A life-threatening umbrella

Elodie Saillen, MD,[a] Christian Latremouille, MD,[b,c] Jacques Pouchot, MD,[a,c] and Brigitte Ranque, MD, PhD,[a,c] Paris, France

Percutaneous device closure of atrial septal defects has been increasingly used during the last 30 years because of its ease and relative safety.[1,2] Various complications have been reported but remain uncommon. Most of them occur in the first days after implantation. We report here late aortic and left atrial perforation by occluder struts, complicated by acute cardiac tamponade, 28 months after device implantation. Our report illustrates the possibility of late life-threatening complications of percutaneous atrial devices.

CLINICAL SUMMARY

A 22-year-old woman was seen for acute chest pain. She had been treated with prednisone (8 mg daily) for a anti–cyclic citrullinated peptide antibody rheumatoid arthritis since the age of 17 years, with the recent addition of oral methotrexate (15 mg weekly). She also had a history of secundum atrial septal defect of 11 mm successfully treated 28 months previously by percutaneous closure with a 20-mm CARDIA occluder (Atriasept ASD; Cardia, Eagan, Minn), a double-umbrella device with left- and right-sided struts (arms).

At her admission, the patient was afebrile and in hemodynamically stable condition. There was isolated jugular venous distention. Her electrocardiogram showed a 120 beats/min sinus tachycardia, and laboratory findings revealed anemia (hemoglobin 10.9 g/dL). Chest radiography appeared normal; however, echocardiography demonstrated a pericardial effusion of 28 mm width with evidence of right ventricular compression. Subxiphoid pericardial drainage removed 150 mL of bloody pericardial fluid under pressure. Pericardial fluid culture results were negative, and a pericardial biopsy sample was unremarkable. Immediate outcome was favorable, and a diagnosis of viral or connective tissue–related pericarditis was considered. The patient was given oral colchicine (1 mg daily). Persistent tachycardia (120 beats/min), however, prompted us to check the functionality of the atrial device. Cardiac computed tomographic scan suggested the protrusion of a device's strut through the right atrial wall and the aorta, which was confirmed by transesophageal echocardiography.

The patient was rapidly taken for surgery. One of the occluder's struts was indeed perforating the aortic root, and another was perforating the lateral wall of the right atrium (Figure 1). The occluder was removed, and the atrial septal defect was closed with a heterologous pericardium patch. Perforations of the aorta and right atrium were fixed with cross stitches. Postoperative outcome was uneventful, and after 6 months of follow-up, the patient remained free of symptoms.

DISCUSSION

Closure of atrial septal defects with various percutaneous devices has been increasingly used during the last 30 years as an alternative to conventional open surgical repair because of the ease and the relative safety of the procedure.[1,2] Various complications, including device migration, thromboembolism, significant residual shunt, arrhythmia, aortic or atrial perforations, and device erosion, have been reported but remain uncommon. Most complications (70%) occur within the first 3 days after implantation.[3] Serious complications requiring surgery have been reported for 2.3% to 8% of all types of atrial septal defect closure devices.[1,2] Perforations are extremely rare and specifically involve anterosuperior atrial walls or adjacent aorta.[4,5] Of note, a quarter of such perforations occur late, from 3 weeks to 3 years after the closure,[4] and there has even been a report of a device erosion associated with Amplatzer device placement after 6 years.[5]

Our patient had been treated with prednisone for a few years; however, this therapy is unlikely to have played an important role in the complication because of the low daily dose administered. Furthermore, there is no evidence of a higher incidence of percutaneous device complications among patients receiving corticosteroids. Nevertheless, corticosteroids are known to alter tissues healing and may have helped to worsen the injury provoked by the device.

We report here late aortic and left atrial perforation by occluder struts, complicated by acute cardiac tamponade, occurring 28 months after the implantation of a double-umbrella occluding device. Our report illustrates the possibility of life-threatening complications of percutaneous atrial devices even several years after the closure. Prolonged caution is therefore warranted for patients in whom atrial septal defects have been treated with a transcatheter occlusion device.

