

# INPLASY

## Zero-contrast left atrial appendage closure: a systematic literature review and meta-analysis

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### ADMINISTRATIVE INFORMATION

**Support** - None.

**Review Stage at time of this submission** - Preliminary searches.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202420042

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 February 2024 and was last updated on 24 April 2024.

### INTRODUCTION

**Review question / Objective** In patients with non-valvular atrial fibrillation, is percutaneous left atrial appendage closure with a zero-contrast technique not inferior in terms of feasibility, safety, and effectiveness to conventional left atrial appendage closure?

**Condition being studied** Atrial fibrillation is the most common arrhythmia in adults. Left atrial appendage closure is an alternative treatment for patients with relative or absolute contraindications for oral anticoagulation. A significant group of patients who underwent this procedure are patients with a high risk of contrast-induced nephropathy. The conventional procedure uses fluoroscopy with contrast agents as guidance for device implantation in combination with other imaging techniques. New intra-procedure image

alternatives have emerged, and the possibility of performing the procedure with a zero-contrast technique has been reported in some observational studies.

### METHODS

**Search strategy** Between February 1 and April 23 of 2023 PubMed, EMBASE, and The Cochrane Central Register of Controlled Trials were consulted. For the Cochrane Central Register of Controlled Trials, the following search terms were used: (left atrial appendage closure) AND (contrast OR fluoroscopic OR Zero-Contrast). For PubMed and EMBASE, the following search terms were used: (left atrial appendage) AND (closure OR occlusion) AND (contrast OR fluoroscopic OR Zero-Contrast). The references of the included articles were thoroughly reviewed as part of the search strategy. This step involved a

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comprehensive examination of the cited sources within the selected articles to ensure a thorough understanding of the relevant literature and to identify additional potential studies for inclusion.

**Participant or population** Patients with non-valvular atrial fibrillation who underwent percutaneous left atrial appendage closure.

**Intervention** Percutaneous left atrial appendage closure with a zero-contrast technique.

**Comparator** Percutaneous left atrial appendage closure with the use of contrast agent.

**Study designs to be included** Observational studies.

**Eligibility criteria** -Spanish or English -Full text available -Comparison between any technique without contrast agent use and a technique with the use of contrast agent.

**Information sources** Between February 1 and April 23 of 2023 PubMed, EMBASE, and The Cochrane Central Register of Controlled Trials were consulted.

**Main outcome(s)** Procedure time, fluoroscopy time, re-size requirement, number of device recaptures, successful rate, major adverse events, device-related thrombus, and peri-device leak.

**Quality assessment / Risk of bias analysis** Two independent reviewers assessed studies quality and risk of bias with the Newcastle–Ottawa Scale for cohort studies. Discrepancies were resolved by discussion.

**Strategy of data synthesis** R software will be used for analysis. Odds ratio, mean difference, and mean standard deviation difference will be used as the statistics for effect analysis. Heterogeneity among the included studies will be analyzed using the I<sup>2</sup> index. A fixed-effect model will be used if there is no heterogeneity, and a random-effects model will be used in the case of statistical heterogeneity. The level of significance for the meta-analysis will be set at  $\alpha = 0.05$ .

**Subgroup analysis** No subgroup analysis will be performed.

**Sensitivity analysis** Sensitivity analysis will be performed on R aiming to examine how the results of the meta-analysis vary when modifications are made to the methodology or the selection of studies.

**Language restriction** Spanish or English.

**Country(ies) involved** Colombia.

**Keywords** Atrial Fibrillation, Anticoagulation, Left Atrial Appendage Closure.

#### **Contributions of each author**

Author 1 - Juan F Rodriguez - Study design, conceptualization, literature search, data extraction, quality assessment, statistical analysis, interpretation of results, and manuscript writing.

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