

## Bail-out wire stenting of restrictive atrial septal defect in cardiac total anomalous pulmonary venous connection

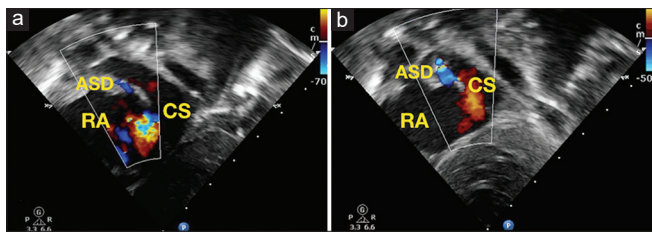
Sir,

As is common knowledge, surgical correction is the only definitive treatment for total anomalous pulmonary venous connection (TAPVC). However, sometimes, immediate surgery is not feasible due to logistic issues or due to unfavorable patient characteristics in patients with obstructive TAPVC. In such situations, percutaneous interventions such as vertical vein stenting and balloon dilation of atrial septal defect (ASD) have been attempted to tide over the acute crisis.<sup>[1,2]</sup> We report our experience with one such patient, where a stiff wire stenting of the interatrial septum resulted in hemodynamic stabilization.

A 1-month-old infant, weighing 3 kg with cardiac TAPVC to the coronary sinus and a small ASD, had sudden respiratory and hemodynamic worsening, requiring endotracheal intubation and inotropic support. Echocardiogram revealed very small ASD with very small left ventricle volume [Figure 1a and Video 1]. Immediate corrective surgery was not feasible due to logistic reasons and very poor hemodynamic status. Since the situation warranted immediate relief of obstruction, immediate balloon dilation of ASD was planned. Right femoral

venous 5F access was secured and using 10 × 2 and 11 × 3 Tyshak balloon, static balloon dilation of ASD was done sequentially, but there was no waist formation across the ASD. Hemodynamics improved with improvement in arterial pressure trace. As soon as the balloon-wire assembly was removed from the heart, there was immediate fall in blood pressure. Echocardiogram at this time showed flap across the ASD with no flow. Mechanism of ASD closure was due to flap of atrial septum and compression from the dilated coronary sinus.

When the ASD was recrossed with a wire in an attempt to repeat balloon dilation, it was noted that wire stented the interatrial septum and kept the ASD patent. Hence, it was decided to leave the wire *in situ* for a few hours, till hemodynamic stability could be achieved. The 0.018" 300 cm V-18 wire (Boston Scientific, USA) was exchanged for 0.035" J tip Amplatzer regular wire (Cook Inc., USA), with tip parked in left atrium and the proximal end coiled outside the groin [Figures 1b and 2 and Video 2]. Heparin infusion was continued to avoid thrombus formation. Within 2 h inotropes were tapered, and urine output normalized. Serum potassium level improved from 6.8



**Figure 1: Echocardiogram in subcostal view showing (a) very tiny atrial septal defect with right-to-left shunt and dilated coronary sinus, (b) after wire stenting of atrial septal defect wider jet of color flow is seen along with metal artifact due to wire across atrial septal defect**

to 4.2 meq/L. After 5 h of intervention, the patient was taken up for surgical correction of TAPVC, and the wire was removed just before inferior vena cava cannulation. Intraoperatively, ASD was completely closed by the flap of fossa ovalis. Sternal closure was done on day 1 postoperatively. Postoperative course was complicated by renal failure requiring peritoneal dialysis and klebsiella sepsis. Unfortunately, the patient succumbed on the postoperative day 4.

For acute worsening due to ASD restriction, many methods of creating a nonrestrictive interatrial communication have been described including balloon septostomy, static balloon dilation, blade septostomy, and interatrial stent placement.<sup>[3]</sup> We describe a novel method of wire stenting of interatrial septum, which could temporarily help to improve hemodynamics in some situations. Our experience may help others in similar circumstances where stenting might not be feasible. Whether the presence of wire for a few hours would be detrimental and introduce or worsen sepsis is debatable. Proper aseptic precautions must be undertaken during the procedure.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

#### Financial support and sponsorship

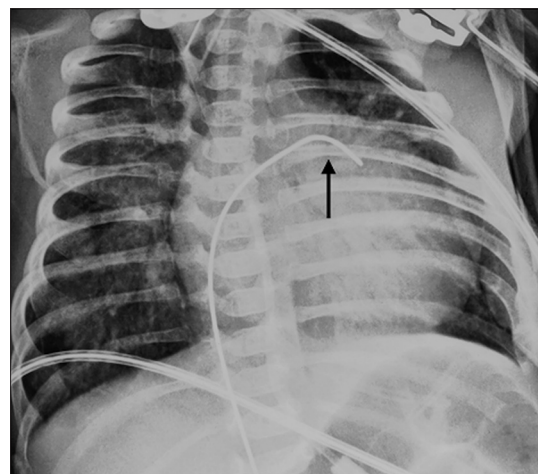
Nil.

#### Conflicts of interest

There are no conflicts of interest.

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**Figure 2: Chest radiograph postwire stenting of atrial septal defect showing the location of the tip of wire in the left atrium (arrow)**

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