AFI on TEE images

Automated Functional Imaging

Vivid E9 BT 11

Echo PAC BT 11

GE Healthcare
VividClub

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NOTE
This hand out is additional training material.
For more information please refer to the user manual and/or reference manual.

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Getting started

1. Create an exam
2. Connect the ECG
    a. Press **Physio** and change **ECG Lead** to get the best signal
    b. Obtain a stable ECG trace

Optimizing images

1. Sector width
    o Not too small, the myocardium must be visible during the entire cardiac cycle.
    o Not too big, this lowers the frame rate

2. Frame rate
    o Optimal between 40-90 fps
    o Optimize the frame rate with the rotary knob

3. Store loops from the following views
    o Mid-esophageal 4 CH
    o Mid-esophageal 2 CH
    o Mid-esophageal LAX
    o It is recommended acquiring all three views sequentially in order to get comparable heart rates in all views.

Measure the AVC

From Doppler

1. Acquire a nice Doppler signal from the AV; most likely including the valve clicks.
2. Press **Measure**.
3. Open the folder for **Event Timing**.
4. Select AVC.
5. **Set** the marker for the closure.

Now the measurements are stored in the worksheet and will be used for the AFI analysis.

Starting the analysis

The measurement

1. Open the **Mid-esophageal LAX** view
2. Press **MEASURE**
3. In the Measurement menu, select **AFI**.

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4. Select APLAX
   o It is needed to start with the LAX view, because this allows checking the positioning of the aortic valve closure (AVC).

Defining the ROI

1. Only three clicks!
2. Define the endocardial border on both basal points of the annulus and in the apex.
3. Follow the instructions on the pointer or in the status bar.

