

INTRAOPERATIVE AORTIC DISSECTION CAUSED BY AN INTRAORTIC BALLOON PUMP

Ketan Shevde, M.D. & Ravi Naik, M.D.

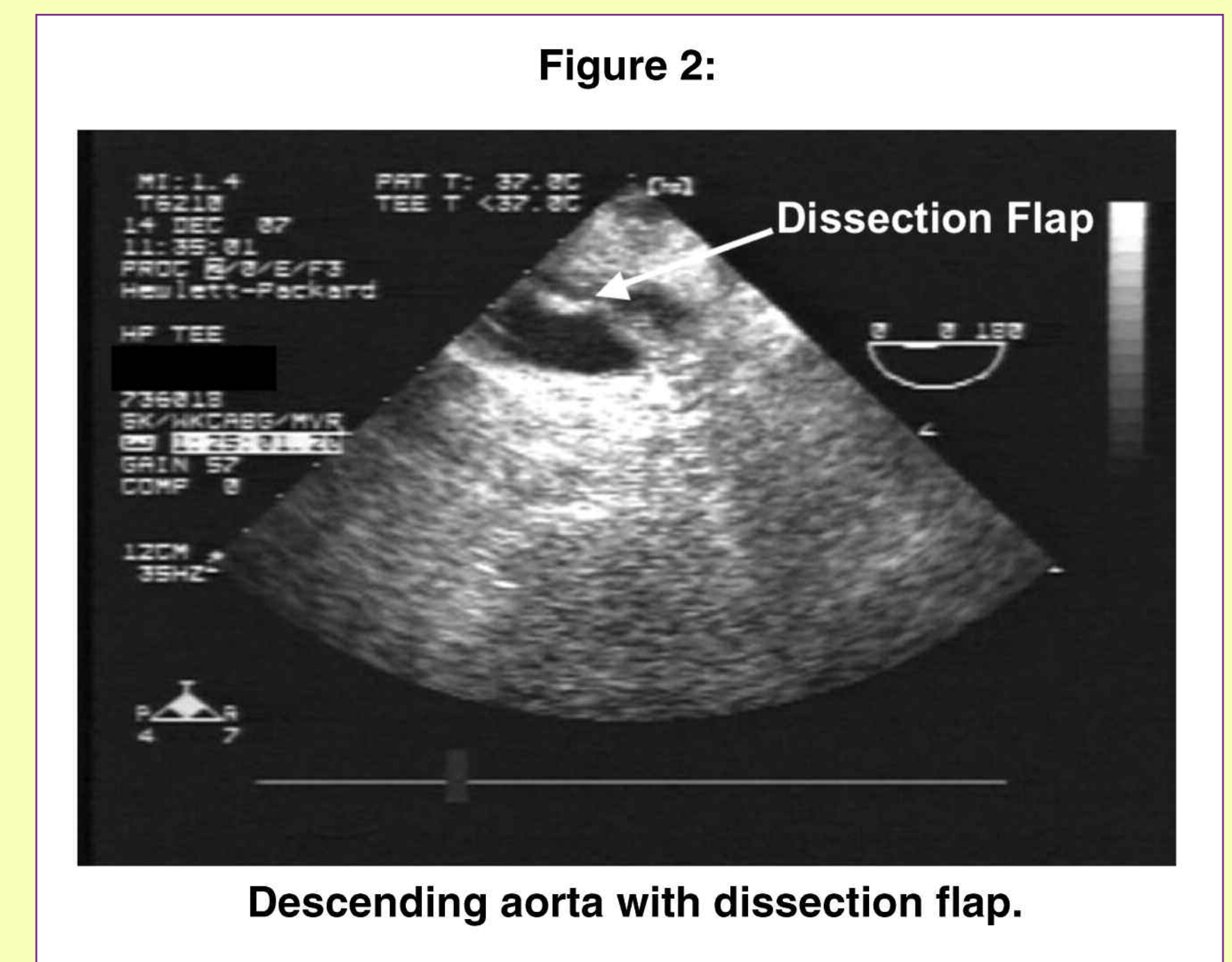
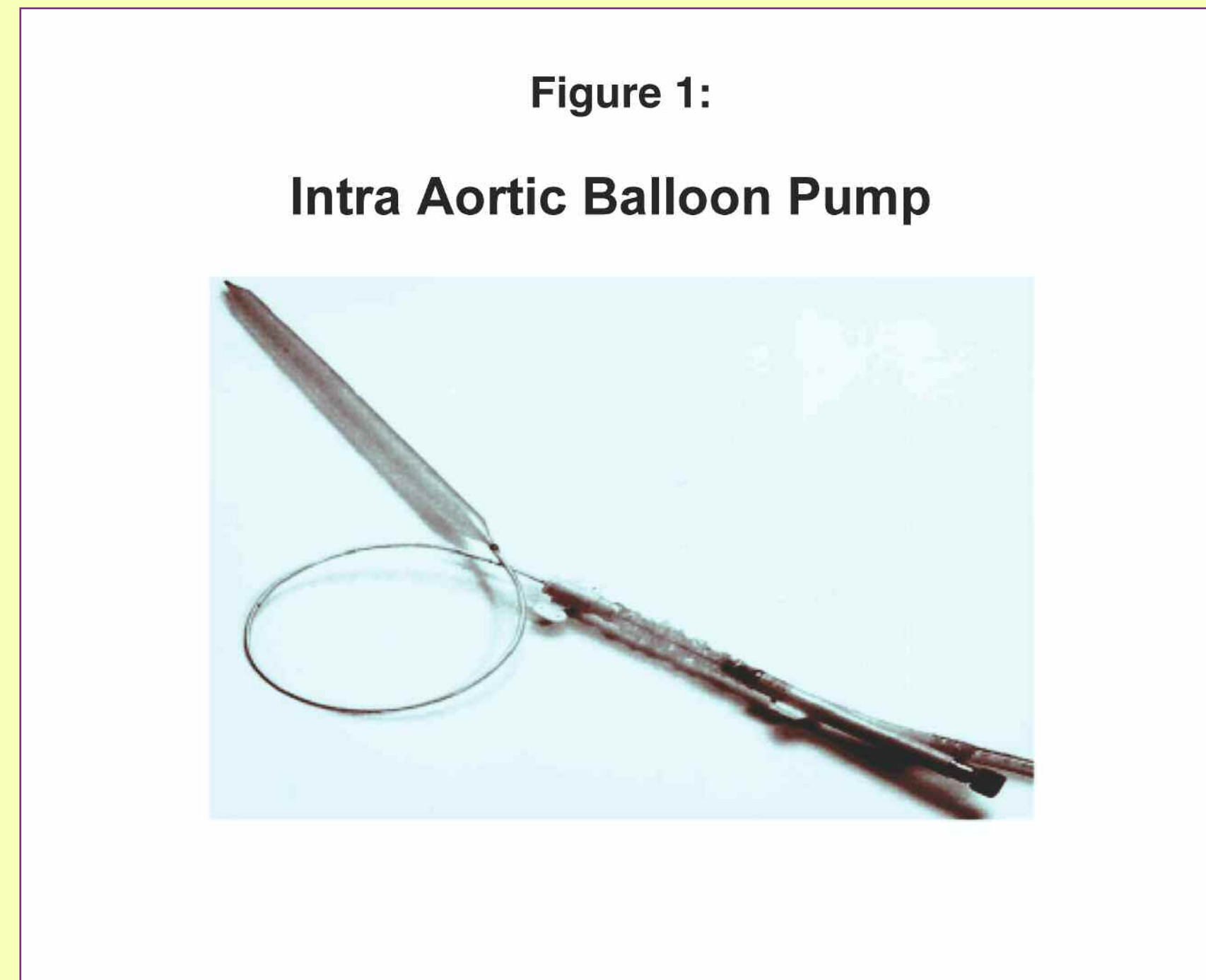
Department of Anesthesiology, SUNY Downstate Medical Center, Brooklyn, New York

