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Abstract 34: The Role of Computed Tomography in the Diagnosis of Traumatic Aortic Transection and in the Planning and Follow Up of Thoracic Endovascular Aortic Repair (TEVAR)



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Introduction: Traumatic aortic transection is the second most common cause of death, after head injury, in major trauma. The injury is associated with rapid deceleration. The vast majority occur at the aortic isthmus distal to the origin of the left subclavian artery. Most patients die at the scene with only 20% of cases surviving to hospital. A further 20% will die in the first 30 hours. Early diagnosis and definitive management is essential. Multidetector computed tomography (CT) with multiplanar reformatting plays an important role in diagnosis. Findings include intimal flap, periaortic haematoma, luminal filling defect, pseudo aneurysm, vessel wall disruption and active extravasation of contrast. Thoracic endovascular aortic repair (TEVAR) is the gold standard of care as it is minimally invasive with a vastly reduced mortality compared to open surgical repair (8% vs 23%). CT is important in pre-procedure planning including sizing, deployment, and access. CT also has an important role in the follow-up of patients post-procedure to evaluate for complications such as endoleak. Our centre is the national cardiothoracic tertiary referral centre. We performed a retrospective review of cases from 2012 to present.

Methods: A keyword search and PACS procedure specific search was performed to identify all cases undergoing TEVAR for traumatic transection in our institution. The mechanism of injury and the initial

presenting hospital were recorded. The time of diagnostic CT was recorded followed by the time of definitive management with TEVAR. Procedure-specific factors, such as stent proximity to the left subclavian artery, were evaluated. The time of initial follow-up CT and presence of complications were recorded. 12-month mortality was also recorded.

Results: 7 cases of traumatic aortic transection proceeding to TEVAR were identified from 2012-2018. 3 patients were involved in car-car road traffic accidents, 2 motorcyclist-car collisions, 1 pedestrian struck by a car and 1 kite-surfing accident. In all cases the transection was diagnosed on CT and occurred at the aortic isthmus distal to the origin of the left subclavian artery. The mean time of diagnosis to definitive management was 7.3 hours. All patients had follow-up CT. In 3 of the 7 patients there were struts partially covering the left subclavian artery, however there was satisfactory subclavian flow in all cases. There were no post-procedure complications or mortalities.

Conclusions: Multidetector CT plays an essential role in the diagnosis of traumatic aortic transection. CT is also important in the planning of TEVAR intervention with sizing of stent, deployment position and access sites all important considerations evaluated. CT is also important in the post-procedure follow-up of these patients.

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