

TEVAR for Uncomplicated Type B Dissection : New Paradigm Shift

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Aortic disease progression occurs in 25-50% of patients. Long-term outcomes of best medical therapy (BMT) show upwards of 30% complications rates. Intervention with its attendant mortality may still be required days after presentation should the patient fail to respond to medical therapy, although there is little agreement regarding the threshold for these indications. The ADSORB (Acute Dissection: Stent graft or BMT) Study compared TEVAR plus BMT to BMT alone in acute uncomplicated type B dissection. There were no mortalities or neurologic complications in either group at 1 year. However, 10% of patients in the medical arm crossed over to surgery. Imaging at 1 year favored TEVAR, as there was a higher frequency of false lumen thrombosis and aortic remodeling. The INSTEAD-XL (Investigation of Stent grafts in Aortic Dissection) Study showed that TEVAR for uncomplicated type B dissection plus BMT improved 5-year aortic-specific survival and showed favorable aortic remodeling rates. The majority of retrospective and registry reports compare treatment groups (medical or interventional) without separating patients into subgroups based on presentation (with or without complications). Results of medical therapy of mostly uncomplicated dissections are typically compared to surgery or TEVAR treatment for mostly complicated dissections. Early outcomes in these biased comparisons clearly favor medical management with the most recent mortality estimates around 6-10% for the uncomplicated group. With intervention in mostly complicated patients, the early mortality rate with TEVAR is reported to be better than open surgical repair. The results of TEVAR for acute uncomplicated dissection are not well defined. In two small prospective trials for uncomplicated dissection, TEVAR appears to have better outcomes than in reports of its use in complicated dissections: early mortality of 2.8% in the INSTEAD Trial and 0% in the ADSORB Study, suggesting that TEVAR is a relatively safe intervention in this more stable group. This favorable early outcome is clearly a prerequisite for prophylactic application of the procedure. Despite small numbers, the results of ADSORB are particularly encouraging since they demonstrate the relative safety of early TEVAR in a cohort operated on in the acute phase (14 days). Although INSTEAD revealed similar encouraging results, the randomization occurred later during the chronic more stable phase of the dissection. Unfortunately, patients treated medically with uncomplicated type B dissection remain at increased risk for late complications and death. The frequency of these late adverse events has only recently come to light. In 2013, late follow-up from the IRAD Registry paradoxically revealed a more favorable late adverse event profile for patients treated with TEVAR, most of whom were initially complicated, compared to those treated with medical therapy. After a relatively benign course, late mortality in the medically managed group significantly exceeded that of the TEVAR group at 5 years (29% vs. 15.5%, $P=0.018$) suggesting that TEVAR exerts a stabilizing effect on the aortic wall and diminishes late complications. More germane to the issue at hand is the long-term data from the INSTEAD Trial, which was a randomized comparison of medical therapy and TEVAR in uncomplicated chronic dissection. It showed a significant benefit of TEVAR five years after intervention, including improved aortic related event rates (16.7% vs. 26.5%), aortic-related mortality (6.9% vs. 19.3%, $P=0.04$) and disease progression (27% vs. 46.1%, $P=0.04$). A major contribution of INSTEAD was long-term follow-up that identified a much higher late aortic event rate (conversions, emergency and elective interventions) than previously estimated from single-center series and population studies. In addition, almost all deaths 2-5 years after entering the study were related to new complications of the dissection. Unfortunately INSTEAD was initially planned as a 2 year study, was underpowered (140 patients), and required an extension, late retrospective collection of data, and unusual statistical manipulation to show the benefits. The ADSORB Study more appropriately randomized patients during the acute phase in order to show protection from earlier events with TEVAR. ADSORB reported 5 aortic-related events requiring treatment (16.1%) during the first year alone. Similar to INSTEAD, it showed marked improvement of aortic remodeling with TEVAR at 1 year. The conclusion of both studies is that TEVAR appears to be a better option for the 25- 50% of medically treated patients who develop aortic disease progression. This has generated a lot of interest in this field, although clearly requires confirmation with a large randomized study. Several other meta-analyses have suggested a superior benefit of TEVAR.