Aortic root enlargement by Manouguian's technique*To the Editor:*

We read with interest the article by Kawachi, Tominaga, and Tokunaga¹ titled "Eleven-Year Follow up Study of Aortic or Aortic-Mitral Anulus-Enlarging Procedure by Manouguian's Technique" and appreciate their results. However, our own experience is different from theirs.

Between June 1989 and September 1992, we have done aortic root enlargement by Manouguian's technique in 12 patients aged 20 to 51 years. One patient underwent aortic root enlargement as an emergency procedure for severe aortic regurgitation after balloon dilation of the aortic valve. In six patients, the anterior mitral leaflet was divided and a diamond-shaped Gelseal patch (gelatin-coated Dacron patch, Vascutek Inc., Inchinnan, Scotland) was sutured in the defect in the mitral leaflet. The edges of the Gelseal patch were buttressed by strips of pericardium as well. In the remaining six patients, a pericardial patch was used to bridge the defect in the mitral leaflet. Whenever the roof of the left atrium was opened, it was closed by a patch of pericardium.

A mechanical prosthetic valve, either St. Jude Medical (St. Jude Medical, Inc., St. Paul, Minn.) or Medtronic Hall (Medtronic, Inc., Minneapolis, Minn.), larger than the measured aortic root by either one or two sizes, was sewn into place with interrupted horizontal mattress sutures. None of the patients had any significant bleeding through the suture line. All the patients have been followed up for 6 months to 2 years and are doing well.

Unlike Kawachi, Tominaga, and Tokunaga, we used only mechanical valves. In addition, none of the patients had either mitral regurgitation or hemolysis. The patient-prosthesis mismatch or small-sized prosthesis can produce complications such as a significant gradient, left ventricular hypertrophy, thrombosis, and hemolysis.² On the basis of our own experience and the report by Kawachi, Tominaga, and Tokunaga, we believe that aortic root enlargement can be done without much morbidity and the patient should be given the benefit of having a large prosthesis.

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REFERENCES

1. Kawachi Y, Tominaga R, Tokunaga K. Eleven-year follow-up study of aortic or aortic-mitral anulus-enlarging procedure by Manouguian's technique. *J THORAC CARDIOVASC SURG* 1992;104:1259-63.
2. Rahimtoola SH. The problem of valve prosthesis-patient mismatch. *Circulation* 1978;58:20-4.

Type A aortic dissection: Management of brain malperfusion through retrograde cerebral perfusion*To the Editor:*

Antegrade organ malperfusion, and particularly cerebral malperfusion, is a life-threatening complication of acute aortic

dissection that is due to an impaired flow in either the true or the false lumen. However, cerebral malperfusion can also occur at the time of surgical repair. This may be a consequence of the reversed flow from the femoral artery on initiation of cardiopulmonary bypass if no entry site is present in the ascending aorta; it may also appear when the intimal tear in the proximal ascending aorta is excluded at the moment the crossclamp is applied or when the surgical repair is completed. In the first two instances the problem is managed either by repositioning the arterial cannula into the true aortic lumen or fenestrating the membrane within the proximal arch¹ or, whenever possible, by pharmacologically maintaining an adequate pressure as systemic hypothermia is induced.² In the last case the problem is solved by reestablishing an antegrade perfusion via the ascending aortic graft.³ Herein we present a case of cerebral malperfusion that was successfully managed by selective retrograde cerebral perfusion through the right internal jugular vein.

A 56-year-old woman was admitted with unreceding chest pain. Echocardiography and magnetic resonance imaging studies showed a type A aortic dissection with the two lumina extending from the proximal ascending aorta through to the abdominal aorta, as well as severe aortic valve insufficiency. All peripheral pulses were present. The patient underwent urgent surgical treatment. The left femoral artery did not have evidence of dissection and was cannulated for cardiopulmonary bypass. The right atrium was cannulated for venous return. Cardiopulmonary bypass was started and, on occurrence of ventricular fibrillation, the aorta was crossclamped. A few seconds after crossclamping of the aorta, at a core temperature of 32° C, sudden bilateral mydriasis developed, suggesting impaired cerebral perfusion. At the same time, the mean right radial artery pressure dropped suddenly. A self-inflating balloon cannula was inserted high into the internal jugular vein via the right atrium. The cannula was then connected with an arterial line to the heart-lung machine. A retrograde cerebral perfusion with oxygenated blood flowing in a retrograde direction through the jugular vein and thus to the brain was begun. The retrograde cerebral blood flow was maintained at 200 to 250 ml/min with a mean pressure of 25 mm Hg while the patient was cooled, the aortotomy performed, the aortic valve resuspended, and the proximal aortic anastomosis completed (45 minutes). Then, during deep hypothermic circulatory arrest, the aortic clamp was released and the distal aorta closely inspected. A single intimal tear was present 2 cm above the coronary ostia; no intimal tears were present in the aortic arch. Good back blood flow from the left common carotid artery and the innominate artery was evident. During the period of deep hypothermic (18° C) circulatory arrest (36 minutes), the arch anastomosis was performed. Blood samples simultaneously drawn from a side port of the cerebral perfusion cannula (arterial inflow) and from the back bleeding from the left carotid and innominate arteries (venous outflow) at the beginning of circulatory arrest were sent for arterial blood gases measurements. The results showed an oxygen extraction of 3.3 ml/dl throughout the brain. The postoperative course was uneventful and the patient awoke 6 hours after the operation. The way in which she awoke and behaved was within normal limits.

Encouraged by reported data,⁴ we have recently been using retrograde cerebral perfusion during hypothermic circulatory arrest, and we are impressed by our good results. Therefore, faced with the sudden appearance of cerebral malperfusion, we thought that any neurologic sequelae could be prevented by a selective retrograde perfusion of the brain through the superior