Introduction: Acute onset Stanford type A aortic dissections are surgical emergencies that carry a high mortality rate if not immediately surgically corrected. Several life threatening complications such as aortic rupture, cardiac tamponade, myocardial ischemia, and acute aortic regurgitation can be quickly and accurately assessed by an intra-operative transesophageal echocardiography (TEE). We present a case of an aortic dissection that ruptured, creating an aortic to left atrial fistula that was diagnosed via intra-operative TEE which changed the surgical management of the patient.

Case Presentation: A 60 year old male with a history of prior stroke with left sided weakness, coronary artery bypass grafting and kidney transplant presented with sharp chest pain and new onset right sided weakness. A CT scan of his chest revealed an acute Stanford type A aortic dissection, and the patient was taken to the operating room for emergent surgical repair. After a radial arterial line was placed, general anesthesia was induced and a central line, pulmonary artery catheter, and TEE probe were placed. The TEE exam found an aberrant jet of flow coming into the left atrium. Further echocardiographic inspection revealed a fistula originating from the non-coronary sinus with communication to the left atrium, representing a rupture of the dissected aorta into the left atrium. Due to the presence of the fistula, the surgeon opted to place an LV vent through a hole in the left atrium instead of placing it through the right superior pulmonary vein as is his usual practice. After a period of deep hypothermic circulatory arrest to repair the aortic arch, the fistula was closed with a pledgeted purse-string suture. The aortic valve, root and ascending aorta were all replaced and the coronary artery bypass grafts were reattached to the tube graft. The patient was successfully separated from CPB and transported to the ICU after bleeding was eventually controlled. The patient was transferred to a rehabilitation facility on post-operative day 23.

Discussion: Stanford type A aortic dissections are considered surgical emergencies because the mortality rate in these patients without emergency surgery has been shown to be extraordinarily high. The mortality rate is significantly reduced when the dissection is surgically corrected urgently, especially in patients younger than 80 years. The TEE exam provides high quality aortic images with comparable sensitivity and specificity to MRI and CT scan for detecting aortic dissections. Of note, the TEE can look for associated complications by interrogating the aortic valve, assessing ventricular function including regional wall motion abnormalities for coronary dissection and diagnosing pericardial effusion and cardiac tamponade. The unique and educational aspect of the case presented is the unexpected intra-operative TEE finding of an aortic to left atrial fistula. This finding altered the cannulation technique that the surgeon employed to ensure greater myocardial protection and allowed him to surgically correct the problem. This is an excellent example of the utility of intra-operative TEE in its ability to look for complications associated with acute aortic dissections.