



## CASE REPORT

# An unusual case report of prosthetic valve endocarditis complicated with a huge ascending aortic mycotic Pseudo aneurysm after aortic valve replacement

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## ABSTRACT

Pseudoaneurysm of the ascending aorta following cardiac surgery is a very rare entity and life-threatening entity due to the risk of rupture. This is a unique case of a 38-year-old male patient who presented with mycotic aneurysm of ascending aorta and aortic prosthesis endocarditis following aortic valve replacement 05 weeks earlier. The diagnosis was confirmed with the aid of transthoracic echocardiography and chest CT scan. He underwent reoperation under femoral-right atrial cardiopulmonary bypass and moderate hypothermia with no aortic clamping. The aortic prosthesis was replaced, and the mycotic aneurysm of the ascending aorta was excised and replaced by a Dacron tube. The patient was discharged after an uneventful postoperative sui. The aim of this work is to report a case of infectious pseudoaneurysm at the site of aortic cannulation secondary to endocarditis on aortic prosthesis successfully surgically repaired.

**Keywords:** Prosthetic valve endocarditis, ascending aorta pseudoaneurysm, redo cardiac surgery .

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## 1. INTRODUCTION

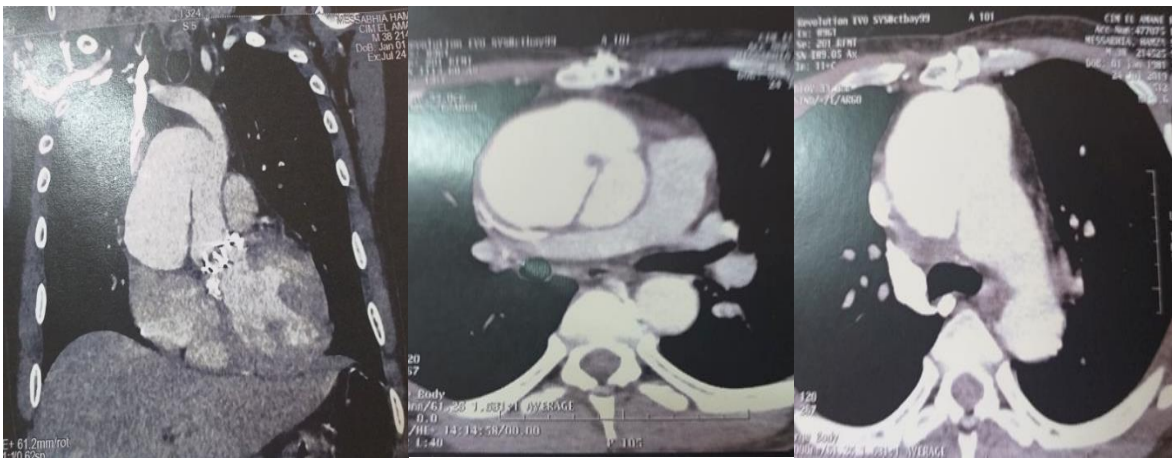
Mycotic aneurysm of the ascending aorta is a rare but serious complication following cardiac surgery, with an incidence of approximately 0.5% (1). Predisposing factors include aortic cannulation site dissection and infective endocarditis (1,2). Several cases have been reported as secondary infections resulting from bacteremia (3). Reoperations for aortic aneurysms are associated with significantly higher morbidity and mortality (4–7). Mycotic aneurysms may develop at sites of prior aortotomy or cannulation, accounting for approximately 13% of such cases (6,7). Although reoperative surgical management is technically challenging in this context, it remains essential to prevent aneurysmal rupture, which carries a high risk of mortality.

Herein, we report the case of a patient with prosthetic aortic valve endocarditis following surgical aortic valve replacement, complicated by a mycotic aneurysm of the ascending aorta. The patient underwent successful redo surgery, including aortic valve replacement and simultaneous ascending aortic replacement. Cardiopulmonary bypass was instituted, with moderate hypothermia and circulatory arrest, combined with antegrade selective cerebral perfusion according to the Kazui technique.

