Editorial

Combined percutaneous treatment of structural and congenital heart defects: more than just a feasible procedure in the catheterization laboratory

Tratamento percutâneo combinado de defeitos cardíacos estruturais e congênitos: mais do que apenas um procedimento viável no laboratório de cateterismo

In this issue of the *Revista Brasileira de Cardiologia Invasiva*, Chamié et al.[1] describe an interesting series of ten cases in which combined percutaneous treatment of structural and congenital heart defects were performed by the authors. The procedures included closure of atrial septal defect (ASD), ventricular septal defect (VSD), left atrial appendage (LAA), and patent ductus arteriosus (PDA), patent foramen ovale (PFO), as well as pulmonary balloon valvuloplasty, treatment of aortic coarctation and aortopulmonary collaterals embolization. Closure of PDA was the most common intervention and the two most frequent combined procedures were VSD with PDA and VSD with ASD, each contributing with two cases.

Descriptive studies of combined congenital and structural procedures have been sporadically reported in the literature. Hamid et al. presented a similar series of cases, describing the successful correction of congenital heart defects in eight patients.[2] To note, their study included only adult patients and had a shorter follow-up period, in comparison to the series of Chamié et al. Regarding non-congenital structural heart interventions, several single case-reports have been described, such as a simultaneous LAA closure and transcatheter aortic valve intervention (TAVI) under cerebral protection.[3] The scarce literature on combined structural interventions and congenital structural procedures probably reflects the complexity of these procedures and relative low prevalence of these pathologies, in comparison to e.g. coronary disease.

This field is crawling in the generation of evidence to push the boundaries of current practice. The description of case-reports and case series is the first step to change, while more powerful study designs cannot be implemented. The procedural success rate and clinical outcomes presented by Chamié et al. were excellent, albeit they were mostly not complex procedures that demanded long interventional times. Nevertheless, the combined procedures presented are not the "bread and butter" case of a catheterization laboratory. Considering that procedural performance and clinical outcomes were the same as if the procedures were to be performed separately, what is the leap forward in this case series?

We believe that there are at least a few definitive advantages and some potential ones. Firstly, percutaneous structural interventions are becoming globally more frequent and with a trend to increase in the next few years.[4] That is also true for congenital interventions, considering the aging population of patients with congenital heart defects and consequently increase in prevalence.[5] TAVI and other adult cardiac structural interventions are advancing over otherwise surgical procedures, as mitral valve procedures and aortic valve replacement. Simpler procedures, as ASD, PFO and LAA closures, are performed almost exclusively in the cath lab. This ought to become true for more complex interventions as well. As a result of the increase in the frequency of percutaneous structural procedures, which usually demand longer preparation periods (room setup, patient preparation, anesthesia/sedation and imaging), time optimization in the catheterization laboratory is welcome.

The second and maybe most compelling aspect of Chamié et al. work is patient preference and comfort. Children with congenital heart defects represent a special concern regarding parents, cath lab staff and especially the emotional burden on younger patients, frequently too young to understand the procedure and all manipulation involved. In this population, safely avoiding staged procedures through combined interventions is a major step forward.

Finally, from a cost-effectiveness perspective in the Brazilian health-care scenario, it is most likely interesting for health insurance companies to have two interventions done in the same day instead of allocating personnel and cath lab resources in two separate procedures. This is especially valid considering public hospitals in Brazil and their budget constraints.

The potential application of combined structural procedures is vast, although there are limitations for more complex interventions. Longer procedures may incur in typical surgical issues, as for example longer intubation periods and its consequences, especially considering patients with severe lung disease. Renal failure secondary to increased use of contrast dye and periprocedural cerebral embolism and stroke, secondary to multiple structural heart procedures that include transseptal puncture for closure of the LAA or mitral valve interventions, are other potential limitations. As patients with multivessel complex coronary disease will most probably be submitted to a staged procedure, the same is valid for structural and congenital interventions. The feasibility has to be assessed considering the type of intervention and patient characteristics. Overall, combined procedures for multiple acquired and congenital heart defects may be a glimpse of what future holds for percutaneous structural cardiac interventions.

Conflicts of interest

The authors declare no conflicts of interest.

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Felipe C. Fuchs, Eberhard Grube, Georg Nickenig*

Medizinische Klinik und Poliklinik II, Universitätsklinikum Bonn, Rheinische Friedrich- Wilhelms-Universität Bonn, Germany

*Corresponding author: Heart Center Bonn, Department of Medicine II, University Hospital Bonn Germany, Sigmund-Freud-Str. 25, 53105 Bonn – Germany.
E-mail: georg.nickenig@ukb.uni-bonn.de (G. Nickenig).