Reinterventions For Late Endograft Migration After TEVAR In The Aortic Arch

Roberto Chiesa
Yamume Tshomba
Luca Bertoglio
Enrico Rinaldi
Efrem Civilini
Davide Logaldo
Andrea Kahlberg
Germano Melissano

Objective:
To analyse incidence, risk factors and outcomes of reinterventions for late stent-graft distal migration after TEVAR involving the aortic arch.

Methods:
We reviewed a prospectively compiled single-centre database containing 516 consecutive patients who underwent TEVAR at our Institution from 1999 to 2013 using standard thoracic stent-grafts without CHIMPS. Aortic arch was involved in 178 cases (54 zones 0, 38 zones 1, and 86 zone 2). In 131 (73.6%) patients an adjunctive aortic debranching was required to obtain an adequate length of landing zones before TEVAR. Stent-graft oversizing was at least of 15% in all cases. The study primary endpoint was reintervention for late stent-graft migration defined as distal migration of $\geq$ 10 mm at an angioCT during follow up compared to the first post-operative angioCT.

Results:
At a mean follow up of 31 months, nine (5.0%) late stent-graft migrations were observed. In all cases a secondary type 1 endoleak with aneurysm enlargement was reported.

In all the migrations the aneurysms were degenerative, non-dissected and without connective tissue disease. Mean time of detection of late stent-graft migration was 46 months after index procedure. Neck length and stent-graft sizing during index procedure respected the manufacturer indications in all cases. Aortic angulation, bird’s beak effect and neck enlargement at follow up were all independent predictors of late stent-graft migration (p< 0.5).

All late stent-graft migrations were treated. Complete arch debranching with stent-graft relining in zone 0 was performed in four migrations from zone 2 and, under temporary bypass from ascending aorta to right subclavian artery during innominate artery clamping, in two migrations from zone 1. A new-relining with a larger stent-graft was performed in two migrations from zone 0, and in one from zone 1. One antegrade endograft insertion was performed for distal stent body misalignment of previously inserted stent-graft. Neither perioperative mortality nor paraplegia was reported, with one minor stroke and one case of respiratory failure.

Conclusions:
Stent-graft migration after TEVAR involving the aortic arch is not so infrequent. All the landing zones are implicated and specific independent risk factors may be recognised. Careful follow up is mandatory because hybrid and open reinterventions present specific challenges but really satisfactory outcomes in our series.