

Technical option for redirection of flow in the partial anomalous pulmonary veins connection

Opção técnica para o redirecionamento de fluxo na conexão anômala parcial de veias pulmonares

Ulisses Alexandre CROTI¹, Domingo Marcolino BRAILE¹, Adriana Érica YAMAMOTO¹, Renata Geron FINOTI¹

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PATIENT CHARACTERIZATION

Five-year-old female child, 14.9 kg, from Guararapes, Brazil. Since birth with a diagnosis of interatrial communication (IAC), monitored in the local Service, remained asymptomatic and without medication.

The patient was referred for surgical treatment and the preoperative transthoracic echocardiogram confirmed IAC ostium secundum of 4.7 mm, superior sinus venous IAC of 6.2 mm and right upper pulmonary vein (RUPV) connected to the superior vena cava (SVC), characterizing partial anomalous connection of the pulmonary veins. There was mild hemodynamic repercussion and the relationship between the pulmonary and systemic flows was of 2,4:1.

The operation aimed to redirect the flow of RUPV to the left atrium (LA) with open side of the right atrium (RA) and SPV immediately prior to the RUPV, avoiding lesion of the sinus node. We performed resection of the interatrial septum to increase sinus venous IAC and implantation of a large bovine pericardial patch (BPP) separating the left and right structures. Then enlargement of the SVC and RA were performed using a second BPP by preventing the SVC stenosis [1-3]. The cardiopulmonary bypass time was 48 minutes and myocardial ischemia was of 32 minutes at 32°C.

DESCRIPTION OF THE TECHNIQUE USED

Incision of the skin, subcutaneous tissue opening and median transsternal thoracotomy using electric saw. Exposure of the thymus of the anterior mediastinum, pericardial sac, visceral pleura and moving lungs. Pericardial sac opened, external observation of cardiac anatomy. RA traction and analysis of the sinus node position, SVC and RUPV. Analysis and relationship between the veins after dissection of the region, with RUPV then connecting it to the junction of the SVC with the RA.

Confection of the purse-string suture of the aorta using 5-0 polypropylene, on the SVC near the innominate vein and inferior vena cava with 6-0 polydioxanone yarn. Passage of cotton thread around the SVC, positioning it below the azygos vein in order to avoid blood flow during intracardiac repair. Similarly, in the inferior vena cava cotton thread was passed for tourniquet.

Puncture of RA and the direct administration of 5mg/kg dose of sodium heparin.

Positioning of the cannula in aorta and vena cava immediately before the start of cardiopulmonary bypass (CPB). RA traction showing the relationship between the site of insertion of the cannula in the SVC and RUPV connected abnormally.

THE VIDEO PERTINENT TO THE TEXT IS AVAILABLE ON THE BJCVS WEBSITE: <http://www.rbccv.org.br>

CONFLICT OF INTEREST STATEMENT: The authors declare that they have conflict of interests; Braile Biomédica® provided all the material used and supplied the video images of the operation, presenting its commercial products.

1. São José do Rio Preto Pediatric Cardiovascular Surgery Service - Hospital de Base - São José do Rio Preto Medical School, SP, Brazil.

Correspondence address:

Ulisses Alexandre Croti
Hospital de Base - Faculdade de Medicina de São José do Rio Preto (FAMERP) - Avenida Brigadeiro Faria Lima, 5544 - São José do Rio Preto - SP - Brasil - CEP 15090-000.
Fone (Fax): 17 - 9772-6560 / 3201-5025
E-mail: uacroti@uol.com.br

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In CPB, antegrade hypothermic blood cardioplegic solution was administered. Intracardiac cavities were aspirated through a small hole in RA, in the same region that heparin was administered.

Opening of the RA into the SVC side wall, passing anteriorly and parallel to the RUPV, thus avoiding lesion of the sinus node. Opened RA traction through single incision and analysis of intracardiac defects. The clamp indicates the small IAC ostium secundum, the small venous sinus IAC, and the anomalous RUPV and azygos vein.

Excision of portions of the interatrial septum, oval fossa limbus, resulting in enlargement of orifices of interatrial communications and relationship with RUPV, azygos vein and SVC.

Adequacy of the oval BPP size, and beginning of the suture between the SVC, below the azygos vein, and RUPV using 5-0 polypropylene yarn, by positioning the flow from this vein to the left cavities. The suture used the incision edge, with appropriate distance from RUPV, aiming to prevent late stenosis. After RUPV region, the suture follows the resected lateral septal edge. In the medial edge of suture, attention was given in order to avoid sinus node lesion, with surface sutures, which follow the medial edge of the resected tissue. At the end of the BPP implant, blood comes from the LA after requesting to the anesthesiologist to inflate the lungs, as part of maneuvers to remove air from the left cavities.

Final appearance of BPP, very wide, avoiding restriction to the blood flow from pulmonary veins to LA. The clamp indicates the azygos vein.

With a second BPP, enlargement of the SVC and closing of the RA using 6-0 polypropylene yarn were initiated. The suture initiates at the superior angle of the SVC, making a "sandwich" of the first patch used to separate the atria towards the RA (similarly to the superior edge). The correction was concluded - in CPB - with orifice in the aorta bleeding for removal of air.

After CPB, RA tractioned showing external appearance of the bovine pericardial patch that enlarged the SVC and the RA.

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