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Case Report

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First Tirone David's Intervention in Mali: About a Case at the Festoc Centre in Bamako

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ABSTRACT

Surgery to replace the aortic root with a valved tube, whether mechanical or biological, remains the most widely used technique for the correction of diseases affecting this aortic segment [1]. Although mechanical valves are usually used, they expose patients to the risk of thromboembolic complications associated with anticoagulation. We report on the first Tirone David procedure performed at the Festoc center in Bamako. A 60-year-old patient was referred to us for dilatation of the ascending aorta in the context of stage 3 dyspnea. Physical examination revealed a Musset's sign and a diastolic murmur of intensity 3/6 at the aortic focus. Ultrasound revealed severe aortic insufficiency associated with dilation of the ascending aorta, with the aortic annulus measured at 23.5 mm, the sinus at 50 mm and the sino-tubular junction at 61 mm. Thoracic angioscan showed a saccular aneurysm of the initial segment of the ascending aorta. Coronary angiography was normal. Surgery was performed to replace the ascending aorta, preserving the aortic valve and re-implanting the coronary arteries. The postoperative course was marked by the onset of a haemorrhagic syndrome with pre-buffering, which prompted repeat surgery 24 hours after the first operation. The outcome was favorable, with the drains removed 48 hours later.

Keywords: Tirone, David, Festoc Center, Mali

Introduction

Surgery on the ascending aorta is nowadays better understood and described. It mainly comprises aortic dissections, a life-threatening emergency requiring multidisciplinary management, and ascending aortic aneurysms. Aneurysms of the ascending aorta are a significant cause of death, and are usually managed by surgical intervention.

Surgery to replace the aortic root with a valved tube, whether mechanical or biological, remains the most widely used technique for the correction of diseases affecting this aortic segment [1]. Although mechanical valves are usually used, they expose patients to the risk of thromboembolic complications associated with anticoagulation. We report on the first Tirone David operation performed at the Festoc center in Bamako.

Observation

This 60-year-old patient, not known to be hypertensive or diabetic, was referred to us for dilatation of the ascending aorta in the context of NYHA stage 3 dyspnea. Physical examination revealed a Musset's sign and a diastolic murmur of intensity 3/6 at the aortic focus.

The chest X-ray showed cardiomegaly with a cardiothoracic index of 61%.

Cardiac ultrasound (Figure 1-2) revealed severe aortic insufficiency associated with dilation of the ascending aorta, with the aortic annulus measured at 23.5 mmm, the sinus at **50 mm and** the sino-tubular junction at 61 mm. The ejection fraction was 53%. There was also functional grade 2 mitral insufficiency. Left ventricular end-diastolic diameter was 71 mm in diastole.

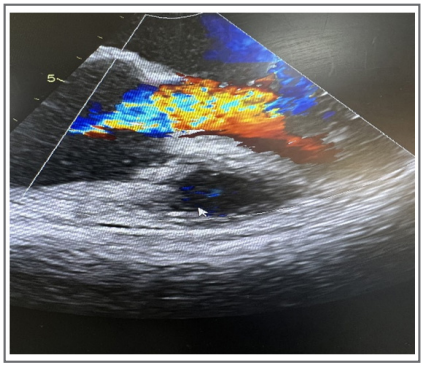

Figure 1: (Doppler Incidence parasternale grand axe montrant un jet diastolique en mosaique au Doppler couleur): **Fuite Aortique Massive**

Thoracic angioscan (Figure 3-4) showed a saccular aneurysm of the initial segment of the ascending aorta measuring 74*61 mm with no parietal abnormalities or associated intimal flap.

Coronary angiography was normal. Biological work-up was also unremarkable.

