

Peer Review File

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Reviewer A

Comment 1: The manuscript is focused on the rare transesophageal finding given the perpendicular and turbulent flow caused by the leak, however, this kind of images are not so unusual in this context, thus leaks frequently generate eccentric and eye-catching flows at the TEE.

Reply 1: TTE was routinely used by ultrasound doctor postoperatively in our hospital. This patient was diagnosed as coronary-left ventricular fistula on TTE, when the patient showed continuous low cardiac output. However, further TEE examination revealed a perivalvular leak by anesthetist.

Changes in the text: we have modified our text as advised, 'a Rare Transesophageal Echocardiogram Finding' in the title has been eliminated. (see Page 1, line 2).

Comment 2: Under my opinion, the case would be clearly improved orienting the presentation based on the particular scenario in which the patient was treated, thus percutaneous closure of leaks in the immediate postsurgical period is not advised due to the potential risk of disruption of the valve suture. (1)

Reply 2: Reoperation has been a traditional treatment for significant PVL, but it is associated with high mortality. Although it has been reported that percutaneous closure of leaks is not advised in the immediate postsurgical period, many literatures have shown that a successful percutaneous aortic PVL closure can alleviate cardiac symptoms and reduce mortality

Changes in the text: we have modified our text as advised. (see Page 7, line 13).

Different details should also be corrected along the text:

Comment 3: Introduction: Although the real incidence of paravalvular leaks is unknown, different registries have reported an incidence between 6-47%, most of them incidental findings with an asymptomatic course. He asseveration that this is an uncommon but life-threatening complication (Introduction lines 4-5) should therefore be eliminated.

Replay 3: While most patients with PVL are asymptomatic, approximate 1-5% PVL patients develop significant clinical consequences with higher mortality, such as severe heart failure and hemolytic anemia.

Changes in the text: we have eliminated the sentence in the introduce. (see Page 5, line 11).

Comment 4: Case presentation: It is mandatory to include the videos of TEE pre and postprocedural and the angiography pre and post procedure. The figure 3 is completely senseless and should be replaced by the image of the aortic angiogram showing the contrast flow into the LV corresponding to the leak.

Reply 4: we are so sorry that the figure 3 don't show the contrast flow into the LV corresponding to the leak. The post-procedural TTE (fig.5) and the pre-procedural

angiography have been supplemented.

Changes in the text: we have modified our text as advised. (see Page 5, line 6).

Comment 5: Discussion: The role of TEE in the setting of paravalvular leaks is not a novelty, thus it is well known that TEE is the gold-standard image technique.

In this sense, we recommend the authors to modify the discussion orientating the value of the case in the setting that it was performed during a high risk period, and with a great angiographic and clinical result.

Reply 5: In this case, the patient developed severe PVL in the immediate postsurgical period, making it difficult to determine which treatment is beneficial for the patient. Reoperation has been a traditional treatment for significant PVL, but it is associated with high mortality. Although it has been reported that percutaneous closure of leaks is not advised in the immediate postsurgical period, many literatures have shown that a successful percutaneous aortic PVL closure can alleviate cardiac symptoms and reduce mortality

Changes in the text: we have modified our text as advised. (see Page 7, line 10).

Comment 6: Conclusion: The affirmation that paravalvular leaks are uncommon and life-threatening should be eliminated.

Reply 6: We are very sorry that this expression is not appropriate.

Changes in the text: we have eliminated the sentence in the conclusion. (see Page 9, line 1).

1. Unzué L, García E, Díaz-Antón B, Pinto ÁG, Teijeiro R, Del Río MR. Percutaneous Closure of Mitral Paravalvular Leaks Generating Refractory Heart Failure in the Immediate Postoperative Period. *J Invasive Cardiol Internet*. 2019;31(8):E259—E260. Available from: <http://europepmc.org/abstract/MED/31368900>

Reviewer B: Authors report a case of AVR with stented bioprosthesis complicated by prolonged low cardiac output syndrome. Based on TTE a suspicion of coronary fistula was raised but after TEE and aortography a final diagnosis of aortic PVL was established and followed by successful device closure.

Comment 1: The PVL was not present on whining from CPB – could there be any suspicion of IE leading to early PVL formation? Was the patient treated with antibiotics in the early postop period?

Reply 1: As Matteucci reported, early occurrence of PVL is mainly related to technical risk factors, whereas late occurrence is related to infection. In this case, the PVL was occurred on the second day after surgery. There was no evidence of infective endocarditis after surgery. Antibiotics were routinely used to prevent infection in the early postoperative period.

Changes in the text: we have modified our text as advised. (see Page 7, line 1).

