knowledge, an early stenotic failure due to postoperative swelling of a stentless aortic valve prosthesis has not yet been described.

As exploration of the explanted prosthesis by the manufacturer did not show any primary quality defect of the prosthesis, the reason for the early stenotic failure, after adequate initial function, as documented by intraoperative TEE, remains unclear. It is conceivable that the swelling was caused by fluid or blood accumulating under the layer of porcine pericardium reinforcing the annulus in the wall of the prosthesis. Although not conclusively proven in the histological work-up of the explant, this has to be considered as a possible drawback of the RootElan prosthesis and its double-layered construction.

Early degeneration and technical malfunctioning of an intact biological prosthesis might also be explained by an unexpected and unknown primary tissue failure [5]. On the other hand, technical problems caused by suture lines cannot be ruled out completely, although intraoperative inspection did not reveal any impairment of the prosthesis caused by the suture lines. Finally, a possible idiosyncratic response to the device has to be considered.

4. Conclusions

In conclusion, our case underlines the importance of early and routine postoperative echocardiography in patients after aortic valve surgery, especially after implantation of the technically more demanding and more ‘vulnerable’ stentless valves. In order to avoid technical problems, that is, buckling of the ring caused by suture lines, it might be feasible to rotate the RootElan prosthesis with respect to the morphology of the native annulus prior to implantation.

References


eComment: Early stentless aortic prosthesis dysfunction due to interlayer hematoma formation

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We read with great interest the paper by Donndorf et al. [1] dedicated to early stentless valve dysfunction. Nowadays stentless valves are becoming more and more popular as substitutes in AVR as they tend to provide longer durability [2] and preferable hemodynamics [3].
The problem of biological prosthesis in young patients is well-known and is widely covered in numerous scientific publications. This drawback of bioprostheses, restricted their usage in patients younger than 65 years. These failures are caused by calcification and structural deterioration in the midterm period. In this context, the described case is of particular interest. In our opinion this early postoperative prosthesis failure is caused by liquid accumulation between prosthesis layers. At our center we have significant experience of stentless valve implantation. Initially we started to use ‘home-made’ xenografts reinforced with xenopericardium. In spite of ‘full root replacement’ technique application we faced such complications as hematoma formation between prosthesis layers without affecting the hemodynamic profile. Hematomas sometimes required small incisions in the outer layer of xenopericardium to evacuate the blood. After investigating this complication we stopped manufacturing such prostheses.

In conclusion, the solution to this problem is enclosing the bioprosthesis with a xenopericardial or synthetic fabric sheet, e.g. polyester.

References

