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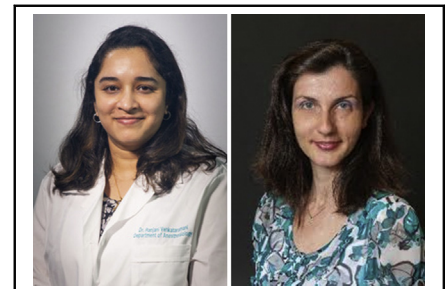


Commentary: Break the barrier: An unexpected transesophageal echocardiography finding of pseudo-coarctation in thoracoabdominal aortic repair

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Thoracoabdominal aortic repair for aneurysms or chronic dissections is one of the most intense, risky, and technically demanding procedures in cardiothoracic surgery. Type II aortic aneurysm repair involves graft replacement just below the left subclavian artery (LSA) down to the aortic bifurcation. The involvement of the LSA in the disease process may represent a challenge for the proximal aortic clamp placement due to limited space of intact aortic tissue distal to the artery.¹

In this issue of *JTCVS Techniques*, Tully and colleagues² present a case of extensive thoracoabdominal aortic repair of DeBakey type III chronic dissection extending from the LSA down to the iliac arteries. The proximal aortic clamp was placed just distal to the LSA. After an uneventful thoracoabdominal aortic repair, left heart bypass was discontinued. The authors immediately noticed blood pressure gradient of 72 mmHg between the radial and femoral arterial blood pressure readings, which was confirmed by direct needle pressure measurement. The authors used transesophageal echocardiography (TEE) to investigate the high gradient between upper and lower



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CENTRAL MESSAGE

Diligent use of intraoperative transesophageal echocardiography unveiled in real time a proximal anastomotic stenosis (“pseudo-coarctation”) due to a residual dissection flap during thoracoabdominal aortic repair, leading to timely surgical correction.

extremity blood pressure and found residual chronic dissection in the distal aortic arch above the level of aortic anastomosis. The authors are to be commended for their diligent use of TEE to provide real-time diagnosis of the anastomotic stenosis and surgical guidance for correction of this complication.

The American Society of Echocardiography’s guidelines on multimodal imaging of the thoracic aorta³ describe the use of color flow Doppler and spectral Doppler to interrogate aortic coarctation. Normal aorta has low-velocity forward flow during systole, followed by early reversal of flow in diastole. In hemodynamically significant stenosis (pseudo-coarctation), there are 3 pathognomonic findings on Doppler ultrasound: flow acceleration through the stenotic orifice on color flow Doppler; high peak velocity across the area of stenosis on continuous wave Doppler; and delayed forward systolic flow that continues in diastole (“diastolic tail”) on continuous-wave Doppler.

Although the presence of a pressure gradient between upper and lower extremity blood pressure raises suspicion for an anastomotic problem, the hemodynamic monitoring or direct pressure transduction with needle through the graft could not identify the specific cause or location. The authors

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provide a great example of the utility of intraoperative TEE for detecting blood flow through a stenotic orifice and made a real-time diagnosis of proximal extension of the dissection flap as a direct cause of the gradient, allowing for an immediate corrective intervention.

This report describes a rare and interesting complication of open thoracoabdominal aortic graft replacement. Diligent inspection of the aorta postrepair is paramount, and intraoperative TEE should be used routinely during thoracoabdominal aorta repair to inspect the thoracic aorta above the proximal anastomosis, in addition to its

traditional role in monitoring the ventricular volume and function.

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