Minimal access versus conventional aortic valve replacement: a meta-analysis of propensity-matched studies.

Abstract:

Conventional aortic valve replacement (CAVR) via a full sternotomy is the standard surgical approach for aortic valve replacement. Minimal access aortic valve replacement (MAAVR) is commonly performed via a partial sternotomy and a right minithoracotomy. Such procedures aim not only to reduce the invasiveness but to offer the same quality, safety and results of the conventional approach. Our goal was to compare both procedures by performing a meta-analysis of reports with risk adjustment that performed a propensity-matched analysis. Relevant articles were searched for in Medline, the Cochrane Database of Systematic Reviews and the Scopus database based on predefined criteria and end-points. The early and late outcomes and complications were compared in the selected studies. A total of 4558 patients from 9 studies were enrolled; 2279 (50%) underwent CAVR and 2279 (50%) underwent MAAVR. There was a significantly lower rate of postoperative low output syndrome (1.4% vs 2.3%, P = 0.05) and atrial fibrillation (11.7% vs 15.9%, P = 0.01) in the MAAVR than in the CAVR group, respectively. In contrast, aortic cross-clamp and cardiopulmonary bypass times were significantly longer in the MAAVR group (P< 0.05). Finally, the incidence of early deaths (1.5% vs 2.2%, P =
0.14), stroke (1.4% vs 2%, P = 0.20), myocardial infarction (0.4% vs 0.5%, P = 0.65), renal injury
(4.5% vs 6%, P = 0.71), respiratory complications (9% vs 10.1%, P = 0.45), re-exploration for bleeding
(4.9% vs 4.1%, P = 0.27) and pacemaker implantation (3.3% vs 4.1%, P = 0.31) was similar in both
groups, respectively. In summary, even though MAAVR procedure, either through partial sternotomy
or right minithoracotomy, provides patient satisfaction due to the smaller incision and better cosmetics,
MAAVR is as safe as the CAVR procedure. Although MAAVR takes slightly longer, it was not
associated with greater cardiopulmonary bypass-related adverse effects. Interestingly, MAAVR shows
a lower incidence of low cardiac output syndrome and atrial fibrillation.

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