From the Internal Medicine Department[a] and the Cardiac Surgery Department,[b] Hôpital Européen Georges Pompidou, Assistance Publique des Hôpitaux de Paris, Paris, France; and the Université Paris Descartes,[c] Paris Cité Sorbonne, Paris, France.

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Address for reprints: Brigitte Ranque, MD, PhD, Internal Medicine Department, Hôpital Européen Georges Pompidou, Assistance Publique des Hôpitaux de Paris, 20 rue Leblanc, 75015 Paris, France (E-mail: brigitte.ranque@egp.aphp.fr).

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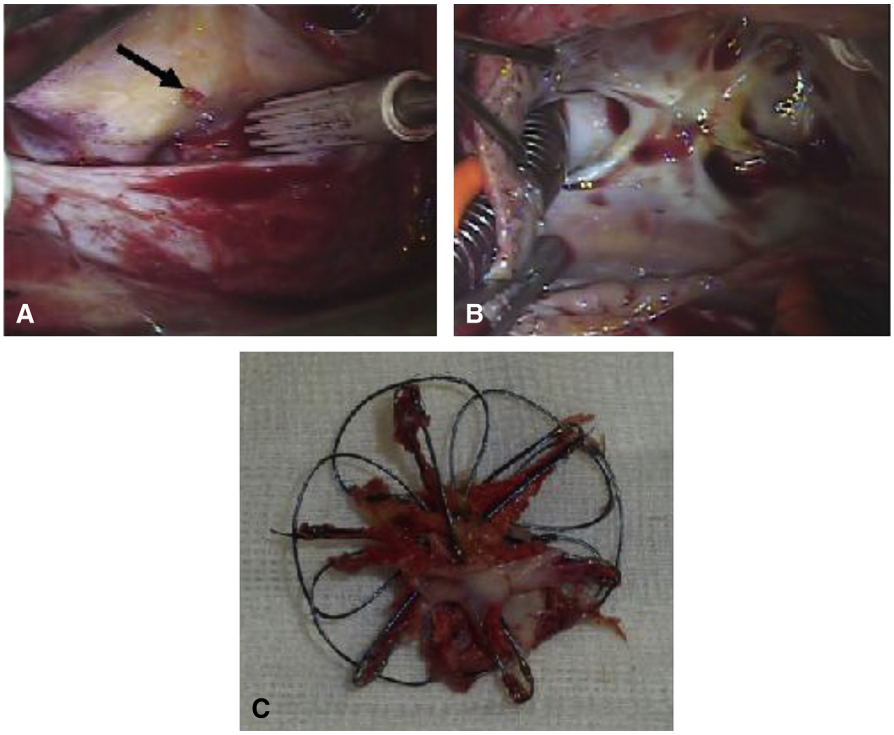

FIGURE 1. Operative findings. A, Intraoperative photograph shows perforation of the right atrium by an occluder strut (*arrow*). B, Intraoperative photograph shows atrial septal occluder in situ, before removal (visualized through the opened right atrium). C, The removed device can be seen clearly in this photograph.

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Endobronchial ultrasonographically guided transbronchial needle aspiration in mediastinal abscesses

Yen-Fu Chen, MD,[a] Chao-Chi Ho, MD, PhD,[b] Chung-Yu Chen, MD,[a] and Chong-Jen Yu, MD, PhD,[b] Douliou City and Taipei, Taiwan

From the Department of Internal Medicine,[a] National Taiwan University Hospital, Yunlin Branch, Douliou City, Taiwan; and the Department of Internal Medicine,[b] National Taiwan University Hospital, Taipei, Taiwan.

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Address for reprints: Chung-Yu Chen, MD, No. 579, Section 2, Yunlin Rd, Douliou City, Yunlin County 640, Taiwan (E-mail: c8101147@ms16.hinet.net).

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Mediastinal abscess is a serious condition carrying a high mortality and requiring surgical intervention. Real-time endobronchial ultrasonographically guided transbronchial needle aspiration (EBUS-TBNA), which is used for obtaining mediastinal tissue samples, is a safer and less invasive method than surgery.[1] Here we present 2 cases of patients with mediastinal abscess diagnosed by EBUS-TBNA and discuss the related issues.