Rev Bras Anestesiol. 2019;69(2):197–199

REVISTA BRASILEIRA DE ANESTESIOLOGIA
Publicação Oficial da Sociedade Brasileira de Anestesiologia
www.sba.com.br

CLINICAL INFORMATION

Aortic dissection after mitral valve replacement: the role of intraoperative echocardiography in this diagnosis

José Mateus Costa[a,b], **Fábio de Vasconcelos Papa**[a,b,c,*], **Kamila Fernanda Staszko**[d]

[a] *Takaoka Anestesia, São Paulo, SP, Brazil*
[b] *Hospital Israelita Albert Einstein, Centros de Ensino e Treinamentos, São Paulo, SP, Brazil*
[c] *Sociedade Brasileira de Anestesiologia (SBA), Núcleo Vida-Ecocardiografia Transesofágica Intraoperatória (ETI), São Paulo, SP, Brazil*
[d] *Hospital Israelita Albert Einstein, Ecocardiografista Incor, São Paulo, SP, Brazil*

Received 18 February 2018; accepted 7 May 2018
Available online 28 October 2018

KEYWORDS
Intraoperative echocardiography;
Aortic dissection;
Mitral valve replacement

Abstract According to the most recent guidelines, the use of intraoperative transesophageal echocardiography in valvular surgeries is well established, as well as its use in the diagnosis, management, and rescue of perioperative complications. The aim of this case report is to illustrate a condition in which its intraoperative use had a positive influence on the outcome.

PALAVRAS-CHAVE
Ecocardiografia intraoperatória;
Dissecção de aorta;
Troca valvar mitral

Dissecção de aorta pós-troca valvar mitral: o papel da ecocardiografia intraoperatória no diagnóstico

Resumo O uso da ecocardiografia transesofágica no intraoperatório em cirurgias valvulares é bem estabelecido de acordo com os *guidelines* mais recentes, assim como o seu uso no diagnóstico, manuseio e resgate de complicações perioperatórias. O objetivo deste relato de caso é ilustrar uma situação em que o seu uso no intraoperatório influenciou de maneira positiva o seu desfecho.

* Corresponding author.
E-mail: fv.papa@hotmail.com (F.V. Papa).

https://doi.org/10.1016/j.bjane.2018.10.003

Background

The use of intraoperative transesophageal echocardiography in valvular surgeries is well established according to the most recent guidelines,[1] as well as its use in the diagnosis, management, and rescue of perioperative complications.[2] The purpose of this case report is to illustrate a condition in which its intraoperative use had a positive influence on the outcome.

Objectives

To describe the role of transesophageal echocardiography in the detection and evaluation of perioperative surgical complications.

Case report

A 73-year-old male patient with severe mitral regurgitation after endocarditis (Figs. 1 and 2) underwent mitral valve replacement with a biological prosthesis implant (Edwards®), number 27, without complications (Fig. 3). Immediately after the extracorporeal circulation (ECC) removal, an image suggestive of dissection flap was seen in the ascending aorta just above the coronary ostia (Figs. 3 and 4) that extended to the aortic arch (Fig. 5).

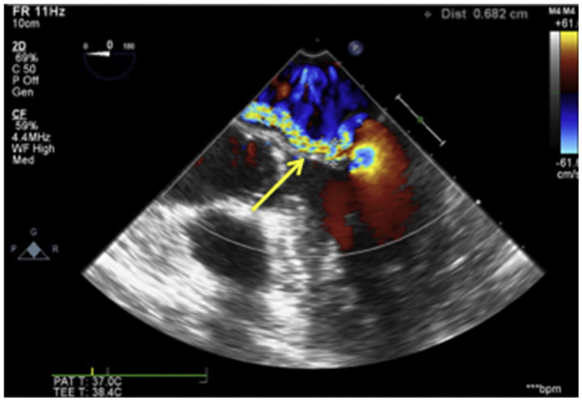

Figure 1 Five-chamber view with color showing severe mitral regurgitation with anteriorly directed regurgitation jet.

