Introduction: Immediate post-cardiopulmonary bypass (CPB) complications of valve replacement surgery include paravalvular leak, leaflet immobility, coronary obstruction by aortic bioprosthesis, and valve incompetence. We present a case of mechanical aortic valve incompetence immediately post-CPB due to entrapment of the left ventricular (LV) vent catheter within the valve.

Case Presentation: 27 yr old male with ascending aortic aneurysm and stenotic bicuspid aortic valve presented for surgical correction. Following application of standard monitors and placement of arterial line, anesthesia was induced intravenously and maintained with volatile anesthetic. Initiation of CPB was uneventful. The patient underwent ascending aorta (AAo) tube graft replacement and mechanical aortic valve (AV) replacement. Upon attempted separation from CPB, the patient developed persistent ventricular fibrillation resistant to repeated defibrillation and pharmacological therapy. Via transesophageal echocardiography (TEE), severe prosthetic valve incompetence of unclear etiology was identified, though a small echogenicity in the vicinity of the prosthesis was visualized. After discussion with the surgical team, this echogenicity was attributed to suture material. Resumption of CPB followed. Upon re-exploration of the AAo, the tip of the LV vent catheter placed into the ventricle via the right superior pulmonary vein was found entrapped within the valve leaflets. Upon retrospective review of TEE images, the echogenicity attributed to suture material correlated with this finding (see image). The vent was withdrawn, the aorta closed and uneventful separation from CPB followed.

Discussion: TEE plays an important role in intraoperative surgical decision making in cardiac surgery and has successfully diagnosed foreign body as the cause of failure to wean from CPB. Although foreign body identified on TEE following AV replacement has been reported, to our knowledge migration of the LV vent catheter through the AV immediately post-CPB has not previously been described.

In the present case, intraoperative TEE facilitated successful diagnosis of valve incompetence as the cause of failure to wean from CPB leading to corrective surgical intervention. A prior knowledge of the possibility of LV vent migration as a source of prosthetic valve incompetence, we speculate, may have allowed for restoration of valve function without resumption of CPB.

Conclusion: The present case illustrates two key points regarding failure to wean from CPB following mechanical aortic valve replacement: (1) TEE examination can facilitate corrective surgical intervention and (2) LV vent catheter migration through the AV should be considered as a potential cause of valve incompetence.

References:
5) A & A 2006;103:40