that a double arterial cannulation strategy is a very effective per-
fusional approach for patients suffering from complex multisegmen-
tal thoracic aortic pathologies. Furthermore, this approach is
against the mainstream of what is currently followed by a large
number of surgeons. We feel that it remains important to report
the advances in conventional surgical approaches that take longer,
definitely are more quiet but are finally highly likely to be more
durable, particularly in highly complex patients such as those pre-
sented here.

Summarizing, extensive proximal thoracic aortic surgery using a
double arterial perfusion technique in order to avoid lower body
hypothermic circulatory arrest is an attractive conceptual option.
Further refinements of this technique will enable a safe and effective
simultaneous multisegmental treatment of thoracic aortic
pathology in patients who would otherwise have to undergo a
two-step surgical approach.

Conflict of interest: none declared.

REFERENCES

J et al. What makes the difference between the natural course of a remain-
ing type B dissection after type A repair and a primary type B aortic dissec-
One 2013;8:e57713.
40:1–11.
et al. Mortality and neurologic injury after surgical repair with hypothermic
circulatory arrest in acute and chronic proximal thoracic aortic pathology:
et al. Antegrade selective cerebral perfusion and moderate hypothermia in
aortic arch surgery: clinical outcomes in elderly patients. Eur J Cardiothorac
et al. Risk factors and outcome in European cardiac surgery: analysis of the
EuroSCORE multinational database of 19032 patients. Eur J Cardiothorac
et al. Aortic arch surgery using bilateral antegrade selective cerebral perfu-
sion in combination with near-infrared spectroscopy. Eur J Cardiothorac
One-stage repair of extensive chronic aortic dissection using the arch-first
technique and bilateral anterior thoracotomy. Ann Thorac Surg 2008;86:
1502–9.
The frozen elephant trunk for the treatment of chronic dissection of the
thoracic aorta: a multicenter experience. Ann Thorac Surg 2011;92:
1663–70.
aortic arch replacement with a novel four-branched frozen elephant trunk
Midterm results of thoracic endovascular aortic repair in patients with
aneurysms involving the descending aorta originating from chronic type B


EDITORIAL COMMENT

Re: Double arterial perfusion strategy for extensive thoracic aortic
surgery to avoid lower body hypothermic circulatory arrest

Nicholas T. Kouchoukos*

Missouri Baptist Medical Center, St. Louis, MO, USA

* Corresponding author. 3009 N. Ballas Rd, Suite 360 C, St. Louis, MO 63131, USA. Tel: +1-314-9965287; fax: +1-314-4326068; e-mail: ntkouch@aol.com

Keywords: Double arterial perfusion • Extensive thoracic aortic surgery • Lower body perfusion

Czerny and his co-workers report a technique of double arterial
perfusion to avoid lower body hypothermic circulatory arrest in 10
patients undergoing extensive thoracic aortic repairs [1]. A median
sternotomy combined with a left fourth intercostal space incision
was utilized to provide exposure of the entire thoracic aorta. There
was no hospital mortality, 2 patients (20%) sustained a stroke, and
one each developed acute renal failure and myocardial infarction.

Their technique represents another modification of the one-
stage approach to treat extensive thoracic aortic aneurysmal
disease, some of which develops after previous procedures on
the thoracic aorta such as repair of acute type A dissection. The
authors employed a double arterial perfusion strategy and double-clamping of the descending thoracic aorta to avoid lower
body hypothermic circulatory arrest, and selectively perfused the
brachiocephalic vessels with a separate roller pump at a

AORTIC SURGERY
temperature of 20°C. This was stated to be a potential advantage over techniques that employ hypothermic perfusion of the lower body with intervals of ischaemia [2, 3]. Although lower body ischaemia is presumably avoided with their technique, acute renal failure developed in 1 patient and no information regarding hepatic or intestinal function was provided. With procedures that involve replacement of most or all of the descending thoracic aorta, the risk of spinal cord ischaemia increases, and some degree of hypothermia may be advantageous. As an example, performance of the distal anastomosis of the graft to the aorta at or near the aortic hiatus in the diaphragm would preclude distal aortic clamping. None of the patients in the present series had a replacement of more than two-thirds of the descending thoracic aorta.

No major pulmonary complications were reported, and the authors attribute this to minimal manipulation of the left lung, since it was limited only to the area of the distal anastomosis of the graft to the descending thoracic aorta. In the setting of chronic aortic dissection however, control of bleeding from patent intercostal arteries is mandatory and sometimes troublesome, and can require exposure of the entire opened descending thoracic aorta and greater manipulation of the left lung.

Despite these minor criticisms, the authors are to be commended for pursuing the strategy of a one-stage approach for the treatment of extensive thoracic aortic disease. Given the limitations of the two-stage and hybrid techniques for the treatment of extensive thoracic aortic disease, particularly in patients with chronic aortic dissection, we strongly support the authors’ recommendation that continued evaluation and refinement of techniques that involve a one-stage approach are indicated [4–6].

REFERENCES