Ann Thorac Surg
2003;75:796–802



## INVITED COMMENTARY

Böhm and colleagues are to be congratulated for having done 250 consecutive Ross procedures in patients aged 2–67 years without a single operative death and only 3 "transiently elevated myocardial enzymes." These exceptionally good operative results added to the fact that only one patient in their older group required pulmonary autograft replacement and none developed pulmonary homograft stenosis, which prompted the authors to conclude that "older patients fare better with the Ross procedure" than do younger ones. The authors may be correct but their conclusion is a bit premature because most patients have had only two years of follow-up and only 9 patients had 5 years of follow-up.

The Ross procedure is a surgical treatment for aortic valve disease that potentially gives the patient two-valve disease, and if the aortic root replacement technique is used, may also cause coronary artery disease. Indeed, even in Böhm's exceptional series, 11 patients in the two younger groups and 11 in older group needed coronary artery bypass; but there was no mention of coronary artery disease in the paper. Therefore, I have to assume that at least some of those 22 patients had myocardial ischemia related to the reimplantation of the coronary arteries and needed bypass surgery. Those 22 patients will not have as good long-term results as patients without coronary artery disease, since this is an independent predictor of late death after aortic valve replacement.

The main message of their study, however, is that they observed fewer failures with both the pulmonary autograft and homograft in older patients than in younger ones. Although the mean follow-up is very short (probably less than 2 years), they had only one patient with more than mild aortic insufficiency and no pulmonary homograft stenosis in any patient (defined as peak systolic gradient >40 mm Hg). These are probably the best results of the Ross procedure ever published; and if further follow-up confirms this initial observation, then we all have to rethink of the role of this operation in older patients.

I remain skeptical for a couple of reasons. First, we have found that degenerative changes in the walls of the pulmonary artery is more common in older than in younger patients. Will these changes be accelerated when the pulmonary root is transferred into the aortic position because of greater mechanical stress? If this happens, aneurysm of the pulmonary autograft sinuses, which is uncommon in young patients, may become more common in older patients. Second, it is well known that homograft valves are more durable in older than in younger patients probably because of slower rejection and other factors related to the host's age. Thus it is not surprising that the authors found the highest pulmonary homograft gradients in the youngest patients and the lowest gradients in older patients. There is no guarantee, however, that those gradients will remain low over the next 10 years or that the pulmonary homograft valve will remain competent.

This study is an important contribution to our knowledge of the Ross procedure and we look forward to learn what happens to these older patients reported by Böhm and colleagues after a decade of follow-up.

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0003-4975/03/$30.00
PII S0003-4975(02)04834-8