

Amplatzer septal occluder and atrioventricular block: A case report and literature review

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Transcatheter closure of secundum atrial septal defect (ASD) is an alternative option to open heart surgery with good short and long-term outcomes. For this purpose, the Amplatzer septal occluder (ASO) device is widely used. Arrhythmias are known complications of ASD device closure including atrial ectopy and heart block.

We report a seven-year-old female patient who developed second degree atrioventricular block (AVB) within few hours after ASD device closure using ASO device. At the seventh post-procedure day; while under close observation; patient regained sinus rhythm which was maintained thereafter. A 3-day course of prednisolone was given.

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Case report

A seven-year-old girl presented to the outpatient department with a history of palpitations on exertion for two months. It was not associated with syncope or dizziness. She was not on any medication. Examination revealed a thin, young girl weighing 13 kg (below the 5th percentile). Her height was 109 cm (below the 5th percentile). Cardiovascular examination showed a regular pulse, fixed splitting of the second heart sound, and an ejection systolic murmur grade 3/6 at the upper left sternal border. Pre-intervention 12-lead electrocardiogram (ECG) showed a normal sinus rhythm at a rate of 100 per minute with a normal PR interval. There was an incomplete right bundle branch block with QRS duration of 90 ms (Fig. 1). The echocardiogram was diagnostic of a 20-mm atrial septal defect (ASD) secundum

type with moderate dilatation of the right atrium and right ventricle. The ASD rims were adequate with a 15 mm rim to the superior vena cava (SVC), 6 mm rim to the inferior vena cava (IVC), 4 mm rim to the aorta, and 6 mm rim to the atrioventricular (AV) valves.

In the cardiac catheterization laboratory, under general anesthesia, transesophageal echocardiography (TEE) confirmed the diagnosis and showed the presence of a deficient rim to the aorta and a small rim to the AV valves.

The patient had transcatheter ASD device closure using a 22 mm AMPLATZER[®] Septal Occluder (ASO) device (AGA Medical Corporation), under fluoroscopy and TEE guidance. The device/patient height ratio was 0.20. The procedure was uncomplicated and the patient was transferred to the recovery area in stable condition. Eight hours after the procedure she had an irregular rhythm. A 12-lead

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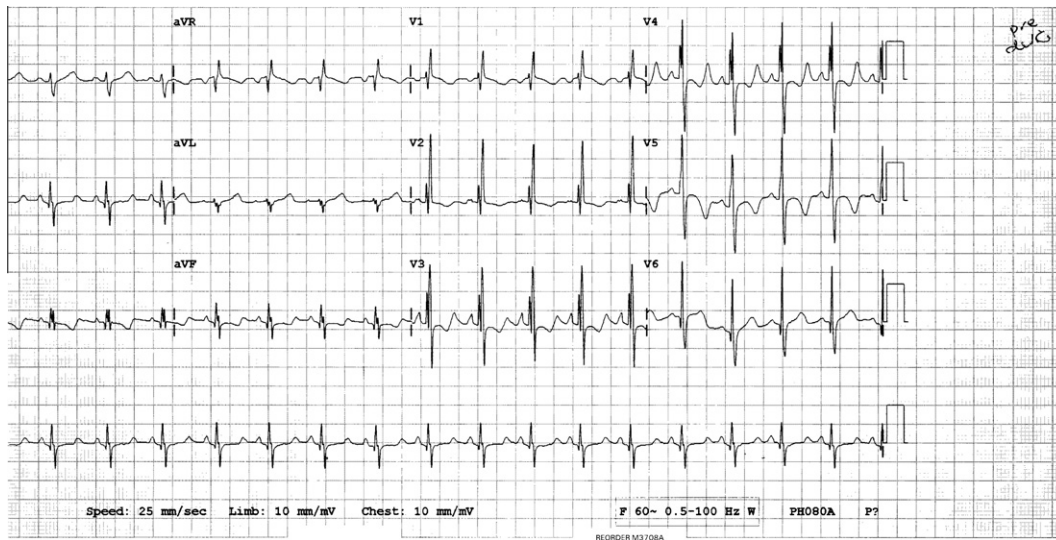


Figure 1. ECG prior to ASD device closure. Sinus rhythm, with normal PR interval and rSR in V1 (incomplete RBBB).

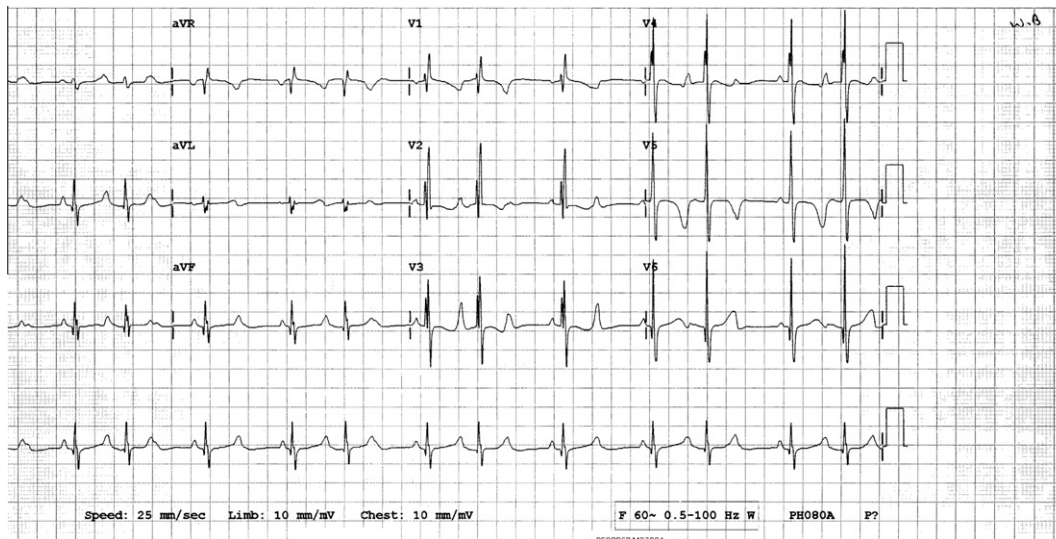


Figure 2. ECG after ASD device. Second degree heart block type 1 (progressive prolongation of the PR interval).

ECG showed second degree atrioventricular block (Mobitz I/Wenckebach periodicity) (Fig. 2).

A transthoracic echocardiogram showed that the ASD device was in good position with no residual shunt and no compromise to nearby structures (SVC, IVC, Pulmonary veins, and AV valves). There was no pericardial effusion (see Fig. 3).

She was kept in the hospital for close observation and a twice daily ECG. Holter telemetry recording for 24 h confirmed the presence of second degree heart block with 2:1 conduction as well as Wenckebach periodicity. In the third post procedure day she was started on Prednisolone 2 mg/kg/day divided every eight hours for three days. At the seventh post cath day, her rhythm re-

turned to sinus with normal AV conduction. The 24 h telemetry recording confirmed the normal conduction with no evidence of AV block. She was discharged home on Aspirin 5 mg/kg/day orally for six months. She was seen three weeks later and then at three and six months post intervention. ECG revealed that she is still in sinus rhythm with normal PR interval. Echo revealed that the device is in position, with no impingement on nearby structures and no pericardial effusion.

Discussion

ASDs are one of the most common congenital heart diseases. It is well known that ASDs may be associated with subclinical ECG abnormalities,

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