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Type B aortic dissection can prove challenging when medical management fails. Collectively, the literature suggests that the effectiveness of medical management as a treatment option for dissections is suboptimal. Conversely, although the effectiveness of open surgical repair has long been established, the safety of this approach remains a concern.

The morbidity and mortality associated with both medical management and open surgical repair of type B dissections, neither of which afford any definitive advantage over the other in terms of survival,¹ have driven clinicians to develop new approaches for treatment. As with medical management and open surgical repair, the goal of endovascular therapy is to alleviate symptoms and minimize the risk of rupture and end organ malperfusion, all of which are seemingly linked to false lumen status, based on evidence that a patent false lumen has been associated with adverse outcomes in patients with dissection.^{2,5}

False lumen patency has been identified as a predictor of dissection-related death (ie, rupture, perioperative death, death owing to end organ ischemia) as well as dissection-related events (aortic rupture or surgery).⁴ Survival was significantly lower in medically treated patients with a patent false lumen compared with those with a thrombosed false lumen ($p=.017$). The 2-week, 2-month, and 1-, 5-, and 10-year survival rates were 90.8%, 90.1%, 83.6%, 64.3%, and 48.0%, respectively, for patients with a patent false lumen, and 97.1%, 97.1%, 97.1%, 90.1%, and 62.8%, respectively, for patients with a thrombosed false lumen.³

Given the morbidity and mortality associated with open surgical repair of aortic dissection, the necessity for an alternative treatment in the form of stent grafts has clearly been established. Debate continues regarding optimal treatment strategies for patients with acute uncomplicated type B dissections. Although these patients may have traditionally been treated conservatively with medical management, evidence suggests a more aggressive approach to treating these patients early on may be warranted. Initial endovascular modalities for treating aortic dissection consisted primarily of stents and balloon fenestration. Early experimental studies assessing the utility of intravascular stents in the treatment of surgically created dissections in dogs yielded useful results. Deployment of stents within the true lumen demonstrated the ability for such an approach to restore and maintain blood flow in the true lumen while avoiding ischemic intravascular stents to fully obliterate flow to the false lumen.^{6,7} In practice, similar findings have been noted whereby during follow-up, upwards of 63% of patients treated with stents and/or balloon fenestration exhibited a persistently patent false lumen.^{8,9} Additionally, those who have gained experience in using stents and balloon fenestration have acknowledged the need for simpler endovascular approaches in treating dissections as the use of stents and balloon fenestration have been characterized as time consuming and technically complex, requiring multiple steps.¹⁰

We report a novel method of treatment for type B dissection by covering the entry point with the Zenith Thoracic device (TX2) and supporting the true lumen with uncovered Z stents in tandem (Zenith Dissection Endovascular Stent). This has preliminarily been very useful in reversing malperfusion syndromes by excluding the false lumen with long term healing of the aorta. The Zenith Dissection Endovascular Stent is involved in a trial approved by the US Food and Drug Administration comparing endovascular treatment to open surgery for complicated type B dissections.

References

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