CASE REPORT

A rare case of prosthetic endocarditis and dehiscence in a mechanical valved conduit

Arun Kannan,¹ Cristy Smith,² Sreekumar Subramanian,² Rajesh Janardhanan³

¹University of Arizona, Tucson, Arizona, USA

²Department of Cardiothoracic Surgery, University of Arizona, Tucson, Arizona, USA

³Sarver Heart Center, Tucson, Arizona, USA

Correspondence to

Dr Arun Kannan,
arask83@gmail.com

SUMMARY

A middle-aged adult patient with a history of aortic root replacement with a mechanical valved conduit and remote chest trauma was referred to our institution with prosthetic endocarditis. Transoesophageal echocardiogram at our institution confirmed a near-complete dehiscence of the prosthetic aortic valve from the conduit, with significant perivalvular flow forming a pseudoaneurysm. The patient underwent a high-risk re-operation, involving redo aortic root replacement with a homograft after extensive debridement of the infected tissue. The patient was discharged to an outside facility after an uncomplicated hospital course, and remains stable.

BACKGROUND

This case emphasises the importance of accurate diagnosis of infected aortic conduit with dehiscence. We believe that the formation of a pseudoaneurysm is a rare presentation of an infected aortic conduit.

CASE PRESENTATION

A middle-aged adult patient with a history of thoracic aortic aneurysm repair with St Jude aortic valve conduit root replacement presented to a peripheral hospital with 3-month history of fever and chills. It was insidious in onset with intermittent periodicity. The patient had also noticed night sweats and a 20-pound weight loss. Transthoracic echocardiogram suggested prosthetic endocarditis of the valved conduit. Given the high-risk nature of the re-operation required, the patient was transferred to our tertiary facility for further evaluation and management. On arrival, the patient was found to be in severe sepsis and started on empiric intravenous antibiotics.

INVESTIGATIONS

A preliminary transthoracic echocardiogram (figure 1; video 1) was carried out in our institution, which revealed abnormal rocking motion of the aortic valved conduit suggesting dehiscence. A subsequent transoesophageal echocardiogram (TEE) confirmed the diagnosis of dehiscence resulting in severe aortic regurgitation with left ventricular dilation. X-plane imaging on three-dimensional TEE showed a pseudoaneurysmal sac (figure 2; video 2) with conduit dehiscence. The pseudoaneurysm was noted to extend at least 7 cm up into the ascending aorta. Colour flow Doppler (figure 3) demonstrated turbulent blood flow in the pseudoaneurysmal sac between the aortic root and the dehiscenced conduit

Figure 1 Parasternal long axis view from transthoracic echocardiogram showing the dehiscence.

Video 1 Parasternal Long Axis View from Transthoracic Echocardiogram movie showing the dehiscence.

resulting in severe aortic regurgitation. CT chest carried out preoperatively (figure 4) showed the pseudoaneurysmal sac as an ill-defined low-density process in the retrosternal region anterior to the ascending aorta and the proximal aortic arch measuring approximately 2.8 cm×5.4 cm extending into the aortopulmonary region of the mediastinum. Initial blood cultures from our institution were negative.

Figure 2 X-plane imaging showing the aortic conduit dehiscence and formation of pseudoaneurysm.

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Video 2 Three Dimensional Transesophageal Echocardiogram movie showing the aortic conduit dehiscence and formation of pseudo-aneurysm.

TREATMENT

In the operating room, the patient was placed on peripheral cardiopulmonary bypass utilising an axillary outflow and prepared for deep hypothermic circulatory arrest to 18°C. A redo sternotomy was performed and extensive adhesions around the aortic root and conduit were noted. A pseudoaneurysmal sac full of blood and purulence was seen (figure 5). The pseudoaneurysm was formed due to the detachment of the aortic valved conduit from the aortic annulus and subsequent gushing of blood into the sac. The prosthetic aortic valve was found hanging by a suture in the blood pool resulting in free communication of blood flow between the left ventricular outflow tract/annulus and the pseudoaneurysm.

The aortic valve conduit was excised and debridement was carried out on the aortic root to remove all purulent material (figure 6). The conduit was replaced with an aortic homograft and sutured in place. Owing to extensive infection, the native aorta was not preserved. The coronary buttons were then placed and anastomosed. Culture from the intraoperative specimens revealed *Enterococcus* sensitive to vancomycin. It is thought that the initial blood cultures were negative due to administration of antibiotics at the previous hospital. His sepsis is thought to be primarily due to the infected aortic conduit. Surgical pathology report from the excised aortic conduit revealed fibrosis, acute on chronic inflammation and necrosis.

OUTCOME AND FOLLOW-UP

The patient had an uncomplicated postoperative period. Infectious disease consultation recommended long-term intravenous vancomycin for a period of 6–8 weeks. A peripherally inserted central catheter was placed and the patient was

Figure 3 Colour Doppler showing the blood seen surrounding the aortic conduit.

Figure 4 CT of the chest demonstrating the abscess around the aortic root.

discharged home in a stable condition with no neurological or cardiac sequelae and with appropriate follow-up.

DISCUSSION

Aortic conduit infection is an uncommon, but a serious complication with high mortality rate.¹ Such scenarios, if left

Figure 5 Intraoperative image showing aortic root with abscess.

Figure 6 Intraoperative image showing opened aortic root with abscess cavity extending into aortic graft.

unrecognised, have high mortality with a survival expectancy of less than 20%.² The recommended treatment include radical debridement of all infected tissues, valve replacement along with perioperative and long-term antibacterial agents. In severe prosthetic dysfunction such as dehiscence or obstruction, surgery with radical debridement of the infected tissue along with removal of foreign material is a Class I indication.³ This

case demonstrates an uncommon presentation of aortic conduit infection with dehiscence. The case also demonstrates the value of imaging in accurately diagnosing this complex case and planning appropriate surgical approach. Searching and identifying the obscure aetiology for the sepsis is vital in managing septic patients with no obvious source.

Contributors AK wrote the case report and discussion, CS contributed with intraoperative images, SS was involved in providing intraoperative details and editing the report and RJ provided critical revision of manuscript, echocardiographic images and final approval.

Competing interests None.

Patient consent None.

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Learning points

- ▶ Aortic conduit infection and pseudoaneurysm formation are uncommon scenarios with a high mortality rate, if left unrecognised. Prompt recognition is of paramount importance.
- ▶ Radical debridement, valve replacement and long-term intravenous antibiotics are recommended treatment options.
- ▶ Transoesophageal echocardiogram is an excellent imaging modality, when combined with other modalities, provide invaluable information in diagnosing and planning surgery in complicated scenarios.
- ▶ Infectious source identification and control are key aspects in managing septic patients with no clear aetiology.

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