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**Scientific Abstract**

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# Dual-Phase Chest CTA Versus Single-Phase Chest CTA In Blunt Traumatic Aortic Injury Patient Underwent TEVAR: Comparison Of Image quality And Radiation Dose

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**Objective:** To compare the image quality and radiation dose of single arterial phase and single delayed phase alone with the reference dual-phase (arterial and delayed phase) of chest CTA in follow up case of blunt thoracic aortic injury patients underwent thoracic endovascular aortic repair.

**Material and method:** Follow-up chest CTA 127 examinations performed between January 2010 and July 2018 in 45 patients underwent TEVAR were evaluated for thoracic aorta and branches, major thoracic organ related trauma, and aortic stent. Image quality was evaluated using a subjective scale assessed by two cardiovascular radiologists. Effective dose and DLP in an arterial phase and a delayed phase were compared.

**Results:** High overall percentage of agreement was found for image quality, artifact, aortic contour and stent scores(85.8%-100%). Compared with the dual-phase, a single delayed phase showed statistically significant difference of scores in image quality at heart and artifact at mediastinum. While, there were statistically significant difference between scores of a single arterial phase and dual-phase: the image quality parameter of U/D aortic disease, branch of aorta; artifact parameters of U/D aortic disease, branch of aorta; aortic contour parameter of ascending aorta an branch of aorta. The median effective dose of single delayed phase was significantly lower than that of single arterial phase (6.4 (5.2,8.7)mSv VS 7.6 (6.1,9.8), $P<0.001$).

**Conclusion:** Single delayed phase reached overall image quality as similar to the dual-phase except nonaortic image quality at heart and artifact at mediastinum while reducing radiation dose 54% in surveillance chest CTA of patients underwent TEVAR.