A 66-year-old white man presented to the emergency department with a 4-day history of progressive dyspnea, cough, and hemoptysis. The patient was known to have mitral valve prolapse confirmed by transthoracic echocardiogram, performed 9 months before his present admission. The transthoracic echocardiogram had shown a myxomatous mitral valve with prolapse of the P2 scallop and severe eccentric mitral regurgitation (MR) that was anteriorly directed. The mitral regurgitant fraction using the volumetric method was 69%. The left ventricular (LV) end diastolic dimension was 4.8 cm, and the LV end systolic dimension was 3.3 cm, both within normal limits. The LV systolic function was normal with ejection fraction (modified Simpson’s rule) of 58%. The right ventricular dimensions were normal (apical 4-chamber view: long axis, 7.2 cm; midshort axis, 2.2 cm; inflow short axis, 2.5 cm). The right ventricular systolic function was normal. The peak pulmonary artery systolic pressure was 30 mm Hg, with estimated right atrial pressure of 5 mm Hg. The patient had a transrectal prostate biopsy done to rule out carcinoma a few weeks before his presentation to the emergency department.

On examination, he was hypotensive (blood pressure, 96/61 mm Hg), tachycardic (heart rate, 122 beats per minute), and in respiratory distress (36 breaths per minute with oxygen saturation of 86% on room air and 98% on facemask). Cardiovascular examination was remarkable for grade 5 of 6, holosystolic murmur along the left sternal border, and the presence of significant bibasilar rales. There were numerous palpable petechial lesions on the skin (Figure 1). After admission to the coronary care unit, the patient developed a fever of 38.7°C (101.7°F) and was subsequently intubated for worsening respiratory distress. Blood cultures were obtained, and broad-spectrum antibiotics were started. The transthoracic echocardiogram showed myxomatous degeneration of the mitral valve with flail posterior leaflet and a perforation in the anterior leaflet (Figure 2; see Movies I and II in the online-only Data Supplement). A small mobile mass was seen on the atrial side of the anterior edge of the perforation, suggestive of a vegetation (Figure 3; see Movies III and IV in the online-only Data Supplement). There was severe MR with mitral regurgitant fraction of 74%. The LV size had increased when compared with the previous transthoracic echocardiogram with LV end diastolic dimension at 5.4 cm and LV end systolic dimension at 2.5 cm. LV systolic function was hyperdynamic with an ejection fraction of 71%. The right ventricular dimensions had increased as well, and measurements in the apical view were as follows: long axis, 8.0 cm; midshort axis, 2.8 cm; and inflow short axis, 3.5 cm. The right ventricular systolic function was normal. Severe pulmonary hypertension was present, with peak pulmonary artery systolic pressure of 60 mm Hg with estimated right atrial pressure of 5 mm Hg. The patient underwent cardiac catheterization that showed elevated pulmonary capillary wedge pressure (mean of 23 mm Hg), cardiac output of 5.4 L/min, and normal coronary arteries. An intra-aortic balloon pump was placed for hemodynamic support.

Transesophageal echocardiogram with 2 dimensions and real-time 3 dimensions was done next. It showed severe prolapse of the posterior leaflet with a partially flail P2 segment (see Movie V in the online-only Data Supplement). A perforation was seen at the base of the A2 segment of anterior mitral leaflet (Figure 4A; Movie V in the online-only Data Supplement). A small mobile mass was visualized on 2-dimensional transesophageal echocardiogram on the atrial side of the anterior edge of the perforation, which was suggestive of a vegetation (see Movies VI and VII in the online-only Data Supplement). There were two MR jets: a central valvular jet and an eccentric jet through the perforation at the base of anterior leaflet (Movie VIII in the online-only Data Supplement). Two sets of blood cultures, 48 hours apart, grew coagulase negative *Staphylococcus lugdunensis* (*S. lugdunensis*). Skin biopsy done on admission confirmed leukocytoclastic vasculitis. Cardiothoracic surgery was consulted, and the patient was taken to the operating room. The echocardiographic findings were confirmed on direct visualization showing the flail P2 segment and an acute large perforation of the anterior leaflet (Figure 4B). A 33-mm Epic tissue bioprosthesis was placed in the mitral position. Microscopic examination of valve tissue...
revealed severe acute inflammation with fibrinous exudates and bacterial colonies consistent with acute bacterial endocarditis (Figure 5). Tissue culture also grew *S. lugdunensis*. The patient had an uneventful postoperative course and was discharged on a 4-week regimen of intravenous vancomycin and oral rifampicin.

