

## Case Study: Pneumococcal Prosthetic Valve Endocarditis with Mitral Annular Abscess Fistulised in the Left Atrium: An Uncommon Germ with Dramatic End

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### ABSTRACT

**Background:** Streptococcus pneumoniae is an infrequent cause of infectious endocarditis. Several case series have underscored the aggressive course of Streptococcus Pneumoniae with acute clinical presentation, rapid valvular destruction, and high mortality despite appropriate antibiotic therapy.

**Case summary:** We present a 74-year-old woman with previous aortic and mitral valve replacement 12 years ago, presented with a 5 days history of persistent fever and a red, hot, and swollen right knee. Atrial fibrillation was demonstrated on a 12-lead electrocardiogram. The initial echocardiography did not show any sign of endocarditis but in front of the clinical symptomatology the patient was put under probabilistic antibiotic therapy. In the meantime blood culture grew Streptococcus Pneumoniae and then the antibiotic treatment was adapted. The sudden deterioration of the patient brought us back to control the heart by a transthoracic echocardiography, which revealed a mitral annular abscess fistulizing to the left atrium. The patient expired 30 days after admission from presumed severe sepsis and cardiogenic shock.

**Conclusion:** Pneumococcal endocarditis in prosthetic valve is associated with very high mortality, especially when complicated by paravalvular abscess and other comorbidities. This case highlights the need for a carefully considered approach for fast and efficient care.

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**KEYWORDS:** Infective endocarditis, annular abscess, streptococcus pneumonia, mitral valve prosthesis.

### INTRODUCTION

Pneumococcal endocarditis has been reported in less than 1% of native heart valves [1] and in 22–31% of valvular prostheses [2], most frequently prosthetic aortic valves. Several case series have underscored the aggressive course of PE with acute clinical presentation, rapid valvular destruction, and high mortality despite appropriate antibiotic therapy. [3][4]

The case presented here describes a patient with mitral annular abscess in PPVE revealed with arthritis.

### CASE PRESENTATION

A 74-year-old woman with medical history of hypertension and a previous aortic and mitral valve replacement 12 years ago, presented with a 5 days history of persistent fever and a red, hot, and swollen right knee.

On arrival, her body temperature was 39, her breath sounds were clear with rhythmic mechanical heart sounds, the knee

was objectively swollen and hot compared to the contralateral limb. There was a positive patella tap.

Atrial fibrillation was demonstrated on a 12-lead ECG, and electrogram revealed cardiomegaly

On our routine laboratory examination, her white blood cell count was 11200 /L and C-reactive protein was 154 mg/l and blood culture grew Streptococcus Pneumoniae. Preliminary results of the knee aspirate (turbid) did not identify any organism or crystals (the patient had already started her antibiotic course one week before her admission).

Initial evaluation (transthoracic echocardiography and Transesophageal echocardiography) had ruled out endocarditis and showed an apparently normal functioning mitral and aortic prosthesis with a mild tricuspid regurgitation. Nevertheless, the patient was put on double antibiotic therapy based on amoxicillin and gentamycin. As

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the fever subsided with increase of white blood cell count and elevated C-reactive protein (CRP) amoxicillin was replaced with Vancomycin. A second TEE evaluation performed a

week later due to a clinical deterioration with persistence of fever and decline in her renal function revealed a mitral annular abscess fistulizing to the left atrium.



a.



b.

Figure : **a** Transesophageal echocardiography periannular abscess (arrow) on the prosthetic mitral valve.; **b** Transesophageal echocardiography showing shunt flow from the abscess to the left atrium

A redo cardiac surgery was planned. Unfortunately, the patient developed a week later a dyspnea consistent with congestive heart failure and acute renal failure. Subsequently to this deteriorating condition the patient was transferred to the intensive care unit and a bed-side Transthoracic Echocardiogram was performed, which suggested a significant paravalvular leak of moderate severity around the mitral valve prosthesis. The patient expired 30 days after admission from presumed severe sepsis and cardiogenic choc.

### DISCUSSION

Pneumococcal endocarditis (PE) has become uncommon since the advent of penicillin; it now develops in less than 1% of native heart valves [1]. However, an increase in the number of prosthetic heart valves has recently been observed, accounting for 22–31% of all cases of valve endocarditis [2], with higher mortality, ranging from 28–60% [5].

The most common risk factor for PE are alcoholism, advanced age, malnutrition, immunosuppression, and previous valve disease [6]. *In the case of our patient, the risk factor present, were age and previous valve disease.*

The clinical presentation is usually acute similar to staphylococcal endocarditis, with a rapid and aggressive clinical course.

Atypical initial symptoms, including back pain, arthralgia, and arthritis, has been describe in patients with endocarditis[7].

Septic arthritis typically presents as a tender, hot, swollen joint or multiple joints. The most commonly affected joints are the hip and knee [8].

*Our patient's infective endocarditis was revealed by symptoms of acute monoarticular septic arthritis.*

The diagnosis of endocarditis is more difficult in the presence of a prosthetic valve when compared with a native valve. Transoesophageal echocardiography is mandatory in the assessment of prosthetic valve infective endocarditis (PVE)[9][10]

Complications are frequent and include congestive heart failure in 48.6% of cases, valve perforation in 34.7%, paravalvular abscesses in 33.7%, and embolization in 24.3% [1]. *Both paravalvular abscess and paravalvular dehiscence were present in our case.*

The treatment of PE includes a prolonged course of intravenous antibiotics and, if necessary, surgery. The surgical management of PVE is a subject of great debate as there have been no randomized controlled trials comparing efficacy of medical treatment with the combined medical–surgical approach.[11]

In each individual case, the risks and benefits of surgery need to be carefully weighed. Surgical intervention is most beneficial when patients present with complications of PVE, such as worsening heart failure, prosthetic valve dehiscence, worsening regurgitation or perivalvular leak, valvular obstruction and cardiac abscess formation. Surgery should

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also be considered in PVE cases with persistent bacteremia or relapse of infection after completion of an appropriate antibiotic course.

Other relative indications of surgery include relapsing bacterial infection despite adequate therapy, fungal endocarditis, intracardiac abscess resulting in heart block, culture-negative endocarditis with recalcitrant fever despite 10 days of antibiotic therapy and recurrent emboli despite optimal antibiotic treatment.

Surgery is not performed when the possibility of recovery is remote. This is usually seen in patients with high operative risks due to cardiopulmonary and neurological status, poor prognosis due to other severe comorbid conditions, a major cerebrovascular event with intracranial hemorrhage and history of multiple and technically difficult surgery with inoperability defined during a previous surgery.[12][13]

*In our case, besides medical treatment, an urgent cardiac surgery (recommendation classe I level B) was indicated, but considering the increase operative risk due to age, comorbidity and acute renal failure, the decision to postpone the surgery was taken until the improvement of her condition.*

### CONCLUSION

Pneumococcal endocarditis in prosthetic valve has become more common recently and it is associated with very high mortality, especially when complicated by paravalvular abscess and other comorbidities.

This case highlights the need for a careful considered approach taking into account the patient characteristics, clinical course, laboratory result and imaging studies in order to make a early diagnosis and to decide on the best therapeutic strategy: antibiotic therapy and surgery.

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