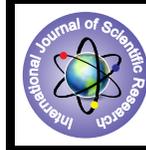


Transcatheter Closure of Restrictive Aortopulmonary Window



Medical Science

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ABSTRACT

Aortopulmonary window is a rare congenital cardiac defect. It is usually nonrestrictive and conventionally treated surgically at an early age to prevent the development of pulmonary vascular obstructive disease. 10% of aortopulmonary window may be small in size and can be closed by transcatheter closure. We report transcatheter closure of restrictive aortopulmonary window in a two years old, 10kg child using duct occluder device.

Introduction :

Aortopulmonary window (APW) is relatively rare cardiac malformation, found in 0.2% to 0.6% of patients with congenital heart disease. Nearly half of the patients have associated lesions. The most common associations are aortic origin of the right pulmonary artery, Type A Interruption of the aortic arch, and Tetralogy of Fallot. Mori classified APW as Type 1 is the most common type, mid-way between semilunar valves and pulmonary bifurcation, Type 2 is a more distal defect, the distal border of which is formed by the pulmonary bifurcation, Type 3 a large, confluent defect involving essentially the entire aortopulmonary septum, it is the most rare.

Closure is indicated in all cases. In most cases, surgical repair is under taken during infancy to prevent development of pulmonary arterial hypertension. Ten percent of aortopulmonary window may be small in size and can be closed by catheter closure. The experience with transcatheter closure of APW is limited. We report a case of successful closure of restrictive APW using duct occluder device.

Case Report :

A 2 years old male child weighing 10 kg presented with incidental detection of cardiac murmur. On examination, he had continuous murmur heard at the left upper sternal border. Echocardiography showed 2.5mm APW (fig.1)(video 1). There were no associated cardiac anomalies. Catheterization and selective aortogram were performed. Pulmonary artery pressure was 38/20mmHg and systemic pressure was 100/30mmHg. Selective ascending aortogram showed APW measuring 2.5mm in diameter, away from the aortic valve and coronary arteries (fig 2a) (video 2).

APW was crossed from pulmonary artery side using end hole catheter and Terumo wire. The wire was taken to the descending thoracic aorta and exteriorized to femoral artery. Contralateral sheath was introduced from venous side and placed in the descending thoracic aorta. A 3/5 Lifetech PDA device was deployed at appropriate position. Device position was confirmed by transthoracic echo cardiography and aortography, prior to release of the device (fig 2b)(video 3). The follow-up echocardiography done at 9 months showed good device position and no gradient in the pulmonary artery and ascending aorta.

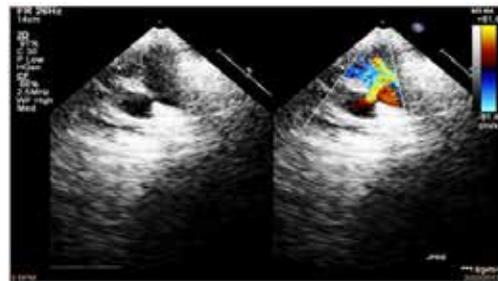


fig.1-ECHO showing APW



Discussion:

APW is a rare cardiac malformation with fifty percent of the patients having associated lesions. Closure of the defect is indicated in all patients with APW and treatment of choice is surgical closure. Correction of associated anomalies can be done during surgery. Transcatheter closure of APW can be done if anatomy is suitable. We have demonstrated the use of duct occluder device to close 2.5mm APW.

Different operators have used different types of devices. Naik et al (1) have used an Amplatzer ASD device to close a 6mm APW and an Amplatzer duct occluder for 3 mm APW in 6 and 10 years children respectively. Atiq et al (2) used an Amplatzer duct occluder for a restrictive APW in a 8 years old child. Rohit et al (3) used an Amplatzer duct occluder for a 9mm APW in a 9 years old child. Sivakumar et al (4) closed two APWs 8mm and 6mm with a Amplatzer duct occluder in 8 months and 5 years old children. Trehan et al (5) closed APWs in three infants with duct occluder, muscular VSD occluder and perimembranous VSD occluder for 10mm, 10mm and 8mm APW respectively. Amplatzer duct occluder is used more commonly.

Conclusion:

For the defects suitable for transcatheter closure, it is important to see the relationship of the coronary artery origin to the margins of APW. Distally located defect are ideal for catheter closure and do not carry the risk of the device impinging on a coronary artery.

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