TAVI Costs Top Surgery In Low Risk Cases

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For patients with symptomatic aortic stenosis and an intermediate operative risk, transcatheter aortic valve implantation (TAVI) is more costly than surgical valve replacement, a single-center study showed.

Total costs (converted from Euros to U.S. dollars) through 1 year of follow-up -- including both in-hospital and follow-up costs -- were $61,247 for TAVI and $47,059 for surgery, according to A. Pieter Kappetein, MD, PhD, of Erasmus Medical Center in Rotterdam, and colleagues.

Although costs related to use of blood products and to hospital stay were lower for TAVI, they were not enough to compensate for the higher costs related to materials ($29,227 versus $6,841, $P<0.001$), which included the cost of the transcatheter valve, the researchers reported in the December issue of the *Annals of Thoracic Surgery*.

"Therefore, surgical aortic valve replacement remains a clinically and economically attractive treatment option," they wrote, noting that more detailed analyses are needed to confirm whether TAVI is cost-effective despite the higher total costs.

TAVI has emerged as a treatment alternative to surgical valve replacement for patients with severe aortic stenosis following positive results from the PARTNER Cohort A [1] and Cohort B [2] trials, which evaluated patients who had a high operative risk and those who were ineligible for surgery, respectively.

TAVI is now being evaluated for use in lower-risk patients. And particularly in those with an intermediate operative risk, a choice will have to be made between using TAVI or surgery. Cost is one factor that might influence that decision.

Kappetein and colleagues looked at the comparative costs of TAVI and surgical aortic valve replacement in patients with intermediate operative risk who were treated at Erasmus Medical Center. The researchers prospectively collected clinical data on 141 patients who underwent TAVI and 405 who underwent surgery. Costs were then calculated retrospectively.

Propensity score matching resulted in 42 matched pairs of patients -- one who underwent TAVI and one who underwent surgery -- with an intermediate operative risk. The mean age of the patients was 79 and roughly 50% were male.

The average logistic EuroSCORE was 12.9 in the TAVI group and 12.5 in the surgery group.

The length of stay after the procedure was significantly longer for the patients who underwent surgery (18.8 versus 11.3 days, $P<0.001$), which was consistent for both time spent in the intensive care unit and on the ward.

Concomitant percutaneous coronary intervention or coronary artery bypass grafting (CABG) was more common in the surgery group (47.6% versus 7.1%, $P<0.001$). The researchers said that was "because guidelines recommend concomitant CABG for patients with moderate-to-severe coronary artery disease; no such recommendations exist for [TAVI]."

There were no between-group differences in complications, mortality, follow-up duration, readmissions, or outpatient clinic visits.

Total in-hospital costs were higher with TAVI ($54,071 versus $44,201, $P=0.01$), which was performed using the self-expanding, third-generation CoreValve prosthesis.

Costs were lower for TAVI for blood products and the total stay -- driven by lower costs in the ICU -- but higher for the procedure itself ($38,146 versus $17,355, $P<0.001$), driven almost entirely by the cost of the transcatheter valve.

The researchers noted that the valve used in the study currently costs $23,310, and it would have to be priced at $9,123 to level the costs between TAVI and surgery.

"With more valves being developed, market forces are likely to decrease the price of transcatheter valves, similar to the trend previously seen in coronary stents," they wrote.

Follow-up costs through 1 year were numerically higher in the TAVI group, although the difference did not reach statistical significance ($7,175 versus $2,858, *P*=0.17).

The researchers noted some limitations of the study, including the retrospective collection of costs from a relatively small, single-center study; the possibility of unmeasured confounding; and the potential for the logistic EuroSCORE to underestimate the operative risk of TAVI patients because it does not account for porcelain aorta, frailty, chest deformities, and malnutrition.

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