Is seeing believing: An obstructed bidirectional Glenn, that wasn’t!

Sir,
A 7-year-old boy underwent a bidirectional Glenn (BDG) and pulmonary artery (PA) band at an outside center for his congenital heart disease, at around 2 years of age. Few months after surgery, his parents noticed prominent venous channels at anterior chest wall. He underwent reevaluation in his home country and was referred to us as a case of obstructed BDG. Understandably, social factors accounted for delayed presentation.

His echocardiography showed usually placed left-sided heart; there was tricuspid atresia with unrestricted atrial and ventricular septal defects, ventriculoarterial concordance, severe pulmonary stenosis, and a PA band in situ. The Glenn anastomosis was patent with flow in bilateral adequate size branch PAs. The superior vena cava (SVC) was dilated with spontaneous echo contrast. The right ventricle was hypoplastic and left ventricle was normal in size and function. His hematocrit was 48%.

He was taken up for cardiac catheterization for further evaluation and planning. Pertinent findings at catheterization included dilated SVC [Figure 1] and multiple decompressing venous channel [Figure 2] with a pull through gradient across Glenn of 4 mmHg. The mean PA pressure was 19 mmHg (systolic 26 mmHg and diastolic 13 mmHg) and left ventricular end diastolic pressure was 12 mmHg. Branch PAs were adequate in size and arborization. The evaluation was suggestive of a high-risk fenestrated Fontan completion candidate.

The patient was taken up for revision of Glenn and completion of Fontan. At induction, the central venous
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pressure (CVP) transduced by the right internal jugular vein line was around 20–22 mmHg.

During surgery, after usual dissection, a thrill was appreciated at the lower SVC which was unusual even for an obstructed anastomosis on venous side. The thrill was felt to be originating from the main PA (MPA) region. The MPA was looped and temporarily snared; immediately, the SVC pressure in the CVP line fell to 13 mmHg from 22 mmHg and the thrill disappeared. We felt that it could have been a jet coming from the banded PA that was the culprit rather than an anastomotic narrowing in the Glenn circuit.

Cardiopulmonary bypass was established by standard aortic and bicaval cannulation and completion Fontan was accomplished using a size 20 mm tube graft, offsetting it to Glenn. The Glenn anastomotic site seemed adequate and nothing was done at that site. The patient had an uneventful postoperative course and was eventually discharged in stable condition.

Thus, we believe that it was the jet coming from the PA band [Figure 1] that, given its location in this particular case, was directed at the Glenn anastomosis and must have resulted in flow reversal and all its consequences.

To conclude, in patients with pulsatile Glenn, an attempt should be made to measure the PA pressure after balloon occlusion of the antegrade flow during catheterization to estimate the correct PA pressure. Indeed, a reappraisal of the surgical plan based on intraoperative findings may simplify the matter and avoid unnecessary exploration.

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.

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Conflicts of interest

There are no conflicts of interest.

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Figure 1: Angiographic image showing dilated superior vena cava. Pulmonary artery band is visible

Figure 2: Angiographic image displaying decompressing venous channels