

Hybrid Treatment of Aortic Arch Aneurysm: One Stage Off Pump AO-TSA Bypass and Endovascular Stent-Graft

A. Lomeo, A. Scolaro, G. D'Arrigo, F. Distefano, M.C. Monea, G. Mauceri, G. Cacciaguerra, Ospedale Cannizzaro, Catania, Italy

OBJECTIVES: The surgical treatment of aneurysms involving the aortic arch is total arch replacement, on extracorporeal circulation, total circulatory arrest with deep hypothermia and cerebral perfusion. Mortality and morbidities remain high for such operations due to cerebral embolization, neurologic dysfunction, high haemorrhagic risk, respiratory complications, particularly on elderly patients with heavy co-morbidities. We have used a stent- grafting implanting method that uses Ao-TSA by-pass on partial clamping before covering the arch and descending aorta with one or more endoprosthesis. The aim of our study is to evaluate the efficacy and safety of the technique.

METHODS: Between December 2002 and October 2004, 12 pts were enrolled in this study. Male/female: 9/3. Median age: 74 (68- 81) Preoperative evaluation was made by spiral CT scans. A cerebral magnetic resonance imaging was done to estimate the competence of the circle of Willis. Cerebral perfusion monitoring during operation was made by near-infrared spectroscopy.

The main portion of a bi or trifurcated PTFE 12/8 mm. was anastomosed to the lateral aspect of the ascending aorta. The distal ends of the graft were anastomosed to the innominate artery, to the left carotid artery and to the left subclavian artery in all cases but two. In those cases the left subclavian artery was ligated, due to a difficult anatomy. The native three cervical branches were sutured at the origin before the aortic arch manipulation of the delivery system, to reduce any cerebral ischemic complication. The Talent endovascular stent-graft system (EGS) was used in all cases, introduced from the right common femoral artery, surgically isolated. After positioning under fluoroscopy view the EGS was gradually deployed. 2 or 3 EGS were necessary to seal the aortic arch from the 0 zone to the thoracic aorta, zone 4 (according to Ishimaru classification).

RESULTS: There was no operative mortality.

The stent graft placement was carried out during the same operation. 100% technical success. No ischemia of left upper arm lesions or paraplegia occurred. No AMI, no respiratory failure, 1 case of worsening of renal insufficiency. No infections. The patients were extubated 3 to 6 hours after the operation. All patients are still alive and followed by angio tc multislice every six months on the first postoperative year and then every year. No endoleak have been noticed at follow-up.

CONCLUSION: The aortic arch aneurysm repair with hybrid technique is an innovative way to avoid the risks of the conventional surgical technique, particularly helpful for high risk patients.