More data on the Ross procedure

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Central Message

Should the Ross procedure be performed in patients with aortic insufficiency caused by bicuspid aortic valve disease?

See Article page 134.

In this issue of the *Journal*, Sharifulin and colleagues¹ from Novosibirsk, Russian Federation, describe their experience with the Ross procedure in 792 consecutive patients operated on during a 17-year period. This is certainly the largest series ever published from a single institution. The patients' mean age was 46.5 ± 12.4 years (range, 18-67 years), and the technique of aortic root replacement with the pulmonary root was performed in all patients (in 20 patients, the autograft was sutured into a Dacron polyester fabric graft with sinuses before implantation in the aortic position). Unique in this experience is the fact that the right side of the heart was reconstructed with a xenograft valve in 588 cases (74.1%) and with a polytetrafluoroethylene conduit in 20 (2.5%); unfortunately, however, the mean follow-up was too short to determine the effect of this approach on the durability of the right-sided valve. There were 23 operative deaths (2.9%) and 22 late deaths during a mean follow-up of 6.5 ± 3.2 years, with 38 patients unavailable for follow-up. Twenty-four patients developed infective endocarditis of the pulmonary autograft. Of these, 11 required surgery. This incidence of endocarditis, particularly endocarditis of the pulmonary autograft, appears to be a bit higher than in series from Europe and North America.²⁻⁴

In my institution's experience with a much smaller series of 212 patients undergoing the Ross procedure but with a median follow-up of 18 years, only 7 patients developed endocarditis of the failing pulmonary homograft, for an incidence of 3.4% at 20 years, and not a single patient developed endocarditis of the pulmonary autograft.² In the study of Sharifulin and colleagues,¹ 25 patients developed moderate aortic insufficiency (AI), and 37 developed severe AI. This is also a higher incidence of pulmonary autograft dysfunction than in 3 recently published series of the Ross procedure.²⁻⁴ There is an encouraging finding in Figure 2 of the article, however, in which the graphic shows nonprogressive rates of moderate and severe AI during the first decade of follow-up, suggesting a technical problem during transference of the pulmonary root from the right to the left side of the heart. What this study establishes

is that the preoperative AI caused by bicuspid aortic valve (BAV) disease is associated with high rates of postoperative AI and reoperation on the pulmonary autograft. This phenotype of BAV was also found to be associated with dilatation of the aortic annulus, aortic root, and ascending aorta with time. Other investigators have also described this problem.²⁻⁴

Should the Ross procedure be offered to patients with AI caused by BAV? I have been reluctant to do this type of aortic valve replacement in these patients, particularly if the aortic annulus is larger than 27 mm, for more than a decade. Skillington's group from Australia,⁵ however, recently reported freedom from moderate or severe AI of 85% at 20 years (with 10 patients at risk) in a cohort of 129 patients with a mean age of 34.7 years followed up for a mean of 9.6 years. Skillington uses only a modified aortic root inclusion technique, and his results are unique for this subgroup of patients, with other recent series showing a much higher rate of AI in patients with preoperative AI and BAV, regardless of the technique used to implant the pulmonary autograft in the aortic position.²⁻⁴ I believe that some genetic abnormality in the pulmonary valve of patients with the phenotype of BAV and AI causes premature failure of the pulmonary autograft and that the Ross procedure should be used with caution in this subgroup of patients with BAV until further information becomes available.

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