intramural coronary artery is in a very close relationship with the posterior valvular commissure [5]. It has been reported in several studies that the intramural coronary artery is at high risk of myocardial ischemia and cardiac death and that it has been considered a contraindication for ASO in the past [6, 7]. Given that separation and mobilization of the intramural coronary artery is difficult because of its slit-like ostium, slender intramural course, and acute angle of takeoff, many techniques for the translocation of the intramural coronary artery have been developed.

The incidence of late coronary lesions after ASO is difficult to report because most patients with coronary stenosis are symptom free and do not show any evidence of myocardial ischemia in follow-up studies. Conventional coronary angiography was the only method able to detect such lesions until multidetector CT coronary angiography recently became a viable substitute [8]. A few revascularization techniques for late coronary lesions after ASO have been reported, including patch angioplasty and coronary artery bypass grafting [4, 5]. In the present case, coronary artery bypass grafting was not considered because distal LCA flow was clearly visualized in coronary angiograms, and a bypass graft would be expected to result in flow competition. Patch angioplasty was also not considered because there was a dense adhesion between the neoaorta and the neo-pulmonary artery, which were in an anterior–posterior relationship, so that it was technically challenging to manipulate the slender intramural LCA.

It has been reported that some surgeons routinely perform the unroofing procedure during neonatal ASO, whereas others do not [5]. It has been stated that only a small percentage of patients need revascularization for late coronary events [4, 5]. Therefore, it is thought that the unroofing procedure could be an option for patients with intramural coronary arteries at the time of ASO but is not an obligatory procedure. We report here a case of stable angina that developed a few years after ASO and a successful treatment by use of an unroofing procedure. Although the early outcome of this case was satisfactory, long-term follow-up is warranted.

References


Mitral Commissural Repair With Autologous Fresh Pericardium in an Infant

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We describe the successful mitral valve repair with autologous fresh pericardium in a 5-month-old infant with acute progressive mitral regurgitation. The intraoperative findings consisted of fragile mitral valve leaflets with multiple chordal rupture of both the anterior and posterior leaflets. The disrupted anterolateral commissure was reconstructed using autologous fresh pericardium, a technique not previously reported in an infant of this size. Follow-up echocardiography for up to 7 years showed only trivial mitral regurgitation and no mitral stenosis.

(Mitral valve (MV) repair in pediatric patients has recently been advocated to treat mitral regurgitation, and good surgical outcomes of MV repair in infants

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have been reported [1, 2]. However, due to complex morphology and leaflet fragility, MV repair in infants remains technically demanding. A recent report [3] describes successful clinical MV repair with autologous pericardium in an infant after excision of a mitral valve leaflet damaged by mitral endocarditis. We applied the same technique to an infant with MV insufficiency accompanied by edematous and fragile mitral leaflets. We describe the commissural patch repair with autologous fresh pericardium in an infant with frail mitral valve leaflets, and multiple chordal rupture of both the anterior and posterior leaflets in such a young infant.

A previously healthy 5-month-old boy (weight, 7 kg) developed mild respiratory symptoms that rapidly progressed to respiratory failure on the following day, and he was referred to our hospital for further treatment. Upon admission he required resuscitation from cardiogenic shock and cardiopulmonary arrest. Transthoracic echocardiography revealed severe mitral regurgitation and prolapsed anterior and posterior leaflets with considerably reduced left ventricular contractility. An initial inotropic infusion did not improve his hemodynamics; he underwent surgical repair on the second day after admission.

