Introduction: As surgeons develop more intricate and less invasive procedures anesthesiologists must evolve to accommodate these new techniques. We discuss the management of a patient that presented for totally endoscopic coronary artery bypass (TECAB) who was diagnosed with significant aortic insufficiency (AI) intraoperatively. This new finding dictated a change in the operative plan to utilize retrograde cardioplegia for cardiac arrest by placing a percutaneous coronary sinus catheter (PCSC).

Case: A 70 year old male with coronary artery disease presents for TECAB. Preoperative assessment included transthoracic echocardiogram which revealed trivial aortic insufficiency. Hemodynamic monitoring included intra-arterial and central venous pressure monitoring as well as transesophageal echocardiography and placement of a pulmonary artery vent. Surgical plan required left axillary, femoral cannulation, as well as endoaortic occlusion balloon (EAOB), to deliver antegrade cardioplegia.

TEE performed prior to incision demonstrated moderate AI. Thus we adjusted our anesthetic plan and placed a PCSC for the delivery of retrograde cardioplegia. Surgery continued as planned using solely retrograde cardioplegia to arrest the heart. This technique was successful, and good cardioprotection was afforded throughout the procedure. The patient did well and was extubated later that evening.

Discussion: The EAOB and PCSC have both been widely used in robotic valve surgery to facilitate delivery of cardioplegia. In this case, as with open cardiac procedures, the use of antegrade cardioplegia administered through the aortic root was avoided to prevent left ventricular distension in the presence of significant aortic insufficiency. Also antegrade cardioplegia in this situation may not provide adequate coronary antegrade flow to arrest the heart. A review of exclusion criteria for TECAB does not include the presence of significant AI. An EAOB can be used purely as an occlusive device without the delivery of antegrade cardioplegia, similar to its use in open aortic procedures. While there are potential risks associated with placement of a PCSC for delivery of retrograde cardioplegia it has been shown to be as effective as antegrade cardioplegia in arresting the heart and providing adequate cardioprotection.

Conclusion: Newly diagnosed aortic insufficiency in a patient who presents for TECAB requires modification of the route of cardioplegia delivery with placement of PCSC. Less invasive procedures show a benefit in patient satisfaction from the view of decreased incisional scarring, less postoperative pain, and decreased recovery time. Benefits to the healthcare system come in the form of cost reduction from shorter stay and recovery time. We will continue to evolve our practice in order to facilitate delivery of safe, effective anesthetics to facilitate these less invasive procedures.