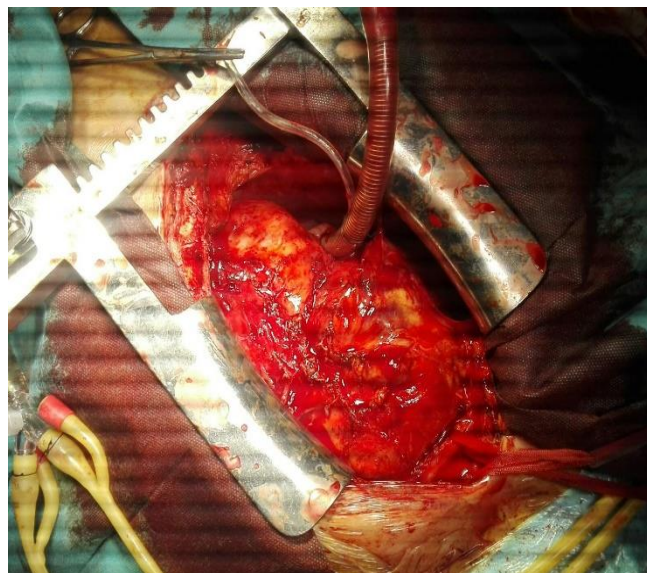
## 2. CASE REPORT

We report the case of a 38-year-old man who had undergone aortic prosthesis replacement for bicuspid aortic valve with severe aortic valve stenosis using a number 23 Saint Jude's Medical mechanical prosthesis aortic valve. He was readmitted 5 weeks later to our hospital with a very high-grade fever (40°C) and dyspnea grade III with no chest pain of 5 days duration. On admission, a physical exam revealed a mechanical valve click. A chest X-ray showed a cardiothoracic index at 0,58. The patient had a normal ECG and as well as cardiac enzymes.

Transthoracic echocardiography revealed a severe peri-prosthetic aortic regurgitation and a huge saccular false aneurysm in the anterior portion of the ascending aorta measuring 80 mm in its larger axis. A suspicion of ascending aortic pseudoaneurysm was confirmed with an urgent contrast chest CT scan. This showed a large saccular pseudoaneurysm at the base of the ascending aorta with a neck diameter of 77 mm situated approximately 38 mm above the aortic annulus of the ascending aorta above with aortic prosthesis valve leak without any other pathological findings: dissection or rupture (figure 1). Blood cultures revealed the presence of coagulase-negative *Staphylococcus* germ.



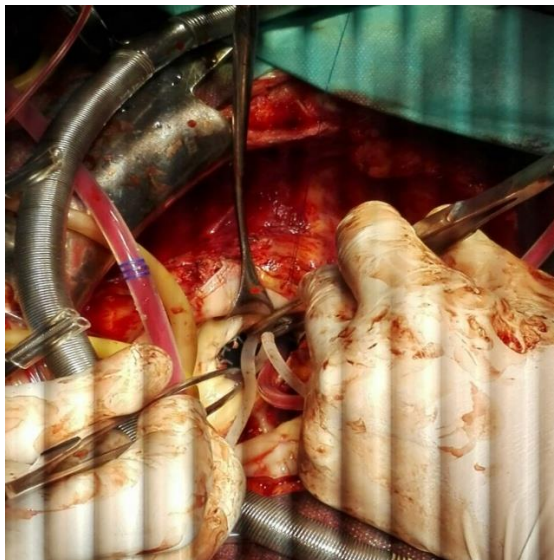
**Figure 1.** Chest CT scan showing pseudoaneurysm of ascending aorta.



