The periprosthetic sac–innominate vein shunt: An effective way to control bleeding after aortic root operations

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Bleeding is a common complication of aortic root surgery. It may be prevented by accurate anastomotic technique and by the use of appropriate prosthetic material. When inclusion techniques are selected, an effective way to control bleeding is to wrap the composite graft with the aortic wall and to create a fistula between the periprosthetic space and the tip of the right appendage, as described by Cabrol and associates.¹ This fistula directs blood leaking from the reconstruction to the low-impedance right atrium, decompressing the periprosthetic space during the early postoperative period. Usually, because of the progressive reduction of flow through it, this communication closes spontaneously within a few days.

Herein we describe a modification of this technique that has been successfully performed at our institution in two patients who had a large pseudoaneurysm of the ascending aorta after aortic root replacement with a composite graft (Bentall operation²). In one patient echocardiography showed the complete dehiscence of the proximal suture line resulting in a free-floating composite graft inside the pseudoaneurysmal sac. In the other patient angiography showed a pseudoaneurysmal dilatation of the proximal reconstructed ascending aorta around the right coronary ostium.

Both patients were advised to have a subsequent reoperation. We instituted cardiopulmonary bypass by peripheral cannulation, reduced the core temperature to 20°C, reopened the sternum, and minimally dissected the adhesions surrounding the distal ascending aorta to properly apply a clamp. Then we crossclamped the aorta and opened the periaortic sac anteriorly to perform the intraaortic repair (the posterior and lateral surfaces of the pseudoaneurysmal aorta were left undisturbed to minimize postoperative bleeding). In the first case, the repair consisted in the replacement of the prosthetic valve and part of the ascending aorta. In the second, we merely closed the leak of the right coronary anastomosis. In both cases, we closed the pseudoaneurysmal sac over the reconstruction to control bleeding but some tension rapidly developed in it. We then decided to construct a "Cabrol fistula." Unfortunately, the conventional auricular-periprosthetic sac connection was unfeasible because

Fig. 1. Final appearance after the construction of the shunt between the periprosthetic space and innominate vein.

of the strong adhesions surrounding the right atrium. Moreover, in the first patient, the right appendage had already been used during the first operation. Then we connected the periprosthetic space to the innominate vein by the interposition of a 6 mm tubular expanded polytetrafluoroethylene graft (Fig. 1). The bleeding was satisfactorily controlled and the patients were weaned from bypass. After an uneventful postoperative period, both patients were discharged and an echocardiographic test showed no residual flow through the expanded polytetrafluoroethylene tube, suggesting a complete occlusion of the fistula.

We propose this technical variation of the Cabrol fistula in all cases of uncontrollable bleeding after aortic root surgery when an inclusion technique has been adopted and the conventional shunt is not feasible. We think this shunt is likely to behave like the conventional one, because it effectively controls bleeding in the early postoperative hours while reducing tension over the reconstruction.

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