

Comparison of Coronary Intravascular Lithotripsy and Rotational Atherectomy in Heavily Calcified Coronary Lesions: A Systematic Review and Meta-analysis

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Background

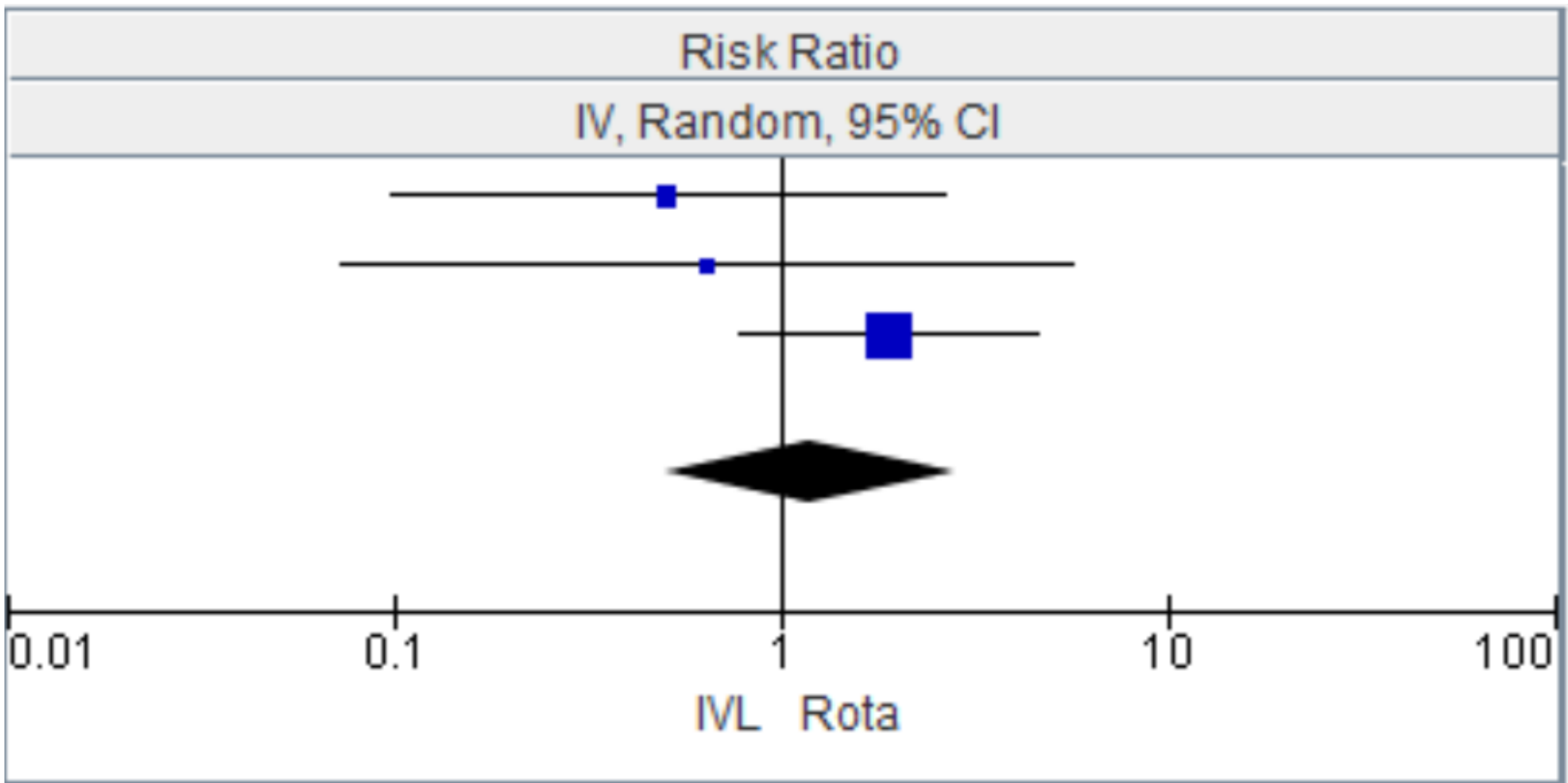
- ❖ Severe coronary artery calcification is associated with poor procedural and clinical outcomes.
- ❖ Currently, Rotational atherectomy (RA) is regarded as the standard of care for lesions not responding to balloon based therapies.
- ❖ Intravascular Lithotripsy (IVL) is a novel technique which uses sonic waves to cause intraplaque fractures with benefits of reduced vascular intimal injury and a shallow learning curve.
- ❖ Although single-armed studies have shown IVL to be safe and effective for heavily calcified coronary lesions, their comparative safety and efficacy remain unknown.

Methods

- ❖ Studies which met the common inclusion criteria of in hospital major adverse cardiovascular events (MACE) and coronary artery perforation from Medline, Embase, Cochrane and Google Scholar were included in the analysis.
- ❖ RevMan 5.4 was used to calculate risk ratios using inverse variance method and random effects model.

