TABLE 1. Comparison of results between patients with (group B) and without (group A) connectors

	Group A (n = 323)	Group B (n = 305)	*P* value
Patients undergoing repeated cardiac catheterization	40	45	NS
Venous grafts studied	71	88	NS
Venous grafts patent	61	18	<.0001
Venous grafts occluded	10	39	<.0001
Venous grafts with >50% stenosis	0	31	<.0001

NS, Not significant.

The proximal connector device is appealing for the reasons mentioned previously. For facilitated anastomoses to justify the expense and replace traditional hand-sewn grafts, however, they must have equal or better short- and long-term patencies. Despite potential benefits of sutureless aortic connections, this patient review demonstrates unacceptable saphenous venous graft stenosis and occlusion with the use of the Symmetry aortic connector.

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Apicoaortic conduit in a patient with severe hemolysis after three aortic valve replacements

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Left ventricular outflow obstruction usually requires repair or replacement of the aortic valve or resection of a subannular stenosis. Cooley and Norman[1] proposed the implantation of a valve-containing conduit between the apex of the left ventricle and the descending thoracic aorta for treatment of complex outflow obstruction. Following a 5-year follow-up, we report the case of a patient who underwent apicoaortic conduit implantation in 1997.

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Dr Skrabal is supported by a grant of the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG).

Received for publication May 23, 2003; accepted for publication July 14, 2003.

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J Thorac Cardiovasc Surg 2004;127:270-2

0022-5223/$30.00

doi:10.1016/j.jtcvs.2003.07.002

Clinical Summary

The patient had a history of 3 previous aortic valve replacements including replacement of the ascending aorta for repair of prosthetic endocarditis with annular abscess. The need for the implantation of an apicoaortic conduit arose from an enduring hemolysis secondary to a relatively undersized aortic valve prosthesis. In 1975, the then 36-year-old man underwent replacement of a bicuspid stenotic aortic valve with a Björk-Shiley convexo-concave (BSCC) mechanical heart valve (Shiley, Inc, Irvine, Calif, a subsidiary of Pfizer, Inc). In September 1995, the patient had a high fever, chills, fatigue, joint pain, and painful peripheral subcutaneous nodes of the phalanges. Echocardiography revealed a paravalvular leak with fistula to the right ventricle. Blood cultures were positive for *Staphylococcus aureus.* After prolonged intravenous antibiotic therapy, replacement of the Björk-Shiley valve and repair of the aorta−right ventricular fistula was performed by implantation of a 21-mm St Jude Medical valve (St Jude Medical, St Paul, Minn) with aortic root replacement using a Hemashield graft (Meadox Medicals, Inc, Oakland, NJ). The coronary arteries were reinserted by the Cabrol technique. In October 1996, however, the patient had increasing fatigue, and echocardiography showed severe subvalvular aortic stenosis. The aortic valve area was 0.6 cm^2 with a mean pressure gradient of 56 mm Hg and a peak velocity of the stenotic jet of 4.85 m/s. An attempt was made to excise the stenosis through the valve but the valve broke under the stress. After resection of the valve and subvalvular stenosis, a 19-mm St Jude Medical prosthesis was implanted. Subsequently, the patient began to experience hemolysis with consecutive anemia

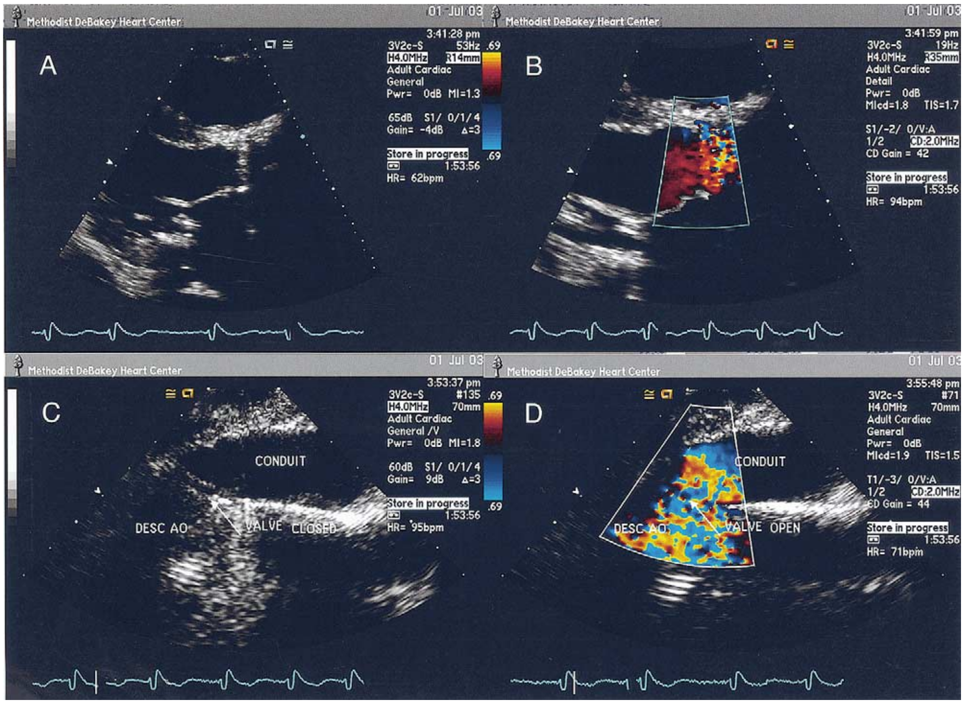

Figure 1. Recent echocardiography. A, Valve prosthesis in aortic position. B, Flow through aortic valve prosthesis. C, Apicoaortic conduit with mechanical valve. D, Flow through conduit.

requiring recurrent blood transfusions twice a month. The hemolysis was believed to be secondary to compounding aortic prosthetic and subvalvular stenosis. Therefore, creation of a new left ventricular outflow tract was considered (Table 1).

