TITLE: Aortic Valve Bypass for Patients who Cannot Undergo Conventional Aortic Valve Replacement: Clinical Effectiveness

DATE: 12 November 2010

RESEARCH QUESTION

What is the clinical effectiveness of aortic valve bypass for patients who cannot undergo conventional aortic valve replacement?

KEY MESSAGE

Limited evidence suggests that aortic valve bypass is a feasible alternative for high-risk patients with aortic stenosis who cannot undergo conventional aortic valve replacement.

METHODS

A limited peer reviewed literature search was conducted using the following bibliographic databases: PubMed and the Cochrane Library (2010, Issue 10). Methodological filters were applied to limit retrieval health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, and non-randomized studies. Where possible, retrieval was limited to the human population. The search was limited to English language documents published between January 1, 2005, and November 4, 2010. Grey literature was obtained through health technology agency websites and a focused Internet search. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
RESULTS

Rapid response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials and non-randomized studies.

Five relevant non-randomized studies were identified on aortic valve bypass for patients who cannot undergo conventional aortic valve replacement. No relevant health technology assessment reports, systematic reviews, meta-analyses, or randomized controlled trials were found. Additional information that may be of interest, including case reports on the use aortic valve bypass, is included in the appendix.

OVERALL SUMMARY OF FINDINGS

Non-randomized studies from the University of Maryland Medical Center\textsuperscript{1,2,3,5} and Karolinska University Hospital (Sweden)\textsuperscript{4} have reported aortic valve bypass (AVB) to be a feasible alternative for high-risk aortic stenosis patients who cannot undergo aortic valve replacement. For all studies, the mean ages of patients ranged from 75 to 82. In the Swedish study, apicoaortic valved conduits were inserted in 13 high-risk patients. Two patients died of myocardial infarction within the first 30 days after surgery and three patients died after 30 days from pneumonia (n=2) and myocardial infarction (n=1). The remaining eight patients were in New York Heart Association class I or II at follow-up, and showed a low gradient over the valved conduit.\textsuperscript{4} In the first University of Maryland study of 14 AVB patients, there were two perioperative deaths and two non-cardiac late deaths. Nine of the 10 remaining patients were in functional class I.\textsuperscript{5} In an updated study including 31 patients, four perioperative deaths were reported and one stroke related to intraoperative hypotension.\textsuperscript{2}

Two further University of Maryland studies looked at hemodynamics of AVB\textsuperscript{1} and the imaging of apioaortic conduits via multidetector CT (MDCT).\textsuperscript{3} Using two-dimensional and Doppler echocardiography, the hemodynamics study found no obstructions of the native aortic valve or conduit in 47 patients who had undergone AVB. They concluded that AVB relieves left ventricular outflow tract obstruction in addition to halting the native progression of aortic stenosis.\textsuperscript{1} The imaging study\textsuperscript{3} noted the effectiveness of MDCT to assess the appearance of apicoaortic conduits and any post-operative complications. Looking at the MDCT images of 12 patients, the authors found that periconduit outpouching and hypoperfusion involving the left ventricle were common. Complications noted were pericardial hemorrhage, hemothorax, and ventricular pseudoaneurysm.\textsuperscript{3}
REFERENCES SUMMARIZED

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses
No literature identified.

Randomized controlled trials
No literature identified.

Non-randomized studies


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APPENDIX – FURTHER INFORMATION:

Case reports


Additional references