CASE PRESENTATION

A 46-yr-old female patient was admitted to the hospital with a recent severe myocardial infarction resulting in global hypokinesia of the left ventricle, cardiogenic shock, severe mitral regurgitation and pulmonary edema. Cardiac catheterization showed triple vessel coronary occlusive disease and the cardiologists managed her in the coronary ICU with an intraaortic balloon pump (IABP)¹ [Figure 1] and infusions of nitroglycerin and vasoactive drugs to maintain a reasonable arterial pressure and urine output. Her troponin level was 211.93 ng/ml, CKMB 90.9 U/L, CK 2305 U/L and BNP 20,200 pg/ml. She soon went into multi-organ failure and it was decided to stabilize her as much as possible prior to coronary artery and mitral valve surgery. Her chest x-ray showed bilateral lung congestion.

Transesophageal echo (TEE) prior to surgery showed severe ventricular dysfunction, with anterior wall hypokinesia and moderate mitral regurgitation based on a dilated left ventricle, but without morphologic valve changes. She improved hemodynamically over the next 24 h, but the improvement was short lived and she again showed signs of decompensation at which point it was decided to take her to the operating room for emergency triple coronary bypass and mitral valve repair or replacement.

Intraoperative TEE and pulmonary artery catheterization confirmed prior catheterization and TEE results and the pulmonary artery pressure was recorded at 45/24 mmHg. She was well oxygenated and hemodynamically stable during induction, vein harvesting and sternotomy on low dose norepinephrine and milrinone. The IABP was functioning well with good diastolic augmentation and the cardiac index was 2.1 l/min/m². After heparinization cannulae were inserted and cardiopulmonary bypass (CPB) commenced. Within 5 min of going on CPB the perfusionists complained of a significant drop in the reservoir volume. After unsuccessfully inspecting for problems with the CPB lines and obvious bleeding, we interrogated the ascending aorta and the aortic arch with the TEE and visually for a possi-



ble dissection at the cannulation site. The ascending aorta and the arch were normal-looking. At this point the descending aorta was interrogated with the TEE and a dissection flap [Figure 2] was noted at the level of the IABP below the left subclavian artery. The left pleura was opened and 1,500ml of blood were suctioned out. The IABP was removed and the left chest was packed with lap pads while the surgery continued.

The aortic bleed slowed down considerably, but after triple CABG and mitral valve replacement the patient was not able to come off CPB. Due to the aortic dissection we had lost the ability to reinsert the IABP and the patient had to be managed on biventricular assist devices and continued to have a poor hemodynamic status. We were able to transport the patient to the CTICU on vasoactive infusions and ventricular assist device, the patient died the next day.

DISCUSSION

Although aortic dissection has been reported as a known complication of the IABP it occurs during balloon placement and we found no report of it occurring during the surgical procedure as in our case.² We feel moving the leg during endoscopic vein harvesting and/or manipulation of the heart during cannulation were likely responsible for the aortic dissection during surgery. In a patient with an IABP, aortic dissection should always be a differential diagnosis if there is evidence of sudden hypotension or decrease in circulating blood volume as was the case in our patient.

REFERENCES

1. Waksman R, Weiss AT, Gotsman MS, Hasin Y: Intra-aortic balloon counterpulsation improves survival in cardiogenic shock complicating acute myocardial infarction. *Eur Heart J* 1993; 14:71-74
2. Meco M, Gramegna G, Yassini A, et al: Mortality and morbidity from intra-aortic balloon pumps:risks analysis. *J Cardiovasc Surg* 2002; 43:17-23