

# INPLASY PROTOCOL

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submission:** Preliminary  
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None declared.

## Incidence of major adverse cardiovascular events in the myocardial bridging population: A protocol for systematic review and meta-analysis

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**Review question / Objective:** This review aims to systematically evaluate the incidence of major adverse cardiovascular events in the myocardial bridging population, which has significant predictive value for the MB population, to inform clinical practice better.

**Condition being studied:** Myocardial bridging (MB) is a congenital abnormality of coronary artery development. Usually, the deep epicardial surface or submembranous fatty tissue is the leading site of coronary artery travel. Still, when myocardial fibers cover the coronary artery, this part of the coronary artery is known as the Mural coronary artery (MCA). The segment of myocardial fibers is known as the myocardial bridge. The vast majority of the MB population is asymptomatic and traditionally considered benign. However, in recent years, there has been increasing concern that myocardial ischemia can develop in the MB population, with clinical manifestations such as angina pectoris, arrhythmias, and even myocardial infarction and sudden death. The diagnosis and management of MB and vigilance for major adverse cardiovascular events (MACE) in the MB population are emphasized. However, there is no systematic review and meta-analysis of how the incidence of MACE in the MB population has been reported.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 May 2023 and was last updated on 04 May 2023 (registration number INPLASY202350021).

### INTRODUCTION

**Review question / Objective:** This review aims to systematically evaluate the incidence of major adverse cardiovascular events in the myocardial bridging population, which has significant predictive value for the MB population, to inform clinical practice better.

**Condition being studied:** Myocardial bridging (MB) is a congenital abnormality of coronary artery development. Usually, the deep epicardial surface or submembranous fatty tissue is the leading site of coronary artery travel. Still, when myocardial fibers cover the coronary artery, this part of the coronary artery is known as the Mural

coronary artery (MCA). The segment of myocardial fibers is known as the myocardial bridge. The vast majority of the MB population is asymptomatic and traditionally considered benign. However, in recent years, there has been increasing concern that myocardial ischemia can develop in the MB population, with clinical manifestations such as angina pectoris, arrhythmias, and even myocardial infarction and sudden death. The diagnosis and management of MB and vigilance for major adverse cardiovascular events (MACE) in the MB population are emphasized. However, there is no systematic review and meta-analysis of how the incidence of MACE in the MB population has been reported.

## METHODS

**Search strategy:** Search terms include "myocardial bridging", "myocardial bridge", "mural coronary artery", "tunneled artery", "cardiovascular disease", "major adverse cardiovascular events", "major adverse cardiac events", "angina pectoris", "arrhythmias", "myocardial infarction" and "death".

**Participant or population:** The study was conducted on people diagnosed with MB by medical examination.

**Intervention:** Not adaptable.

**Comparator:** Not adaptable.

**Study designs to be included:** We will include observational studies, such as cross-sectional, case-control, and cohort studies.

**Eligibility criteria:** We will exclude studies involving case reports, fundamental studies, reviews, and studies with incomplete, duplicate, or unusable data.

**Information sources:** We comprehensively searched Pubmed, Embase, Web of Science, and Scopus databases.

**Main outcome(s):** The main outcome indicators are MACE, including angina

pectoris, arrhythmias, myocardial infarction, and death.

**Quality assessment / Risk of bias analysis:** We will use the Agency for Healthcare Research and Quality (AHRQ) recommended quality assessment criteria for observational studies.

**Strategy of data synthesis:** Statistical analysis was performed using Stata 17.0 software, and rates were transformed and combined using the double inverse sine transformation method, and their 95% confidence interval (CI) was provided. Heterogeneity between the results of the included studies was analyzed using the  $\chi^2$  test (test level  $\alpha = 0.1$ ), while the magnitude of heterogeneity was determined quantitatively in conjunction with I<sup>2</sup>. Meta-analysis was conducted using a fixed effects model if there was no statistical heterogeneity between the results of the studies; conversely, a random effects model was used. If quantitative synthesis is not possible, we will perform a descriptive analysis. We will not perform a publication bias test because there is no publication bias in the single-group rate meta-analysis.

**Subgroup analysis:** If adopted, we will perform a subgroup analysis based on study endings of angina pectoris, arrhythmias, myocardial infarction, and death.

**Sensitivity analysis:** If a random effects model is used, we will perform a subgroup analysis or sensitivity to clarify the source of heterogeneity.

**Country(ies) involved:** China.

**Keywords:** myocardial bridging, major adverse cardiovascular events, incidence, protocol

**Contributions of each author:**

Author 1 - Wenwen Li.

Author 2 - Cuncheng Liu.

Author 3 - Shouqiang Chen.