

The use of teflon strips in acute aortic dissection: surgeon be aware

Abstract

Background: We report an unusual but highly morbid complication of this method, where wide strips of Teflon placed inside the aorta caused, by turning upwards, a severe supra-valvular aortic obstruction.

Methods: A 59 year old patient underwent repair of a Type A acute aortic dissection. Postoperatively he was extubated and re-intubated a few hours later due to pulmonary congestion, high filling pressures, fever and laboratory signs of hemolysis. Transthoracic echocardiography revealed a severe supra-valvular aortic stenosis.

Result: The patient was taken to the operating room. After division of the graft just above the anastomosis, a severe obstruction, caused by the inner strip of Teflon was found and removed. The patient was discharged home 12 days later.

Conclusion: We suggest that a thin, narrow and stitched as proximal as possible inner strip of Teflon is the recommended way in order to avoid this potentially morbid complication.

Keywords: acute aortic dissection, teflon strips, supra-valvular aortic obstruction

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Introduction

Acute aortic dissection is the most common catastrophe of the aorta and its emergency repair is a very challenging procedure. The dissected part of the aorta is fragile, therefore several techniques have been used in order to ensure a stable anastomosis. The most common practice is to use felt strips inside and outside of the aortic wall for reinforcement. We report a rare and potentially hazardous complication of this technique.

Case presentation

A 59year old, obese, hypertensive, male was admitted for emergent surgical repair of an acute type A, aortic dissection. He was taken to the operating room where a straight tube graft (size 28mm in diameter) was used to replace the dissected part of the ascending aorta from the sinotubular junction to the underside of the arch (hemi-arch replacement) with moderate hypothermia and antegrade cerebral perfusion. The patient separated from cardiopulmonary bypass with difficulty, moderate doses of inotropes and high filling pressures which normalized few hours postoperatively. He was extubated 36hours later, only to be re-intubated few hours later in the midst of pulmonary congestion, high filling pressures, fever and laboratory signs of hemolysis. Transthoracic echocardiography revealed a severe supra-valvular aortic stenosis with an estimated systolic gradient of 110mmHg and peak velocity of 4.8m/s (Figure 1).

The patient was taken back to the operating room where after division of the graft above the proximal anastomosis, a severe obstruction, caused by the inner strip of Teflon was found (Figure 2). The inner strip was removed, autologous pericardium was used instead and the anastomosis was carried out without any difficulty. The patient had an uneventful recovery and was discharged home 12days later. Follow up echocardiogram was satisfactory.

Discussion

This case demonstrates two interesting and inter-related complications caused by the inappropriate use of Teflon strips when reconstructing the acutely dissected aortic wall. First, the inversion

of a wide, thick and not sutured as proximally as possible strip of Teflon can cause a severe obstruction in the reconstructed aortic lumen, especially if a rather small diameter graft is used. Second, the hemolysis and the associated inflammatory reaction noted were caused by the severe supra-valvular stenosis. The latter has been reported by others^{1,2} and is a part of a clinical picture which should almost immediately alert the surgeon for a possible need of a prompt re-operation and correction of the problem. Alternatives for aortic wall reconstruction have been described³ and used by some, but since the majority of the surgeons use the “old reliable” Teflon strip, inside-outside technique, be aware that a thin, narrow and stitched as proximal as possible inner strip of Teflon is the recommended way in order to avoid this potentially morbid complication.



Figure 1 Transthoracic Echocardiogram: Supra-valvular stenosis (arrow).

Conclusion

A very careful aortic wall repair when dealing with acute aortic dissection is a must. The use of Teflon strips especially the ones used in the inner layer of the aortic wall should consist of thin ones and

sutured in such a way preventing the creation of a sizable free lower margin which has the potential of turning upwards by the cardiac ejection causing a supra-valvular stenosis, which can be very critical especially in the presence of a small diameter aortic graft.

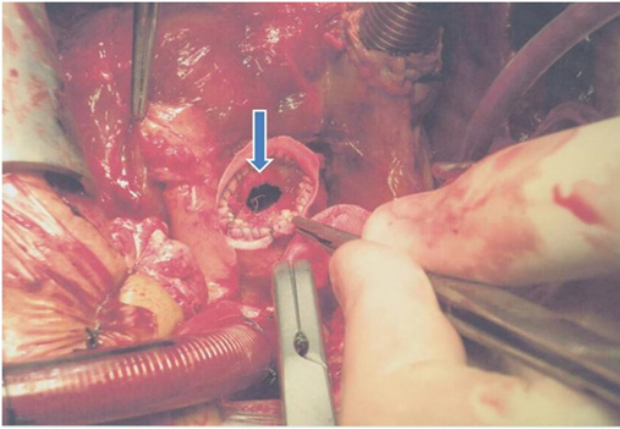


Figure 2 Operative findings: Severe supra-valvular stenosis caused from the inner-side Teflon strip (arrow).

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Conflicts of interest

Author declares there are no conflicts of interest.

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