Subaortic ventricular septal defect closure: is the principle of harmony for a longer function no longer valid?

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During my training, I was taught a few golden rules, one of which never failed: what looks aesthetic and harmonious works better and longer. Indeed, flows remain laminar in pleasant curves, while they break in turbulence—with a loss of energy and an increased stress on the surrounding structures—around sharp angles. Textbooks further taught me the characteristics of subaortic ventricular septal defects (VSDs): anatomically, they present as a perimembranous VSD or are committed to both semilunar valves and stay at a distance of the conducting tissues; physiologically, they are usually restrictive or are committed to both semilunar valves and stay at a distance of the failing support to the aortic annulus. We do not hesitate, however, to open the ascending aorta—before the closure—to ensure a complete resection of the aortic valve and a complete freeing of the right coronary leaflet. These two manoeuvres—the restoration of the full leaflet mobility and a stronger support to the aortic annulus—are usually sufficient to achieve a competent and stable aortic valve. In long-standing regurgitations, with a more pronounced prolapse of the right coronary leaflet, a central plicature of the leaflet should be added [5].

In Hu et al.’s series [6], published in this issue, one-third of the patients with a subaortic VSD were treated through a so-called ‘percardiac closure’, with the use of an asymmetric device. The results of this approach were good, at least regarding the obliteration of the communication and the immediate aortic valve function. The fact that all periods of treatment, hospitalization and recovery, in the percardiac group were shorter than in a comparative surgical group is, in my opinion, only anecdotal, as all the patients were able to go home in good shape and after a short period. A fundamental question, not alluded to in the paper, however, emerges. What is the outlook of the left ventricular outflow tract (LVOT) and aortic valve over time with such an intruding device? The published echocardiographic views (see their Figure 4) look alarming. They show a device pushing the septum towards the anterior leaflet of the mitral valve, on the one hand, and impinging on the right coronary leaflet, on the other hand. In short, the device creates an ‘en baignonnette’ LVOT and excludes the systolic function of the right coronary leaflet. Everyone who has opened an atrium a few years after the implantation of a similar device has witnessed its covering by scarring tissue, spreading on the adjacent structures. The same process is bound to exacerbate the obtrusive presence of the device: on its inferior part, turbulences will promote the development of a subaortic membrane, and much more concerning, on its superior part, the scarring tissue may reach the right coronary leaflet.

The results reported with this new method are reassuring on a short term period. Visually, however, the repair looks terrible, especially if it is compared with a direct closure of the defect, when the septum is realigned and maligned, when the anatomy is very close to normal. The fact that no turbulences were detected on the
peroperative TEE does not exclude their appearance in a situation when a higher cardiac output is set, a frequent occurrence in active young patients. Time will tell whether some of our concerns will materialize finally. For the time being, until a longer follow-up or a dynamic study is reported, I will continue to stick to the golden rules learnt during my training.

REFERENCES


