A NEW TECHNIQUE FOR SPARING THE AORTIC VALVE IN PATIENTS WITH ANEURYSM OF THE ASCENDING AORTA AND ROOT

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Patients with an aneurysm of the ascending aorta and aortic valve incompetence may have normal aortic valve leaflets enabling them to benefit from operations preserving the valvular apparatus. Basically, such operations focus on two targets: making the native valve leaflets competent and preventing further dilatation of the aortic root.

Five patients benefited from a new procedure that can be described as an inclusion technique, in which the Dacron tube is placed inside the aortic root (Fig 1). After transection of the aortic root 1 cm above the leaflet commissures, three suspension sutures are placed above the leaflet commissures and the valve leaflets are examined. The Valsalva sinuses are not resected. If the leaflets are considered to be satisfactory, the diameter of the aortic root is measured with a Hegar dilator. A tubular Dacron graft of the same caliber as or slightly smaller than the diameter of the aortic anulus will be selected. This proximal Dacron tube must be short, no more than 4 to 5 cm in length, and will be placed inside the aortic root. The graft will be scalloped to fit the commissures and the contour of the aortic anulus, keeping in mind that the noncoronary segment of the aortic anulus is usually set deeper than the others in the left ventricular outflow tract. The running proximal suture line securing the Dacron graft takes large bites into the wall of the Valsalva sinus and exits immediately adjacent to the aortic anulus. Once the Dacron tube is seated, two lateral openings in the Dacron tube, aligned with the coronary ostia, will allow them to be directly implanted into the graft. Once these are completed, the suture line at the level of the sinotubular junction will join together the internal tubular Dacron graft and the external native aortic wall, sealing off all the proximal suture lines, completing the inclusion technique.

Patient demographics and operative data are summarized in Table I. The follow-up extends from 2 months to 3 years. The patients were followed up by serial Doppler echocardiograms before discharge, at 6 months, and then annually.

Fig 1. Schematic representation of the inclusion technique.

No patient was lost to follow-up. Valvular function showed no alteration when compared with the initial results, with zero to trace regurgitation. On the transesophageal echocardiogram (small-axis views), the origin of the left coronary artery was visible with no evidence of dilatation or false aneurysm in the two patients with more than 1 year of follow-up.

Discussion. Previously, two valve-sparing techniques were available.

The approach initially devised by Tirone David¹ is achieved by externally lowering a tubular Dacron graft around the preserved native aortic valve and securing the proximal portion with horizontal sutures placed under the aortic anulus. The Valsalva sinuses are resected and the aortic valve is suspended and positioned inside the Dacron tube. Coronary arteries are then mobilized and reimplanted. The relative complexity of this technique is essentially related to the proximal subannular suture line.

A different approach, initiated by Yacoub and associates² and supported by Tirone David,³ consists in replacing the three aortic sinuses by a Dacron tube scalloped to match the contour of the scalloped Valsalva sinuses. This simplified

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technique seems, however, to carry a higher risk of perioperative bleeding.

Our new inclusion technique combines several advantages. All the sutures are placed above the aortic anulus, facilitating the surgical approach, as with the Yacoub procedure. The aortic root is preserved, and therefore the spatial organization of the three leaflets and their commissures is minimally disturbed, facilitating understanding and reconstruction. The size of the Dacron tube is selected solely on the basis of the measured diameter of the aortic anulus and not on mathematical formulas, taking into account the height of the leaflets and the length of their free margins. Hemostasis is ensured by the large bites of the running suture and furthermore by enclosing all the sutures within the proximal aortic root. Finally, although the number of patients is still small, there have been no instances of postoperative aortic valve regurgitation.

Among the three operations described for preserving the aortic valve, only the David procedure could remodel the aortic anulus. The Yacoub procedure and the present operation are not designed to reduce the aortic anulus and therefore share the same limitations concerning annuloaortic ectasia and Marfan syndrome.

In conclusion, the Dacron tube inclusion technique seems promising. Compared with the other techniques, it associates the greater facility of a supra-annular suture line, an easier reconstruction of the native aortic valve, and a secure hemostasis. More cases will be needed to confirm the validity of this novel approach.

Table I. Patient demographics and operative data

No. of patients	5
Age (y)	46-67
Preop aortic insufficiency	1+ to 3+
Marfan syndrome	0
Bicuspid valve	1
Associated procedures	
Coronary grafting	2
Arch replacement	1
Mitral repair	1
Aortic crossclamp (min)	95 ± 41
CPB time (min)	115 ± 25
Dacron diameter (mm)	26-32
ICU bleeding (mL)	730 ± 520
Postop aortic regurgitation	0 to trace
Deaths	0
Follow-up	2 mo to 3 y
Reoperation	0

CPB, Cardiopulmonary bypass; ICU, intensive care unit.

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REVERSAL OF SPINAL CORD ISCHEMIA RESULTING FROM AORTIC DISSECTION

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Spinal cord ischemic injury is one of the hazards of acute aortic dissection. The following case report provides tentative evidence that, in certain instances, spinal cord ischemia resulting from acute aortic dissection may be completely reversed by therapeutic measures previously applied successfully to prevent and/or treat spinal cord ischemia incident to resection of thoracic and thoracoabdominal aortic aneurysms.

Clinical summary. A 57-year-old man had a history of longstanding medically controlled hypertensive cardiovascu-

lar disease. He had a brain stem stroke (dysconjugate gaze, ataxia, and dysarthria) 8½ years previously with complete recovery. At approximately 8 PM on February 6, 1999, he had the sudden onset of severe upper back pain. After being evaluated in the emergency department of his community hospital, he was transferred to Saint Luke's Hospital.

He was hypertensive (183/68 mm Hg), all extremity pulses were normal by palpation, and the neurologic examination showed no abnormalities. Chest and abdominal com-

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