Intermediate-term Results of Repair of Congenital Heart Diseases Using Pulmonary Homografts

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Abstract

Objective: We evaluate our intermediate-term results of our patients who had insertion of homografts for repair of their congenital heart diseases since the first application in April 1999. Background: Use of homograft valve in the repair of complex congenital heart lesions has been a standard for over two decades. However, homograft is not available locally because of lack of donor. Since 1999, we were able to obtain limited supply of homograft from England. Methods: Between 26 April 1999 and 28 February 2005, 45 patients had insertion of homografts for repair of congenital heart disease. The mean age of operation was 7.2±6.2 years (33 days-28 years). The mean follow-up duration was 32.5±20.6 months (0.03-71 months). The follow-up clinical status was reviewed. Overall survival and freedom from reoperation due to conduit failure were estimated by Kaplan-Meier method. Homograft valve stenosis or regurgitation was assessed by serial echocardiography and cardiac catheterisation. Results: There were one early death (2.2%) and two late deaths (4.4%). One of the late deaths died from non-cardiac cause due to severe bronchial stenosis. The actuarial survival was 93% at 71 months. Of the 42 survivors, majority had improved functional status significantly. There were 40 patients (95%) in NYHA class I or II. Three patients (6.7%) required reoperation for conduit failure. The freedom from reoperation was 85% at 71 months. One patient is awaiting reoperation for severe pulmonary homograft and aortic (truncal) regurgitation. Homograft conduit function of the remaining patients was satisfactory on follow-up. Conclusion: This study showed satisfactory intermediate-term outcome in patients after cardiac operations using homograft.

Key words Cardiac operation; Congenital heart diseases; Homograft

Introduction

In 1966, Ross and Somerville\(^1\) first reported the use of a fresh antibiotic-preserved aortic valve homograft for the correction of pulmonary atresia. Many follow-up studies have demonstrated excellent haemodynamic characteristics of the pulmonary homografts after reconstruction of the right ventricular outflow tracts in children or adults with complex congenital heart diseases.\(^2-5\) The requirement of no anticoagulation and freedom from thromboembolism also offers great advantage in repair of complex congenital heart diseases in children. Pulmonary homograft is also required in patient undergoing the Ross procedure for aortic valve replacement.\(^6-8\) The pulmonary homografts have been regarded as the ideal conduits in repair of congenital heart diseases in children.

Pulmonary homografts are primarily harvested from human cadaver donors. This is not available locally because there is no tissue valve bank in Hong Kong. Since April 1999, we are able to obtain limited supply of cryopreserved homografts from the Heart Valve Bank of Royal Brompton Hospital in England. This article is an analysis of the intermediate-term results of our patients with homografts inserted in the right ventricular outflow tracts.