

#238 Gururaj Shan

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### **Computed Tomography Angiography for Aero-digestive Injuries in Penetrating Neck Trauma; A Systematic Review**

**Objectives:** Management of hemodynamically stable patients with penetrating neck trauma (PNT) has evolved in recent years with improvements in imaging technology. Computed Tomography Angiography (CTA) encompassing all zones of the neck has become part of the standard diagnostic algorithm for PNT patients who do not require immediate surgical intervention for vascular or aero-digestive injuries (ADI). Several studies have demonstrated favorable operating characteristics for CTA at excluding arterial injuries; however, consensus as to CTA's ability to detect ADI is lacking. We conducted a systematic review (PROSPERO registration) to answer the question: Is CTA sufficient to rule-out ADI in hemodynamically stable PNT patients without hard signs? **Methods:** Investigators independently searched PubMed, EMBASE, and Web of Science from their inception to August 2020 for the search terms "penetrating neck injuries" and "CT scan". To be included, studies required sufficient data to construct a 2x2 table of CTA for ADI. The operating characteristics of CTA for detecting ADI were reported as sensitivity, specificity, and likelihood ratios with 95% confidence intervals (95% CI). Bias in our studies was quantified by QUADAS-2. **Results:** Our search identified 1,242 citations with 7 studies with moderate to high risk of bias meeting our inclusion/exclusion criteria and encompassing 877 subjects with an ADI prevalence of 13.4%. CTA for ADI: Sensitivity (92%, 95% CI, 85%-97%) Specificity 88% (85%-90%), LR+ 12.2 (4.6-32), LR- 0.14 (0.05-0.37). Of the 26 identified esophageal injuries across our studies that were diagnosed by either swallow studies or surgical exploration, 5 (19%, 8.1%-38.3%) were initially missed by CTA. **Conclusion:** CTA alone is not sufficient to exclude esophageal injuries in PNT. As delayed diagnosis is associated with increased morbidity, additional diagnostic interventions should be undertaken if the trajectory is concerning for esophageal injury.

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