

Transcatheter closure of a ruptured sinus Valsalva via retrograde approach

Sinüs Valsalva rüptürünün retrograd yaklaşımla transkateter kapatılması



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Introduction

Sinus Valsalva aneurysm is a rare entity the prognosis of which worsens when ruptures (1-3). Surgical repair is the traditional method for sinus Valsalva aneurysm rupture (SVAR). However, the need for sternotomy and the reoccurrence of the rupture or aortic regurgitation necessitating second operation are the weak sides. Transcatheter closure of SVAR, on the other hand, is being performed using different devices successfully (4-10). In most of the cases, antegrade approach, which needs snaring the wire and constructing a femoro-femoral wire loop, is used.

We present a case in which SVAR was closed by retrograde approach in order to reduce the cost and fluoroscopy time.

Case Report

An 18-year-old male was referred to our clinic for palpitation and dyspnea at exertion. Physical examination revealed a grade III/VI continuous murmur at the lower sternal border. An aneurysm of right sinus Valsalva, which ruptured into the right atrium just below the septal tricuspid leaflet with a high velocity shunt flow of 4.8 m/second and Qp/Qs of 2.1 was detected in echocardiography (Fig. 1, Video 1, 2. See corresponding video/movie images at www.anakarder.com). The patient was informed about the treatment options, including surgical repair and percutaneous closure, and decided to proceed with percutaneous approach.

The procedure was performed under general anesthesia and the guidance of 3D transesophageal echocardiography (TEE) (Philips Z33 with a X7 transducer). Aneurysm neck, diameter of rupture site and the distance to the right coronary artery measured by TEE were 0.9 mm, 4 mm and 12 mm respectively. A 6 Fr Multipurpose (Cordis, Miami, FL) catheter

with a 0.035 hydrophilic wire was advanced into the right atrium through the rupture. We, then, changed the hydrophilic wire with an extra back-up wire. Multipurpose catheter was changed with a 9 Fr delivery sheath. We retrieved the wire and advanced a patent foramen ovale (PFO) occlusion device (Occlutech International AB, Helsingborg, Sweden) into the right atrium. Left atrial disk (16 mm) was opened in the right atrium, pulled back with delivery sheath and then right atrial disk (18 mm) was opened at the mouth of the aneurysm in the aorta (Fig. 2A, Video 3. See corresponding video/movie images at www.anakarder.com). After TEE confirmed that the device was in proper position with a suitable distance from right coronary artery ostium and the aortic valve function was not disturbed, we released the device. Aortography and echocardiography revealed complete closure of the rupture site of the aneurysm with no aortic regurgitation (Fig. 2B-2C, Video 4, 5. See corresponding video/movie images at www.anakarder.com). Total fluoroscopy time was 7.3 minutes.

Discussion

The criteria for percutaneous closure of RSVA are as follows: 1) left to right shunt > 1.5, 2) right ventricle volume overload (right ventricle diameter >1.5cm/m²), 3) margin of the defect at least 5mm from the right coronary ostia, 4) past history of infective endocarditis (4, 5).

Antegrade approach is being used in most of the cases. In this method, after the wire is passed through the rupture into the related chamber, it is snared and pulled out making a femoro-femoral wire loop and then the device is advanced antegradely from the chamber to the aortic root. This method necessitates the use of additional snare and prolongs fluoroscopy time. On the other hand the present case showed that, retrograde approach can be used safely and easily. Different devices were used in the literature such as Raskind umbrella, Gianturco coil, Amplatzer duct occluder and AGA septal occlude for the closure of SVAR (6-10). We preferred PFO occluder, a double disk device, as we used retrograde pathway and opened the first disk in the low pressure chamber. The larger disk closed the ostium of the aneurysm completely while keeping a safe distance from both the aortic valve and the right coronary ostium. Complete covering of the mouth of the aneurysm is suggested to be better compared to plugging only the rupture site. It may be speculated that leaving the aneurysmal segment may cause new ruptures as well as thrombus formation in the future. Using a double disk device which has a "sandwich" effect also helped the closure of the aneurysm mouth.

