Percutaneous occlusion of perimembranous ventricular septal defect with Amplatzer® Vascular Plug II: initial experience in Brazil

Oclusão percutânea de comunicação interventricular
perimembranosa com Amplatzer® Vascular Plug II:
experiência inicial no Brasil

¹Instituto do Coração, Hospital das Clínicas,
Faculdade de Medicina, Universidade de São
Paulo, São Paulo, SP, Brazil.

Luis Sérgio Carvalho Luciano^{1ID}, Santiago Raul Arrieta¹, Luiz Junya Kajita¹

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Corresponding author:

Luis Sérgio Carvalho Luciano
Av. Dr. Enéas Carvalho de Aguiar, 44 –
Cerqueira César
Zip code: 05403-900 – São Paulo, SP, Brazil
E-mail: luiscl@msn.com

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Ventricular septal defect (VSD) is the most frequent cardiac defect in the pediatric population, after bicuspid aortic valve, and accounts for approximately 20% of all congenital heart diseases.¹

Perimembranous VSD is the most common ventricular septal defect, and surgical treatment has been used since the 1950's, with good results. However, it is not exempt from complications, including total atrioventricular block, residual shunt and need for reintervention.

Advances in design of devices have enabled percutaneous occlusion of perimembranous VSD, with excellent results, comparable to those obtained with conventional surgery, and lower complication rates. The perimembranous cardiac defects should be treated when there is overload of the left cavities on complementary methods.

The most favorable candidates to percutaneous treatment are patients weighing over 10kg, with a defect measuring between 5 and 12mm, with no aortic regurgitation and no heart rhythm disorders.

All patients must be followed up, since late atrioventricular block may occur.²

There is a broad variety of devices available for percutaneous occlusion of VSD.¹ In the United States and South Korea, there are reports of experiences using Amplatzer® Vascular Plug II (AVP II) in few patients.^{3,4}

There are no publications in our country describing the use of AVP II for percutaneous occlusion of VSD.

We present the initial experience in Brazil using AVP II, for percutaneous occlusion of a perimembranous VSD.

A 7-year-old female patient, 22.7kg, with Arnold-Chiari type II malformation, submitted to surgical repair of myelomeningocele and ventriculoperitoneal shunt.

Transesophageal echocardiography showed perimembranous VSD partially occluded by tricuspid valve tissue, and with aneurysmatic formation, 9-mm diameter in its left ventricular aspect, and 5-mm effective orifice, left-to-right flow, and maximum systolic gradient left ventricle-right ventricle (LV-RV) of 78mmHg.

Percutaneous occlusion of VSD was performed using the classic technique, with arteriovenous loop and implantation of AVP II 8mm inside the aneurysmatic sac. The final left ventriculography showed a well-positioned prosthesis, minimum residual shunt, and no signs of complications.

The reference used to choose the device size was the largest diameter of the interventricular septum aneurysm, and a prosthesis with similar diameter was chosen.

Considering the successful reports in the international literature and our initial experience in Brazil, we concluded that AVP II can be included in the armamentarium for percutaneous occlusion of perimembranous VSD in selected cases as off-label indication, since the device was not designed for this purpose.

Randomized studies are required to support the use of these devices for this aim.

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CONFLICTS OF INTEREST

The authors declare there are no conflicts of interest

CONTRIBUTION OF AUTHORS

Conception and design of the study: LSCL and SRA; data collection: LSCL; data interpretation: LSCL, SRA and LJK; writing of the text: LSCL and SRA; approval of the final version to be published: LSCL, SRA and LJK.

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