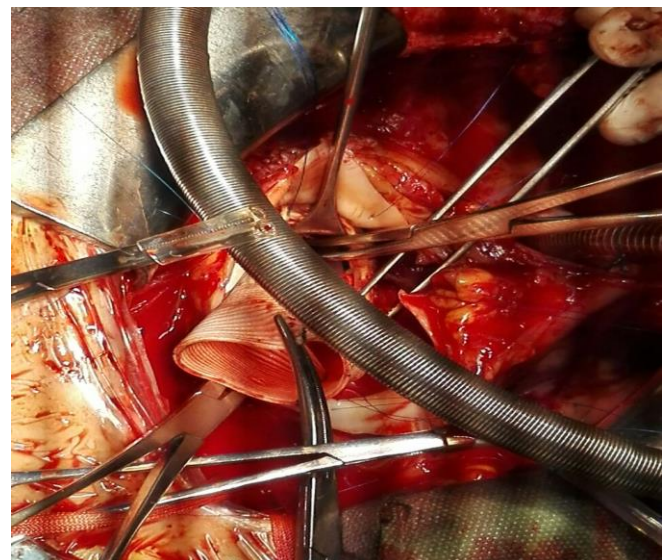
**Figure 2.** Operative view of ascending aorta pseudoaneurysm after mediastinal dissection.



**Figure 3.** Cardiopulmonary bypass was installed with moderate hypothermia (24 °C) and no aortic clamping.



**Figure 4.** Operative view of opening of the ascending aorta pseudoaneurysm and cardioplegia.



**Figure 5.** Operative view after aortic valve replacement and proximal aortic anastomosis

At emergency surgery and after initial preparation by antibiotic therapy based on vancomycin 2 grams per day + rifampicin 1200 mg per day and gentamicin 160 mg per day for two weeks, a sternotomy was then performed after femoral cannulation (figure 02). Cardiopulmonary bypass was established between the femoral artery and right atrium and was installed with moderate hypothermia (24 °C) and no aortic clamping (figure 3) selective perfusion of the brachiocephalic arterial trunk and left common carotid artery using the Kazui's technique during the creation of the distal anastomosis. The intraoperative exploration showed a huge saccular pseudoaneurysm of the ascending aorta at the aortic cannulation site (figure 2) with disinsertion of the mechanical prosthesis over 2/3 of the circumference. The ascending aorta pseudoaneurysm was directly approached (figure 4). The valve prosthesis was almost completely dehiscent from the annulus, with extensive vegetation. The outer wall of the false aneurysm was formed from fibrous tissue and laminated thrombus, and there was a small defect in the aortic cannulation site. The gesture consisted of first creating the distal anastomosis in the open without aortic clamping with selective cerebral perfusion according to the Kasui's technique, then replacing the aortic valve with a mechanical prosthesis using a number 23 Saint Jude's Medical mechanical prosthetic and creating the proximal anastomosis and restoration of aortic continuity by a Dacron tube while the patient is warming up after restarting cardiopulmonary bypass (figure 5). The chest was closed after inserting mediastinal and pleural drains. Duration of Cardiopulmonary bypass time was



200 min and duration total circulatory arrest of 20 minutes. The patient remained hemodynamically stable on minimal inotropic support and was extubated after 12 later with no obvious neurologic sequelae.

Our patient had a good clinical recovery without major complications. He was discharged from the intensive care unit 3 days after the operation and from the hospital 12 days (due to the necessity of monitoring atrial tachycardia) after the operation. At the 2-month follow-up, the dyspnea had improved, and 6 months after the operation, computed tomography angiography showed a good surgical result.

### 3. DISCUSSION

The presentation of aortic pseudoaneurysm after aortic valve replacement is often silent and requires specific imaging studies. Most pseudoaneurysms of the ascending aorta are asymptomatic, as is the case in our case currently, unless they compress important structures, such as the coronary arteries, pulmonary arteries, or the superior vena cava, causing acute clinical manifestations (02). A chest computed tomography (CT) scan is the examination of choice and is recommended every six months for the first year following aortic root surgery, and then annually. The cause of the pseudoaneurysm appeared to be perioperatively infection and results from complications of cardiac surgery, in which the ascending aorta is cannulated or aortotomy (02). In our case series of more than 5000 patients with cardiopulmonary bypass, this was the first with this complication (0.0002%). Most ascending aorta pseudoaneurysms occur after surgery on the aortic valve, and coronary revascularizations, usually at the site of the proximal anastomoses of the grafts, aortotomies, or in the cannulation sites. Despite the evidence of some cases of ascending aorta pseudoaneurysm occurring because of infection or in aortas with weak points (Marfan's syndrome), a great percentage, result from mechanical rupture of aortic sutures. Surgical treatment is mandatory (03).

