Case studies are prepared periodically for your review in an effort to better assist you in understanding the types of patients we care for at St. Peter's Health Partners. Please contact us with any questions regarding patients in your care who are presenting with similar symptoms.

Case Study at St. Peter's Hospital

A 61-year-old female with a history of end-stage renal disease presented with native aortic valve endocarditis.

She had developed E.coli bacteremia shortly after having knee surgery. She subsequently developed severe aortic insufficiency that required emergent aortic valve replacement.

Intra-operatively, there was fibrinous pericarditis along with a periannular abscess. The abscess cavity was unroofed, debrided, irrigated, and successfully repaired primarily with pledgeted annular sutures.

The aortic valve was replaced with a St. Jude 23 mm Regent mechanical valve. Her post-op course was unremarkable. Negative blood cultures were obtained one month post-op.

Two months later during a routine checkup, she was noted to have a diastolic murmur by her cardiologist. An echocardiogram revealed moderate aortic insufficiency with partial dehiscence of her prosthetic valve. There was also a pseudoaneurysm consistent with aorto-ventricular discontinuity.

She underwent redo sternotomy. The St. Jude valve had dehisced adjacent to a large 2 by 3 cm pseudoaneurysm. This replaced half of the annulus between the left main and right coronary artery. The valve was resected. The pseudoaneurysm was debrided and the aortic root was replaced with a St. Jude 25 mm mechanical valved conduit.

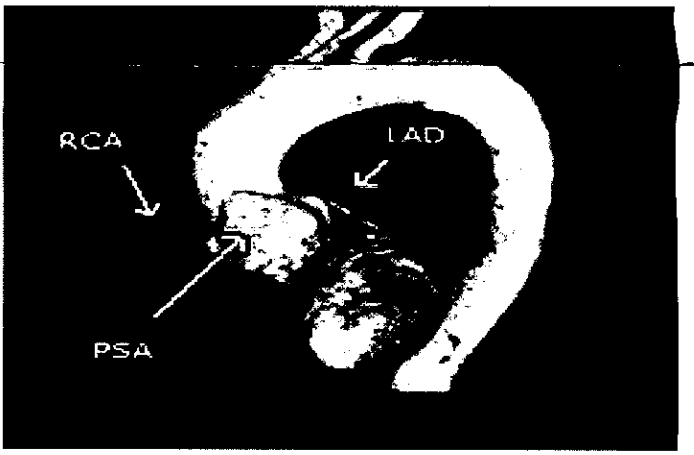
To seat the valved conduit, her AV node had to be sacrificed and she required a permanent pacemaker post-op. The remainder of her course was uncomplicated.

The patient followed up in the office six months post-op. She feels well and is awaiting kidney transplant. ∎

Axial Cut

CT scan confirms the diagnosis.

3D Reconstruction of Aortic Root and Thoracic Aorta



RCA: Right Coronary Artery
LAD Left Anterior Descending Artery
PSA: Pseudoaneurysm

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Discussion

Aortoventricular discontinuity (AVD) is a separation between the aorta and left ventricle.

It represents a large abscess cavity, or pseudoaneurysm, of the aortic valve annulus. Typically, these encompass over one third of the circumference.

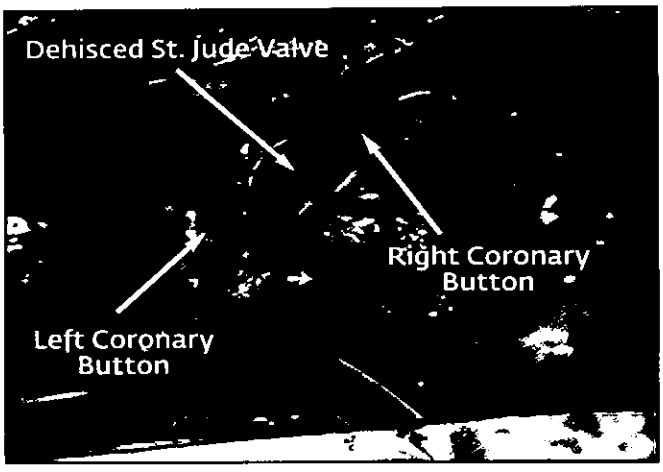
Annular abscess is a complication seen more frequently with prosthetic valve endocarditis than native valve endocarditis. In some studies, up to 40 percent of these are large enough to be considered aortoventricular discontinuity.

AVD is more frequently observed in older patients, those presenting with hypotension and staphylococcal infections.

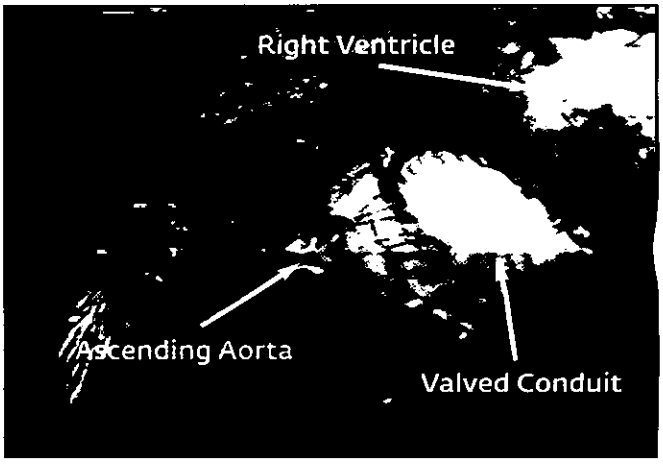
While operative management of prosthetic valve endocarditis is superior to medical management, these patients are high surgical risk. Operative mortality ranges from 4 to 25 percent.

The mortality associated with replacement of the aortic root in the setting of complicated prosthetic valve endocarditis is as high as 25 percent in the setting of AVD.

Heart block requiring a permanent pacemaker *may occur in as many as* 30 percent of these patients. Its incidence is directly related to the size of the abscess cavity and debridement required. ▮



Aortic root debrided. Dehisced valve shown. Forceps pointing into pseudoaneurysm cavity.



Procedure completed. Off bypass with valved conduit shown.

Special Considerations and Operative Management

Surgical options for prosthetic valve endocarditis associated with annular abscess and AVD include:

- Patch closure of aortic/annular pseudo aneurysm cavity
- Ross Procedure (Pulmonary autograft)
- Patch closure, supracoronary prosthetic valve, with CABG
- Radical debridement and aortic root replacement: cryopreserved allograft, xenograft, or composite prosthetic valved conduit

Radical debridement and replacement of the aortic root remains the most effective means of eradicating necrotic and infected tissue; providing a competent valve; and repairing any associated cardiac defects.

Replacement of the aortic root with a cryopreserved allograft may provide some survival advantage, and superior freedom from reinfection over other aortic root operations. ▮