Introduction: Transcatheter Aortic Valve Implantation (TAVI) is an option for patients with aortic stenosis considered high risk for open surgery. However, this procedure may be associated with significant complications, which differ from the conventional approaches. Managing these complications in patients with significant comorbidities is challenging.

Case Presentation: An 87 year old female experiencing NYHA III-IV symptoms presented to hospital with critical aortic stenosis. Her past medical history included moderate-severe COPD, and mild cognitive impairment; in consultation with her family, she consented for a TAVI procedure. Despite a heavily calcified aortic annulus, a 23 mm Edwards Sapien valve was positioned with excellent initial results. However, 12 hours postoperatively she developed third degree heart block requiring insertion of a temporary transvenous pacemaker. Several hours later, she developed a pericardial effusion with tamponade secondary to an RV perforation from the pacing lead and required an emergency sternotomy. During this procedure, an intraoperative TEE detected an aortic root to RV fistula with a concomitant VSD. With the extent and severity of this defect uncertain, the resulting RV dysfunction and severe TR was initially managed medically. However, over the course of seven days, the RV continued to fail with evidence of systemic hypoperfusion resulting in a decision to proceed with surgical repair. The valve was explanted, the fistula and VSD were repaired with a bovine pericardial patch, and a 21 mm Carpentier-Edwards Magna Ease valve was inserted with a tricuspid annuloplasty. Postoperatively, the patient had multiple complications including progressive renal dysfunction and aspiration pneumonia that resulted in death 35 days after the TAVI.

Discussion: While TAVI is an option in high risk patients, it is associated with its own set of complications that are often difficult to manage due to the significant preexisting comorbidities. Reported morbidity and mortality rates are widely variable due to multiple factors. 1. Rhythm disturbances are common with 15% requiring permanent pacemaker insertion. 2. Annular perforation/dissection is also described, carrying a significant risk of mortality. 3. The risk factors for annular rupture, have not been described, but severe calcification might have been a contributing factor. In our patient, the decision to pursue medical management was partly due to the inability to quantify the severity of the fistula and VSD, but also influenced by the patient's comorbidities. However, after exhausting medical options, surgery was performed. In general, for patients requiring emergency surgery post-TAVI, the results are poor. In a recent meta-analysis (n=9251) of TAVI patients, 1.1% required emergent surgery, and 6 were for annular rupture. Emergency surgery carried a 9-fold increase of 30-day mortality (67%). 4. While TAVI is an option in these patients, complications lead to significant increases in morbidity and mortality and often create difficult decisions regarding management.

References:
4. EuroIntervention 2012;doi:pii:20121102-01