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REVIEW

A Systematic Review of Mid-term Outcomes of Thoracic Endovascular Repair (TEVAR) of Chronic Type B Aortic Dissection CME

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Abstract *Objective and design:* The role of Thoracic Endovascular Repair (TEVAR) in chronic type B aortic dissection remains controversial and its mid-term success as an alternative to open repair or best medical therapy remains unknown. The aim of the present study was to provide a systematic review of mid-term outcomes of TEVAR for chronic type B aortic dissection.
Materials and methods: Medline, trial registries, conference proceedings and article reference lists from 1950 to January 2011 were searched to identify case series reporting mid-term outcomes of TEVAR in chronic type B dissection. Data were extracted for review.
Results: 17 studies of 567 patients were reviewed. The technical success rate was 89.9% (range 77.6–100). Mid-term mortality was 9.2% (46/499) and survival ranged from 59.1 to 100% in studies with a median follow-up of 24 months. 8.1% of patients (25/309) developed endoleak, predominantly type I. Re-intervention rates ranged from 0 to 60% in studies with a median follow-up of 31 months. 7.8% of patients (26/332) developed aneurysms of the distal aorta or continued false lumen perfusion with aneurysmal dilatation. Rare complications included delayed retrograde type A dissection (0.67%), aorto-oesophageal fistula (0.22%) and neurological complications (paraplegia 2/447, 0.45%; stroke 7/475, 1.5%).
Conclusion: The absolute benefit of TEVAR over alternative treatments for chronic B-AD remains uncertain. The lack of natural history data for medically treated cases, significant heterogeneity in case selection and absence of consensus reporting standards for intervention are significant

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obstructions to interpreting the mid-term data. High-quality data from registries and clinical trials are required to address these challenges.

Introduction

The role of thoracic endovascular aortic repair (TEVAR) in complicated chronic type B aortic dissection (B-AD) remains controversial.[1–5] A recent expert consensus document concluded that medical therapy remains the best treatment for uncomplicated chronic B-AD.[6] This was supported by the INSTEAD (INvestigation of STEnt grafts in patients with type B Aortic Dissection) trial, which randomised patients with uncomplicated chronic B-AD to TEVAR with best medical therapy or to best medical therapy alone. The trial revealed no advantages in the rates of survival, aortic rupture or need for re-intervention of TEVAR over medical therapy at 2 years.[7]

Intervention is justified in complicated chronic B-AD; in patients with significant aortic dilatation (maximum thoracic aortic diameter >5.5 mm), rapid aortic growth (>1 cm/year), the development of unrelenting pain, uncontrollable hypertension, end-organ ischaemia or aortic rupture.[6,8] In these settings, TEVAR aims to prevent persistent perfusion of the false lumen (FL) with the resultant aortic expansion (estimated at 1–4.3 mm/year), which has been shown to increase the risk of aortic rupture and other complications.[8,9] Once the aortic diameter exceeds 60 mm, the risk of FL rupture is estimated at 30% per annum.[10,11]

The appropriateness of TEVAR for chronic dissection has been questioned due to the established nature of the false lumen and the presence of multiple fenestrations that decrease the likelihood of complete FL thrombosis.[6] Other areas of uncertainty include the length of aortic coverage required to accomplish successful treatment. Although favourable perioperative outcomes and one-year survival rates have been demonstrated for TEVAR compared to open surgery, the long-term outcomes of TEVAR remain unknown.[12] The outcomes of TEVAR have been reported in mixed pathology comprising both acute and chronic dissections,[13,14] as well as exclusively for acute type B dissection,[15] but few separate data exist to define the performance of TEVAR exclusively in the setting of chronic type B dissection. This is despite evidence that acute B-AD and chronic B-AD behave differently following endovascular intervention and consequently have different outcomes.[13] Furthermore, those dissections with a strong genetic aetiology may have different outcomes to those with a degenerative aetiology.[16]

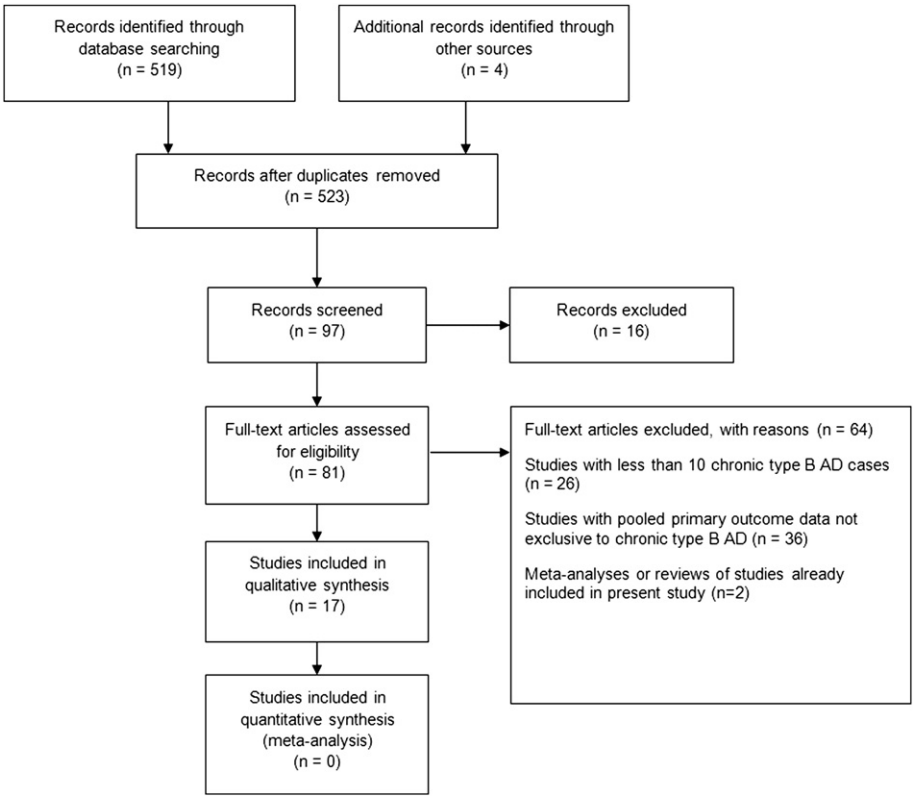

Figure 1 PRISMA flow diagram depicting search strategy used.