

Transcatheter Aortic Valve Replacement: A Review

Context

Aortic stenosis (AS) is a condition in which progressive failure of the aortic valve to open fully leads to syncope (loss of consciousness), angina, heart failure, and sudden death. If left untreated, most patients with this condition will die within five years. It is estimated that a little more than 62,000 Canadians older than 75 have AS, and approximately one-third of them are considered too high risk for open heart surgery. Transcatheter aortic valve replacement (TAVR) — sometimes called transcatheter aortic valve implantation (TAVI) — is an alternative for patients with severe AS who are not eligible for conventional surgical aortic valve replacement (SAVR).

Technology

The two most common approaches for TAVR are through an artery in the leg (transfemoral) or through an incision between the ribs (transapical). Today there are two commercially available systems for TAVR: Edwards Sapien manufactured by Edwards Lifesciences and CoreValve manufactured by Medtronic. Health Canada approved use of the Edwards Sapien system in 2011 for the transfemoral approach. The CoreValve system is available through the Special Access Programme.

Issue

The benefits of TAVR with up to one year follow up were shown in two randomized controlled trials (PARTNER cohorts A and B), but questions remain about the durability and clinical effectiveness of TAVR compared with SAVR or standard medical therapy beyond one year. A review of the longer-term (> 12 months) clinical evidence will help to guide decisions about its use.

Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages

- Outcomes beyond 12 months support the use of TAVR as an alternative to SAVR in select high-risk patients with AS.
- TAVR and SAVR resulted in similar clinical outcomes such as: mortality and re-hospitalization rates, and myocardial infarction.
 - Major vascular complications and neurologic events were more frequent with TAVR.
- Compared with standard medical treatment, TAVR was superior with regards to long-term clinical outcomes and improved symptoms.

Results

The literature search identified 874 citations and a search of the grey literature identified 2 additional studies. Of the 31 studies selected for full text review, 5 were included in the review. The full report lists all the included and excluded trials.

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