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Extension of indications for percutaneous pulmonary valve implantation in native right ventricle outflow tract : should all patients be considered ?

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Introduction

Patient selection for percutaneous pulmonary valve insertion (PPVI) is widely accepted, being limited to patients having a right ventricle to pulmonary artery conduit. Little data has been reported regarding PPVI on patients having a native right ventricle outflow tract (RVOT).

We present our data regarding PPVI in native RVOT and discuss the specific requirements to make this technique safe and durable.

Patients and methods

We review patients included over the last 18 months in the prospective study (REVALV) for patients undergoing intervention for RVOT dysfunction. Only valved stent on native RVOT group is analyzed here. Eleven patients were included. We performed MRI, balloon calibration and angiography of the RVOT to all patients in order to define the RVOT morphology and to establish a personalized technique for each patient in order to implant a valved stent on the native RVOT. All patients undergoing valved stent implantation are previously pre-stented with a bare metal stent according to present recommendations.

Results

Initial dimensions for these patients were on the upper limit for the established criteria. Two had a diameter above 24mm. In one case, the "Russian dolls" technique was used (one bare-stent inside another and valved stent inside both of them, in order to reduce diameter). For the other patient, "branch jailing" technique was used (left pulmonary branch was stented down to the pulmonary trunk in order to have an appropriate diameter for valved-stenting). Pulmonary valve was placed successfully in all cases. All but one had been pre-stented at same procedure than valvulation. Of those, one freshly implanted bare metal stent dislodged to the right pulmonary artery. Two extra bare metal stents were implanted in order to cover the branch to the trunk, and finally valved stent was placed with no further problems.

Conclusions

Percutaneous pulmonary valve implantation can be performed on patients having native RVOT with success. Pre-stenting should be performed in a previous intervention in order to ensure stabilization of the bare metal stent and to avoid dislodgements. MRI, angiography and balloon calibration are not discriminating criteria for discarding candidates if personalized techniques are established for each patient.