A refined flanged Bentall technique using Valsalva tube graft: does it really wrap all of the proximal anastomosis line?

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We read with great interest the article by Koshiyama et al. [1] regarding reinforcement of the proximal anastomosis during composite graft replacement of the aortic root, using one of the modifications of the Bentall and DeBono technique [2]. Modified Bentall procedures have many beneficial effects such as prevention of excessive bleeding and development of false aneurysm, avoidance of the kinking of coronary arteries, as well as reduced tension on ‘button’ coronary anastomoses. However, a major weakness in the composite graft replacement of the ascending aorta is haemostasis at the proximal suture line.

A refined, flanged Bentall technique using Valsalva tube graft reported by Koshiyama et al. [1] is similar to the flanged technique reported by Yakut [3], previously. The Valsalva sinus portion of the graft is resected, leaving ~10 mm in length as the flange and is everted outwards using Koshiyama’s technique [1], whether a segment (several millimetres in a length) of the proximal end of the flange is everted outwards to form the flange of the graft using Yakut’s technique [3]. The polypropylene running suture (3-0 or 4-0) is used to anastomose the cuff of the prosthetic valve to the bottom border of the chosen conduit. Subsequently, the flange is returned to its original position. In both techniques, the homemade composite conduit is seated on the aortic annulus, using continuous 3-0 polypropylene suture [3], or evertting pledged 2-0 polyester sutures [1], which are passed through the flange below the sewing cuff of the prosthetic valve.

Koshiyama et al. [1] stated that using 3-0 polypropylene suture to sew the flange and the margin of the residual proximal aortic wall enabled them to wrap tightly all of the proximal anastomosis line. However, as it can be easily seen on figure 1D of their manuscript [1], only the pledgets of the tied evertting pledged 2-0 polyester sutures are covered, while the knots of these sutures are still ‘naked’, outside, on the flange, between the flange and prosthestic tube, thus leaving pinholes of the evertting mattress sutures as the potential sites of bleeding.

On the contrary, Chen et al. [4] modified the composite graft by adding a short skirt (which was made of a part of the distal end of the prosthestic tube) to a standard composite graft root. After the proximal end of the modified composite conduit was secured in the aortic annulus, the short skirt was sewn to the remaining native proximal aortic wall to really wrap all of the proximal anastomosis line.

However, we have to point out that Copeland et al. [5] reported an elegant, easily reproducible, and efficient technique to reduce bleeding from the proximal anastomosis after the Bentall procedure. After the composite conduit is seated into the aortic annulus and the sutures are tied, an additional 3-0 polypropylene suture is used to sew the cut edge of the proximal aortic wall and the prosthestic sewing cuff or the prosthestic tube, thus reinforcing and really completely covering all of the proximal anastomosis line.

REFERENCES

Reply to Nezic et al.

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We appreciate the comments by Nezic et al. [1] regarding our article [2]. Nezic et al. pointed out the pinholes of the everting mattress sutures on the flange as the potential sites of bleeding. However, a recent Gelatin-sealed woven Dacron graft was considered because the problem was rare. In addition, we injected fibrin glue around the proximal suture line after sewing the Valsalva sinus skirt to the residual aortic wall to prevent bleeding of the pinholes. Actually, no patient required re-exploration for bleeding. Therefore, we think that the flange side pinholes of everting mattress sutures are not the potential sites of bleeding.

As stated in their letter, sewing the residual aortic wall to the prosthetic sewing cuff or the prosthetic tube is a simple technique [3]. However, their technique is difficult to wrap tightly all of the proximal anastomosis line in case with the thin and fragile residual aortic wall or the inadequate length to contact the cuff after resection of coronary ostia. To prevent this problem, Chen et al. [4] made the corresponding portions of the flange long enough in order to sew between the residual aortic wall and the flange. We used the Valsalva sinus skirt as the flange, which is soft and stretchable. This characteristic is useful to sew tightly the skirt to the residual aortic wall even in the cases.

REFERENCES