An arterial cannula was positioned in the ascending aorta and bicaudal venous drainage was established for a cardiopulmonary bypass (CPB) through a standard median sternotomy. After the aorta was clamped and antegrade blood cardioplegia was initiated, the mitral valve was inspected through the left atrium. Both anterior and posterior leaflets were prolapsed due to chordal rupture in segments A1-2 and P1-2 (Fig 1). Four pairs of Gore-Tex neochordae (W.L. Gore and Associates, Flagstaff, AZ) were placed at the free margin of the anterior and posterior leaflets. Edge-to-edge sutures were also applied at segments A1 and P1. Additional anuloplasty was not indicated. However, transesophageal echocardiography revealed persistent moderate mitral regurgitation and prolapse of both the anterior and posterior leaflets at the anterolateral commissure upon weaning from CPB. Therefore, all Gore-Tex neochordae and edge-to-edge sutures were excised under a second CPB and cardiac arrest because the leaflets were extremely edematous and fragile. A piece of fresh autologous pericardial patch (7 x 7 mm) was then cut to simulate the valve segments of A1 and P1 (Fig 2). The smooth surface of the pericardium was turned toward the atrium. Transesophageal echocardiography at the conclusion of the repair confirmed the absence of mitral regurgitation and mitral stenosis at the new mitral valve. Because respiratory dysfunction prevented weaning from CPB, postoperative extracorporeal membrane oxygenation was applied. Aortic cross-clamping and CPB took 192 and 371 minutes, respectively. He was weaned from extracorporeal membrane oxygenation on postoperative day 2 and ventilated in the intensive care unit for 5 days. Transthoracic echocardiography at discharge from hospital 6 weeks later confirmed mitral competence. Follow-up echocardiography for up to 7 years has shown only trivial mitral regurgitation and no mitral stenosis.

Comment

Mitral valve repair has recently become an established surgical procedure for treating mitral insufficiency in infants and children [1, 2]. Some MV leaflets damaged by destructive mitral endocarditis have been successfully repaired using fresh or glutaraldehyde-treated autologous pericardium [3-7], which is free of antigenicity, does not require permanent anticoagulation, and is readily available. One year before operating on the present patient, we achieved excellent outcomes of MV repair using autologous fresh pericardium in 2 pediatric

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Fig 1. Both anterior and posterior leaflets were prolapsed due to chordal rupture in segments A1-2 and P1-2.

Fig 2. Autologous fresh pericardial patch (7 x 7 mm) cut to simulate valve segment of A1 and P1. Patch is sutured in place to leaflet rim using continuous 6-0 polypropylene sutures.
patients with active destructive endocarditis. Based on these earlier experiences, we similarly applied commis-
sural patch repair using autologous fresh pericardium to
the present infant, who had acute progressive mitral
regurgitation due to multiple chordal rupture of both the
anterior and posterior leaflets. Edge-to-edge sutures and
artificial chordal replacement were ineffective because
the leaflets were extremely edematous and fragile.
However, commissuroplasty with autologous fresh
pericardium was very effective in repairing the mitral
prolapse of both the anterior and posterior leaflets at the
anterolateral commissure. Others have reported suc-
scessful mitral repair using pericardium in infants after
excising mitral valve leaflets damaged by mitral endo-
carditis [4, 5]. Here, we applied the same technique to
treat MV insufficiency with edematous and fragile mitral
leaflets.

Mitral valve replacement with a mechanical valve was a
potential alternative therapeutic approach for this infant.
However, most pediatric patients require redo replace-
ment due to patient-prosthesis mismatches or signifi-
cant pannus formation. We therefore prefer to attempt MV
repair for pediatric patients to at least delay the need for
replacement.

Mitral commissural repair with a pericardial patch is
simple and effective, for not only patients with endo-
carditis but also for those with acute progressive mitral
regurgitation resulting from chordal rupture. Follow-up
echocardiography of our patient for up to 7 years
confirmed only trivial mitral regurgitation and the
absence of mitral stenosis and mitral valve infection.
However, further follow-up will proceed to exclude late
mitral incompetence.

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Blunt traumatic innominate pseudoaneurysm is rare, and
coccurring airway distress is even rarer. We describe a
case of innominate pseudoaneurysm that subtotally
compressed the trachea in a 45-year-old man. The patient
also had bovine-type arch anatomy. He experienced
evacuated respiratory distress on anesthesia induction.
A cardiopulmonary bypass (CPB) circuit was immedi-
ately established through the femoral vessels. The aortic
arch was replaced with a branched graft under circulatory
arrest and antegrade cerebral perfusion. The pseudoa-
neurysm was eliminated and airway compression was
completely relieved. The patient fully recovered without
major complications. The unique feature of this case is its
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mon but potentially lethal.

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Innominate Pseudoaneurysm Subtotally Compressing the
Trachea as a Result of Blunt
Trauma
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