

Hybrid Repair of Type B Aortic Dissection Involving Aberrant Right Subclavian Artery and Kommerell's Diverticulum using a Thoracic Branched Endoprosthesis

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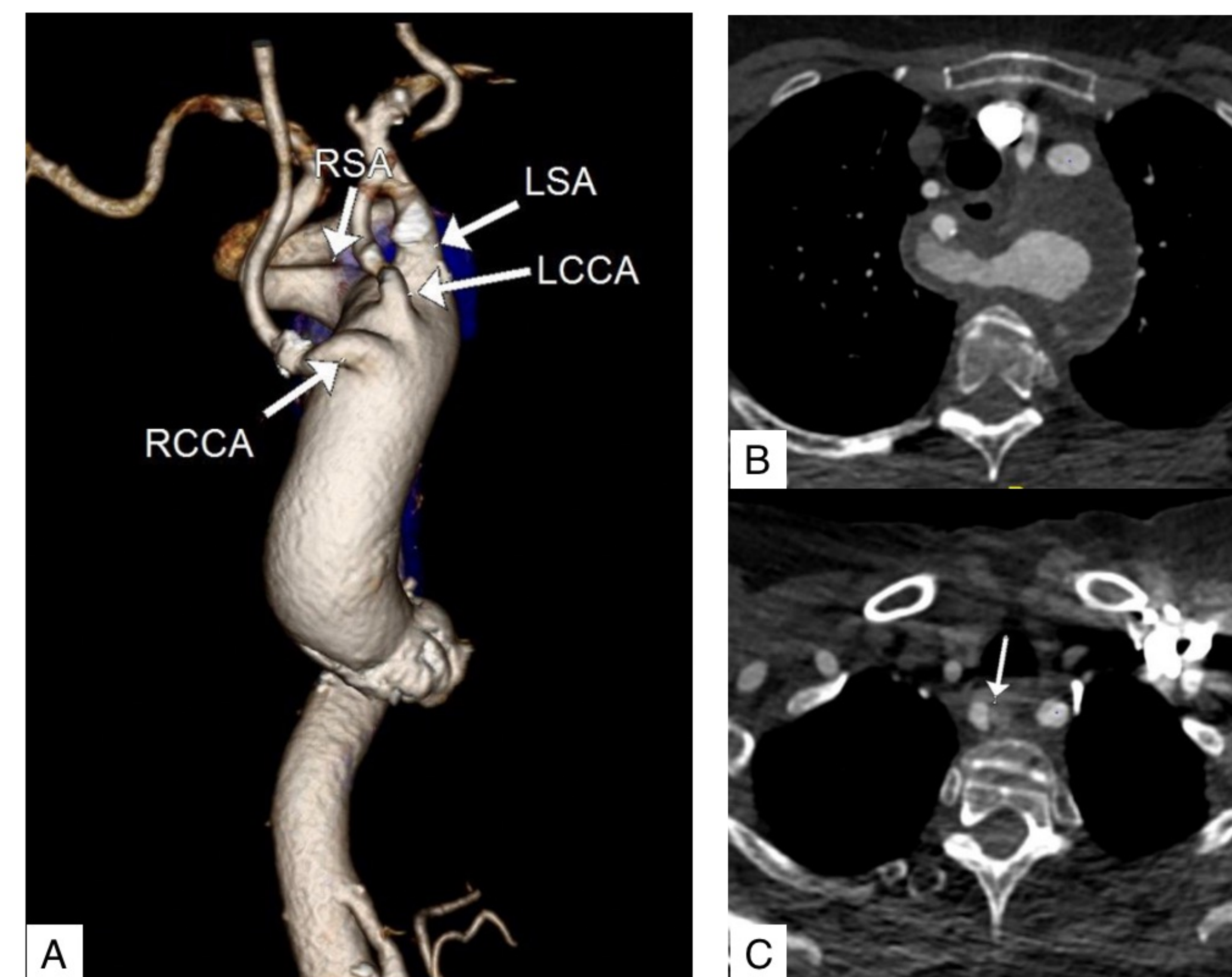
Introduction

- Aberrant subclavian artery is a commonly described aortic arch branch anomaly that occurs approximately in 0.5% - 1.0% of the population (1-3)
- They may be associated with Kommerell's diverticulum (KD) and even more uncommonly can be complicated by type B aortic dissection (TBAD) (3,4) (Fig 1)
- Favorable outcomes have recently been reported using hybrid, staged approach such as bilateral carotid-subclavian artery bypasses followed by TEVAR as an alternative to open repair with sternotomy (4,5)
- We report a case series of four patients with KD using hybrid repair with a novel commercially available thoracic branched endograft (Thoracic Branch Endoprosthesis [TBE], WL Gore, Flagstaff, AZ) and single sided surgical revascularization.

Methods

- Patients underwent hybrid endovascular repair incorporating right sided carotid-subclavian bypass (CSB) and TBE placement with the single side branch to the left subclavian artery with proximal landing in zone 1, followed by Amplatzer plug occlusion distal to the KD
- Primary end point was 30-day mortality and technical success. Secondary endpoints were major adverse events. Procedure feasibility, patient survival, clinical outcome, and symptom resolution were evaluated
- CTA was used for pre and post-operative evaluations

Figure 1



Preoperative imaging CTA (B, C) with 3D aortic reconstruction (A) (RSA - aberrant right subclavian artery, LSA - left subclavian artery, LCCA - left common carotid artery, RCCA - right common carotid artery)

Results

- All 4 were females with mean age 71.5 ± 18.3 years
- 3 symptomatic at presentation with chest or back pain
- 3 had single-stage right CSB and TBE, with 1 undergoing TBE 24hrs following right CSB
- Technical success was 100% with no major adverse events, including stroke, spinal cord ischemia, MI or death
- Median hospital stay: 7 (5 - 21 days)
- Median follow-up: 2.9 (1.6 - 8.4 months)
- Branch vessel patency 100% in follow up CTA (Fig 2)
- 1 patient had concomitant 9.5cm aneurysmal degeneration; underwent planned staged F/BEVAR during index hospitalization for distal seal

Figure 2



Follow-up imaging 1 month after right carotid subclavian bypass and TBE showing complete remodeling

Conclusion

- TBE with right subclavian artery revascularization is feasible with technical and procedural success and minimal morbidity in patients with KD even in the setting of concomitant TBAD
- This technique provides satisfactory early and midterm outcomes
- Early application may mitigate the risk of unpredictable aortic complications
- Future studies and long-term outcomes comparing hybrid approach using TBE device to those with open surgery or TEVAR with bilateral revascularization are warranted
- Long-term durability especially for TBE remains unknown

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