Chapter 6
Pseudoaneurysm of the Mitral-Aortic Intervalvular Fibrosa (MAIVF)

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Abstract The region of the mitral-aortic continuity (MA inter-valvular fibroza; MAIVF) contains mostly fibrous and avascular tissue. MAIVF is the weakest segment of the aortic ring, prone to infection and trauma and creation of pseudoaneurysm.

TEE is the most sensitive technique.

Characteristic dynamic feature of pseudoaneurysm is its expansion during early systole and collapse in diastole. Confirmation of this diagnosis requires communication to the LVOT.

Keywords Pseudoaneurysm · Mitral-aortic intervalvular fibrosa (MAIVF) · Infective endocarditis · TEE · TTE · 3D echocardiography

Case Presentation

A 32-year-old woman with type 1 diabetes underwent TTE due to atypical chest pain.

She had had IE with *Streptococcus viridans* 3 years ago and fortunately improved just by medication and discharged with moderate aortic regurgitation.

In this visit TTE revealed an echolucent area adjacent to the aortic valve, raising suspicion of a Pseudoaneurysm of MAIVF (P-MAIVF).

TEE showed an echolucent area too measuring 23 mm in its widest dimension, which was freely communicating with the LVOT.

This cavity expanded during systole, bulging into the left atrium and collapsing during diastole. Doppler examination confirmed it. There was no fistulous communication to the left atrium or aorta.

She underwent surgical repair with the closure of the communication with the LVOT using a Dacron patch.

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Echocardiography Findings and Discussion (Figs. 6.1, 6.2, 6.3, 6.4 and 6.5)

Because TEE has come into routine use, there has been increasing recognition of this entity, although the number of patients in any series is quite small.

Pseudoaneurysm of the mitral-aortic intervalvular fibrosa (P-MAIVF) is a rare condition that has been reported as a sequela of endocarditis and surgical trauma.

It is defined as a pseudoaneurysm at the inter-annular zone between the mitral and aortic valves and its communication with the LVOT between the left coronary or non-coronary aortic cusp and the anterior leaflet of the mitral valve.

Our patient underwent surgical repair with the closure of the communication with the LVOT using a Dacron patch.

Endocarditis and aortic valve surgery were the two most frequently associated causative factors for PSA. In study, 46 patients (52%) had prosthetic aortic valves, either bioprosthetic (n = 6) or mechanical. Of the 43 patients (48%) with native valves, 14 (33%) had bicuspid valves, 1 had a unicuspid valve, and 27 had normal tricuspid aortic valves.

The shortest time reported after valve surgery to the development of a P-MAIVF was 9 days, but that patient had had a MAIVF abscess preoperatively. Pseudoaneurysms had developed within 1 month of valve surgery in two patients.

Aortic regurgitation has been suggested as a contributing factor for the development of P-MAIVF.

In other previous study Of the 87 patients, 42 were noted to have some degree of aortic regurgitation at the time of diagnosis. Diagnoses by TTE were made in 31 (54%), missed in 24 (42%). Diagnoses by TEE were made in all cases. 3D echocardiography was performed in five patients, with excellent visualization of the pseudoaneurysm. Computed tomography was performed in four patients CMR in six patients.

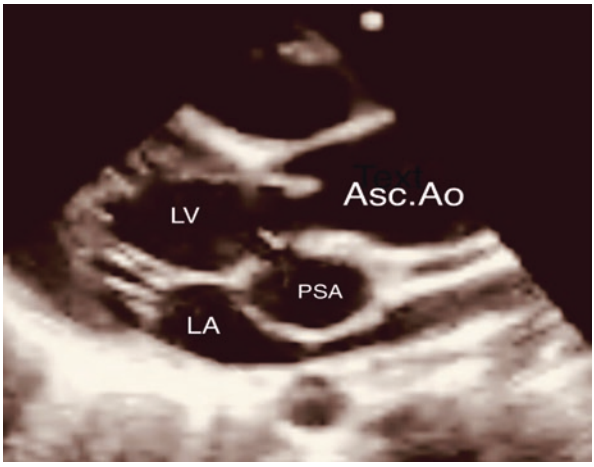

Fig. 6.1 TTE parasternal long-axis view showed an echolucent area adjacent to the aortic valve, a Pseudoaneurysm of MAIVF

