

Transapical Endovascular Ascending Repair for Inoperable Acute Type A Dissection

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Acute aortic dissection remains a surgical emergency. The conventional approach involves graft replacement of the ascending aorta under circulatory arrest with variable extension into the root or arch depending on morphology at presentation. A significant proportion of patients are deemed too high-risk for surgery and are managed medically, but the 30-day mortality is over 58% (1).

A 55-year-old woman had previously undergone emergency open repair of a descending aortic dissection complicated by aorto-esophageal fistula. Multiple reoperations included re-replacement of the descending aorta, esophagectomy, delayed reconstruction with a substernal colon interposition, and hybrid thoracoabdominal repair with visceral debranching and stent grafting. She presented, eight years since the initial type B dissection, with an acute type A dissection with

moderately severe aortic insufficiency (Fig. 1, Online Videos 1 and 2). Given her exceptional risk for open repair, she consented to stent grafting of the ascending aorta (2).

Left ventricular apex and left subclavian artery were accessed through small incisions. Through and through wire access was obtained, and a 32 × 58 mm aortic extension cuff (Cook, Bloomington, Indiana) was advanced through the apex into the ascending aorta and deployed during rapid pacing (Fig. 2A, Online Video 3). Fluoroscopy and transesophageal echocardiography were used to guide delivery and for post-procedure assessment (Figs. 2B and 2C, Online Videos 4, 5, and 6).

Transapical delivery with through and through wire access allows for accurate delivery of a commercially available stent graft into acutely dissected ascending aorta with resolution of severe aortic insufficiency.



Figure 1. Pre-Operative Imaging of Acute Ascending Aortic Dissection

Preoperative imaging of acute ascending aortic dissection with (A) computed tomography, (B) angiography (Online Video 1), and (C) echocardiography (Online Video 2).

From the Heart and Vascular Institute, Cleveland Clinic, Cleveland, Ohio. Dr. Roselli reports receiving honorarium for training from Cook. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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Figure 2. Transapical Stent Grafting of Acute Ascending Dissection Repair

Transapical stent grafting of acute ascending dissection repair as seen during (A) fluoroscopic guided deployment (Online Video 3), (B) completion angiography (Online Video 4), and (C) post-procedure echocardiography (Online Videos 5 and 6).

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