

EDITORIAL

To Occlude or not to Occlude. That is the Question

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In this issue of the International Journal of Cardiovascular Sciences, Madeira et al.¹ evaluated the influence of percutaneous left atrial appendage (LAA) occlusion device on left atrial (LA) function. They assessed several parameters of atrial function, including LA strain and strain rate by speckle-tracking echocardiography (STE) of 16 patients, 75% with permanent atrial fibrillation, undergoing percutaneous LAA closure. No differences were found in maximum and minimum LA volume or LA emptying fraction before and 3 months after the procedure. Similarly, no differences were noted in LA strain (13.7 ± 11.1 vs. $13.0 \pm 8.8\%$; $p = 0.63$) or strain rate (1.06 ± 0.26 vs. 1.13 ± 0.34 s⁻¹; $p = 0.38$) in the reservoir phase. Based on those results, the authors concluded that LAA occlusion had no impact on LA function.

This is among the first studies to examine the effect of this procedure on LA function, for which the authors should be congratulated.

The LA function is difficult to be assessed in patients with atrial fibrillation, and an addition analysis of strain and strain rate can be of great help.

Since the concept of “strain” was introduced with respect to myocardial contraction² and in echocardiographic field,³ many discoveries have been made in the areas of myocardial, valvular, congenital and coronary diseases. With these studies, the use of ventricular strain has become the standard of practice in cardiology today.

On the other hand, the study of atrial performance has been a great challenge in clinical cardiology in the past

decade, and a hard task to accomplish in several imaging modalities, especially echocardiography and magnetic resonance imaging (MRI).

Due to its advantages over MRI, recent advances in the quantification of tissue motion, triggered by the discovery of speckle tracking imaging (STI), and the known value of 2D and Doppler echocardiography, echocardiography is undoubtedly the gold standard method to evaluate atrial anatomy and function in humans.

The results of the study by Madeira et al. are in agreement with the first rule of medicine in patient care: “first do no harm - primum non nocere” (Thomas Inman, 1860)⁴. The authors demonstrated that the LAA implantation in patients with high embolic risk, expressed by a median CHA₂DS₂-VASc score of 5 and HAS-BLED score of 3, did not negatively affect their left atrial function.

Despite these results, we must view them with caution, since they apparently apply to a population of elderly patients with well-preserved left ventricular function and poor atrial function at baseline. The average longitudinal strain was ~13% in the reservoir phase, which is very low and is similar to what is seen in heart failure patients.

In a study performed in our institution, in patients admitted to the emergency department for heart failure,^{5,6} patients with new or worsening heart failure symptoms, and LA strain lower than 11.7% in absolute values had higher chance of developing a short-term cardiac event.

In another study,⁷ in a population of 286 outpatients with heart failure and reduced ejection fraction, the authors measured global peak atrial longitudinal strain at the end of the reservoir phase and concluded that the global peak atrial longitudinal strain, especially those with strain values below 12.5%, were among those with a higher incidence of hard cardiac events.

Keywords

Atrial Fibrillation; Atrial Appendage; Balloon Device; Diagnosis Imaging; Echocardiography / methods

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Therefore, the study by Madeira et al. adds to the current literature, but we must understand that their results are limited to the studied population, i.e., a group of subjects with severe atrial dysfunction, in whom no significant worsening is expected.

Moreover, these results suggest, at best, what can be expected to occur at short term (3 months), in elderly

patients with well-preserved left ventricular function. Nevertheless, this opens the possibility of studying the effect of percutaneous LAA on LA function in younger subjects with many forms of cardiac diseases.

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