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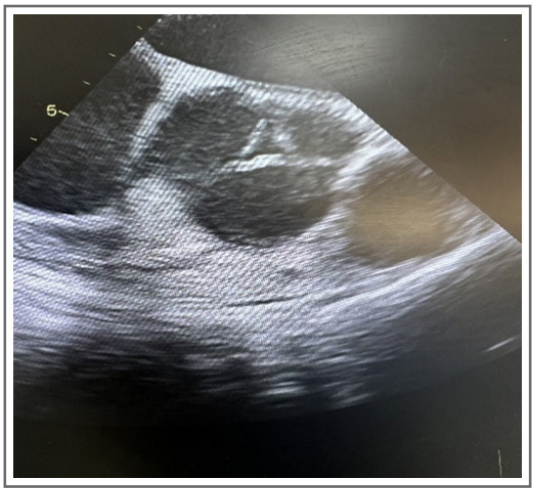

Figure 2: (ETT bidimensionnelle. Coupe parasternale gauche petit axe de la base du cœur en diastole) **dilatation anneau avec mauvaise coaptation des sigmoides aortiques**

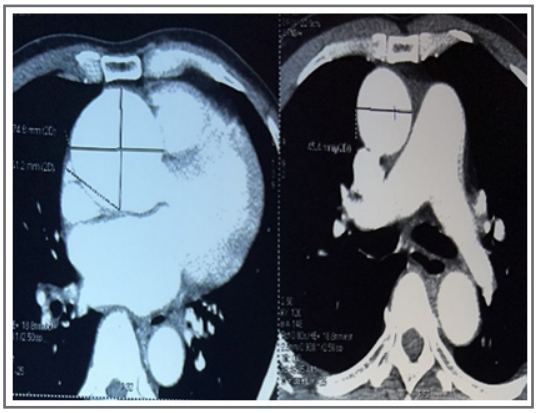

Figure 3: (Angiosanner Coupe Transversale) Anevrisme Aorte Ascendante

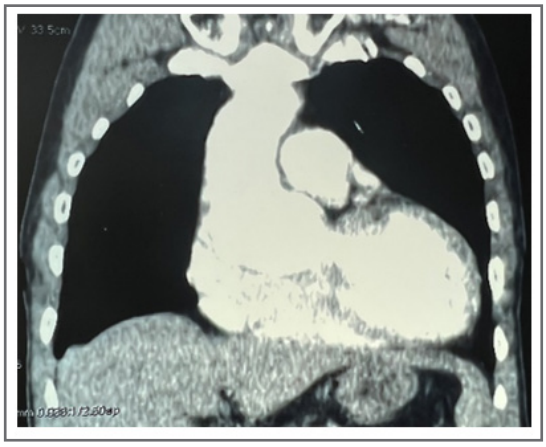

Figure 4: (Angiosanner Coupe Frontale): Dilatation Aorte ascendante

The patient was initially treated with beta-blockers.

The operation involved replacement of the ascending aorta with preservation of the aortic valve, which was dissected and then resuspended inside a straight Dacron prosthetic tube. The prosthesis was fixed to the aortic annulus using large U-shaped stitches on pledget. The coronary arteries were then re-implanted into the tube using two 5/0 prolene hemi-stitches. The extracorporeal circulation time was min and the clamping time minutes. A haemorrhagic syndrome with pre-buffering occurred after the operation, prompting repeat surgery 24 hours after the initial operation. Surgical exploration did not reveal any active bleeding. A decaillotage was therefore performed. The outcome was favourable and the drains were removed 48 hours later.

