

Transesophageal echocardiography may verify true lumen of a dissected aorta

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ABSTRACT

Thoracic endovascular aortic repair is used to treat complicated type B dissections. A 62-year-old male patient was admitted to our cardiovascular surgery clinic with chest pain. Contrast thoracic tomography showed chronic type B dissection, proximal advance of type B aortic dissection beginning distally to the origin of the left subclavian artery. Endovascular intervention was planned. Transesophageal echocardiography was used to verify the true and false lumens during procedure. In conclusion, angiographic examination may not be sufficient to differentiate the true and the false lumens of the aorta. Therefore, transesophageal echocardiography may be used to verify the true lumen of the thoracic descending aorta.

Keywords: Aortic dissection; echocardiography; endovascular intervention.

Thoracic endovascular aortic repair (TEVAR) has been a novel treatment modality for the descending thoracic aortic aneurysms and dissections in the past decade.^[1] In nearly all cases, angiographic assessment is enough to verify true lumen during TEVAR.^[1] However, if not available, there are some other methods.^[2,3] Herein, we report a rare case in whom the true lumen was verified with transesophageal echocardiography (TEE) during TEVAR.

CASE REPORT

A 62-year-old male patient with a preexisting type B aortic dissection for three years was admitted to our cardiovascular surgery clinic with chest pain.

Contrast computed tomography of the chest showed proximal advance of type B aortic dissection beginning distally to the origin of the left subclavian artery. In this case, TEVAR was planned. During TEVAR, TEE examination was used to verify true and false lumens (Figure 1).

In TEE examination, the beginning of the dissection was detected. The distal part of the arcus aorta was assessed by Doppler ultrasound (Figures 1a and 1b). The descending aorta was also visualized by Doppler ultrasound (Figures 1c and 1d).

The intra- and postoperative period were uneventful. The patient was discharged on the third postoperative day without any additional problem.

A written informed consent was obtained from the patient.

DISCUSSION

Although echocardiography, either transesophageal or transthoracic, is not considered as the gold standard for the diagnosis of aortic pathologies, such conditions can be detected during first-line echocardiography in the majority of the cases. By transthoracic echocardiography (TTE), ascending aorta can be best visualized in parasternal long axis view.^[4] Arcus aorta and proximal part of the descending aorta can be visualized in TTE suprasternal view. The sensitivity of TEE in the diagnosis of aortic dissection was 97 to 99%; however, the specificity of TEE alone is as low as 77 to 85%.^[4] Keren et al.^[5] described the high sensitivity of biplane or multiplane TEE for the detection of ascending aortic pathologies on 112 emergency patients with an ascending aortic dissection.

Altogether, it is obvious that TTE can visualize ascending aortic pathologies. However, it is not favorable for the practitioners to diagnose or even predict a descending aortic pathology with TTE.

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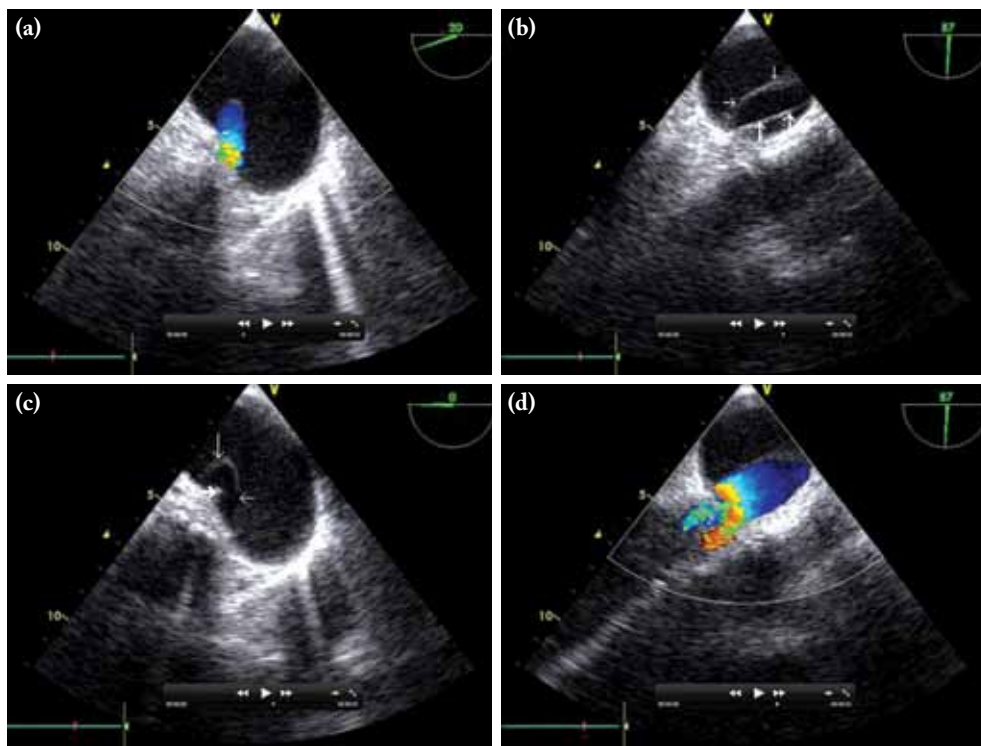


Figure 1. Perioperative transesophageal echocardiography examination. (a) Blood flow in true lumen of the distal part of the arcus aorta is seen. (b) In the distal part of the arcus aorta, true lumen is marked with regular arrows and the guidewire can be seen in the true lumen marked with a bold arrow. (c) In the descending aorta, true lumen is marked with regular arrows and the guidewire can be seen in the true lumen marked with two bold arrows. (d) Blood flow in the true lumen of the ascending aorta is seen.

On the other hand, TEE can be helpful for the diagnosis of descending aortic pathologies.

During TEVAR procedures, angiography can be always enough for the visualization of the lumens and verifications of true lumens.^[2,3] However, in some complicated cases, it is possible to place the guidewire in the false lumen instead of the true one.^[2] Follis et al.^[2] reported a case with the deployment of the endovascular graft in the false lumen of type B dissection in which the authors compulsorily switched to open surgery. Ugurlucan et al.^[3] in their e-comment addressing Follis et al.'s^[2] case, highlighted their angiographic method to facilitate the correct positioning of the stent graft during endovascular repair of type B dissection. In their previous case reports, Ugurlucan et al.^[1] suggested a method to facilitate the grafts in the correct position of the true lumen. They advanced a guidewire under fluoroscopic guidance from a brachial artery toward the femoral artery and prepared for stent graft deployment. However, this technique requires an

additional surgery or puncture, posing additional time and risk.

In conclusion, we suggest that it is also possible to verify true and false lumens of the aorta using a less invasive technique and to facilitate the proper deployment of the stent graft without risk for an additional invasive procedure.

Declaration of conflicting interests

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