Comment 2: The PVL is apparently presumed to be the main reason for prolonged low output state. On TTE postop the LV dimension (I assume it's the EDD – should be stated explicitly) and EF decreased as compared to preop (81 à 73mm, 39 à 30%). These findings suggest efficient reduction of AR severity and consequently, one might expect a patient “preconditioned” by baseline severe AR to tolerate the PVL better. Could there be any other concurrent factors worsening the patient's condition (e.g. bacteremia / sepsis)?

Reply 2: As previous studies reported, the main factors of PVL are older age, smaller body surface area (BSA), female sex, operating surgeon, endocarditis, severe calcification of the annulus, bioprosthetic valve implantation. As described previously, the main factors for PVL in this patient after the surgery may include calcified aortic valve, older age, bioprosthetic valve, supra-annular valve.

Changes in the text: we have added the risk factors for PVL. (see Page 7, line 4).

Comment 3: The reported shape and course of aortic PVL is actually typical for supra-annular PV implantation (was that the technique used in this patient?) and should at the beginning be taken into account rather than the coronary fistula, perhaps the

Reply 3: It is supra-annular PV implantation in this patient. TTE was routinely used by ultrasound doctor postoperatively in our hospital. This patient was diagnosed as coronary-left ventricular fistula on TTE, when the patient showed continuous low cardiac output. However, further TEE examination by the anesthetist revealed a perivalvular leak.

Changes in the text: we have modified our text as advised. (see Page 4, line 4).

Comment 4: How was the closure device chosen? Was the choice driven by TEE or angiographic characterization of the PVL? Was RT 3D-TEE applied for PVL lumen visualization?

Reply 4: The Cardi-O-Fix Plug is a plugging device made in China. The occluder can be widely used for the treatment of patient with atrial septal defect, ventricular septal defect, and patent foramen ovale. The plugging device was chosen by angiographic characterization. According to the limitations of ultrasound machine, 3D-TEE was not applied.

Changes in the text: we have modified our text as advised. (see Page 8, line 7).

Comment 5: Authors state that no device has been approved by FDA for PVL closure. To widen the perspective, I'd suggest mentioning that 2 devices (PLD, Occlutech AB and AVP 3, Abbott) are currently CE-marked for PVL closure. Their clinical efficacy has been reported both for mitral and aortic locations

Reply 5: Other available instruments include Occlutech PLD and Amplatzer vascular plugs (AVP II and III) are demonstrated to achieve successful PVL closure in majority of cases.

Changes in the text: we have added the information about other devices for PVL closure. (see Page 8, line 4).

Comment 6: To support the points 4&5 some of the following papers might be useful:

Onorato EM, Muratori M, Smolka G, et al. Midterm procedural and clinical outcomes of percutaneous paravalvular leak closure with the Occlutech Paravalvular Leak Device. *EuroIntervention J Eur Collab with Work Gr Interv Cardiol Eur Soc Cardiol.* 2020;15(14):1251-1259. doi:10.4244/EIJ-D-19-00517

Millán X, Skaf S, Joseph L, et al. Transcatheter reduction of paravalvular leaks: a systematic review and meta-analysis. *Can J Cardiol.* 2015;31(3):260-269.

doi:10.1016/j.cjca.2014.12.012

Smolka G, Pysz P, Wojakowski W, et al. Clinical manifestations of heart failure abate with transcatheter aortic paravalvular leak closure using amplatzer vascular plug II and III devices. *J Invasive Cardiol.* 2013;25(5).

Smolka G, Pysz P, Jasiński M, et al. Multiplug paravalvular leak closure using Amplatzer Vascular Plugs III: A prospective registry. *Catheter Cardiovasc Interv.* 2016;87(3). doi:10.1002/ccd.25992

Comment 7: Figure 3 should be replaced with an image showing more contrast agent in the aorta to enable comparison with fig. 4b

Reply 7: We feel really sorry for our carelessness. Based on your comments, we replace the pre-procedural angiography.

Changes in the text: we have replaced the images. (see Page 4, line 16).

Comment 8: Corresponding postop TEE images should be added to document the closure efficacy

Reply 8: thanks for your careful checks, the post-procedural TTE (fig.5) has been supplemented.

Changes in the text: we have added the postop TEE images. (see Page 5, line 6).

Comment 9: Finally, proofreading by a native speaker would make some sections of the manuscript more reader-friendly.

Reply 9: We tried our best to improve the manuscript and made some changes in the manuscript. These changes will not influence the content and framework of the paper.

Changes in the text: we have modified our text as advised. (see Page 2, line 14).