Introduction: Ventricular septal defect (VSD) creation is a rare complication of septal myectomy for idiopathic hypertrophic subaortic stenosis (IHSS). Postoperative management has been described, but intraoperative medical management for refractory VSDs has not been well described. We present a case wherein a patient underwent myectomy for IHSS and developed a refractory VSD. Specifically we discuss the need for quick and effective estimation of shunting for optimal management.

Case Presentation: 41 year old male with history of IHSS presented for septal myomectomy. Initial intraoperative course was uncomplicated and the patient's transesophageal echocardiogram (TEE) demonstrated septal wall thickness of 2.55 cm. After initial transaortic resection and cessation of cardiopulmonary bypass (CPB), TEE imaging demonstrated new left-to-right shunting on color flow doppler (CFD) in the septum. 4 attempts at repair were unsuccessful and creation of a RV opening for correction and a 5th CPB run was discussed. We attempted to estimate shunt fraction (Qp/Qs) using the Fick equation before additional correction was attempted. The shunt fraction was 1.07 and the decision was made to close the sternum with medical management and follow-up with discharge 4 days later.

Discussion: VSD creation following myectomy is a rare event with reported incidence between 0.5-2%. Surgical techniques for IHSS is mainly via transaortic approach. As views are obscured with CPB, TEE is beneficial in reassessing the location and distance, degree of SAM, need for valvular repair or replacement, and surgical outcomes. Ultimately this patient’s VSD was refractory to surgical repair via the transaortic approach and a discussion of resuming a 5th round of CPB with a RV incision was being considered. As the level of shunt on CFD cannot estimate true shunt flow, quantification of Qp/Qs can aid in operative decision making. A modified shunt flow was calculated as Qp/Qs=(SaO2-MvO2)/(PvO2-PAO2) where the systemic saturation (SaO2) equaled pulmonary vein saturation (PvO2). Though not often used, this case demonstrates the importance for the anesthesiologist to understand how to calculate shunt fraction from the Fick equation in order to facilitate appropriate surgical decision making and potentially avoid increased morbidity.