

How to Guide Stent Graft Implantation in Type B Aortic Dissections: Comparison of Angiography, Transesophageal Echocardiography, and Intravascular Ultrasonography

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Background

Despite growing interest in stent-graft implantation for type B aortic dissection, there are no established recommendations to prepare and perform an implantation procedure.

Method

We directly compared angiography, transesophageal echocardiography (TEE), and intravascular ultrasonography (IVUS) intraprocedurally before and after placement of 48 stent-grafts in 42 consecutive patients (12 female, 61 ± 11 years) with acute and chronic type B aortic dissection for both usefulness and capability to guide aortic stent-graft implantation.

Results

Both IVUS and TEE are superior to angiography in identifying multiple entries (52 and 43 vs 34; $p < .005$ each), to diagnose false lumen slow-flow after stent-graft implantation (32 and 31 vs 24, $p < .005$ each) and to detect incomplete stent apposition (18 and 16 vs 8; $p < .005$ each). In comparison to angiography, guidewire position over the entire length of the aorta was documented more frequently by TEE and IVUS (42 and 40 vs 25, $p < .001$). In four patients with abdominal extension of the dissection, only IVUS was able to accurately identify the false lumen over the entire length of the diseased aorta. TEE was superior to IVUS and angiography in the detection of endoleaks (5 vs 0 and 1; $p < .05$). Intraprocedural angiography, TEE, and IVUS had been performed without complications in all patients.

Conclusion

TEE in conjunction with angiography appears to be advantageous and adds incremental information to safely guide stent graft placement in type B aortic dissection. Additional use of IVUS was found to be helpful in patients with complex anatomy and abdominal extension of the dissection.