Non-surgical approach is recommended for the treatment of aortic pseudoaneurysm post cardiac surgery (04). The risk of rupture of a pseudoaneurysm should be taken into consideration as an indication for emergency surgery, especially in the case of huge pseudoaneurysm. From the surgical point of view, the treatment of ascending aorta pseudoaneurysms remains a challenge. In our patient, cardiopulmonary bypass (02) was started with moderate hypothermia. Hypothermia was required for the drainage of a large amount of blood to the cardiopulmonary bypass and arrest of the bypass. These maneuvers were required because of the location of the sacular formation and its neck in the ascending aorta, which was depicted in both the transthoracic echocardiography and the chest CT scan. Contrary to findings in some reports (05), echocardiography was extremely useful in our case. Chest CT scan is a more accurate imaging technique and provides all the details for surgical planning. A successful complete repair of ascending aorta pseudoaneurysms, avoiding the risk of fatal intraoperative bleeding, is due to an objective and accurate planning of surgical tactics and techniques, which should be based on a careful assessment of the results of examinations, such as transthoracic echocardiography and chest CT scans (06). Unintentional rupture during the redo sternotomy or mediastinal dissection due to the reduction in pressure around the formation when opening and sliding the sternum are causes of surgical catastrophe. Mortality reported by authors ranges from 29% to 46% (07) and most of the time it is a consequence of a fatal hemorrhage due to rupture of the pseudoaneurysm during surgical maneuvers for its repair.

### 4. CONCLUSION

Ascending aortic pseudoaneurysms are very rare complications that can occur after cardiac surgery. Surgery should be offered even to asymptomatic patients due to the unpredictable course of the disease. Surgery for ascending aortic pseudoaneurysms remains a challenge for surgeons. Infectious aortic pseudoaneurysms can develop silently. Radical aortic replacement should be preferred to simple repair, as recurrence is possible.

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**Competing interests:** The authors declare that they have no competing interest.

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## REFERENCES

1. Darmoch F, Moussa Pacha H, Pagadala P, Alraies MC. Pseudoaneurysm of the ascending thoracic aorta years after aortic valve replacement. *Cardiovasc Revasc Med*. 2018;19(2):196–198. doi: 10.1016/j.carrev.2017.07.012
2. De Almeida RM, Lima JD Jr, Kahrbek T, Tanomaru M. Surgical repair of a pseudoaneurysm of the ascending aorta after aortic valve replacement. *Arq Bras Cardiol*. 2001;76(4):326–328. doi: 10.1590/S0066-782X2001000400007
3. Parihar B, Choudhary LS, Madhu AP, Alpha MK, Thankachen R, Shukla V. Pseudoaneurysm of ascending aorta after aortic valve replacement. *Ann Thorac Surg*. 2005;79(2):705–707. doi: 10.1016/j.athoracsur.2003.09.125
4. Harky A, Khosravi A, Colledge J, Kolvekar S. Interventional repair of pseudoaneurysm of ascending aorta following prosthetic aortic valve replacement. *BMJ Case Rep*. 2017;2017:bcr2017219196. doi: 10.1136/bcr-2017-219196
5. Milas BL, Savino JS. Pseudoaneurysm of the ascending aorta after aortic valve replacement. *J Am Soc Echocardiogr*. 1998;11(3):303–306. doi: 10.1016/S0894-7317(98)70094-X
6. Olearchyk AS. Repair of a pseudoaneurysm of the ascending aorta after aortic valve replacement. *J Card Surg*. 1998;13(2):143–145. doi: 10.1111/j.1540-8191.1998.tb01251.x
7. Razzouk A, Gundry S, Wang N, Heyner R, Sciolaro C, Van Arsdell G, Bansal R, Vyhmeister E, Bailey L. Pseudoaneurysms of the aorta after cardiac surgery or chest trauma. *Am Surg*. 1993;59(12):818–823.