Results

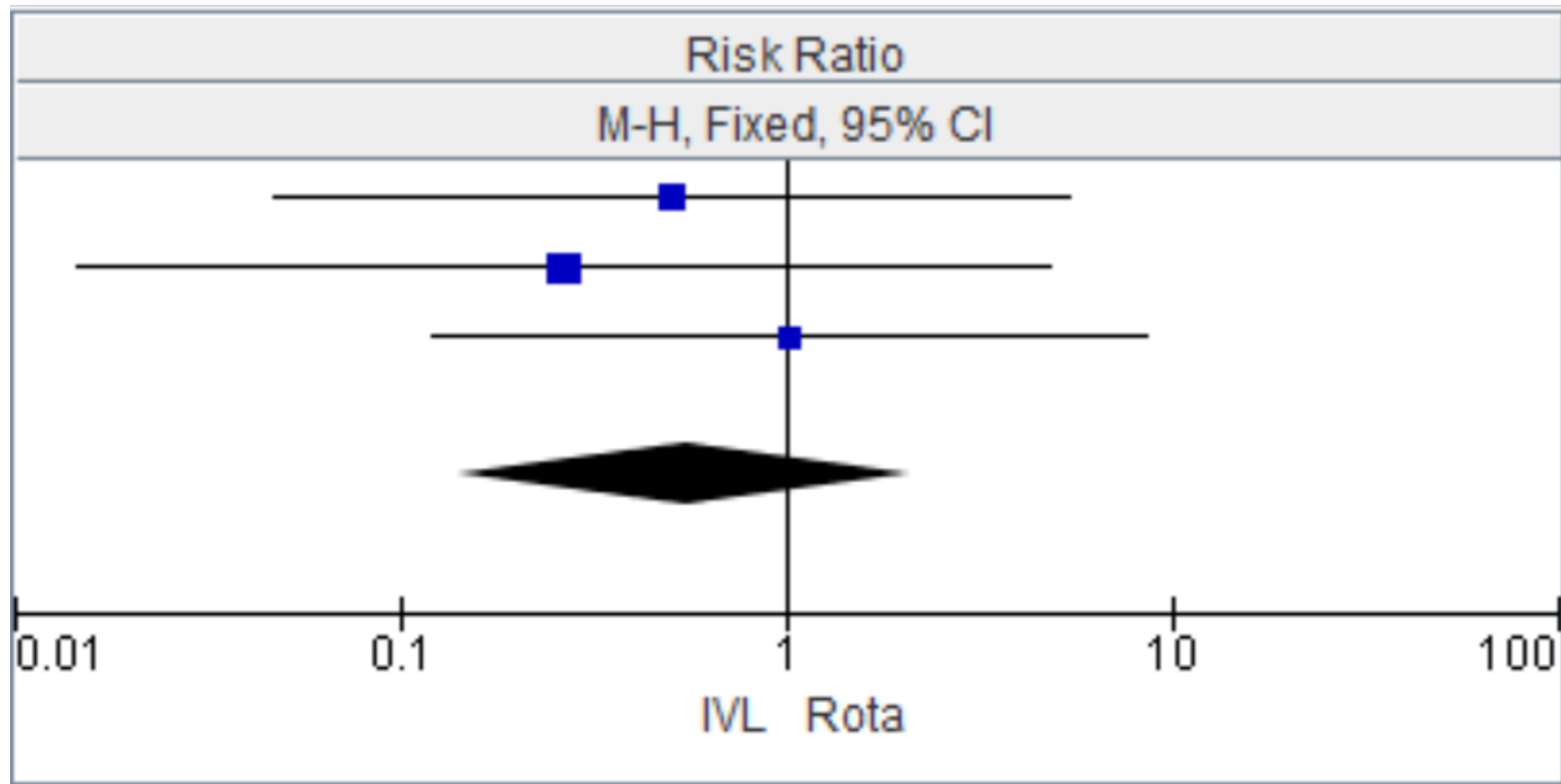
- ❖ Three retrospective studies which included 469 participants met the inclusion criteria.
- ❖ Number of patients who underwent IVL was 118 (15.14%) and RA was 351 (74.84%).
- ❖ There was no statistically significant difference between the in-hospital MACE between the two groups [RR: 1.30 (95% CI: 0.62 - 2.72, p=0.49)].
- ❖ There was also no statistically significant difference between the periprocedural coronary artery perforation rates between the two groups [RR: 0.55 (95% CI: 0.14 - 2.13, p=0.39)].



In-hospital MACE [RR: 1.30 (95% CI: 0.62 - 2.72, p=0.49)]

Conclusion

- ❖ Our analysis did not show any significant difference between the two procedures in terms of in hospital MACE and perforation.
- ❖ Wong et al showed a higher incidence of in hospital and 30 day MACE in the IVL group, which may be due to high risk profile of the patients and a small cohort size.
- ❖ Rola et al and Mousa et al showed that both procedures are safe and effective with no difference in the in-hospital and 6 month follow up MACE.
- ❖ A randomized clinical trial is needed to establish the difference in safety and efficacy between Rotational atherectomy vs. intravascular lithotripsy.



Periprocedural coronary artery perforation rates [RR: 0.55 (95% CI: 0.14 - 2.13, p=0.39)]