

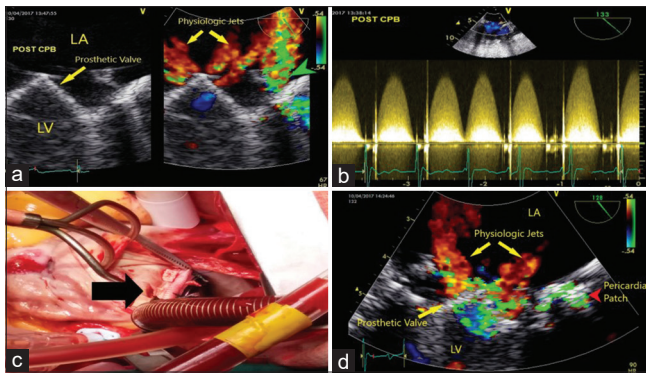
## A Rare Case of Injury to Aorto-Mitral Curtain During Mitral Valve Replacement Surgery

The Editor,

A 32-year-old woman with severe rheumatic mitral stenosis underwent mitral valve replacement surgery with St. Jude's bileaflet mechanical mitral valve prosthesis. After weaning off from cardiopulmonary bypass (CPB), transesophageal echocardiography (TEE) examination showed an abnormal high-velocity, holosystolic regurgitant jet from the left ventricle (LV) into the left atrium (LA), located just outside the sewing ring of the prosthetic valve, suggestive of a paravalvular leak [Figure 1a and Video Clip 1]. The jet was localized at the anterior portion of the mitral valve annulus near the aortic valve. There was, however, no abnormal, rocking movement of the prosthesis. Both the leaflets of the prosthesis were also moving normally. Considering the moderate severity, based on intermediate jet size and dense, parabolic continuous wave doppler waveform [Figure 1b], and the location of the jet, CPB was re-instituted to address the problem. On opening the LA, it was found that there was neither any problem with the seating of the prosthetic valve nor there was

any disruption of the sutures securing the sewing ring to the annulus. There was no calcification also at the region of the aorto-mitral curtain. There was, however, a rent in the aorto-mitral curtain adjacent to the anterior mitral valve annulus, just beside the sewing ring of the prosthetic valve [Figure 1c]. The rent was causing a fistulous communication between the LV and the LA. The rent was repaired using pericardial patch. After repair, the patient was weaned off from CPB. Repeat TEE examination showed complete obliteration of the abnormal jet [Figure 1d and Video Clip 2]. The patient was subsequently discharged uneventfully from the hospital and was asymptomatic at follow-up visits at 1 and 6 months later, respectively. Echocardiography during the follow-up visits did not show any abnormal finding.

Injury to neighboring cardiac structures can happen during cardiac surgical procedures. Injury to aorto-mitral curtain as well as to mitral valve leaflet during aortic valve repair/replacement and injury to aortic valve cusps during mitral valve replacement have been previously



**Figure 1:** (a) TEE (mid-esophageal long axis view) showing the mechanical prosthetic mitral valve and the regurgitant jets. The green arrowhead is pointing to the abnormal jet. (b) CW doppler across the abnormal regurgitant jet showing dense, parabolic waveform. (c) Photograph of the surgical field. The arrow is showing the rent in the aorto-mitral curtain located immediately adjacent to the sewing ring of the prosthetic valve. (d) TEE (mid-esophageal long axis view) showing the complete obliteration of the previously present abnormal regurgitant jet

described.<sup>[1-4]</sup> However, injury to the aorto-mitral curtain during mitral valve replacement is very rare and, to the authors' knowledge, has been rarely reported before. The rent in this region created a high pressure, fistulous communication between the LV and the LA. Due to close proximity of the rent with the sewing ring of the prosthetic valve, the high flow jet through it looked like a paravalvular leak in TEE. 3D workstation and TEE transducer were not available at the authors' institution. Availability of the same would have definitely helped in better characterizing the abnormal jet and discovery of the rent prior to re-institution of CPB. Nonetheless, examination by 2D TEE enabled the authors to pick up as well as locate an abnormality that required immediate correction. Intraoperative TEE plays a pivotal role in detecting iatrogenic injuries during cardiac surgery and thereby preventing morbidity and/or mortality associated with it.<sup>[5]</sup> In this case also, TEE played a major role in timely diagnosis of a complication that required immediate rectification, thus helping to correct it before the patient left the operating room.

This report, therefore, re-emphasizes the indispensable role played by intraoperative TEE in improving perioperative outcome as well as fortifying patients' safety during cardiac surgery.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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#### Conflicts of interest

There are no conflicts of interest.

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#### References

- Gorselen EV, Nihoyannopoulos P, Verhorst P, von Birgelen C, Prendergast B, Bellamy M. Severe regurgitation due to perforation of the mitral-aortic intervalvular fibrosa 3 years after aortic valve replacement. *Eur J Echocardiogr* 2011;12:E30.
- Van Dyck M, Glineur D, de Kerchove L, El Khoury G. Complications after aortic valve repair and valve-sparing procedures. *Ann Cardiothorac Surg* 2013;2:130-9.
- Raj R, Mathew S, Puri GD. Iatrogenic mitral valve perforation following CABG and aortic valve replacement: A rare complication detected by post-bypass transesophageal echocardiography. *J Perioper Echocardiogr* 2014;2:75-6.
- Mehta A, Hunsaker R. Iatrogenic aortic incompetence after mitral valve replacement. *J Cardiothorac Vasc Anesth* 2007;21:276-8.
- Subramaniam K, Wells Cynthia MQ. Intraoperative transesophageal echocardiography: A safeguard for cardiovascular surgery! *J Perioper Echocardiogr* 2014;2:49-50.

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