Letters to the Editor

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The Ross operation as an ideal choice for aortic valve replacement in patients with congenital disease

To the Editor:

We read with interest the article by Al-Halees and associates¹ concerning the Ross procedure for congenital aortic valve disease, and we congratulate them for their valuable work.

They treated 53 patients with congenital heart disease aged 3 months to 18 years (median 9 years). Ten patients were younger than 2 years of age. The mean cardiopulmonary bypass time was 109 ± 36 minutes (52-243 minutes) with a mean crossclamping time 79.5 minutes (45-164 minutes).

The mean follow-up was 4 years with 3 hospital deaths, all among patients with subaortic stenosis. One patient needed autograft replacement for endocarditis. A right ventricular outflow tract gradient necessitated balloon dilatation in 2 and reoperation in 1. All patients but 1 have normal or near-normal autograft valve function. The homografts in the pulmonary position demonstrated gradients in 14 patients; 9 gradients were less than 35 mm Hg and 5 greater than 50 mm Hg. Three of the patients underwent reoperation.

We have a similar group of 26 patients (age range 2.5 months-12 years, median 6.9 years, $5 < 1$ year; weight range 4.9-42 kg, median 23.6 kg, $7 < 10$ kg) having the Ross operation for congenital aortic valve disease: aortic stenosis in 24 and congenital insufficiency in 2. Twelve patients had additional malformations: subaortic stenosis in 7, coarctation of the aortic isthmus in 2, mitral insufficiency in 2, and ventricular septal defect in 1. Thirteen patients had a prior operation: aortic valvotomy in 11, balloon dilatation in 4, coarctation repair in 2, and aortic root replacement by a homograft in 1.

We used the widest possible pulmonary homografts in all patients. Concomitant surgical procedures were performed in 9 patients: 2 mitral valve repairs, 2 resections of a subaortic membrane, and 5 Konno

repairs for subaortic stenosis (cardiopulmonary bypass time 114-162 minutes, median 137.3 minutes; aortic crossclamping time 97-143 minutes, median 123.1 minutes for autograft preparation and implantation and homograft implantation).

There were no hospital deaths but 2 instances of delayed sternal closure and 1 pacemaker implantation. During follow-up (1-8 years, median 4.1 years), there was 1 late death during reoperation for false aortic aneurysm of the proximal anastomosis 6 months postoperatively. One patient had a modified Konno procedure for subaortic stenosis (infundibulotomy with a vertical incision in the subannular left ventricular outflow tract and patch repair). Minimal aortic insufficiency is present in 7 patients, and 4 patients have asymptomatic gradients on the homograft (20-35 mm Hg). Al-Halees and associates did not explain the conduct and short duration of cardiopulmonary bypass (minimum 52 minutes with 45 minutes of aortic clamping), which are different from most related publications.^{2,3}

One of the differences between their results and ours is that the hospital mortality is confined to patients with left ventricular outflow tract obstruction (the total number with involvement of the outflow tract is not mentioned), making their surgical technique for relief of outflow tract obstruction questionable. Another difference is the right ventricular outflow tract gradient in 25% (more than 50 mm Hg in 9%) of their patients despite the use of immunosuppressive therapy. We think our result is due to the use of pulmonary homografts. Despite these differences in results, both studies confirm that the Ross operation represents the best choice for aortic valve replacement in infants and children.

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Preoperative platelet inhibition and bleeding after cardiopulmonary bypass

To the Editor:

Bizzari and associates¹ studied clinical events and potential bleeding complications in a group of patients who had undergone emergency or urgent cardiac surgery after treatment with tirofiban hydrochloride. They observed that patients treated with tirofiban had a smaller decrease in platelet count during cardiopulmonary bypass; other platelet suppressants have similar effects.^{2,3} Preoperative platelet inhibition will reduce the platelet loss associated with cardiopulmonary bypass because a preferential loss of activated platelets is observed during the period of extracorporeal circulation.^{4,5} The hemostatic function of the preserved platelets would, however, be impaired by heparin-induced plasma changes.⁶

The study was undertaken because of a concern that platelet inhibition may exacerbate bleeding after cardiopulmonary bypass. We among others have demonstrated that during cardiopulmonary bypass platelets lose the ability to form large stable aggregates (macroaggregates).⁶⁻⁹ This impairment persists for several hours postoperatively.^{7,8} Macroaggregation is important for platelet hemostatic function because it gives strength to a platelet plug and paves the way for clot retraction. As platelet macroaggregation is virtually abolished during

cardiopulmonary bypass,⁶⁻⁹ we suggest that additional platelet suppression is unlikely further to impair hemostasis or increase bleeding during the immediate postoperative period. Furthermore, after cardiopulmonary bypass platelets appear resistant to aspirin,¹⁰ an irreversible platelet inhibitor; it is therefore unlikely that even long-acting platelet suppressants that are administered preoperatively will significantly impair platelets late in the postoperative period. This would explain why patients who received platelet suppressants shortly before undergoing surgery using cardiopulmonary bypass did not appear to bleed excessively when compared with those who did not receive these drugs.¹⁻³

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Transapical aortic cannulation for acute aortic dissection with diffuse atherosclerosis

To the Editor:

We read with interest the article by Fukuda and associates¹ and congratulate them on their good results. We agree that femoral artery cannulation sometimes must be abandoned as arterial access for cardiopulmonary bypass. Recently we operated on an urgent basis on a 54-year-old man with type A acute aortic dissection. The femoral artery could not be used as arterial access because of tinea inguinalis. We chose the subclavian artery instead.

We doubt the reliability of transapical aortic cannulation in median sternotomy. We suspect that Fukuda and associates¹ happened to dodge the drawbacks of using this procedure by mere luck, because hypotension during elevation of the apex, dislocation of the cannula, incompetence of the aortic valve, and repair of the insertion site are usually inevitable. Insufficient myocardial protection because of the inability to clamp the ascending aorta and to administer cardioplegic solution remains a problem to be solved. If Fukuda and associates¹ have had experience with other