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Porcine pulmonary prostheses versus bovine jugular vein to repair the dysfunctional right ventricular outflow tract in children and teenagers.

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Objectives:

Residual dysfunction of the right ventricle outflow tract (RVOT), due to congenital reconstructive surgery, is usually reoperated into adulthood. Sometimes, symptoms and/or dysfunction of the right ventricle (RV) during childhood may condition an earlier pulmonary valve replacement .

Our target is to compare the results of the valved bovine jugular vein (BJ) versus the stented porcine pulmonary prosthesis (PPP), implanted in patients aged 1 to 18 years old.

Methods:

All reoperation performed for prosthesis interposition (BJ or PPP), in patients aged 1-18 years with dysfunction of the RVOT after previous congenital cardiac surgery. Study period 2003-2015.

Prosthetic dysfunction criteria: surgical/percutaneous reintervention, gradient >50 mmHg or severe prosthetic regurgitation. Statistical Analysis with SPSS 20.0.

Results:

21 PPP/20 patients and 15 BJ/15 patients. 60% male. Fallot, most common primary disease in both groups. From 24 preoperative variables studied, statistically significant differences occur in 11, highlighting previous surgery on RVOT ($p < 0.001$, more transannular in PPP group), degree of previous pulmonary regurgitation (PR) ($p = 0.011$, more PR in PPP), RV function ($p = 0.016$, lower in PPP) and RV diastolic volume ($p = 0.026$, more dilated PPP group)

No hospital mortality. From 15 perioperative variables, significant differences in: average age of the implant ($p = 0.044$, lower in BJ group, 8 vs 11 years), implanted valve diameter ($p < 0.001$, lower in BJ group) and need of aortic cross-clamping ($p = 0.015$ higher in BJ).

No late mortality. BJ mean follow-up 4.8 years, vs 2.4 in PPP group ($p = 0.046$).

From other 16 postoperative variables, were also statistically significant peak transprosthetic average gradient ($p < 0.001$), degree of residual PR ($p = 0.009$) and prosthetic dysfunction ($p = 0.006$, 60% BJ vs 23% PPP), ever favourable for PPP group.

Conclusions:

Although only a longer follow-up will confirm the hypothesis, it seems reasonable to choose a PPP to improve RVOT functionality in children above 1 year, being significantly lower its percentage of dysfunction in tracking.