The chest was opened through a left anterior lateral thoracotomy in the fifth intercostal space. A circumferential Teflon ring was sewn on the left ventricular apex. Using a partial occluding clamp, a 23-mm St Jude Medical aortic valve carrying Hemashield conduit was sewn in an end-to-side fashion into the descending thoracic aorta. A core of the left ventricle within the apical ring was excised and a left ventricular conduit was inserted. The 2 grafts were sewn together and flow was established. The patient was discharged after 9 days and warfarin sodium was prescribed for anticoagulation purposes.

The patient has had no further blood transfusions and his hemoglobin remains stable at 11.5 g/dL. There is a decent murmur at the left-ventricular apex and at aortic position. The most recent echocardiography (Figure 1) confirmed a distinct regression in heart dimensions and the hemodynamic calculations resulted in an overall cardiac output of 9.6 L (3.6 L flow through the aortic valve prosthesis and 6 L through the conduit valve).

TABLE 1. Echocardiography measurements and laboratory values before and 5 years after apicoaortic conduit

	Preoperative	5 years postoperative
Echocardiography		
Left ventricular end-diastolic dimension (cm)	6.0	4.7
End-diastolic septum thickness (cm)	1.4	1.2
Systolic pulmonary arterial pressure (mm Hg)	70	45
Central venous pressure (mm Hg)	20	20
Total stroke volume (mL)	59	156
Aorta	59	58
Conduit	—	98
Laboratory		
Hb (g/dL)	7.0	11.5
Hct (%)	24	29
RBC (Mio/mL)	2.4	3.9
Reticulocytes (%)	10.80	—
MCV (fl)	100	96.2
MCH (pg)	29	29.5
MCHC (%)	29	30.70
Bilirubin, total (mg/dL)	2.4	1.5
LDH (U/L)	8.000	—
INR	—	3.1

Conclusion

Chronic intravascular hemolysis in patients following left-sided heart valve replacement with mechanical prosthesis is well documented.[2] However, severe hemolysis is mostly associated with valve malfunction or paravalvular leakage.[3] A valve prosthesis/body surface area mismatch can also alter postoperative outcome with regard to incidence of sudden death, decreased left ventricular performance, and hemolysis.[4]

In the presented case, valve function was normal and there was no evidence of paraprosthetic leakage. Due to the preceding operations, it was decided to implant a 19-mm St Jude Medical aortic valve prosthesis. This resulted, however, in a mismatch between valve size and body surface area and, consequently, in an artificial obstruction of left ventricle outflow.

Cooley and colleagues[5] previously reported creation of double-outlet left ventricles in a number of patients with severe left heart outflow tract obstruction. The left lateral transthoracic approach, performed in this case, gives direct access to the descending aorta and makes the operation less complex. In creating this conduit, the surgeon has the choice of biologic or mechanical valves. This patient received a mechanical valve-containing conduit due to the mechanical valve in aortic position. Both the anemia and all hematological alterations disappeared after the operation. The gradient over the aortic valve returned to near-normal values and the left ventricular hypertrophy regressed.

Implantation of an apicoaortic conduit can be considered as a valuable alternative to repeated aortic valve replacements in selected patients with complex stenosis of the left ventricular outflow tract.

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Selective perfusion of preoperatively identified artery of Adamkiewicz during repair of thoracoabdominal aortic aneurysm

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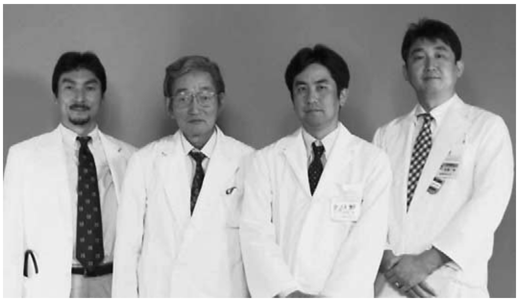

Research Group

In the surgical repair of thoracoabdominal aortic aneurysm (TAAA), preoperative localization of the artery of Adamkiewicz with intraoperative selective perfusion thereof has a bearing on the prevention of spinal cord injury. We report our method for delineating the Adamkiewicz artery with multidetector row computed tomography (MDCT) with selective perfusion through a distal perfusion cannula that is clinically available for off-pump coronary artery bypass. The method is expected to minimize the ischemic time of the spinal cord and attenuate the reperfusion injury.

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Received for publication June 4, 2003; accepted for publication July 14, 2003.

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J Thorac Cardiovasc Surg 2004;127:272-4

0022-5223/$30.00

doi:10.1016/j.jtcvs.2003.07.028

The tip of a distal perfusion catheter designed for off-pump coronary artery bypass (Medtronic Quickflow; Medtronic, Inc, Minneapolis, Minn) is soft and atraumatic, making it applicable for selective perfusion of the segmental arteries. The femorofemoral venoarterial bypass is branched off into selective perfusion of the segmental arteries with an independent roller pump and heat exchanger. In this way, selective hypothermic perfusion of the spinal cord is feasible. Our method of visualization of the Adamkiewicz artery is MDCT scanning with injection of contrast medium directly into the proximal descending aorta, or MDCT during aortography.[1] Compared with the methods used by other investigators who have used magnetic resonance imaging or MDCT,[2-4] in which contrast medium was administered into a peripheral vein, our method provides a clearer image because of a high concentration of contrast medium in the small-caliber arteries.

MDCT during aortography is performed with an MDCT scanner (Lightspeed Qxi; GE Medical Systems, Milwaukee, Wis). At first, a 5F pigtail catheter is percutaneously inserted through the femoral artery on the scanning table of MDCT under fluoroscopic