**Letter to
the Editor**

Heart Valve Surgery in Patients with Patent Coronary Artery Bypass Grafts

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We read a paper by Masaki et al.¹⁾ regarding a patient who underwent aortic valve replacement with functioning internal mammalian artery grafts. The authors used continuous retrograde cardioplegia in addition to moderate hypothermia without the clamping of the functioning grafts.

As the authors mentioned in the Discussion, the operative mortality rate associated with redo aortic valve replacement after coronary artery bypass grafting is reportedly 6%–16%. In addition, dissection of the patent grafts is associated with graft injury in 5%–50% of cases, leading to a poor prognosis.

Myocardial protection procedures for patient with a functioning graft include systemic circulatory arrest under deep hypothermia,²⁾ cardiac arrest under systemic hyperkalemia,³⁾ and others.^{4,5)} However, these reports were anecdotal, and the optimal surgical management remains unclear.

Technical advancements in hemodialysis have shortened the time to correction of the serum potassium levels. The serum potassium level is controlled by the infusion of 20 mEq/L potassium at 200 mL/min for 5–10 minutes based on patients' body surface areas, which is introduced after an ordinary myocardial protection induced by cardioplegia. An additional potassium depends on the left ventricular electric activity. The serum potassium level

that maintains cardiac arrest differs among individual patients around 6.5 mEq/L. Concomitant hypothermia could assist the induction and maintenance of the arrest. Our method of correcting the potassium level during cardiopulmonary bypass is followed. Blood from the reservoir of the cardiopulmonary bypass system is filtered at 200 mL/min with twice the amount of replenisher for hemofiltration. It takes almost half an hour to achieve a 2 mEq/L reduction of serum potassium in an adult patient. Therefore, we choose systemic hyperkalemia associated with hypothermia to protect the myocardium during valve surgery when patent coronary bypass grafts are not cross-clamped. This is a simple method with which to ensure definite cardiac arrest and myocardial protection.

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