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### Title

A COMPARISON OF METHODS TO DETERMINE PATENT FORAMEN OVALE SIZE

### Permalink

<https://escholarship.org/uc/item/9bn355xv>

### Journal

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY, 75(11)

### ISSN

0735-1097

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### Publication Date

2020

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Peer reviewed



## A COMPARISON OF METHODS TO DETERMINE PATENT FORAMEN OVALE SIZE

Poster Contributions

Posters Hall\_Hall A

Saturday, March 28, 2020, 10:00 a.m.-10:45 a.m.

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Session Title: Interventional Cardiology: Mitral and Structural Heart Disease 1

Abstract Category: 24. Interventional Cardiology: Mitral and Structural Heart Disease

Presentation Number: 1104-050

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Authors: *Joshua Rusheen, Preetham Kumar, Jonathan Tobis, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA*

**Background:** Patent foramen ovale (PFO) is implicated in the pathogenesis of clinical conditions such as cryptogenic stroke and migraine with aura. This study evaluated the challenges of sizing a PFO with different contemporary imaging modalities and assessed the relationship between PFO size and severity of the right-to-left shunt (RLS).

**Methods:** Patients who were referred to interventional cardiology with the diagnosis of a PFO and had undergone intra-procedural balloon sizing (n = 147), transesophageal echocardiogram (TEE) imaging (n = 67), or intracardiac echocardiogram (ICE) imaging (n = 73) at the time of workup were included in this study. TEE and ICE were used to obtain PFO length and height during normal respiration. A sizing balloon was used to obtain PFO width and height after the septum primum was opened with balloon inflation.

**Results:** The mean PFO length measured by TEE and ICE differed significantly (n = 27, 13.0 ± 4.1 mm vs. 9.9 ± 3.2 mm, p = 0.001). The mean PFO height measured by TEE and ICE (n = 27, 1.4 ± 0.6 mm vs. 1.7 ± 0.6 mm, p = 0.04), TEE and sizing balloon (n = 56, 1.5 ± 1.2 mm vs. 10.5 ± 4.2 mm, p < 0.0001), and ICE and sizing balloon (n = 66, 1.7 ± 0.7 mm vs. 9.1 ± 3.7 mm, p < 0.0001) also differed significantly. A poor correlation existed between anatomic PFO length or height and functional Spencer TCD grade RLS flow with Valsalva, irrespective of the imaging modality used.

**Conclusion:** The determination of a PFO size is dependent on the imaging modality used. Sizing balloon demonstrates a larger width or height than ultrasound imaging methods, such as TEE and ICE, because a PFO remains closed most of the time, leading the echocardiogram to underestimate the potential PFO size. Additionally, PFO length and height correlate poorly with the functional RLS grade. These findings imply that ultrasound-based size characterization should not be used to determine whether a PFO should be closed.