coronary extensively. The sinus of Valsalva was recreated with another photofixed bovine pericardial patch. The mobilized coronary button was implanted into the patch by use of the trapdoor technique, and the aorta was reclosed (Fig 1B). The LAD distribution then appeared to have normal perfusion. Left ventricular activity was diminished, but this was thought to be due to repeated cross-clamp periods and a relatively prolonged period of ischemia in the LAD distribution. The patient was then given extracorporeal membrane oxygenation (ECMO) to provide hemodynamic support. The patient was weaned from ECMO 48 hours later, the remainder of the hospital course was uneventful, and she was discharged home on the eighth postoperative day. Echocardiography at the time of discharge revealed normal left ventricular function. The patient remains well 3 years after operation, with normal biventricular function and trivial (<10 mm Hg) gradients across the left and right ventricular outflow tracts.

Comment

Supravalvar aortic stenosis (SVAS) remains a challenging surgical problem. Some variation of the three-sinus reconstruction technique has been widely adopted, despite the scarcity of data demonstrating improved clinical outcomes in comparison with single- and dual-sinus techniques [1–5]. Nevertheless, SVAS is a disease of the entire aortic root, and a symmetric repair offers the potential for greater relief of pressure gradients and may improve coaptation of the aortic valve [4, 5].

The incision onto the left sinus must be rightward of the left coronary orifice to prevent injury to the left coronary artery. Overenlargement of the aortic sinuses has been described as a potential cause of aortic valvar insufficiency [2], but impact on coronary perfusion has not been previously noted. The diameters of the annulus and sinotubular junction are similar, and in this case were assessed by echocardiography. However, echocardiography may not provide an accurate estimation of diameter if the measurement is not made at the greatest diameter. This may have led to oversizing of the patches, leading to kinking of the LAD. Direct measurement of the sinotubular junction and annulus may have provided a more accurate measurement. Another possible explanation is that the sinuses may have also been asymmetrically affected, with the left sinus requiring less patch augmentation in comparison with the other sinuses. Finally, the angle of the left coronary takeoff may have been a contributing factor, inasmuch as even a mildly acute takeoff angle may predispose to kinking if the sinus is surgically enlarged.

This report demonstrates that patch enlargement of the left sinus may effectively lengthen the left main coronary artery and cause kinking of the coronary arteries.

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Successful Treatment of a Patient With Purulent Pericarditis by Daily Intrapericardial Washouts

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Purulent pericarditis in adults is rare, but once it develops, it carries a high mortality rate. Adequate pericardial drainage and proper antibiotic treatment are essential in the successful management of purulent effusions, for which percutaneous catheter drainage is the most commonly performed technique. We herein report the case of a 75-year-old woman with purulent pericarditis attributable to methicillin-resistant *Staphylococcus aureus*. Although percutaneous pericardial drainage by catheter was used, the drainage was insufficient because of hyperviscous effusion. We performed surgical subxiphoid pericardial drainage, and a piece of a purulent stone was found in the pericardial cavity with purulent effusion. Additionally, daily intrapericardial washouts with physiologic saline alone were used as adjunct therapy. Five weeks later, the patient had a decreasing inflammatory reaction and symptom relief. She was discharged with no complications such as constrictive pericarditis.

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FEATURE ARTICLES

Purulent pericarditis is the most serious clinical manifestation of bacterial pericarditis, characterized by gross pus in the pericardial sac or microscopically purulent pericardial effusion, which often develops as a complication of a thoracic surgical procedure or chemotherapy. Despite advance in diagnostic and treatment modalities, purulent pericarditis remains a life-threatening illness.

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A 75-year-old woman who had undergone a lung resection and chemotherapy for lung cancer 3 months earlier was referred to our hospital with chest discomfort. She had a history of postoperative pyothorax and had achieved partial remission by intravenous antibacterial therapy 1 month earlier. Physical examination showed blood pressure of 122/82 mm Hg, body temperature of 36.6°C, and heart rate of 90 beats per minute. Laboratory analysis revealed high inflammatory reactions, including increased white blood cell count of 9400/μL and increased C-reactive protein level of 6.28 mg/dL. Electrocardiography showed a sinus rhythm with low voltage in the limb and chest leads. She had an enlarged cardiac silhouette without pulmonary congestion on chest roentgenogram. Transthoracic echocardiography showed a preserved ejection fraction of the left ventricle and a large amount of pericardial effusion and thick solid exudate with collapse of the right atrium and right ventricle (Fig 1). Computed tomography (CT) of the chest showed a large amount of circumferential pericardial effusion (Fig 2) and an expanded inferior vena cava. The density of the pericardial effusion was 40.0 HU, suggesting purulent material.

An urgent pericardial drainage by catheter was performed percutaneously, and 200 mL of hyperviscous red purulent fluid was drained off. Histopathologic examination of the effluent revealed the aggregation of leukocytes and leukocytes phagocytosing gram-positive cocci (Fig 3). Blood and the pericardial fluid cultures grew methicillin-resistant *Staphylococcus aureus*. The patient received a diagnosis of purulent pericarditis secondary to pyothorax. Although appropriate antibiotic therapy (vancomycin plus sulbactam) was given, the pericardial effusion remained because of deposition of fibrinous material and formation of loculations. Therefore, surgical subxiphoid pericardial drainage was performed. Two drainage tubes were inserted through the chest wall and into the pericardial space (Fig 4). Surprisingly, a piece of stone measuring 25 × 20 × 10 mm was removed from the pericardial cavity with the purulent effusion (Fig 5). The stone was an irregular contoured mass. Gross examination of the stone's cut surface showed it to be reddish yellow, with an internal spotty liquefaction or softening but peripheral elastic hardness. Because the purulent effusion could not be drained completely even by a subxiphoid pericardial drainage technique, daily intrapericardial washouts with physiologic saline alone were used for 5 weeks as adjunctive therapy. A closed instillation-drainage technique was achieved by pouring warmed (approximately 36°C) physiologic saline into the pericardial cavity at 50 mL/h with continuous drainage for 9 hours a day. Closed, continuous, steady-flow

Fig 2. Axial image from multislice computed tomography (CT) of the chest, showing a large amount of circumferential pericardial effusion. The density of the pericardial effusion was 40.0 HU.

Fig 1. Transthoracic echocardiogram (subxiphoid view) showing a large amount of pericardial effusion and thick solid exudate with collapse of the right atrium and right ventricle.

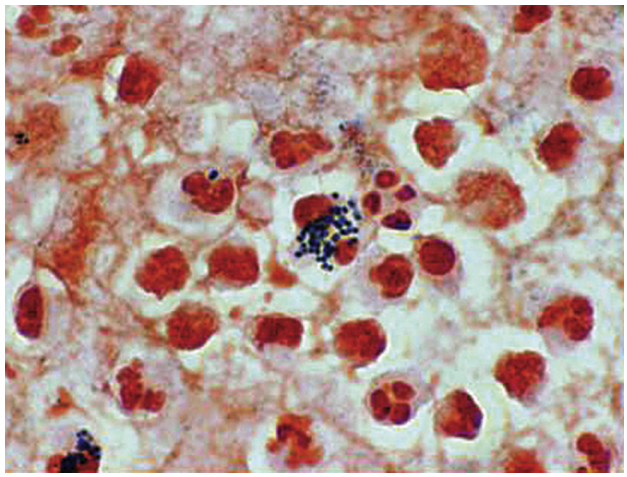

Fig 3. Pathologic findings. Histologic image of the effusion stained with hematoxylin at a magnification of ×400, showing aggregations of leukocytes and leukocytes phagocytosing gram-positive cocci.