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Hybrid Treatment for Aortic Arch and Proximal Descending Thoracic Aneurysm

Eyal Nachum[1], Boris Orlov[1], Alex Garniek[2], Uri Rimon[2], Gil Golan[2], Boris Khaitovitch[2], Ehud Raanani[1], Amihay Shinfeld[1]
[1]*Cardiothoracic Surgery, Sheba Medical Center, Tel HaShomer, Israel*
[2]*Radiology, Sheba Medical Center, Tel HaShomer, Israel*

Background:
Aneurysms involving the aortic arch have been historically treated with open surgical techniques requiring cardiopulmonary bypass and deep hypothermic circulatory arrest. Reported mortality rates reach 17% and neurologic injury rates reach 12%. In cases of aneurysms involve the transverse arch the proximal landing zone may be distal to left common carotid artery or to the innominate artery. In these cases a hybrid approach combined surgical supra-aortic de-branching and endovascular techniques may be a good procedure and may improve the morbidity and mortality of these patients.

Methods:
Between December 2000 and, November 2012, 82 patients underwent thoracic aortic endovascular grafting at our institution. Of these, 4 (5%) patients had aneurysms involving the transverse arch and underwent a hybrid procedure. The hybrid procedure includes surgical supra-aortic de-branching of grafts to left common carotid artery and innominate artery. All patients, who underwent hybrid procedure, were reviewed and analyzed retrospectively.

Results:
Mean patient age was 69±11 years; the interval between the first and second stage ranged from 0 to 1 week. None of the cases converted to open surgery. Follow-up ranged from 3 to 18 months with a mean of 8±7 months. Technical success was achieved in all patients. There were no perioperative (30 day) deaths and one permanent neurologic deficit that were evident before the procedure. There has been no late mortality and all de-branching bypass grafts remain patent. In 3(75%) cases the Computed tomographic scans didn't demonstrate endoleak, and all aneurysms are thrombosed with stable (n=1) or decreasing aortic dimensions (n=2). In one case there was a demonstration of endoleak and the patient under went further endovascular procedures.

Conclusions:
‘‘Hybrid’’ aortic de-branching using Dacron branch grafts combined with endovascular aneurysm exclusion appears to be a safe and effective alternative to conventional open repair for arch aneurysms. Longer term follow-up is needed to determine the durability of this approach.