=14, 5.7%).
- Technical success was 96.4% (n=238).
- Technical failures in 8 patients (3.2%) were due to failure of lesion recanalization, while the lesion could not be passed in 1 (0.4%) case.
- Procedural complications included dissection (n=12), vessel thrombosis (n=4), rupture/bleeding (n=4), stent dislocation (n=3), and stent deformation (n=1).
- Post-procedural (30-day) morbidity and mortality were 10% (1-26%) and 0% respectively (pooled weighted proportion, 95% CI).

- Major postprocedural complications included thrombosis (n=4), pneumonia (n=3), kidney failure (n=2), stent dislocation (n=1), and multiple organ dysfunction (n=1).
- Minor postprocedural complications included access site hematoma (n=31), pseudoaneurysm (n=5), fever of unknown cause (n=4), rebleeding (n=3), and atrial fibrillation (n=2).
- Patency rates were available to three years (pooled weighted proportion, 95% CI).
- Primary patency was 88% (83-92%) at one year and 82% (75-85%) at three years.
- Secondary patency was 97% (94-99%) at one year and 97% (92-99%) at three years.

CERAB PROCEDURE

- Two introducer sheaths are inserted into the common femoral arteries, either percutaneously or by surgical cut-down.
- The occlusive lesion is passed, either subintimal or endoluminal, using regular catheters and a Terumo wire (Terumo Medical, Elkton, MD.).
- After confirmed re-entry, a balloon expandable ePTFE-covered stent is expanded into the distal aorta approximately 20 mm above the bifurcation through a 9 Fr sheath.
- The proximal 2/3 of the aortic stent was flared with a larger balloon, usually, 16 mm, creating a funnel-shaped covered stent.
- Two covered CBES are placed proximally in the distal 1/3 of the aortic stent and distally into the common iliac arteries, deployed simultaneously.
- Typically, two 8 mm V12 balloon expandable ePTFE covered stents (atrium Medical, Hudson, NH) were used, with these two stents creating a tight connection with the first aortic stent, thereby creating a new aortic bifurcation.
- When required, distal extensions are added! **(Figure 1²)**

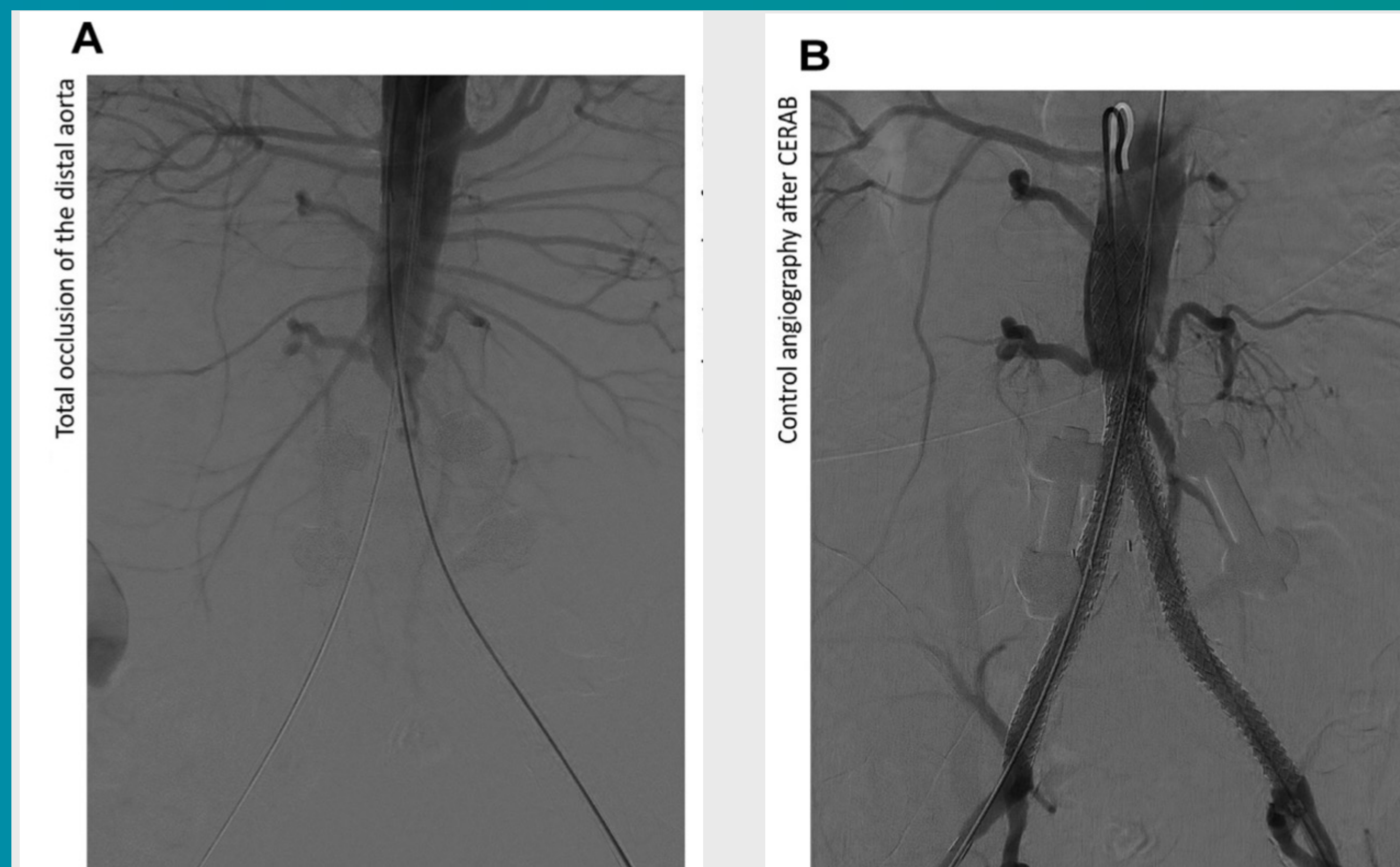


Figure 1. A, Angiography of a 54 yo man with intermittent claudication and occlusion of the distal aorta. **B,** Angiography after reconstruction with CERAB technique, with bilateral extensions landing just above the iliac bifurcation.

CONCLUSION

- CERAB is safe with a high technical success rate.
- This technique is especially useful for TASC-II D lesions but can also be useful to treat TASC-II C and TASC-II B lesions in some cases, and may offer an alternative to conventional stent grafting and bypass surgery.
- Primary and secondary patency rates were favorable at one and three years; further experience is needed to determine longer-term outcomes.

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