5. Access Challenges for Thoracic Endograft: Selective Use of the Ascending Aorta

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OBJECTIVE: Endovascular repair of thoracic aortic disease continues to evolve since FDA approval of the first thoracic endograft in the US in March 2005. Certain anatomic characteristics, including adequacy of arterial access, remain a significant limiting factor in thoracic endovascular repair. In clinical trials evaluating thoracic endografts, vascular complications occurred in >20% of cases. The purpose of this study is to evaluate the arterial access and selective use of the ascending aorta for thoracic endograft placement.

METHOD: A retrospective review was performed for patients who underwent thoracic endograft placement from May 2005 to April 2009 (four years since FDA approval of thoracic endografting). The patients were reviewed for indication for the procedure, type of arterial access, technical success, and access-related complications.

RESULTS: 79 thoracic endografts were placed during the study period. The indications for endograft placement included: 53 aneurysms, 10 traumatic lesions, 6 endoleaks, 4 dissections, 3 penetrating ulcers, 2 bleeding aortic fistulas and 1 thoracic diverticulum. Retrograde access was used in 70 cases: 60 femoral (76%) and 10 aortoiliac (13%). Antegrade access through a 10 mm Dacron graft in the ascending aorta was used in 9 cases (11%). These procedures included endograft placement with proximal elephant trunk creation in 6 cases, endograft alone in 2 cases, and 1 case in combination with proximal arch reconstruction/debranching. There was 100% technical success for all cases. The overall access-related complication rate was 6%. There were no complications with antegrade access through the ascending aorta. There were 5 (8%) complications in the femoral access group (3 iliac artery dissection, 1 iliac artery injury and 1 femoral artery injury).

CONCLUSIONS: Access selection is an important part of the preoperative planning of endovascular procedures. Choosing the most appropriate access for a patient will decrease the access-associated complication rate. In addition, selected patients with poor aortoiliac access and those that require debranching or elephant trunk procedures, antegrade access through the ascending aorta is a viable, and may be preferred, option with a low complication rate and can simplify complex endovascular procedures.