EFFICACY AND SAFETY OF DIFFERENT PROSTHESIS AORTIC VALVE REPLACEMENT IN PATIENTS WITH AORTIC STENOSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background

A surgical replacement of the stenotic aortic valve has been a big challenge which facing cardiac surgeons while different types of prosthesis valves showed many clinical events that improving the hemodynamic performance in these patients. Selection for the best prosthesis is still under debate while evidence remains controversial. The aim of this systematic review and Meta-analysis was to assess the efficacy and safety while comparing variable protheses after aortic valve replacement.

Methods and Materials

We searched PubMed, MEDLINE in Process, Scopus and Web of Science (previously ISI) for relevant studies, published up to January 2018. We included randomized controlled trials (RCTs) that compared different types of prostheses valves. Data were pooled as odds ratios (OR) or mean differences (MD) with their 95% confidence intervals (CI) between compared groups in a random meta-analysis model. Subgroup and sensitivity analysis were conducted. We assessed heterogeneity by a Chi square test and I2 statistic.

Results

Regarding efficacy outcomes, transvalvular mean gradient at 1 year was significantly lower in Cryolife O'Brien than Toronto (MD= -4.50 mmhg, 95% CI [-6.64, -2.36]), lower in Edwards Perimount Magna (EPM) than Medtronic Mosaic (MM) (MD= -6.42 mmhg, 95% CI [-8.11, -4.72]), and lower in ROSS than MIRA (MD= -6.70 mmhg, 95% CI [-8.38, -5.02]). Regarding safety outcomes, CarboMedics was associated with significantly higher cardiac valve not related deaths (OR= 2.04, 95% CI [1.04, 3.97]), higher early mortality (OR= 2.72, 95% CI [1.18, 6.32]), and lower hemorrhage (OR= 0.41, 95% CI [0.17, 0.98]) compared to St. Jude Medical.

Figure 1. Forest plot of Transvalvular mean gradient at 1 year.

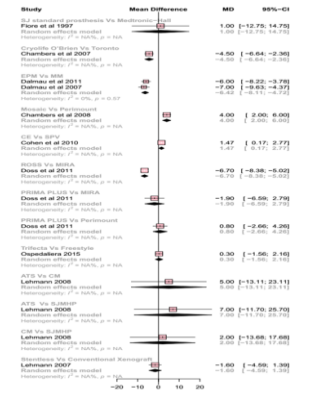


Figure 2. Forest plot of Cardiac Valve Non related Deaths

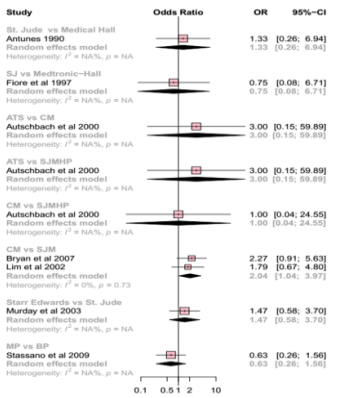


Figure 3. Forest plot early mortality.

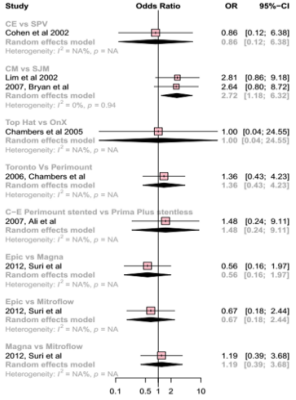
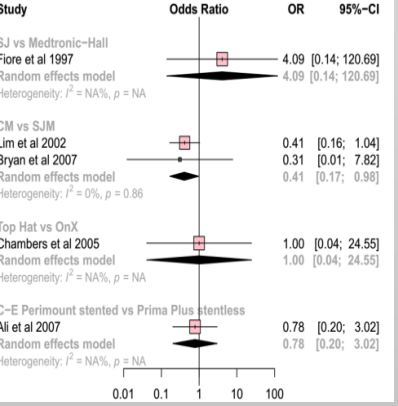


Figure 4. Forest plot of Hemorrhage



Conclusion

Our findings showed that Cryolife O'Brien had lower transvalvular mean gradient at 1 year than Toronto. CM had higher early mortality, cardiac valve not related deaths, and lower haemorrhage than SJM.