Brief communications

Disc embolization of Björk-Shiley mitral prosthesis without strut fracture

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Strut fracture with subsequent embolization of the Björk-Shiley mitral prosthesis is a rare but recognized complication. A case of disc embolization without strut fracture was managed successfully by early surgical intervention. The preoperative chest x-ray film demonstrating apparently intact major and minor struts underscores the importance of a high index of suspicion to make an early diagnosis.

The Björk-Shiley tilting disc prosthesis was introduced originally in 1969.1 Since its inception, several cases of strut fracture with embolization of the disc have been reported.2-4 We report our experience with immediate operation for embolization of the new pyrolytic carbon disc with preoperative radiographic evidence of intact struts.

Case report. A 46-year-old woman was brought to Lankenau Hospital Emergency Room complaining of acute onset of chest pain and severe shortness of breath. The patient had undergone mitral valve replacement for mitral regurgitation with a concavo-convex Björk-Shiley valve 4 years before at another hospital. One year after valve replacement, the patient was readmitted to the same hospital in congestive heart failure, and cardiac catheterization disclosed a small perivalvular leak. She responded well to medical treatment and surgical intervention was believed unnecessary at that time. She was given warfarin sodium and her condition was controlled well. The patient was in her normal state of good health until the morning of admission.

Shortly after arrival in the emergency room, the patient became unresponsive and hypotensive with a heart rate of 140 beats/min and a respiratory rate of 40 breaths/min. There was prominent jugular venous distention. Auscultation of the chest revealed a Grade 2/6 systolic ejection murmur heard best at the left sternal border. There were no prosthetic heart valve sounds. Rales were present throughout both entire lung fields.

Immediate resuscitative measures were performed including endotracheal intubation, pulmonary arterial catheterization, and pharmacologic support with continuous intravenous epinephrine infusion. A chest roentgenogram demonstrated a Björk-Shiley mitral valve prosthesis with intact major and minor struts, cardiomegaly, and massive pulmonary edema (Fig. 1).

The diagnosis at this time was acute mitral insufficiency resulting from prosthetic valve dysfunction. The patient was immediately taken to the operating room. After institution of cardiopulmonary bypass, the left atrium was opened. The Björk-Shiley valve was present in the mitral position; however, the concavo-convex disc was missing despite the appearance of intact major and minor struts. The valve was excised and replaced with a No. 3 Starr-Edwards mitral valve prosthesis. An intraoperative roentgenogram of the abdomen revealed the disc in the area of the upper abdominal aorta. The abdomen was opened, aortotomy performed, and the disc, which was lodged just above the renal arteries, was removed. Examina-
tion of the explanted valve revealed significant metal fatigue at the weld position of the minor strut, which fractured after manual manipulation.

Postoperatively, the patient required cardiac support with pressor agents for 2 days and a tracheostomy for a 1 week period of mechanically assisted ventilation. The patient was discharged on postoperative day 27. At 6 month's follow-up, the patient has resumed her normal preoperative activities.

**Discussion.** Prosthetic valve failure resulting from disc embolization is a rare complication. Several cases of strut fracture with disc embolization have been reported in both the old and newly designed Björk-Shiley prostheses.3 9 In each instance, fracture of either the inlet or outlet strut was observed at operation. Failure of the prosthetic valve because of a thrombotic event or large perivalvular leak was suspected in our patient preoperatively. Disc embolization was not considered likely because the preoperative chest roentgenogram demonstrated intact valve struts. The radiopaque marker of the disc was not visualized; however, on a plain x-ray film, one may suspect the valve to be in a closed position so that the marker would be obscured by the metal prosthetic ring.

Although disc embolization after minor strut fracture is a rare occurrence, it is a widely recognized event. Sudden deterioration in the condition of a previously healthy patient with a prosthetic Björk-Shiley mitral valve should alert the physician to this possibility, because delay in diagnosis seems to prejudice the outcome of the case.7 9

The presence of intact struts on the chest film of this patient would give credence to the metal fatigue theory of strut fracture. Apparently the strut-disc clearance in this patient had been altered by metal fatigue just enough to permit the disc to escape before fracture of the strut.

This case serves to emphasize further the conclusions drawn by others, that early operation is essential for a successful outcome.2 7 When the clinical setting such as this is so indicative of prosthetic valve failure rather than left ventricular failure of another cause, precious time should not be wasted on further time-consuming diagnostic interventions.

**REFERENCES**


**Congenital ostial stenosis of the right coronary artery repaired by vein patch angioplasty**

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A case of congenital ostial stenosis of the right coronary artery is presented in which revascularization was performed by saphenous vein patch angioplasty.

Congenital anomalies of the coronary arteries are a rare but important cause of morbidity and mortality. Most congenital coronary malformations involve coronary arteriovenous malformations or anomalous origin from the pulmonary artery. We report a case of proximal congenital stenosis of the right coronary artery.

**Case report.** A 52-year-old white woman had had transient hypertension that improved with weight loss and had smoked for 37 years, although she voluntarily stopped 1 month before evaluation. She was admitted to Vanderbilt Hospital with throat tightness and upper chest discomfort occurring at rest but aggravated by exertion. She had occasional associated diaphoresis and dyspnea. A treadmill exercise test was positive at 4 minutes with chest discomfort. A trial of calcium blockers failed to relieve the chest pain. Coronary angiography disclosed a severe right coronary ostial stenosis (Fig. 1). The

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