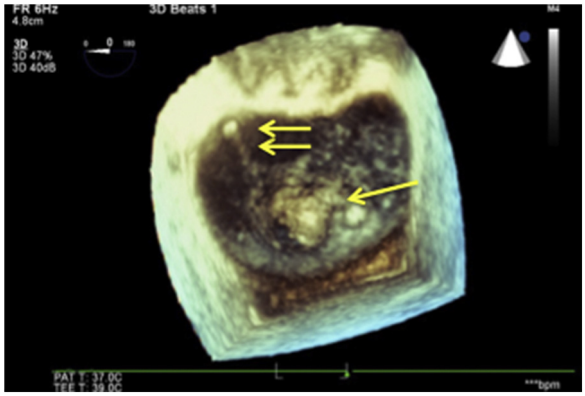

Figure 2 Three-dimensional atrial view showing posterior leaflet prolapse associated with damaged chordae.

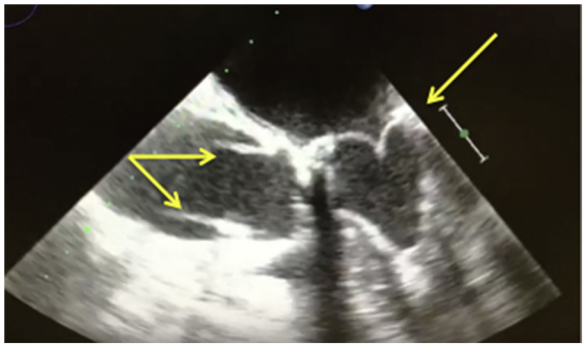

Figure 3 Five-chamber view shows dissection flaps just above the coronary ostia (arrows). Biological prosthesis in mitral position is also seen.

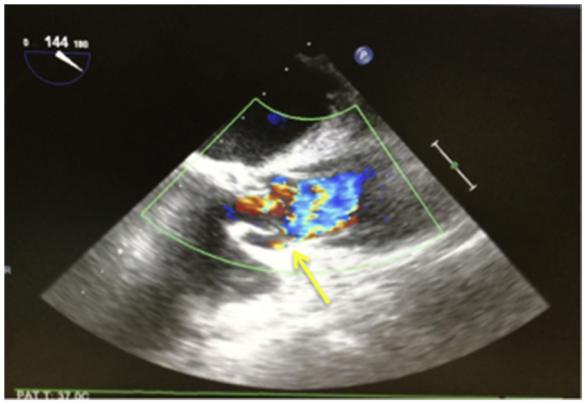

Figure 4 Long-axis view of aortic valve with color showing dissection flap and swirling flow just above coronary ostia (arrow).

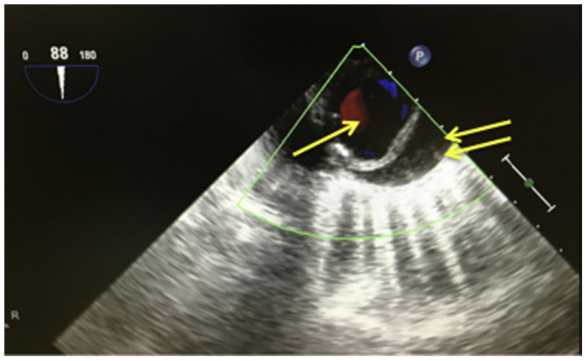

Figure 5 Short-axis view of aortic arch. Note the larger diameter of false lumen (arrow) compared to true lumen.

Multiple sections were obtained in order to differentiate the finding from some artifact,[3] and the diagnosis of ascending aortic dissection (Type A) was confirmed. The patient was then placed on extracorporeal circulation again to correct the injury by means of inserting a Dacron tube. The procedure was completed uneventfully and the patient was transferred in a stable condition to the ICU.

