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EDITORIAL COMMENT

Re: Cryopreserved human allografts (homografts) for the management of graft infections in the ascending aortic position extending to the arch

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Infection of a vascular prosthesis or endovascular stent graft is probably the most serious complication that may occur after replacement of the aortic root and aortic arch and dramatically affects the patient's outcome. Surgical treatment is always required as long as the patient is operable, but early and mid-term morbidities remain significant even following a technically successful repair. Complete resection of the infected foreign material with debridement of the surrounding tissue has been increasingly accepted as the best option and most probably gives the better results. Orthotopic reconstruction is the

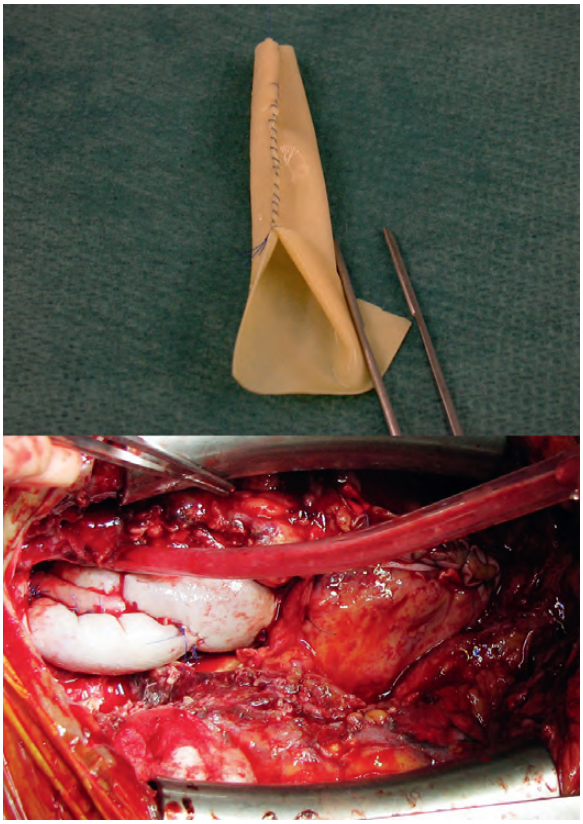

Figure 1: Reconstruction of the ascending aorta, the aortic arch as well as the innominate artery and the left common carotid artery in a severe recurrent aortic infection, using xenopericardial tube grafts. (Synovis Surgical Innovations, St. Paul, MN, USA; Supple PeriGuard 8 cm × 14 cm). Both illustrations copyright by Elsevier [2, 4].

best strategy for all thoracic and thoraco-abdominal pathologies and the use of biomaterial—homografts or self-made vascular tubes from xenopericardial tissue—is the most accepted technique in the literature. In some exceptional situations, endovascular stent graft can be performed as bridging to a more complete treatment if the general condition of the patient has to be stabilized, but introduction of more foreign material is usually not a wise decision in a complex aortic graft infection.

The series reported in the present issue of European Journal of Cardiothoracic Surgery summarizes the experience of the Hannover Medical School with a limited number of patients who presented with infected aortic root and ascending and aortic arch graft prostheses following different procedures, but all involving at least the proximal aortic arch [1]. The strategy was uniform in all patients, and surgery was complicated by substantial early mortality (24%) and early and mid-term morbidity: in 1 patient, very early degeneration of the homograft valve occurred after 16 months only. In this critical context, it is questionable if re-replacement with another homograft was the best possible treatment. At least if the patient was not infected at 3rd operation, a more durable solution might have been discussed.

In cases where the full aortic arch had to be replaced, the authors proceeded with a proximal to distal repair, starting the procedure at the aortic root and performing the most distal anastomosis (which is the most difficult one) at the end. This might have required a prolonged perfusion to rewarm the patient and made the anastomosis technically more demanding; in fact, the authors report some uncontrollable bleeding that required additional stent coverage of the anastomosis in the next few days. Introducing prosthetic material (the endovascular stent graft) in an infectious setting is not optimal.

Personally, we are not sure that a proceeding like this would have any advantages: the authors claim that this helped to save an additional suture line that might have had the potential of bleeding or later degeneration. Performing the distal anastomosis first allows a better visualization of the operative site and has the additional advantage that rewarming can be started immediately thereafter: this helps to shorten perfusion times considerably and may have a positive effect on haemostasis.

In addition to graft and/or endovascular graft excision, we agree that debridement of all inflammatory tissues and appropriate drainage of the prosthetic bed are important principles to prevent persistence of the infection process. In some instances, vacuum-assisted wound drainage and delayed sternal closure may be an interesting option to sterilize the operative site.

Recently, we summarized our experience with vascular graft and endograft infections in the thoracic and thoraco-abdominal aortic location over the last 5-year period (2006–10) that were treated with a self-constructed xenopericardial vascular tube graft [2]. Fifteen patients with graft infection after prior thoracic or abdominal aortic replacement were treated with complete removal of the infected alloplastic material, extensive local debridement and orthotopic vascular reconstruction by one or more neo-aortic segments constructed with a bovine pericardial patch. Perioperative mortality was similar to that described in the present series 27% ($n = 4$). All deaths were due to multiorgan failure as sequelae of the underlying infective process. The mean follow-up is now 36 months and CT scans has shown regular regional findings at the operative site in all patients. Freedom from reinfection was 100%; under continued antibiotic treatment for a mean of 6 months. Following hospital discharge, freedom from reoperation was also 100%. Some additional cases were recently published in the Multimedia Manual of Cardiothoracic Surgery to add some practical issues when dealing with such a pathology [3]. The most interesting points of self-constructed xenopericardial vascular grafts are (i) that the material is always available (in contrary to homografts), and (ii) that the size and the length of the aortic segment and/or supraaortic branches to be reconstructed can be chosen accordingly, from 8 mm to approximately 25 mm. The picture shows a case where not only the ascending aorta and the arch had to be replaced, but also the innominate artery and the left common carotid artery [4] (Fig. 1).

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