

Primary Transcatheter Patent Foramen Ovale Closure Is Effective in Improving Migraine in Patients With High-Risk Anatomic and Functional Characteristics for Paradoxical Embolism

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Objectives: In the present study, we sought to assess the effectiveness of migraine treatment by means of primary patent foramen ovale (PFO) transcatheter closure in patients with anatomical and functional characteristics predisposing to paradoxical embolism **without previous cerebral ischemia**.

Background: The exact role for transcatheter closure of PFO in migraine therapy has yet to be elucidated.

Methods: We enrolled **86 patients (68 female, mean age 40.0 ± 3.7 years)** referred to our center over a 48-month period for a prospective study to evaluate severe, disabling, medication-refractory migraine and documented PFO. The Migraine Disability Assessment Score (MIDAS) was used to assess the incidence and severity of migraine. Criteria for intervention included all of the following: basal shunt and shower/curtain shunt pattern on transcranial Doppler and echocardiography, presence of **interatrial septal aneurysm and Eustachian valve, 3 to 4 class MIDAS score, coagulation abnormalities, and medication-refractory migraine with or without aura**.

Results: On the basis of our inclusion criteria, we enrolled 40 patients (34 females, mean age 35.0 ± 6.7 years, mean MIDAS 35.8 ± 4.7) for transcatheter PFO closure; the remainder continued on previous medical therapy. Percutaneous closure was successful in all cases, with no peri-procedural or in-hospital complications. After a mean follow-up of 29.2 ± 14.8 months (range 6 to 48 months), PFO closure was complete in 95%; all patients (100%) reported improved migraine symptomatology (mean MIDAS score 8.3 ± 7.8, $p < 0.03$). Specifically, auras were eliminated in 100% of patients after closure.

Conclusions: **Primary transcatheter PFO closure resulted in a very significant reduction in migraine in patients satisfying our criteria**. (J Am Coll Cardiol Intv, 2010; 3:282-287) © 2010 by the American College of Cardiology Foundation