Coil Embolization of a Periprosthetic Mitral Valve Leak Associated With Severe Hemolytic Anemia

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A 55-year-old man presented with severe fatigue, anorexia, and weight loss. His past medical history was significant for diabetes mellitus, severe mitral annulus calcification, aortic and mitral valve replacement, prosthetic mitral valve endocarditis complicated by periprosthetic mitral regurgitation, and repeat mitral valve replacement 2 months before admission.

Admission hemoglobin was 6 g/dL and additional laboratory evaluation was consistent with severe hemolytic anemia. A transesophageal echocardiogram (TEE) revealed a periprosthetic mitral valve leak that we believed to be the cause of the hemolytic anemia (Figure 1). During initial hospitalization, the patient remained transfusion dependent.

In view of his past history, we did not believe the patient to be a candidate for a third mitral valve replacement. Therefore, we decided to attempt coil embolization of the periprosthetic leak.

Using the transseptal approach, we crossed the perivalvular leak with a guidewire under TEE and fluoroscopic guidance (Figure 2). A 4F glide vertebral catheter (Boston Scientific) was then advanced over the wire into the ventricular apex. Using the 4F catheter, two 9-cm-long retrievable dumbbell coils, 5 mm diameter on each end and 2 mm diameter in the middle, were deployed across the leak. Postdeployment films demonstrated symmetric deployment of the coils across the mitral ring with approximately one half on either side (Figure 3).

The patient’s hemoglobin stabilized after the procedure, and his serum lactic dehydrogenase level decreased from a baseline of ≈4000 IU/L to ≈1400 IU/L. This was associated with a dramatic decrease in transfusion requirement (Figure 4). The international normalized ratio was maintained between 2 and 2.5, and the patient was discharged to his home in stable condition 5 days after the procedure. After discharge, his hemoglobin continued to remain stable, and at 9-month follow-up, there were no complications related to the procedure.

Figure 1. Transesophageal images obtained before deploying the coils. A. The arrow indicates the area corresponding to the leak across the sewing ring. LA indicates left atrium; LAA, left atrial appendage. B. Regurgitant flow across the leak.
Figure 2. Right anterior oblique view of the prosthetic mitral valve. The glide wire has been advanced into the left ventricle across the mitral valve leak. The TEE probe can be seen in the top portion of the figure.

Figure 3. A and B show radiographic images after deploying the coils. Both coils have been symmetrically deployed across the mitral valve ring.

Figure 4. Transfusion requirement before deployment of the coils and during follow-up. Day 0 is the day of successful deployment of the coils. The y axis indicates number of units of packed red blood cells transfused.
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