Introduction: Superior vena cava syndrome is a rare complication after open heart surgery. Most case reports are diagnosed postoperatively and involve intraluminal thrombi (1). We present a case of a hematoma causing extrinsic compression of the SVC after orthotopic heart transplant, diagnosed intraoperatively using TEE and central hemodynamic measurements.

Case presentation: A 63 year old woman with viral dilated cardiomyopathy (EF 10%), pulmonary hypertension, atrial flutter on warfarin, and a Thoratec Heartmate II LVAD presented for heart transplantation. After induction of general anesthesia an 8Fr introducer sheath and a 7.5Fr Swan-Ganz catheter were placed uneventfully in the right internal jugular vein with real time ultrasound. The surgical technique involved a bicaval anastomosis of the right atrium. There was no significant size mismatch and the ischemic time was 3 hours 23 minutes. Inotropic support with dobutamine, milrinone, and nitric oxide was used to wean cardiopulmonary bypass. Significant post-bypass bleeding required the transfusion of 9U RBCs, 9U FFP, 10U cryoprecipitate, and 18U platelets. The chest tube output was initially brisk but slowed after chest closure, the CVP rose from 14 to 28mgHg with a PA pressure of 22/12mmHg and we noticed mild swelling of the head. On TEE, there was mild TR but no tricuspid stenosis. We noted high velocity turbulent flow across a narrow SVC in the bicaval view (figure). The Doppler derived pressure gradient was at least 10mmHg, likely underestimated by a non-parallel orientation of the Doppler beam. The PA catheter was slowly withdrawn while observing central pressures at the tip to localize the stenosis, and to eliminate any possible contributing obstruction from the catheter. The RV pressure was 22/2 mmHg, the RA 2mmHg and there was a step-up of 28mmHg from the RA to the SVC. In the interim the mean arterial pressure was raised using vasopressors to maintain an adequate cerebral perfusion pressure. The chest was reopened and the surgeons evacuated a hematoma anterior to the SVC anastomosis. Pressures in the SVC and RA were measured directly with a 25G needle. There was no residual pressure gradient, ruling out a tight anastomosis. CVP after chest closure was 10mmHg. The patient was extubated on postop day 2 and discharged postop day 14 with no neurological deficits.

Discussion: The incidence of SVC syndrome after heart transplant in one retrospective single center study showed an incidence of 2.4% of 127 bicaval anastomoses. However, these became evident days to weeks later, only after intraluminal thromboses exacerbated pre-existing strictures (1,2). Our case report of intraoperative SVC compression underscores the importance of careful perioperative echocardiographic examination of all anastomoses and a thorough investigation of unusual patterns of central pressures.

References: