CT TAVR assessment in the United Kingdom: insights from a national BSCI/BSCCT survey

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Background: Assessment of aortic valve and root anatomy is a pre-requisite for transcatheter aortic valve replacement. Optimized computed tomography-transcatheter aortic valve replacement (CT-TAVR) provides spatially isotropic images of the aortic annulus to guide selection of the model and size of transcatheter valves. However, protocols for acquisition and reporting of CT-TAVR differ between institutions in the absence of standardised guidelines.

Purpose: This study aims to evaluate the national variation in CT-TAVR assessment in the United Kingdom (UK) including image acquisition, reporting and dissemination of findings to the Heart Team.

Methods: UK cardiac CT centres were invited to complete an online survey detailing CT-TAVR acquisition and reporting at their institution. Information gathered included activity volume, CT-TAVR acquisition protocols, use of beta-blockade, contrast volume and radiation dose, structured reporting parameters and availability of images to the Heart Team.

Results: Forty-seven responses from thirty-six cardiac centres were assessed. Twenty-nine centres (63%) had a structural heart programme including TAVR. Most patients (76-100%) have pre-procedural CT-TAVR performed at 90% of TAVR centres. Beta blockade was used in 22% of centres overall. There was significant variation in the volume of activity with only 6 centres (13%) performing high-volume activity (>200 scans per annum). Combined CT-TAVR reporting by both cardiologists and radiologists was more common at high volume centres (100% vs. 50%, p = 0.025) and TAVR centres were more likely to have an established TAVR MDT process (100% vs. 56%, p = 0.04). Cardiac imaging specialist presence at TAVR MDT was reported to be: always (56%), most of the time (22%), sometimes (11%) or never (11%). TAVR centres reported specific vascular access details more frequently than non-TAVR centres (descending aorta [p = 0.04]; minimum iliofemoral diameter [p = 0.003], patency [p = 0.02] and tortuosity [p = 0.007]) and more frequently reported optimal tube angulation of the aortic annulus (67 vs. 6%, p = 0.012). TAVR centres also trended towards using lower contrast volume than non-TAVR centres (98 ± 27 vs. 118 ± 42ml, p = 0.06) but radiation doses did not differ (766 ± 502 vs. 801 ± 461mGy.cm, p = 0.86).

Conclusions: In the United Kingdom, CT-TAVR is performed in both TAVR and non-TAVR cardiac centres. However, there is wide variation in the volumes of activity, approach to acquisition and reporting, contrast volume, and use of a TAVR MDT process.