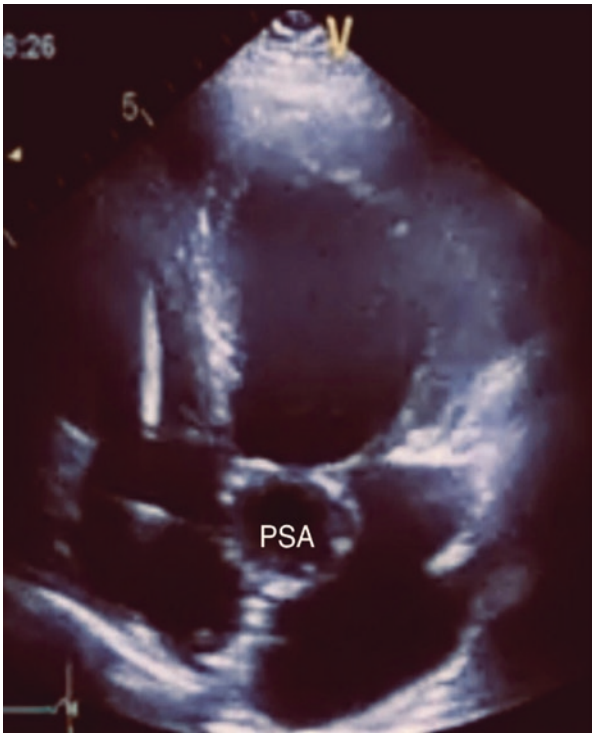

Fig. 6.2 TTE apical four-chamber view showed a Pseudoaneurysm of MAIVF

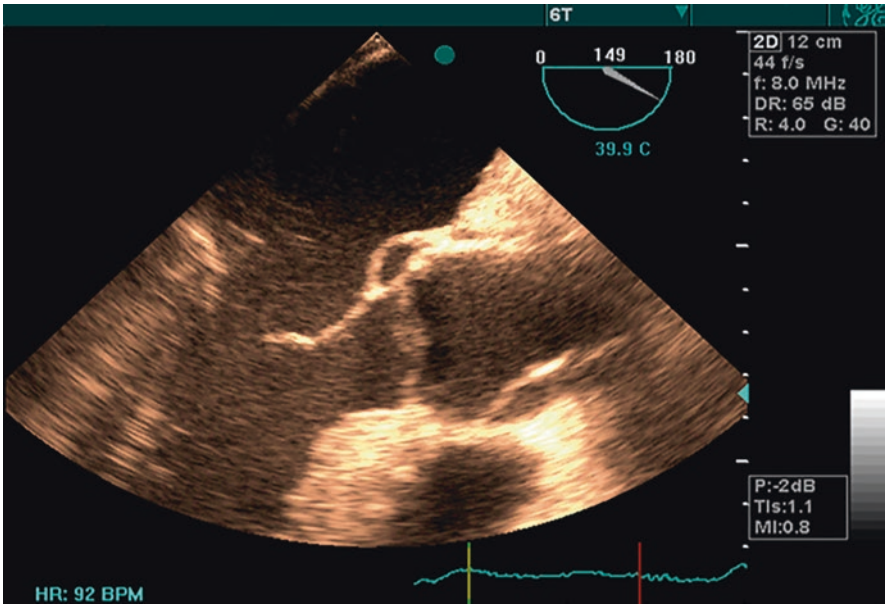

Fig. 6.3 TEE view showed an echolucent area (Pseudo-aneurysm of MAIVF)

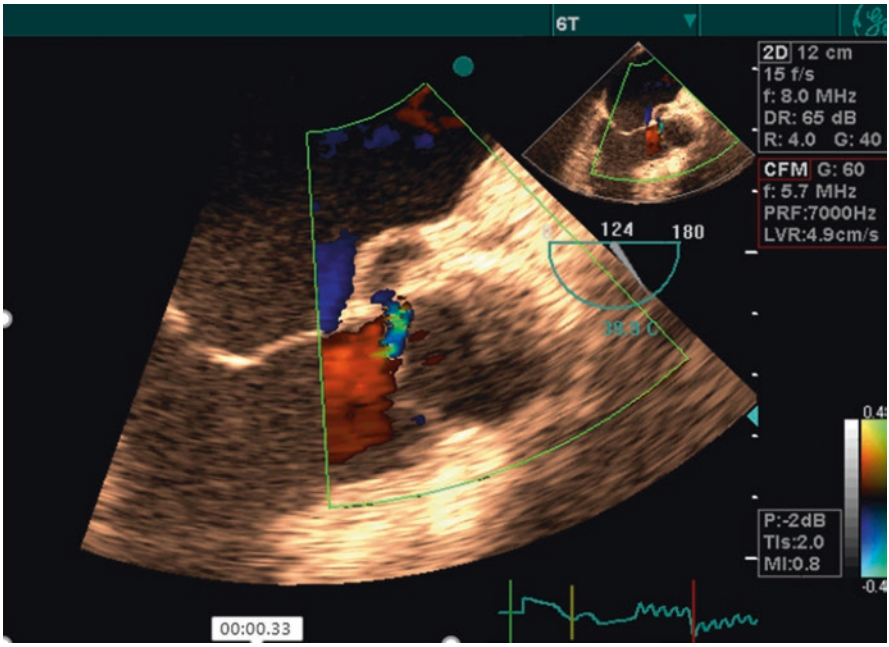

Fig. 6.4 Communication between LVOT and pseudoaneurysm

Fig. 6.5 3D TEE of P-AMIVF

These modalities provided very good 3D information of the pseudoaneurysm size and its relationship to adjacent structures.

Surgery is currently the recommended treatment to prevent further enlargement and complications.

In this review the patient with 4-year follow-up, the P-MAIVF diameter increased from 1 to 1.7 cm and in two other patients, there were no changes in the

pseudoaneurysm sizes at 10-month and 3-year follow-up; so the natural course of uncomplicated P-MAIVF is not clear, but, most patients undergo surgery as soon as the diagnosis is made. This study considered two groups of patients who might be at higher risk for developing P-MAIVF: one group includes patients with infective endocarditis complicated by ring abscess, particularly in the area of the MAIVF and the other group includes patients with prosthetic valves and histories of IE.

Surgery may still be the recommended course of action, but in patients who are at high risk for surgery and in asymptomatic patients who refuse surgery, watchful observation may be considered after careful evaluation of associated high-risk features [1–6].

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