Making the difference with Philips Live Image Guidance

Philips HeartNavigator – the next generation

Minimally invasive treatment of structural heart diseases is becoming more popular as an alternative to surgery for very high-risk patients.
These procedures, however, are challenging and complicated, and experience is required to perform them skillfully.
A TAVR/TAVI procedure, for example, demands high image quality and accurate navigation. Incorrect positioning of the device may lead to the device being dislodged or failing to function correctly.
HeartNavigator is designed to increase your confidence in carrying out structural heart procedures.

Key advantages

- Simplifies planning, measurement, device selection and choice of optimal X-ray viewing angle
- Gives insight into calcification distribution in the ascending aorta, aortic valve and the left ventricle.
- Provides additional live 3D imaging guidance during device placement

PHILIPS

HeartNavigator provides planning

Philips HeartNavigator is an interventional planning and guidance tool that makes it easy for you as an interventional cardiologist or surgeon to quickly increase your confidence in carrying out structural heart disease procedures. It simplifies planning, measurement, device selection and projection angle selection in preparation for the procedure. During the procedure, HeartNavigator provides live image guidance to support you in positioning a device.

Fast and confident planning

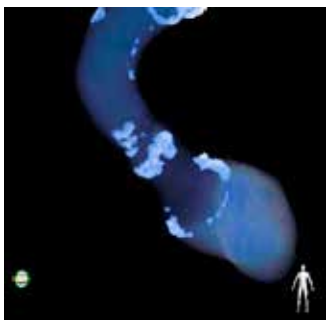
Conventional image guidance software often involves many tedious manual steps that have to be performed in the control room. HeartNavigator provides automated planning to help simplify complex structural heart disease procedures. It creates an excellent volume rendered 3D image of the heart from previously acquired 2D CT datasets. The heart is automatically segmented to visualize anatomical structures and landmarks. The 3D volume is overlayed with the live fluoro image to provide real-time 3D insight during the procedure.

Calcification visualization

In the 3D CT volume, calcifications are automatically highlighted. Assessment of valvular calcification is important to facilitate device sizing. It helps to determine the severity and location of aortic ring calcification to avoid possible complications like rupture of the aortic annulus. Also for a direct aortic approach it is important to know the locations of the aortic calcifications.

Automatic measurements

HeartNavigator provides fast, fully automated and adequate measurements for typical anatomical distances and therefore improving the workflow of planning a TAVR/TAVI procedure. The anatomical distances that are automatically provided are the diameters of the left ventricular outflow tract, aortic valve annulus, sinus of valsalva, sinotubular junction and ascending aorta, together with the distances of the ostia of the LCA and RCA to the valve plane. The automatic measurements are generated automatically in the correct plane and are more reproducible than manual measurements.



"I plan all my cases with the HeartNavigator. I trust the measurements with HeartNavigator more than the measurements provided by the normal CT scan."

Dr. H. Schröfel, Heart Surgery Clinic, Karlsruhe, Germany

support and live image guidance

"We have found that the Philips HeartNavigator automatic measurements of the aortic root are reliable and accurate. They are more reproducible than manual measurements on CT and increased our confidence in transcatheter valve sizing"

Prof. Wahlers - Herzzentrum der Universität zu Köln Germany

Selecting the optimal X-ray view

Without planning tools multiple low-contrast aortograms are used to select the optimal plane for device deployment. This lengthens the procedure time and adds to radiation exposure and the use of contrast medium. The HeartNavigator automatically segments anatomical structures, landmarks and planes out of the DICOM cardiac CT-datasets. In addition the software automatically determines the most commonly used projection angles (3 Bulbi view, AO-NCC view, AO-LCC view,AO-RCC view) to be used during the procedure, without the need for manual manipulations.

Virtual device templates

Virtual device templates of many TAVR/TAVI devices can be overlayed over the segmented CT data and as such be used to assess and select the appropriate device size. The virtual devices can also be overlayed during the procedure in the combined view of the 3D volume with fluoroscopy.

Live 3D image guidance

During the procedure, the live fluoroscopy image can be matched with the 3D image of the ascending aorta to show the exact position of all catheters and devices in relation to the reference image.
This provides you with more guidance and information to check the size of the device and its correct position. HeartNavigator is integrated with Philips Allura X-ray systems, meaning the various X-ray views as determined by the HeartNavigator can be recalled on the X-ray system from tableside. The C-arm moves to the X-ray projection chosen and, vice versa, the 3D image automatically follows the orientation of the C-arm in real-time. Table and L-arm movements are automatically compensated, to keep the 3D volume matched with the live fluoroscopy image when the table or L-arm is moved.

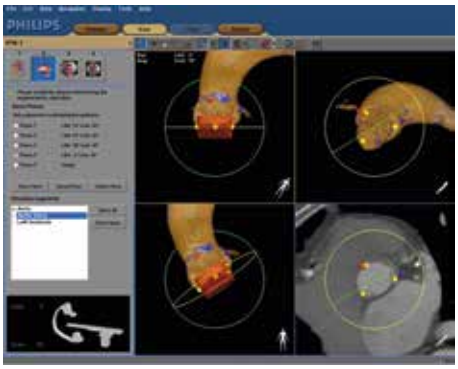
Philips HeartNavigator supports structural heart disease procedures

Step 1. Automatic segmentation.

A DICOM CT dataset is automatically segmented to show anatomical structures and landmarks.

Step 2: Automatic Measurements

With one click, automatic measurements relevant for TAVR/TAVI procedures are provided: the diameters of the left ventricular outflow tract, aortic valve annulus, sinus of valsalva, sinotubular junction and ascending aorta, together with the distances of the ostia of the LCA and RCA to the valve plane.



Step 3. Device selection and view planning.

Commonly used projection angles (based on the calculated planes and landmarks) are automatically provided and can be recalled to select the most preferred X-ray viewing angle for use during the procedure. Additionally personal projection angles can be stored. Different virtual device templates for the most commonly used TAVR/TAVI devices can be used to check the size of the device.

Step 4. Import and match CT volume to X-ray.

The software automatically imports the live X-ray images. The user manually matches the 2D X-ray images with the 3D dataset.

Step 5. Live overlay image.

During the procedure, you can use the 3D live overlay on the live X-ray image to get real-time feedback as you navigate through the vasculature. The overlay automatically follows the C-arm position and table and L-arm movements are compensated to keep the 3D image matched with the live fluoroscopy image.

Please visit www.philips.com/heartnavigator

Philips Healthcare is part of Royal Philips Electronics

www.philips.com/healthcare
healthcare@philips.com

Printed in The Netherlands
4522 962 99181 * MAR 2014