

Transillumination: No one outwits me

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Abstract

A 67-year-old woman with a history of mechanical valve replacement; after the dental procedure, she developed dyspnea, malleolar edema, and fever. The 2D transesophageal echocardiogram (TEE) showed no evidence of valve obstruction, mild paravalvular leak, and no vegetations. In the 3D TEE, the presence of masses suggestive of vegetations on the auricular surface of the prosthesis was suspected which were more precisely defined with transillumination rendering. This technique allowed us to observe with precision the vegetations that were not visualized with traditional methods. This highlights its usefulness in patients with prosthetic valves where infective endocarditis is a serious complication.

Transillumination: No one outwits me

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Short Title: Prosthetic valve endocarditis

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Abstract

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Keywords: Endocarditis, transesophageal echocardiogram, transillumination, prosthetic valve.

A 67-year-old woman with a history of mechanical prosthesis due to severe mitral regurgitation secondary to rheumatic heart disease at 16 years of age, with loss of follow-up. 50 years later, after dental treatment, she began with dyspnea, malleolar edema and fever. The physical examination includes pleural effusion, arrhythmic heart sounds, hepatosplenomegaly, and anasarca. The 2D transesophageal echocardiogram (TEE) showed a mitral prosthesis with a maximum gradient of 10 mmHg, mean of 4 mmHg, valve area 3.3 cm², mild paravalvular leak (Figure 1A,B,C: white arrow), moderate dilation of the right cavities and severe tricuspid regurgitation (Figure 1D), PSAP 78 mmHg, left ventricular function of 63% and no presence of vegetations. In the 3D TEE, the presence of masses suggestive of vegetations on the auricular surface of the prosthesis was suspected (Figure 2: green arrows, Video 1), which were more precisely defined with transillumination (Figure 3A, B, yellow and white arrows, Video 2), with a diameter 1.91 x 0.57 cm. *S. viridans* was isolated in the blood culture, antimicrobial treatment was established with management for acute heart failure. During surgery no vegetations were identified due to the ten days antimicrobial therapy; transillumination technique was essential to establish the final diagnosis. Biological mitral prosthetic valve replacement, left atrial appendage closure and tricuspid ring placement were performed, with excellent clinical evolution.

Transillumination is widely recommended due to a better anatomical and functional definition, characterization and diagnosis of cardiac lesions compared to traditional echocardiographic methods. This technique allowed us to precisely diagnose the vegetations that were not visualized with routine echocardiographic methods; highlighting its usefulness in patients with prosthetic valve endocarditis.

Figure Legends

Figure 1. 2D transesophageal echocardiography in four chamber view with continuous wave and color flow. A: Prosthetic mitral valve without vegetations in the atrial view and dilation of right cavities. B: Paravalvular leak (white arrow). C: Prosthetic valve area 3.3 cm² and mean gradient 4mmHg. D: Two jets of tricuspid regurgitation (white arrows). Abbreviations: RA-right atrium; RV-right ventricle; LA-left atrium.

Figure 2. 3D transesophageal echocardiography. A: Atrial view of the mitral prosthetic valve in diastole (blue arrow pointing surgical suture) B: Atrial view of the mitral prosthetic valve in systole. C, D: Atrial view of the prosthetic mitral valve with evidence of a mass (green arrow).

Figure 3. 3D transesophageal echocardiography with transillumination. A: yellow arrows showing vegetations in the atrial view of mitral prosthetic valve. B: Surgical view of mitral prosthetic valve during systole with evidence of vegetations (white arrows). C: Surgical view in end diastole presenting surgical suture (blue arrow)

Video Legends

Video 1. Surgical view of the mitral prosthetic valve without evidence of vegetations.

Video 2. Surgical view of the mitral prosthetic valve with transillumination showing two vegetations during systole.



