

Late exercise desaturation following percutaneous atrial septal defect closure

*Luciano D. (1), Chenu C. (2), Fraisse A. (1), Kreitmann B.(2,3), Guillaumont S. (1), Ovaert C. (1)
Cardiologie pédiatrique (1) and Chirurgie Thoracique et cardiovasculaire (2), Hôpital Timone Enfants,
AP-HM, Marseille, France. Aix Marseille Université, GMGF, Marseille, France (3).*

Background: Percutaneous device insertion is the preferred option for closure of secundum atrial defects (ASD). Closure rate is high and complication rate low in experienced hands. Positioning of the device may be challenging in patients with small, especially inferior rims.

Case report: a 4 year old, 14 kg girl was referred for percutaneous closure of a large ASD.

Transoesophageal echocardiography described a 21 mm secundum ASD with small inferior and posterior rims. A 22 mm Amplatzer® ASO was inserted using the balloon-assisted implantation technique. Position was considered satisfactory with no residual shunt at final transoesophageal echocardiography. Aspirin was given for 6 months. Clinical evolution was uneventful over the next 3 years but echocardiograms showed abnormal retrograde flow in the inferior vena cavae (IVC) and abnormal protrusion of the device above the IVC. At closer inquiry, the child presented persistent exercise intolerance. Exercise test revealed marked desaturation (68%). CT scan showed the abnormal position of the device (figure). The child underwent surgery under cardiopulmonary bypass, through a posterior “aesthetic” right thoracotomy with femoral venous cannulation. The device was well positioned and endothelialized for most of its circumference. However, at the lower part, the device was unattached and completely on the right side, protruding above the IVC lumen. A small communication between the IVC and the right atrium and a large communication between the IVC and left atrium (residual “ASD”) were noted. No inferior rim was seen suggesting that the defect was not a secundum but an inferior sinus venosus type. The device was gradually dissected out and patch closure (Gore-Tex®) of the defect was performed. Post-operative evolution was uncomplicated. Discussion: Immediate cyanosis following surgical closure of ASDs is a well-known complication, resulting from inappropriate positioning of the patch. To our knowledge this has never been described after transcatheter closure. Differential diagnosis between a secundum defect with minimal inferior rim and an inferior sinus venosus defect is difficult but important. Exercise saturation was in our patient very helpful to demonstrate abnormal right to left shunt resulting from the device malposition.

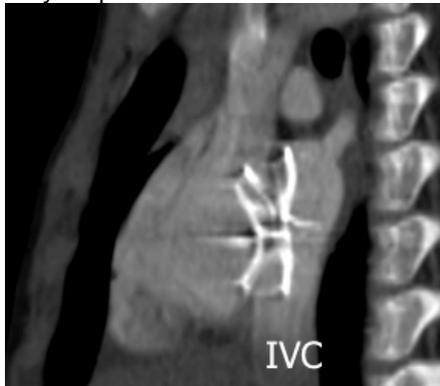


Figure: CT scan showing the device protrusion above the IVC.