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Comparison of CABG and mitral valve repair and CABG in IMR

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ADMINISTRATIVE INFORMATION

Support - The First School of Clinical Medicine,Lanzhou University.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202480092

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 August 2024 and was last updated on 20 August 2024.

INTRODUCTION

Review question / Objective To systematically evaluate the efficacy of different surgical procedures for ischemic mitral regurgitation.

Condition being studied Ischemic bicuspid regurgitation (IMR) refers to the rupture or extension of papillary muscles and chordae tendineae caused by myocardial ischemia and necrosis caused by partial stenosis or occlusion of the coronary artery. The enlargement of the left ventricle further leads to the passive dilatation of the annulus, the prolapse of the valve leaflet, and the abnormal motion of the left ventricle leads to the changes in the geometry of the left ventricle, resulting in mitral insufficiency. The surgical treatment strategy of IMR is still controversial, that is, for moderate to severe IMR, whether only revascularization is sufficient to restore the natural morphology of the valve, and whether valve surgery is necessary at the same time. The aim of this study is to compare the final efficacy between CABG alone and CABG combined with MVr in the treatment of IMR, so as to provide some reference value for clinical work.

METHODS

Participant or population Participants with moderate-to-severe IMR diagnosed by transthoracic echocardiography.

Intervention Interventions included coronary artery bypass grafting (CABG) and CABG plus mitral-valve repair (CABG+MVr).

Comparator IMR patients who underwent CABG alone were used as the control population.

Study designs to be included Study types were limited to randomized controlled trials (RCTS).Eligibility criteria: Literature screening and data extraction were performed by two study investigators.

Eligibility criteria Inclusion criteria: (1) The study type was limited to RCTS; (2) patients with moderate to severe IMR diagnosed by transthoracic echocardiography; (3) Interventions included CABG, CABG+MVr; (4) Primary outcome measures: 30-day all-cause mortality, respiratory complications, renal insufficiency, major bleeding events, wound infection, stroke, myocardial infarction and postoperative new-onset atrial fibrillation.
Exclusion criteria: (1) repeated publications; (2) Lack of relevant outcome indicators; (3) The original article could not be obtained; (4) review or letter literature; (5) non-clinical research.

Information sources We searched PubMed, Cochrane Library, Web of Science, and Embase databases up to July 2024 using the following search terms: ischemic mitral valve regurgitation, ischemic mitral regurgitation, Coronary Artery Bypass, coronary artery bypass graft, Mitral Valve Annuloplasty, mitral valve repair, etc.

Main outcome(s) 30-day all-cause mortality, respiratory complications, renal insufficiency, major bleeding events, wound infection, stroke, myocardial infarction, and postoperative new-onset atrialfibrillation.

Quality assessment / Risk of bias analysis The risk of bias of the included studies was assessed by two independent reviewers using the revised version of the Cochrane tool for randomized trials . Disagreements were resolved either by consensus or by a third reviewer. Six domains, including bias arising from the randomization process, bias arising from deviations from intended interventions, bias arising from missing outcome data, bias in the measurement of the outcome, and bias in the selection of the reported results were considered in the evaluation process. Finally,the overall bias of studies was identified. Studies were considered to be of " low concern" if all domains were rated to have " low risk" . Once one domain was rated to be of "some concern", studies were considered to be of " unclear risk of bias" (including not applicable and no information). When more than one domain was rated as "high risk," the studies were considered to be of "high concern."

Strategy of data synthesis Based on meta-analysis method, Stata 17.0 software was used to draw forest plot, sensitivity analysis plot, funnel plot and egger plot. For binary variables, odds ratio (OR) was used as the effect analysis statistic, and 95% confidence interval (CI) was provided. The heterogeneity between the results of the included studies was analyzed by $\chi 2$ test (test level was α=0.1), and the heterogeneity was quantitatively2 determined by combining withI.

Subgroup analysis If there was high heterogeneity among the included studies, subgroup analysis, sensitivity analysis, Meta regression and other methods would be used to deal with the heterogeneity.

Sensitivity analysis If there was high heterogeneity among the included studies, subgroup analysis, sensitivity analysis, Meta regression and other methods would be used to deal with the heterogeneity.

Language restriction Sensitivity analysis was performed by excluding the included studies one by one to judge the stability of the statistical analysis results.

Country(ies) involved China.

Keywords Coronary artery bypass grafting; Mitral valve repair; Ischemic mitral regurgitation, Meta-analysis.

Contributions of each author
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