Ross procedure during childhood. The leaflets in the majority of them were not good because of the recurrent inflammatory disorder. You cannot preserve.

Dr Hraska: Okay. Is mechanical aortic valve replacement only, without root replacement, justifiable when the long-term future of the neoaortic root is unclear? Can you comment on that?

Dr Alsoufi: This is definitely a good question, and I am already trying to get echocardiograms in those patients who had the aortic valve replaced, and I want to see if the aortic root continues to be pathological.

I believe that the procedure is justifiable as it is a much simpler and safer procedure than the more complex redo aortic root replacement which is associated with high risk of bleeding or coronary problems.

What happens to the root is interesting. We have quite a long follow-up so far, and it seems that despite progressive root dilatation in our patient population, none of them has yet reached a point that requires aortic root replacement. They need continued follow-up, but our experience so far is a course that has a simplified approach. We have not needed to redo the root yet in any of these patients.


The population in their study is different from most reports on paediatric Ross operations from western countries, as it contains a much higher percentage of children who were operated on for rheumatic heart disease. This explains the relatively early reoperations: in the majority, replacement of the pulmonary autograft valve was done by a stented prosthesis and (re-)repair or replacement of the mitral valve.

The mortality of these reoperations was very low despite the fact that almost half of the reoperations were complex, with two to four simultaneous cardiac procedures. It has to be noted that reoperation for autograft dilatation was not necessary in any of their patients. All failing autograft valves could be replaced by stented prostheses that were placed inside the pulmonary autograft root, without the need to perform a root replacement. This also differs from other series and is probably explained by earlier reoperation of the autograft valve when root dilatation has not yet become significant. On the other hand, no repairs of the autograft valve are reported by the authors. This seems logical when considering the nature of rheumatic valve disease and the high chance of another reoperation when repairing the valve.

What can we learn from the experience of Alsoufi et al.? First of all, patient selection for the Ross operation is of paramount importance. Children with rheumatic heart disease are poor candidates for the Ross procedure. Especially when the aortic valve presents with annular dilatation and regurgitation and when the mitral valve is also damaged by rheumatic fever, one should refrain from doing a Ross operation. It was reported and histologically documented by Kumar et al. in 1999 and later in 2006 that the pulmonary autograft will frequently suffer from rheumatic degeneration once it is transposed to the aortic position. The reason for this is not entirely clear. Why does a pulmonary valve, that is often the only valve untouched by rheumatic fever, suffer from the rheumatic process once it is placed in the aortic position? [2, 3]. Concomitant rheumatic mitral valve disease should also be considered as a reason to avoid a Ross operation. Multiple valve involvement carries a higher risk of early reoperation and replacement of a mitral valve with subsequent anticoagulation abolishes one of the main purposes of the Ross technique.

A second lesson from this study is that it is again confirmed that aortic valve insufficiency increases the risk of pulmonary autograft failure and reoperation [1]. Recently, this was stressed by David et al. who found that aortic annular dilatation and valvular insufficiency do increase the risk of autograft failure even when annular reduction techniques were used during the Ross operation [4].

Finally, as was also reported by Stulak et al. [5] in 2010, reoperations after the Ross operation are often complex, with multiple concomitant procedures. The pulmonary autograft valve is usually lost at reoperation. Valve sparing root replacement and autograft valve repair have been reported, but the outcomes of these techniques in the longer term need to be awaited [6]. In experienced hands, reoperation after a Ross procedure can have a low mortality but there may be considerable morbidity. For all these reasons, careful patient selection is what a Ross operation should begin with.

Conflict of interest: none declared.

REFERENCES


