

Systematic Review and Meta-Analysis of Mid-Term Survival, and Recurrent Mitral Regurgitation for Robotic-Assisted Mitral Valve Repair

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Abstract : Over the past two decades surgical approaches for mitral valve (MV) disease have evolved with the advent of minimally invasive techniques. Robotic mitral valve repair (RMVr) safety and efficacy has been well documented, however, mid- to long-term data are limited. The aim of this review was to provide a comprehensive analysis of the available mid- to long-term data for RMVr. Electronic searches of five databases were performed to identify all relevant studies reporting minimum 5-year data on RMVr. Pre-defined primary outcomes of interest were overall survival, freedom from MV reoperation and freedom from moderate or worse mitral regurgitation (MR) at 5-years or more post-RMVr. A meta-analysis of proportions or means was performed, utilizing a random effects model, to present the data. Kaplan-Meier curves were aggregated using reconstructed individual patient data. Nine studies totaling 3,300 patients undergoing RMVr were identified. Rates of overall survival at 1-, 5- and 10-years were 99.2%, 97.4% and 92.3%, respectively. Freedom from MV reoperation at 8-years post RMVr was 95.0%. Freedom from moderate or worse MR at 7-years was 86.0%. Rates of early post-operative complications were low with only 0.2% all-cause mortality and 1.0% cerebrovascular accident. Reoperation for bleeding was low at 2.2% and successful RMVr was 99.8%. Mean intensive care unit and hospital stay were 22.4 hours and 5.2 days, respectively. RMVr is a safe procedure with low rates of early mortality and other complications. It can be performed with low complication rates in high volume, experienced centers. Evaluation of available mid-term data post-RMVr suggests favorable rates of overall survival, freedom from MV reoperation and freedom from moderate or worse MR recurrence.

Keywords : mitral valve disease, mitral valve repair, robotic cardiac surgery, robotic mitral valve repair

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