EDITORIAL

Stenting of Pulmonary Artery Branches. A Complex Procedure in Constant Evolution

Stents en ramas pulmonares; un procedimiento complejo en constante evolución

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In this issue of the Argentine Journal of Cardiology, Peirone et al. report their experience with stent implantation in pulmonary artery branches, which represents the state-of-the-art of this technique. (1) Despite being one of the most common interventional cardiology treatments for congenital heart defects, it is not a routine, easy or automated procedure; on the contrary, it is technically a very demanding one. The reasons of this complexity are also diverse, as the anatomical variability of these lesions (which may be localized, segmental or diffuse), their location (central or peripheral), the origin of the lesions (congenital or post-surgical) and the different mechanisms related with the stenosis (scar recoil, compression, torsion or stretching). (2) All these situations were present and recognized in the series of Peirone et al., emphasizing the high percentage of postoperative lesions. Eighty-eight percent of patients in the series by Peirone underwent surgery with direct or indirect involvement of the pulmonary artery branches due to tetralogy of Fallot, single ventricle, troncus arteriosus, dextro-transposition of the great arteries (d-TGA) or removal of pulmonary artery banding.

Solid theoretical training, technical skills, management of complications, knowledge of the supplies and different types of stents available, and acquaintance of the advantages and limitations of this technique are necessary to deal with these different scenarios. Again, the report by Peirone et al. demonstrates the use of a wide variety of stents, the ability of accessing through different approaches (venous puncture, hybrid approach and transhepatic approach) and the talent to solve complications. The incidence of severe complications reported in this series was 8% and is similar to the 10% reported for this type of interventions, (3) supporting the technical skill of the operators.

In addition, these stenoses are present in a territory with complex anatomy, naturally consisting of a series of progressive branches that hinder the adequate visualization and projection of these lesions using conventional fluoroscopic techniques. For these reasons, computed tomography scan or magnetic resonance imaging may be necessary in occasions for planning the interventions. New imaging tools have been developed in this field, as rotational angiography, which allows reconstruction of three-dimensional images of the pulmonary vascular tree in the catheterization laboratory in order to achieve a better diagnosis of the anatomy to guide the interventions. (4)

Stenting of the pulmonary artery branches has been established as an effective and safe technique for a complex and highly variable condition. The particular complexity of these procedures have led to the development of new techniques and new materials, which, in turn, have made interventional cardiologists and surgeons face new scenarios, as hybrid procedures, repeat dilation of stents and surgery on stents. The cooperation of surgeons and interventional cardiologists in the series by Peirone et al. has been essential for the success in these scenarios. Undoubtedly, novel techniques are to come, such as bioabsorbable stents, (5) angioplasty with ultra-high-pressure balloons to fracture stents, (6) image integration in the catheterization laboratory (7) and the incorporation of all these procedures in the hybrid cardiac catheterization laboratory. (8) And again, as a consequence of these advances, interventional cardiologists and surgeons will be required to cooperate in new scenarios for the treatment of this particular group of patients.

Conflicts of interest

None declared.

(See authors' conflicts of interest forms in the website/Supplementary material).

Rev Argent Cardiol 2016;84:3-4. http://dx.doi.org/10.7775/rac.v84.i1.7890

SEE RELATED ARTICLE: Rev Argent Cardiol 2016;84:20-24. http://dx.doi.org/10.7775/rac.v84.i1.7789

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