Thromboembolic Complications after Frozen Elephant Trunk Aortic Arch Repair

Objective: This study evaluated the frequency and significance of thromboembolic (TE) complications following frozen elephant trunk (FET) aortic arch repair.

Methods: A total of 128 consecutive patients (mean age 67.9±13.7 years, 31.0% female) underwent FET aortic arch reconstruction between September 2014 and May 2021 in four Canadian centers. Patient baseline characteristics, intra-operative details, and FET thromboembolic complications were retrospectively collected and analyzed.

Results: Fifteen patients (11.7%) had either thrombus within the stent graft (n= 8; 53.3%) and/or suffered from a TE event (n=9; 60.0%) prior to hospital discharge. Sites of embolism were mesenteric (n=8; 88.9%), renal (n=4; 44.4%), and iliofemoral (n=1; 11.1%). Patients who experienced thromboembolic complications were more likely to be female (n=8; 53.3% vs. n=33; 29.0%; p=0.06 for those who did not experience a TE complication) and have a history of autoimmune disease (patients with TE complications, n=3; 20.0% vs. patients without TE complications, n=5; 4.4%; p=0.02). The proportion of use of the 150 mm stent-graft length (vs. the 100 mm length) was significantly greater among those with TE complications versus those without (n=13; 86.7% vs. n=45; 39.8%; p<0.001). Fourteen patients (93.3%) with TE complications received therapeutic anti-coagulation, and a smaller proportion required an open surgical (n=4; 26.7%) or an endovascular (n=1; 6.7%) intervention. Radiographic resolution of thromboembolic complications was observed in 80% of patients (n=12). In-hospital mortality occurred in 1 patient (6.7%), stroke occurred in 1 patient (6.7%) and spinal cord injury (SCI) occurred in 1 patient (6.7%).

Conclusion: Thromboembolic complications occur more often than previously recognized following FET aortic arch repair and are associated with increased rates of surgical and endovascular re-intervention. Prevention and management of these complications require further study.

Marina Ibrahim (1), Jennifer C.-Y. Chung (2), Maria Ascaso Arbona (2), Michael Chu (3), Munir Boodhwani (4), Maral Ouzounian (2), Mark Peterson (5), (1) Montreal Heart Institute, Montreal, Quebec, (2) Toronto General Hospital, Toronto, Ontario, (3) University Hospital, London Health Sciences Centre, London, Canada, (4) Ottawa Heart Institute, Ottawa, Ontario, (5) St. Michael's Hospital, Toronto, Ontario