

CASE REPORT

New Intracardiac Mass in Right Atrium Postcardiac Surgery: Thrombus or Artifact?

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ABSTRACT

Intracardiac masses namely thrombus, vegetation, and tumors may have overlapping echocardiographic appearance. Differentiating them from artifacts and normal anatomic structures further adds to the confusion. We report a similar scenario about the appearance of a new hyperechoic mass in the right atrium (RA) after mitral valve replacement (MVR) surgery.

Keywords: Image artifact, Right atrium, Thrombus, Transesophageal echocardiography.

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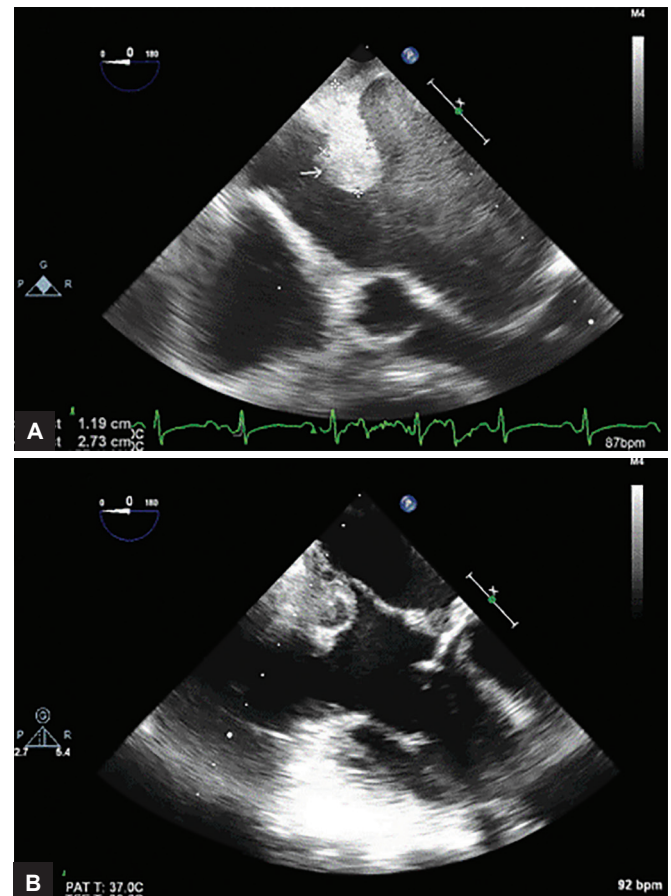
INTRODUCTION

Incidental detection of new mass on echocardiographic image poses a challenge for the cardiac anesthesiologist. The primary concern is to differentiate it from an artifact to prevent unnecessary clinical intervention. This requires a thorough knowledge of the anatomy, physical principles of ultrasound, as well as the experience of cardiac anesthesiologist. We report a case of appearance of a new mass in RA after MVR surgery.

CASE REPORT

A 30-year-old male patient was diagnosed to have severe mitral stenosis, moderate tricuspid regurgitation, and severe pulmonary hypertension with a large thrombus in left atrium (LA; Fig. 1A). Patient was planned for MVR along with LA thrombus removal. Intraoperative transesophageal echocardiography (TEE) confirms the

cardiologist diagnosis. Patient underwent an uneventful MVR with LA clot removal on cardiopulmonary bypass. Postoperative TEE examination was unremarkable for prosthetic mitral valve with no paravalvular leak. There was no residual clot in LA but a new mass was seen in RA in midesophageal (ME) four-chamber view (Fig. 1B, Video 1). In ME bicaval view, same mass was appreciated in the RA below the superior vena cava (SVC) (Video 2). We communicated our findings to the surgical team who revealed that they had accidentally caused a small rent in the mucosa of the RA near the suture line at RA cannulation site for which extra deep mattress sutures were taken in that area. The diameter of SVC and spectral Doppler at the site of new mass was taken to rule out the evidence of SVC obstruction, which was not present. There was no clinical feature suggestive of SVC obstruction as well.



Figs 1A and B: (A) ME five-chamber view showing a thrombus in LA (2.73 × 1.19 cm) prior to MVR. RA can be seen which is free of any mass. (B) ME four-chamber view showing a mass in RA post-MVR surgery. No thrombus can be seen in LA

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The postoperative course was uneventful. The patient was extubated at 6th hour and discharged on 5th postoperative day. A TTE was done on 5th postoperative day before discharge, which revealed no change in the size of the new mass.

DISCUSSION

Apart from tumor, vegetation or thrombus normal anatomic structures or their variants and artifacts may also present as mass. The normal RA anatomic structures giving rise to mass on echocardiography include the Chiari network, Eustachian valve, moderator band, trabeculations, lipomatous hypertrophy and aneurysm of interatrial septum, and pectinate muscles.¹ These are persistent structures in the echocardiographic image. Presence of any such structures was ruled out in our case. The common cause of primary RA thrombus *in situ* formation is low atrial blood flow or cardiomyopathy. Such thrombus is typically homogeneous, adherent to RA wall or interatrial septum with a broad base and takes some days for its formation.

A structure in the echocardiographic image not having corresponding anatomic origin is called an artifact. Any echocardiographic image may have several artifacts because of underlying normal cardiac structures or the physical properties of ultrasound waves.² It is essential to delineate an artifact from a true structure to prevent an unwarranted clinical intervention or concern.³ An artifact has indistinct borders without any clear attachment site as well as dissimilar density in different echocardiographic views. However, the mass in our case appeared to have distinct site of attachment below the SVC in multiple views.

Cardiac thrombi are most commonly located in the atria, especially in LA appendage, free wall, or may even be migratory. Since RA appendage is shallow compared with LA appendage, it is uncommon site for thrombus formation in patients with atrial fibrillation.⁴ Several

conditions are associated with increased incidence of RA thrombi, e.g., indwelling central venous lines, pacemaker leads, mechanical valves, ventricular or atrial septal closure devices, pulmonary thromboembolism, atrial fibrillation, and presence of spontaneous echo contrasts.⁴ Thrombus is often confused with a myxoma if it has a concomitant stalk.⁵ The mass in our case was solitary, hyperechoic, and fixed attached to RA wall without any stalk. It was not vegetation as they are usually small, single, or multiple and attached to the tricuspid valve.

After communication with the team, we became aware about the extra mattress sutures they had taken for controlling the bleeding over RA suture line. It became clear that the mass was actually due to sutures which had caused an indentation in that area mimicking a thrombus.

CONCLUSION

Echocardiographic appearance of an intracardiac mass can be misleading sometimes. Correct interpretation requires assessment of echocardiographic features in conjunction with history, clinical features, and knowledge of intraoperative events.

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