

Transcatheter implantation of aortic valve bioprosthesis: changing paradigms

 Fábio Sândoli de Brito Junior¹
Flávio Tarasoutchi¹

¹ - Codiretores do Núcleo de Intervenção em Cardiopatia Estrutural do Instituto do Coração (InCor), Faculdade de Medicina da USP, São Paulo, SP, Brasil
fabio.cardiol@gmail.com

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The surgical replacement of the aortic valve was, for decades, the treatment of choice for patients with symptomatic aortic stenosis, providing relief of symptoms and increased survival. On 16 April 2002, Alain Cribier began to change history by conducting, in Lyon, France, the first transcatheter aortic valve implantation (TAVI) in a 57-year-old patient with severe aortic stenosis and advanced heart failure. Since then, there have been thousands of TAVIs around the world, all based on strong scientific evidence that stimulated, beyond doubt, the progressive expansion of indications for this procedure. In 2019 alone, it is estimated that approximately 140,000 TAVIs will be performed, mostly in Europe and the United States.

There is no doubt that patients with advanced age and clinical comorbidities, who are considered inoperable or at high surgical risk, are the ones who will benefit the most from this innovative and less invasive treatment. However, currently, there is no longer any doubt regarding the effectiveness of TAVI; it is the best treatment for patients with symptomatic aortic stenosis, regardless of the level of surgical risk. Recent randomized studies Partner 3 and Evolut Low Risk, published in 2019 in the same issue of the renowned *The New England Jour-*

nal of Medicine, showed that the TAVI is superior to conventional surgery also in patients with low surgical risk, with lower rates of death and cerebrovascular accident.^{1,2} The national and international guidelines still need to be updated, which certainly will be done in the near future.

In Brasil, aortic valve implantations by catheter started being used in January 2008 and, despite the lack of coverage by public and private health systems, we have seen a significant increase in the use of this treatment in the country. It is estimated that, in 2019, approximately 2,000 TAVIs will be conducted in Brasil. This number, which represents approximately ten TAVIs for every million inhabitants per year, is still minimal compared to some European countries or the United States, where 100 to 150 for every million inhabitants take place per year. This represents a considerable challenge, since the vast majority of institutions in Brasil have less than ten procedures per year and, therefore, are still learning the method. In a recent international multicenter publication that included Brazilian data, we found that for an institution can achieve excellence, at least 50 cases per year are required.³ Less than five medical centers in Brasil have that number.

With that regard, the role of the Brazilian Society of Hemodynamics and Interventional Cardiology (SBHCI) deserves to be mentioned. In 2010, they created the Brazilian Registry of aortic valve bioprosthesis implantation via catheter to monitor the results of this new modality of treatment in Brasil.⁴ The results of this registry, presented in various scientific meetings and publications, demonstrate the progressive improvement of results in Brasil, similarly to what was found by other important international records. The progressive improvement of results is due to a greater experience of operators, the implementation of procedures under the supervision of medical tutors (proctors) certified by SBHCI and the enormous progress of the transcatheter devices, with smaller circumference, the possibility of repositioning, and design to minimize periprosthetic aortic regurgitation. Nowadays, approximately half of the procedures in our country already use the minimalist strategy, i.e., conscious sedation, percutaneous femoral arterial access, with no vesical catheter, and with monitoring by transthoracic echocardiogram. In general, hospital discharge can happen two to three days after the TAVI, and patients can soon resume their activities. The challenge is still how to obtain uniformity in results in Brasil, a country of continental dimension and with important regional differences.

TAVI is still a new procedure and, as such, full of future prospects. The advancements reached so far are, without a doubt, irreversible. There still remains some doubt in relation to the durability of transcatheter devices, since their short history does not allow to prove, definitively, that their durability will be equivalent to that of surgical prostheses. For this reason, there is a consensus that, in patients younger than 70 years old, conventional surgery is still indicated. There is, however, much more to come. Ongoing studies are assessing the results of the technique in asymptomatic patients and patients with moderate aortic stenosis associated with left ventricular dysfunction. New paradigm shifts are sure to come from these studies. All we have to do is wait and see!

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