Discussion

Type A aortic dissection (involving the ascending aorta) is a surgical emergency; it is caused by a single or multiple

Table 1 Levels of evidence for intraoperative transesophageal echocardiography.

Recommendation	Class
Severe hemodynamic disorders	I
Valve and aortic surgeries	I
Structural procedures	I
Congenital heart disease	I
Myocardial revascularization	IIa
Major surgeries in high-risk patients	IIa

Adapted from: Salgado-Filho et al. Consenso sobre Ecocardiografia Transesofágica Perioperatória da Sociedade Brasileira de Anestesiologia (ETTI/SBA) e do Departamento de Imagem Cardiovascular da Sociedade Brasileira de Cardiologia (DIC/SBC). Rev Bras Anestesiol. 2018. (Consensus on Perioperative Transesophageal Echocardiography of the Brazilian Society of Anesthesiology (ETTI/SBA) and the Department of Cardiovascular Image of the Brazilian Society of Cardiology (DIC/SBC). Rev Bras Anestesiol. 2018.)

lesions in the intima aortic layer, which under blood pressure are dissected from the middle layer and give rise to the false lumen.[4] The most common complications related to dissection include rupture of the false lumen (pericardium, pleural space, or abdominal cavity), acute aortic insufficiency, and coronary occlusion (caused by the dissection flap). Transesophageal echocardiography is an excellent tool to differentiate between true and false lumen (the false lumen usually has a larger diameter and expands in diastole) as well as to diagnose the other complications mentioned above.[5] However, it is important to emphasize that because some artifacts (e.g., reverberation) resemble a dissection flap, which makes diagnosis difficult, a complete examination of the ascending aorta in different planes and incidences is necessary.[3] An artifact will hardly be found in orthogonal planes or have the same density and texture as true structures (Table 1).

In this case, the dissection flap location just above the origin of the coronary arteries suggests that the puncture site of the cardioplegia catheter was the triggering factor of the event, a fact proven intraoperatively after the opening of the ascending aorta.

Conclusion

Transesophageal echocardiography is an important tool in the diagnosis of aortic dissection, especially during the intraoperative period in which other diagnostic modalities are not available.[6] Upon suspicion of dissection, a complete aortic echocardiographic examination should be performed in order to identify the site of dissection, its extent and possible associated complications (tamponade, coronary occlusion, aortic insufficiency), as all of them have an impact on the surgical management of such complication.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Zoghbi WA, Adams D, Bonow RO, et al. Recommendations for noninvasive evaluation of native valvular regurgitation: a report from the American Society of Echocardiography developed in collaboration with the Society for Cardiovascular Magnetic Resonance. J Am Soc Echocardiogr. 2017;30:303–71.
2. Hahn RT, Abraham T, Adams MS, et al. Guidelines for performing a comprehensive transesophageal echocardiographic examination: recommendation from the American Society of Echocardiography and the Society of Cardiovascular Anesthesiologists. J Am Soc Echocardiogr. 2013;26:921–64.
3. Pamnani A, Skubas NJ. Imaging artifacts during transesophageal echocardiography. Anesth Analg. 2014;118:516–20.
4. Sheikh AS, Ali K, Mazhar S. Acute aortic syndrome. Circulation. 2013;128:1122–7.
5. Katz ES, Tunick PA, Colvin SB, et al. Aortic dissection complicating cardiac surgery: diagnosis by intraoperative biplane transesophageal echocardiography. J Am Soc Echocardiogr. 1993;6:217–22.
6. Goldstein SA, Evangelista A, Abbara S, et al. Multimodality imaging of diseases of the thoracic aorta in adults: from the American Society of Echocardiography and the European Association of Cardiovascular Imaging Endorsed by the Society of Cardiovascular Computed Tomography and Society for Cardiovascular Magnetic Resonance. J Am Soc Echocardiogr. 2015;28:119–82.