

Staged Percutaneous Coronary Intervention for Chronic Total Occlusion of Non-Infarct Related Artery: A Meta-Analysis

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Background

Chronic total occlusion (CTO) of a non-infarct related artery (nIRA) is associated with adverse outcomes following acute myocardial infarction (AMI). The current study aimed to evaluate the impact of successful staged percutaneous coronary intervention (PCI) of nIRA CTO lesions on clinical outcomes.

Methods

PubMed, EMBASE, Google Scholar and Scopus databases were queried for studies comparing outcomes between AMI patients who underwent successful staged PCI of nIRA CTO lesions (CTO PCI group) and AMI patients with medical management of nIRA CTO lesions or failed CTO PCI attempt (No CTO PCI group). The primary meta-analysis outcome was major adverse cardiovascular events (MACE). The main summary estimate was the random effects risk ratio (RR) with 95% confidence intervals (CIs).

Results

Eleven studies (1 randomized, 10 observational) with 2,788 patients were included. Compared with the No CTO PCI group, the CTO PCI group demonstrated a lower incidence of MACE (Figure A, RR 0.55 [0.46, 0.66], $p < 0.001$), all-cause mortality (Figure B, RR 0.47 [0.33, 0.66], $p < 0.001$), cardiac mortality (Figure C, RR 0.4 [0.28, 0.59], $p < 0.001$), stroke (Figure D, RR 0.38 [0.22, 0.66], $p = 0.0007$) and heart failure (HF) hospitalization (Figure E, RR 0.61 [0.41, 0.9], $p = 0.01$). There was no significant difference in rates of any repeat revascularization (Figure F, RR 0.98 [0.69, 1.4], $p = 0.92$) or target vessel revascularization (Figure G, RR 0.81 [0.48, 1.37], $p = 0.43$) between the two groups.

Conclusion

In patients with AMI, staged PCI of nIRA CTO lesions was associated with a significantly lower incidence of MACE, all-cause mortality, cardiac mortality, stroke and HF hospitalization.

Figure A: Major adverse cardiovascular events (MACE)