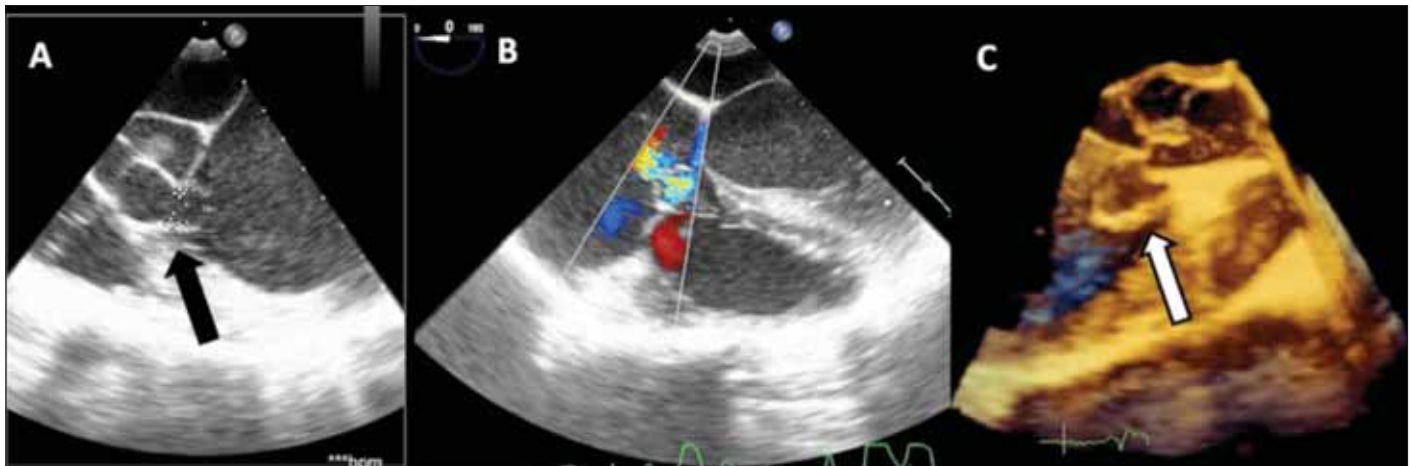


Figure 1. 2D transthoracic (A), 2D transesophageal (B) and 3D transesophageal (C) echocardiography views depicting ruptured sinus Valsalva with regurgitation into the right atrium

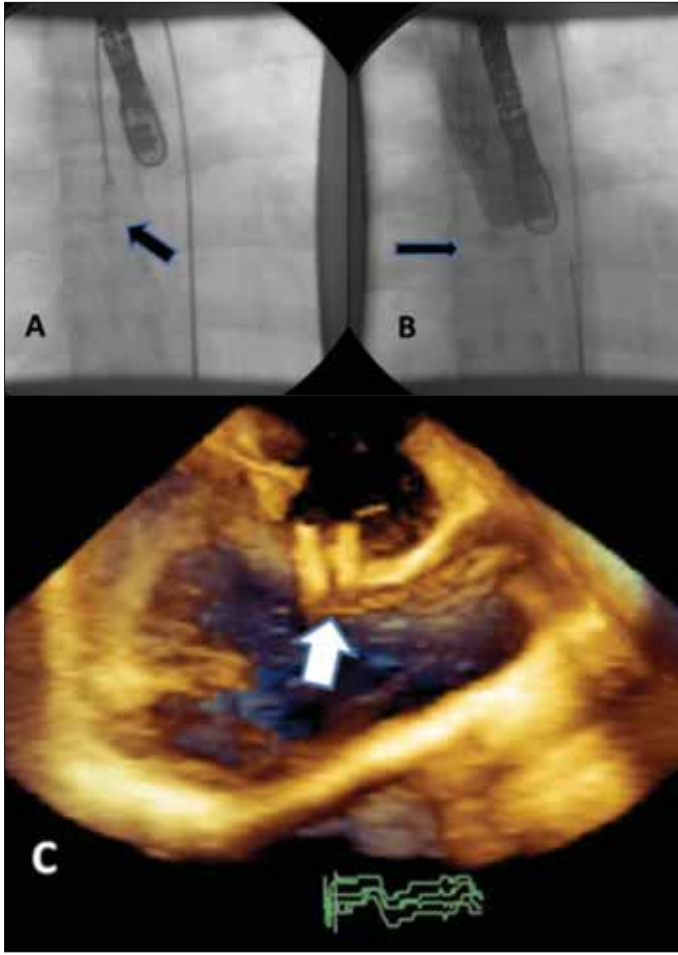


Figure 2. (A) An X-ray view of the Amplatzer device (arrow) after opening both atrial and aortic disks just before releasing with retrograde approach. (B) Aortography view showing complete closure of ruptured sinus Valsalva with no regurgitation. (C) 3D transesophageal echocardiography view depicting the closure of the ruptured sinus Valsalva with double disk Amplatzer device (arrow)

Conclusion

Retrograde closure of the SVAR is a safe and cost effective approach in suitable cases. In addition, using a double disk device such as PFO occluder and "sandwiching" the aneurysm may be more reasonable in terms of closing the aneurysm completely.

Video 1. 3D echocardiogram showing sinus Valsalva aneurysm.

Video 2. Aortography showing ruptured sinus Valsalva and regurgitation into the right atrium.

Video 3. Cine X-ray graphy showing the release of the closure device.

Video 4. Aortography showing complete closure of the defect and absence of regurgitation.

Video 5. Transesophageal echocardiography showing the closure device after deployment.

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Cannabis: a rare trigger of premature myocardial infarction

Esrar: Erken yaşta gelişen miyokart enfarktüsünün nadir bir tetikleyicisi

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Introduction

The European monitoring center for Drugs and Drug Addiction declared that one in five adults in Europe have used marijuana or related drugs like hashish at June 2008 report. While heroin, ecstasy and cocaine were seen as the most harmful illicit drugs, cannabis was often viewed as a relatively benign drug, as alcohol or tobacco. Acute myocardial infarction (AMI) is an uncommon diagnosis among young patients. Smoking cigarettes is the most prevalent risk factor, which has well known detrimental effects on atheromatous plaque formation in this age group (1). Although we need more studies to investigate the contribution of cannabis smoking to coronary artery disease process, it was proposed that cannabis smoking is a trigger of acute cardiovascular events according to several case reports (2-3).