Successful reoperation of the valveless calcified right atrium to right ventricle conduit in an adult patient with tricuspid atresia after Fontan procedure

Justyna Rybicka, Miroslaw Kowalski, Jacek Różański and Piotr Hoffman

INTRODUCTION

Narrowing either of the systemic venous connection or, as in the case of the Bjork modification Fontan procedure, the right atrium (RA) to right ventricle (RV) conduit is an important cause of the failing Fontan [1]. The possible management options in this case include: percutaneous or surgical removal of the obstruction (e.g. valve implantation) and conduit replacement or conversion to a total cavopulmonary connection (TCPC) [1–4]. We postulate that it is not always safe to put valve percutaneously into conduit and, at the same time, that reoperation gives excellent results.

CASE REPORT

The 31-year old woman with tricuspid atresia, after Bjork Fontan modification and reoperation due to homograft narrowing, was evaluated because of progressive exercise intolerance; she was planning a pregnancy. The right atrium (RA) to right ventricle (RV) homograft narrowing and calcification with significant reversal flow were found. Successful reoperation was performed—calcified conduit was excised and extracardiac pulmonary homograft tipped with vascular prosthesis was implanted between the RA and the RV.

Keywords: Tricuspid atresia • Fontan operation • Right atrium • Right ventricle • Homograft
DISCUSSION

In the case presented here, 25 years after conduit implantation, no Fontan circulation complications were found. Thus, when sufficiently developed RV is present, the RA–RV conduit may be considered as a reasonable choice [5, 6]. Frequent conduit narrowing is presumably due to the use of an aortic homograft and pericardial conduit that are prone to calcification (secondary to a high amount of elastic fibres and total tissue calcium) [7, 8]. Considerably, better results are obtained in the case of a pulmonary homograft implantation. What should be born in mind is that the risk of conduit disruption during sternotomy is high. Therefore, before sternotomy is performed, it is recommended to establish cardiopulmonary bypass via femoral vessels. An alternative method for removing homograft narrowing is percutaneous valve implantation into the narrowed conduit [3]. In our case, we did not choose to go for interventional treatment because of severe calcifications of the homograft and a high risk of conduit perforation. Instead, we chose reoperation—we abandoned TCPC conversion and decided to replace the RA–RV conduit because of sufficiently developed RV with a reasonably good contractility. It allowed preservation of biventricular circulation and came out very well. Thus, when feasible, what we advocate here is qualification of patients with conduit narrowing after Fontan operation for surgery treatment. In the case of Bjork modification if only RV size and function are adequate, we recommend to replace the RA–RV conduit rather than to perform TCPC conversion.

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REFERENCES


