Intro: This is the first known case of a carcinoid syndrome patient undergoing tricuspid and pulmonic valve replacement complicated by Takotsubo Cardiomyopathy (TC). The combination of these two syndromes create a challenging case.

Case: 50 year old female with metastatic carcinoid presented for tricuspid and pulmonic valve replacements. Symptoms were controlled with octreotide preoperatively. Following a standard induction and intubation, TEE showed an EF of 55% with severe tricuspid and pulmonic regurgitation. Following a 90 minute bypass (48 min clamp time), weaning was attempted. TEE showed severe global hypokinesis so milrinone infusion was started at .375 mcg/kg/min and octreotide 50 mcg bolus then infused at 50 mcg/hr. Global hypokinesis persisted. Calcium chloride boluses and epinephrine infusion were started without effect, and subsequently discontinued. Mean arterial pressures remained in the 50s and methylene blue was given. After developing pulmonary edema, she was placed on Extracorporeal Membrane Oxygenation.

Heart catheterization by cardiology the following day showed classic signs of takotsubo cardiomyopathy. She was continued on octreotide infusion and ECMO.

Discussion: The lack of consensus regarding the use of octreotide and catecholamines for the management of patients with carcinoid syndrome creates a unique challenge in cardiac surgery. Carcinoid patients have successfully undergone CPB with intraoperative somatostatin infusion or with a bolus method prophylactically or when carcinoid crisis is suspected (4,6,7). Since our patient was on octreotide preoperatively, we chose not to run an infusion. Although recent case studies suggest administration of vasopressors and catecholamines may be used, we decided to avoid administering exogenous catecholamines in order to prevent exacerbating a carcinoid crisis (1-7).

Our plan was changed when we could not wean from CPB. Carcinoid crisis was at the top of our differential and octreotide was administered with a bolus dose and then an infusion. Octreotide has been well documented as the most effective treatment for cardiac instability caused by carcinoid crisis (8,9). After no response to octreotide, milrinone and epinephrine bolus and infusion was started, but were unsuccessful; the reason for this lack of response is unclear. Retrospectively, she may have developed TC intraoperatively or in response to the catecholamine administration.

TC is characterized by transient ventricular dysfunction and apical ballooning (classic octopus trap). Emotional stress and other causes of increased adrenergic/ catecholamines resulting in damage to cardiomyocytes have been implicated as triggers for TC (10). Literature review documents about 40 perioperative cases of TC and only a few after cardiac surgeries. Although TC usually resolves with supportive care, our patient required aggressive treatment and ECMO. At the time of submission of this paper, our patient has been on ECMO for 9 days.
References: