Huge Thrombus Formation One Year after Percutaneous Closure of an Atrial Septal Defect with an Amplatzer Septal Occluder

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Introduction

The Amplatzer septal occluder (ASO) has become the device of choice for interventional closure of atrial septal defects (ASDs) in many institutions during the last decades. Although excellent results have been reported for these devices, concerns have arisen about the long term complications. Of these complications, thrombus formation was rarely seen after 1 year in patients. This is the first child patient of a huge thrombus developing on an ASO device detected by transthoracic echocardiography on a routine examination after 1 year of implantation without a risk factor.

Case Report

A 17-year-old patient had been diagnosed with an ASD during evaluation for cardiac murmur. Transthoracic echocardiography (TTE) showed a 14-mm ASD and moderate dilation of the right ventricle. Transesophageal echocardiography during cardiac catheterization revealed a 16-mm ASD with balloon sizing technique. The pulmonary to systemic flow ratio was 2.8. An 18-mm ASO was successfully implanted without residual shunt and the patient was discharged on Aspirin 300mg/day for 6 months. TTE 4 weeks, 3 months and 6 months after the procedure showed the device in place.

At the 1-year follow-up, TTE revealed huge mobile thrombus with a diameter of 34 x 62 mm attached to the left atrial disk of the device (figure 1). He was taken to surgery for removal of the thrombus and the device. The surgical approach was achieved via a median sternotomy and institution on cardiopulmonary bypass. After right atriotomy, well endothelialized occluder device was seen and excised with large thrombus (figure 2). There was no device fracture or dislocation. The novel created atrial septal defect was closed by pericardial patch. The patient had an uneventful recovery and discharged the third day after surgery. The pathological examination of the material was compatible with thrombus formation.

Coagulation assays were performed in order to identify an inherited thrombotic disposition. The screening, which included the measurement of protein C and S, antithrombin III were normal. Furthermore the patient had no Factor II mutation and factor V Leiden mutation.

Figure 1. Echocardiographic image of huge thrombus on the left atrial disk of Amplatzer device

Figure 2. The appearance of large thrombus with the well endothelialized occluder device

To the best of our knowledge, this is the first reported child of late huge thrombus on an Amplatzer device without any known risk factor. Additional longer follow-up studies are mandatory in children to determine the duration and the type of antplatelet therapy and the preference of imaging technique after device implantation.