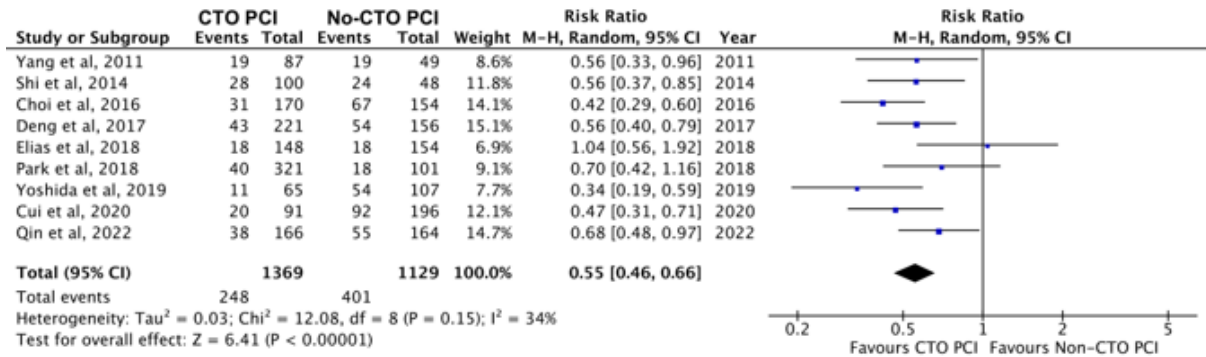


Figure B: All-cause mortality

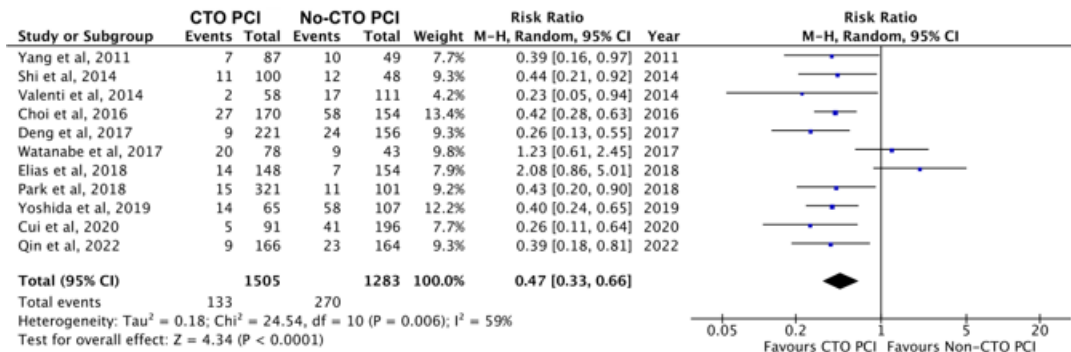


Figure C: Cardiac mortality

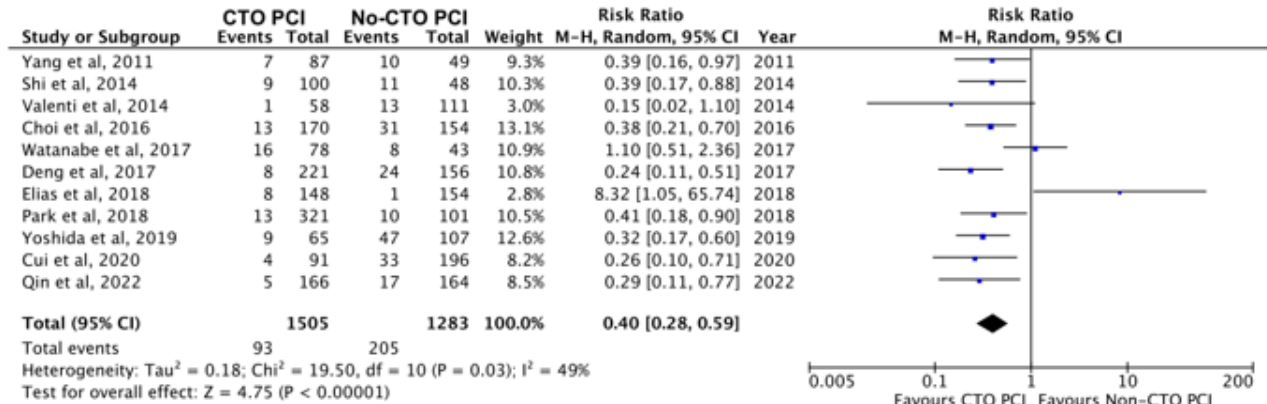


Figure D: Stroke

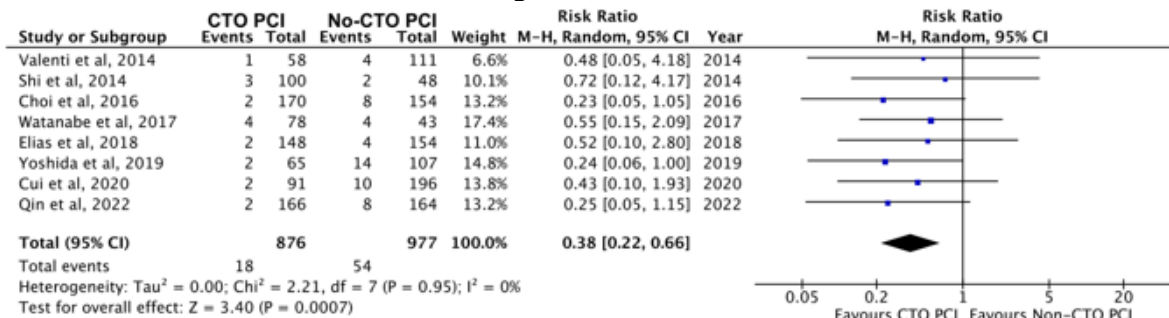


Figure E: Heart failure hospitalization

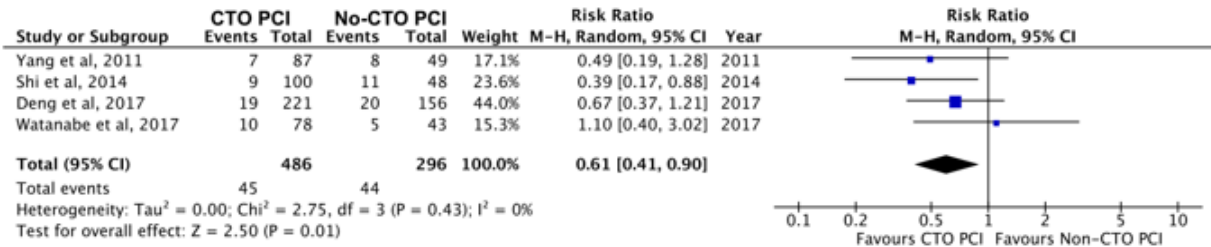


Figure F: Repeat revascularization

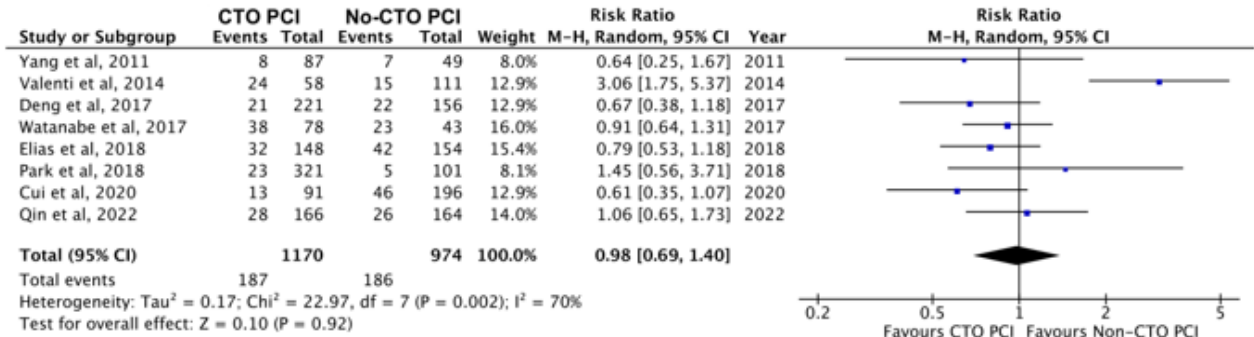


Figure G: Target vessel revascularization