*S. lugdunensis* is a coagulase negative staphylococcus that colonizes the skin often below the waistline. Invasive infections have a virulent course comparable with *Staphylococcus aureus* with extensive tissue destruction and are often fatal without surgical intervention. It has been implicated in causing endocarditis of both native and prosthetic valves. *S. lugdunensis*-related endocarditis has been reported after procedures in inguinal area, and combined medical and surgical treatment is often recommended. Our patient had a history of mitral valve prolapse with significant MR and underwent transrectal prostate biopsy a few weeks before presentation. The patient was not on antibiotic prophylaxis previously and did not receive any antibiotics before the biopsy. This practice is consistent with current clinical guidelines that do not recommend antibiotic prophylaxis in patients with mitral valve prolapse, regardless of the presence of leaflet thickening or MR.

To our knowledge, this is the first reported case of histologically and microbiologically confirmed *S. lugdunensis* endocarditis in a patient with significant mitral valve prolapse that probably got seeded after transrectal prostate biopsy. Using transesophageal echocardiogram with real-time 3 dimensions, we were able to accurately visualize the partially flail P2 segment and perforation in the anterior leaflet along with the central and eccentric regurgitation jets. These findings were confirmed intraoperatively. Transesophageal echocardiogram with real-time 3 dimensions is an important tool to accurately visualize valvular structural abnormalities that can help surgeons plan procedures in advance. Additional investigations are needed to determine whether this approach will improve surgical planning and patient outcomes.

**References**


**Disclosures**

None.
**Figure 3.** A, Transthoracic echocardiogram (parasternal long axis close-up view of the mitral valve). B, Transthoracic echocardiogram (subcostal view) showing a mass (arrowhead) on the atrial side of the anterior edge of the perforation (asterisk). The severely prolapsed P2 segment of posterior leaflet can also be seen (arrow). LA indicates left atrium; and LV, left ventricle.

**Figure 4.** A, Transesophageal echocardiogram with real-time 3-dimensional surgeon’s view of the mitral valve showing a partially flail P2 scallop and a perforation at the base of the A2 scallop of anterior mitral leaflet (white arrowhead). B, Intraoperative surgeon’s view showing the flail P2 scallop and a large perforation involving the A2 scallop of the anterior leaflet (right-angled surgical clamp going through it).

**Figure 5.** A, A portion of the chordae tendinae with fibrosis and myxoid degenerative changes. B, Bacterial colonies mixed with fibrin, colonizing the surface and invading the valve leaflet, which demonstrates myxoid degeneration. C, Higher-power view of a bulky vegetation composed of bacterial colonies and fibrin on the surface of valve leaflet with myxoid degeneration. D, Granulation tissue characterized by small vessels, early fibrous tissue proliferation, acute polymorphonuclear, and fibrinous exudate; early granulation tissue indicates a subacute process of ≈10 days to 3 weeks duration.
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*Circulation*. 2013;128:e204-e206
doi: 10.1161/CIRCULATIONAHA.113.002928

*Circulation* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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Movie Legend

**Movie 1.** 2D TTE parasternal long axis view showing myxomatous degeneration of mitral valve with flail posterior leaflet and a perforation in the anterior leaflet. Best viewed with Windows Media Player.

**Movie 2.** 2D TTE parasternal long axis view showing mitral regurgitation with acceleration proximal to the anterior mitral valve perforation. Best viewed with Windows Media Player.

**Movie 3.** 2D TTE subcostal view, showing a mobile mass on the atrial side of the mitral valve suggestive of a vegetation. Best viewed with Windows Media Player.

**Movie 4.** 2D TTE subcostal view with color Doppler showing severe mitral regurgitation. Best viewed with Windows Media Player.

**Movie 5.** 3D TEE, surgeons view of the mitral valve showing anterior mitral valve perforation and a flail P2 scallop. Best viewed with Windows Media Player.

**Movie 6.** 2D TEE biplane views (4 and 2 chamber views), showing myxomatous mitral valve with mobile masses on the atrial side, possible vegetations. Best viewed with Windows Media Player.
**Movie 7.** 2D TEE biplane views (4 and 2 chamber views) with color Doppler showing severe mitral regurgitation. Best viewed with Windows Media Player.

**Movie 8.** 3D TEE color flow of the mitral valve, showing two regurgitant jets, a central jet through the valve and an eccentric jet through the perforation of the anterior leaflet. Best viewed with Windows Media Player.