

Accurate Placement of Aortic Valves Supported by *syngo* DynaCT Cardiac

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“We found that the use of *syngo* DynaCT Cardiac significantly reduces the overall contrast volume and radiation dose required for the TAVR procedures. It accurately determines the choice of valve deployment position.”

J. Crowhurst, Chief Radiographer, Department of Cardiology,
Prince Charles Hospital Brisbane, Australia

The emerging technique of Transcatheter Aortic Valve Replacement (TAVR), is offering treatment options to many patients who are ineligible for open heart surgery due to frailty and other co-morbidities.

The success of this procedure is greatly dependent on the alignment of the valve prosthesis in the aortic root. The valve must be profiled perfectly perpendicular to the X-ray beam before deployment. This requires multiple aortograms being performed which is time-consuming, inaccurate and uses significant contrast media volumes. Performing a pre-operative or peri-operative CT scan can demonstrate the correct C-arm angle for placement of the valve. The cardiology team at the Prince Charles Hospital has compared the effectiveness of pre-operative CT against peri-operative C-arm CT for these procedures.

Method

Patients enrolled in the TAVI program were separated into two groups. One group was studied with pre-operative CT scans and the other underwent peri-operative C-arm CT (*syngo* DynaCT Cardiac). Predicted C-arm angulations from both groups were decided using Siemens *syngo* InSpace 3D software. In all cases, the Artis zee system was positioned using the CT scan's predicted angle. An aortogram was performed to confirm the accuracy of the predicted profile. Total contrast volume was noted for the re-valving procedure including contrast required for the *syngo* DynaCT Cardiac.

Comments

In the pre-operative CT group, the correct C-arm angulation was demonstrated in less than 30% of cases, versus 93% of cases where *syngo*

DynaCT Cardiac was used to determine the angle. Initial findings show the average re-valving procedural contrast volume for the pre-operative CT group was 285 cc, versus 210 cc for the *syngo* DynaCT group. As a comparison over the combined CT + re-valving procedure, the total contrast volume for the pre-operative CT group was 335 cc, versus 210 cc for the *syngo* DynaCT group. Not only does the use of *syngo* DynaCT Cardiac result in the reduction of contrast required, it importantly also allows us to achieve a significant reduction in radiation dose. Indeed, through the entire assessment and intervention the amount of dose per patient was reduced on average from 255.5 CGy with a pre-procedural CT to 214.2 CGy when *syngo* DynaCT Cardiac is used instead.

Conclusion

The treatment with peri-operative C-arm CT with *syngo* DynaCT Cardiac significantly demonstrates a more precise angle of the C-arm when compared to traditional pre-operative CT. As the use of contrast media is critical for patients suffering from renal impairment, the use of *syngo* DynaCT Cardiac indicated to be the system of choice as less contrast media and radiation dose was delivered in comparison to pre-operative CT.

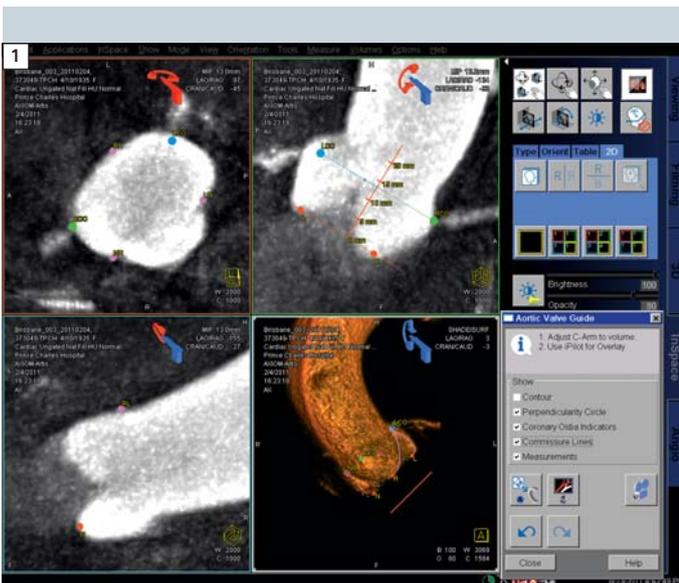
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“Due to the increased accuracy of valve placement with *syngo* DynaCT Cardiac, this technique has become an integral part of all of the TAVI cases within our hospital.”

Darren Walters, M.D., Director of Cardiology,
Prince Charles Hospital, Brisbane, Australia



1 Aortic root segmentation result based on *syngo* DynaCT Cardiac 3D Volume.



2 Overlay of anatomical information and landmarks onto live fluoro for image guidance during valve positioning.