

Patent Foramen Ovale

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KEYWORDS

- Patent foramen ovale • Cryptogenic stroke • Migraine • Transcatheter closure • MIST • CLOSURE I
- RESPECT • PC Trial

KEY POINTS

- Patent foramen ovale (PFO) is a common developmental anomaly that allows for the passage of blood and other substances from the right-sided (venous) to the left (arterial) circulation.
- Presence of a PFO has been implicated as a contributing factor to cryptogenic stroke (via paradoxical embolism), migraine headaches (via absence of filtering in the pulmonary circulation of undetermined substances), and orthodeoxia-platypnea.
- Closure of PFOs to prevent strokes and migraines has been studied in 4 randomized, controlled trials evaluating 2 different types of closure devices.
- Study of PFO has been challenging, as simultaneous off-label PFO closure has been widely available concurrent with clinical trials attempting to enroll patients.
- No study has demonstrated benefit of closure using intention-to-treat analyses, although secondary and subpopulation analyses suggest that there is benefit to closure, especially in patients with atrial septal aneurysms and/or substantial degrees of right-to-left shunting.

INTRODUCTION

The patent foramen ovale (PFO), and more specifically its role in allowing deoxygenated blood, thrombi, and other unidentified substances to bypass the pulmonary circuit and directly transit from the venous to the arterial circulation, remains a subject of study and debate. Specifically, the potential role of transcatheter PFO closure in reducing clinical events and treating syndromes such as stroke, migraine headaches, and systemic hypoxemia has been, and continues to be, a “gray area” in medicine. Although there are no definitive data substantiating the benefits of PFO closure, the debate over the potential

benefits of the therapy remains both healthy and lively. This article aims to describe the pertinent anatomy, available closure devices, and relevant clinical trial data, so that the reader may better understand the nuances of transcatheter PFO closure.

ATRIAL SEPTAL ANATOMY AND EMBRYOLOGY

The normal development of the interatrial septum is complex (**Fig. 1**).^{1,2} Parturition results in left atrial pressure exceeding right atrial pressure, which anatomically causes the septum primum to be forced against the septum secundum.

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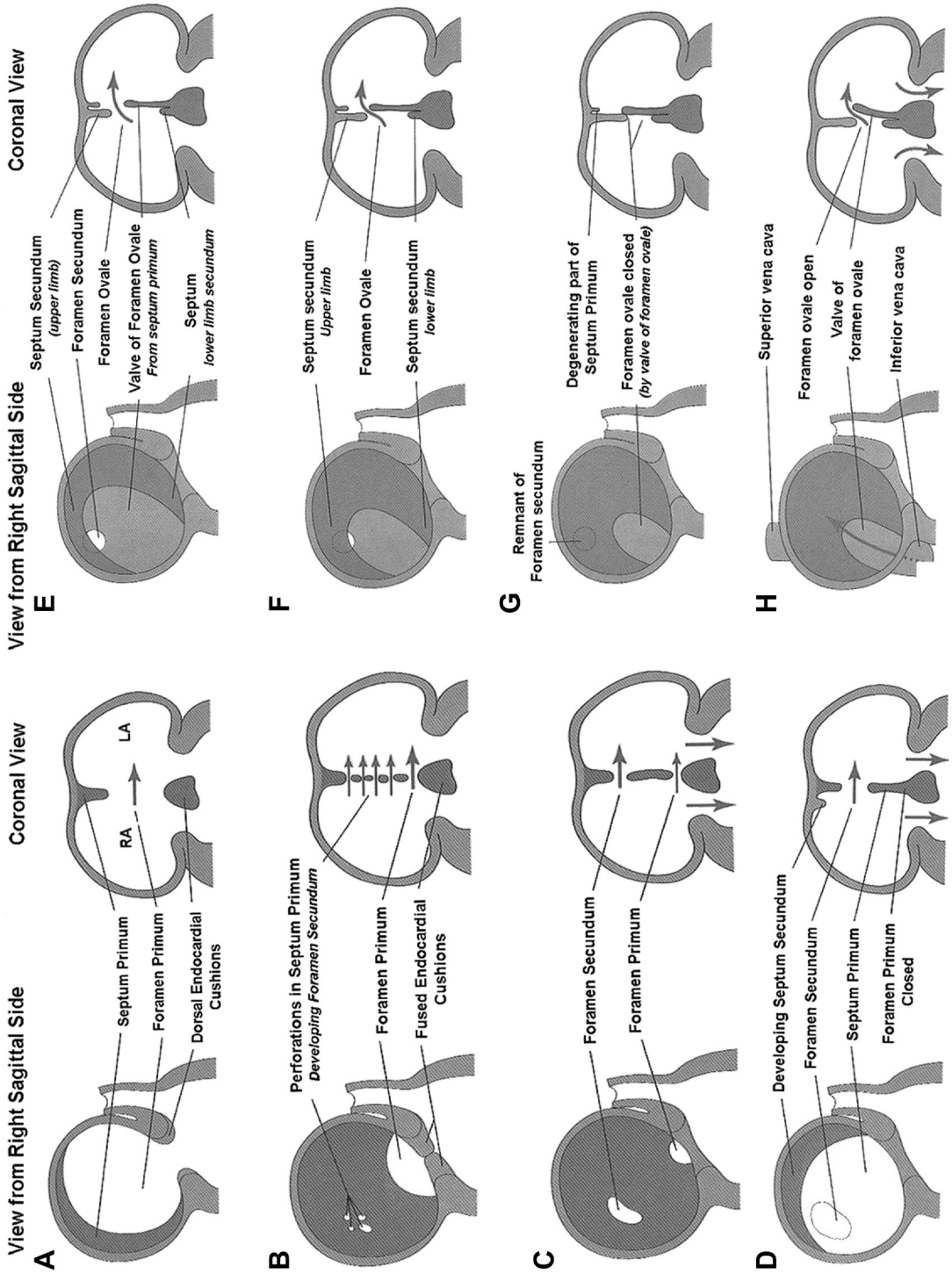
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