

Research Highlights

Highlights from the latest articles in interventional cardiology



Transcatheter versus surgical aortic valve replacement in high-risk patients

Evaluation of: Smith CR, Leon MB, Mack MJ *et al.* Transcatheter versus surgical aortic-valve replacement in high-risk patients for the PARTNER Trial Investigators. *N. Engl. J. Med.* 364(23), 2187–2198 (2011).

Aortic stenosis results in a fixed obstruction to left ventricular output. Severe aortic stenosis, once symptomatic, carries a high mortality rate. Calcific aortic stenosis is generally a disease of the elderly. As such, many of these patients have significant comorbidities that increase their operative morbidity and mortality. Consequently, many patients are not treated given their high risk co-morbidities. Furthermore, surgery has been the only method to treat aortic stenosis due to the lack of available medical therapies to reduce mortality once it has become symptomatic.

Technology has now evolved and the diseased aortic valve can be displaced and a new aortic valve implanted. This can now be performed in a minimally invasive manner – either transfemorally or transapically. There have been approximately 20,000 transcatheter valve implantations (TAVI) outside the USA to date.

In the current study, Smith *et al.* evaluated the use of the Edwards–Sapien bioprosthetic valve in patients deemed high-risk for conventional surgical aortic valve replacement. In 25 centers across the USA (22), Canada (2) and Germany (1), a total of 699 patients with severe aortic stenosis were randomized to undergo surgical (351) or TAVI (348). Patients were deemed high risk for conventional surgical treatment if their risk of death was $\geq 15\%$ in the first 30 days after surgery.

The results of the study are very encouraging for TAVI. At 30 days, the mortality rate in the TAVI group was 3.4% compared to 6.5% in the surgical cohort ($p = 0.07$). One year mortality was not different between the two groups (TAVI 24.2%; surgery 26.8%; $p = 0.44$). There was a trade-off of complications between the two groups – more patients suffered a stroke in TAVI at 30 days than with surgery (3.8 vs 2.1%; $p = 0.20$) and there were more vascular complications in TAVI than surgery (11.0 vs 3.2%; $p < 0.001$); however, post-procedure atrial fibrillation was greater in the surgical arm than TAVI (16.0 vs 8.6%; $p = 0.006$) and more major bleeding occurred after surgical replacement than TAVI (9.3 vs 19.5%; $p < 0.001$).

TAVI will likely be the next revolution in the search for less invasive treatments for cardiovascular disease. It follows the paradigm of percutaneous treatment of coronary artery disease, endovascular treatment of aneurysms and peripheral arterial disease. Like other technologies, data often lags the utilization of these new tools. However, the studies to date with TAVI are very encouraging, particularly in patients who are at high risk for surgical morbidity and mortality.

Financial & competing interests disclosure

The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties. No writing assistance was utilized in the production of this manuscript.

Robert S Dieter^{†1}
& **Aravinda Nanjundappa²**

¹Loyola University, IL, USA

²University of West Virginia, WV, USA

[†]Author for correspondence:
rdieter@lumc.edu

future
medicine part of fsg