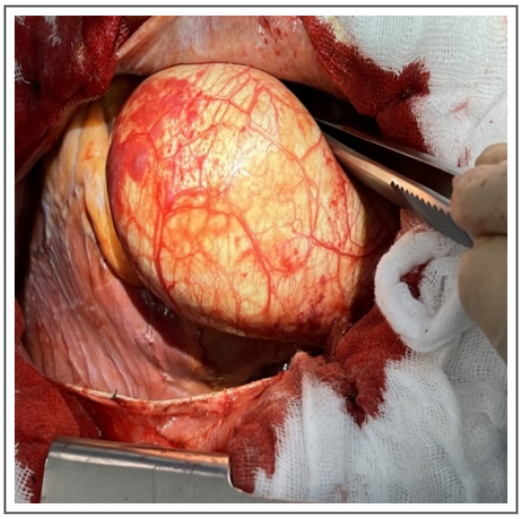

Figure 5: (Vue Supérieure Per Opératoire): Dilatation Aorte Ascendante

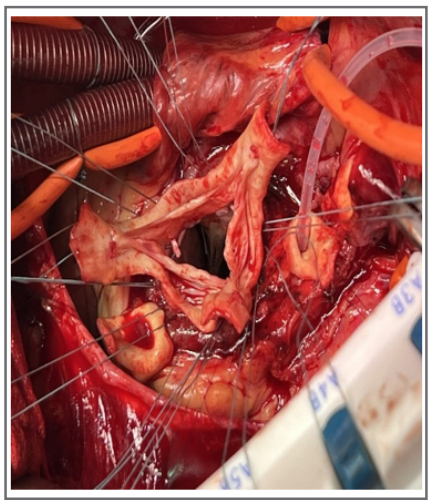

Figure 6: (Vue Supérieure Per Opératoire): Dissection et Isolement Racine et Coronaires

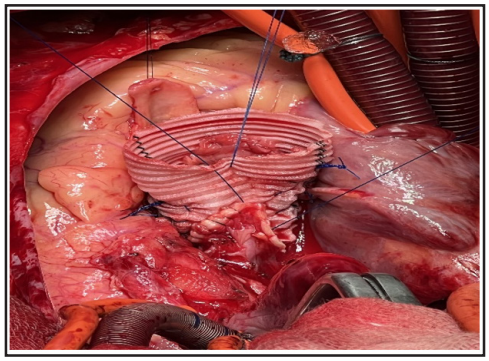

Figure 7: (Vue Latérale Per Opératoire): Réimplantation Coronaires sur le tube en Dacron

Discussion

Annuloectasiante disease is a group of disorders with similar phenotypic expression, combining aortic root aneurysm and aortic annulus dilatation. Its incidence is estimated at 4.5 cases

per 100,000 [2-4]. It is the 13th leading cause of death in Western countries [2-3].

Our patient was 60 years old and male. This is consistent with the series by Tirone who also noted a male predominance and a mean age of 64 plus or minus 11 years [9]. Aneurysms of the ascending aorta are divided into two distinct entities according to etiology and surgical management: aortic aneurysms are degenerative aneurysms. The most common histological lesion is media-cystic necrosis. It combines loss of smooth muscle cells in the media, fragmentation and reduction of elastic fibers, and accumulation of an amorphous basophilic substance giving the pseudocystic appearance. Aortic root aneurysms (annulo-ectasitic aortic diseases) may be idiopathic or associated with connective tissue diseases such as Marfan syndrome, Ehler-Danlos syndrome or valvular bicuspidia [2-4].

20% of patients with Marfan syndrome will undergo surgery for aortic root aneurysms [4,5]. Aortic valve bicuspidism is associated with aortic dissection 10 times more than the normal population [2-6].

Aneurysms of the ascending aorta grow at an average rate of 1-4 mm per year. This rate is higher in the case of bicuspid valves or Marfan's syndrome.

The incidence of aneurysm dissection or rupture increases with aneurysm size [4-7]. Laplace's law indicates that as aneurysm diameter increases, so does wall tension, leading to aortic dilatation.

The risk of aortic aneurysms is aortic dissection or rupture, especially when their diameter exceeds 50 mm.

The operative strategy is to intervene before the complications of aneurysmal dilatation appear. While the size of the aneurysm is the main factor in determining the indication for surgery, other factors such as the underlying etiology, the patient's age, associated aortic insufficiency, the rate of growth of the aneurysm and the bi- or tricuspid nature of the aortic valve must also be taken into account.

Conclusion

The Tirone David procedure is a feasible technique in our developing country context, and can provide satisfactory results both for aortic ectasia and for AI control. Given the high cost of biological valves, it spares patients from lifelong anticoagulation. Indications depend more on the state of the sigmoid than on the severity of regurgitation. It is particularly feasible in ascending aortic aneurysms without valve damage.

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