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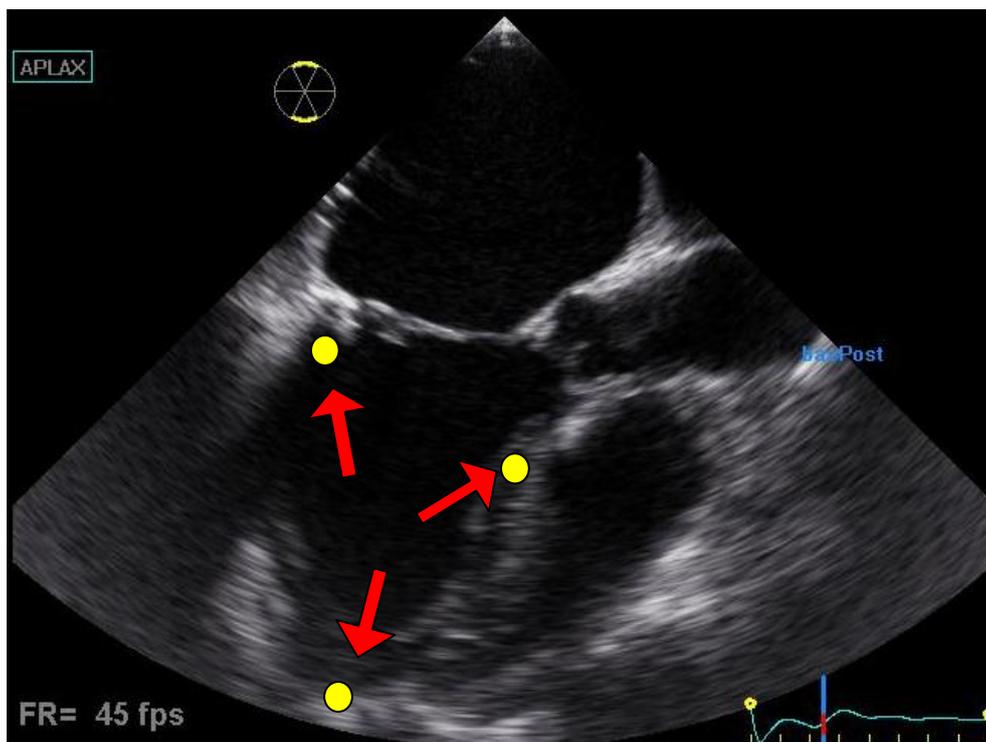
4. Correct ROI definition is crucial to get good tracking
5. After placing the three points the ROI is displayed.
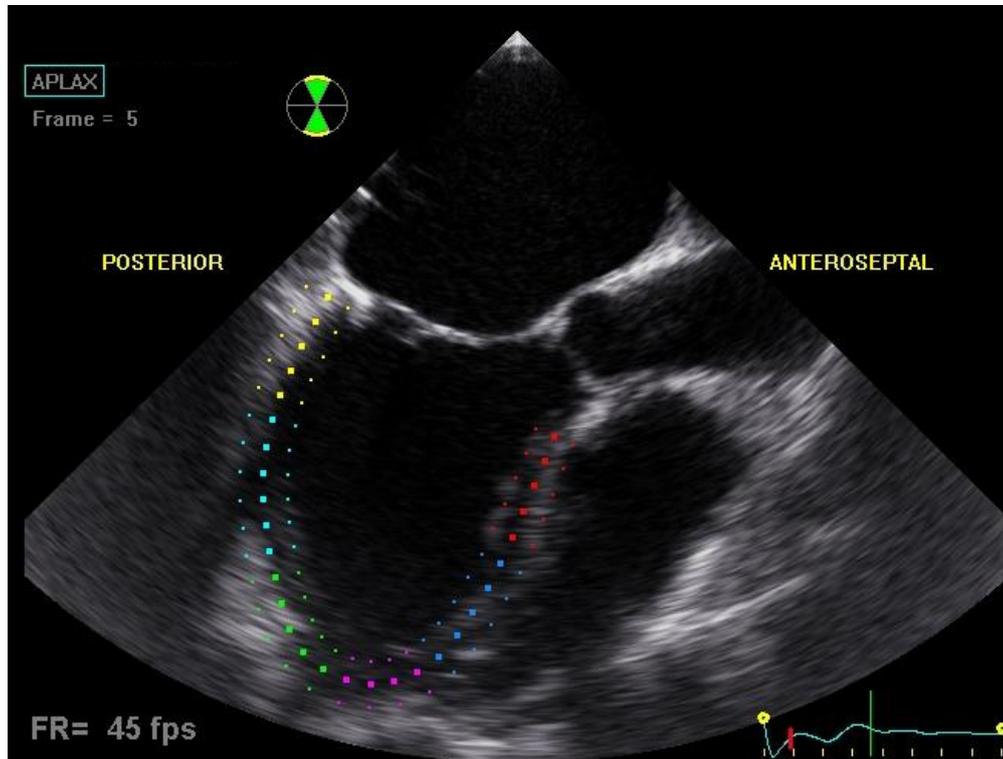
6. The shape can be changed with the cursor (click on the points in the inner border and move them).
7. The processing of the whole loop starts automatically (when the cursor will not be moved any more).
8. The data is processed and the tracking validation screen is displayed.
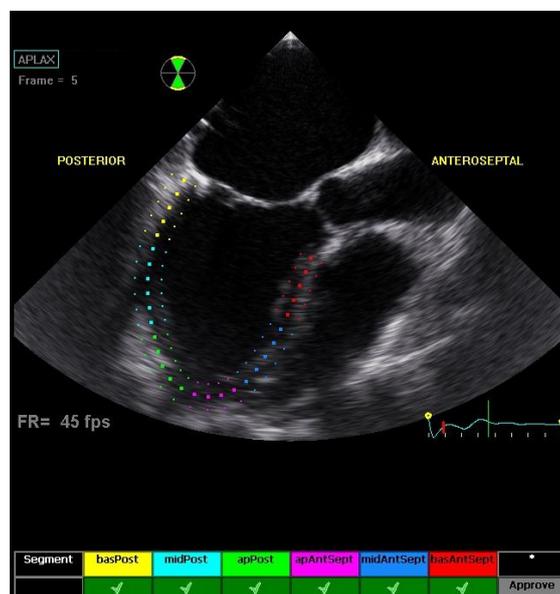
9. Check the tracking quality and make changes on the ROI if necessary.
10. Approve the scoring table, once you can agree with it.

| Segment	basPost	midPost	apPost	apAntSept	midAntSept	basAntSept	*
	✓	✓	✓	✓	✓	✓	Approve

11. Set the AV closure

AV Closure

Different ways to define the AVC:
1. Measure the event timing (needs to be done by Doppler on AV) before starting the AFI.
2. Default AVC selected by the system (determined by the temporal contraction of all LV segments (strain curves)).
3. From the 2D image select the first frame where the AV is closed (only visible in LAX, therefore we start with this) and press Select.
4. Look carefully on the message and make your decision.

Once the AVC is defined this will be used for the other views as well (therefore comparable heart rates are crucial).

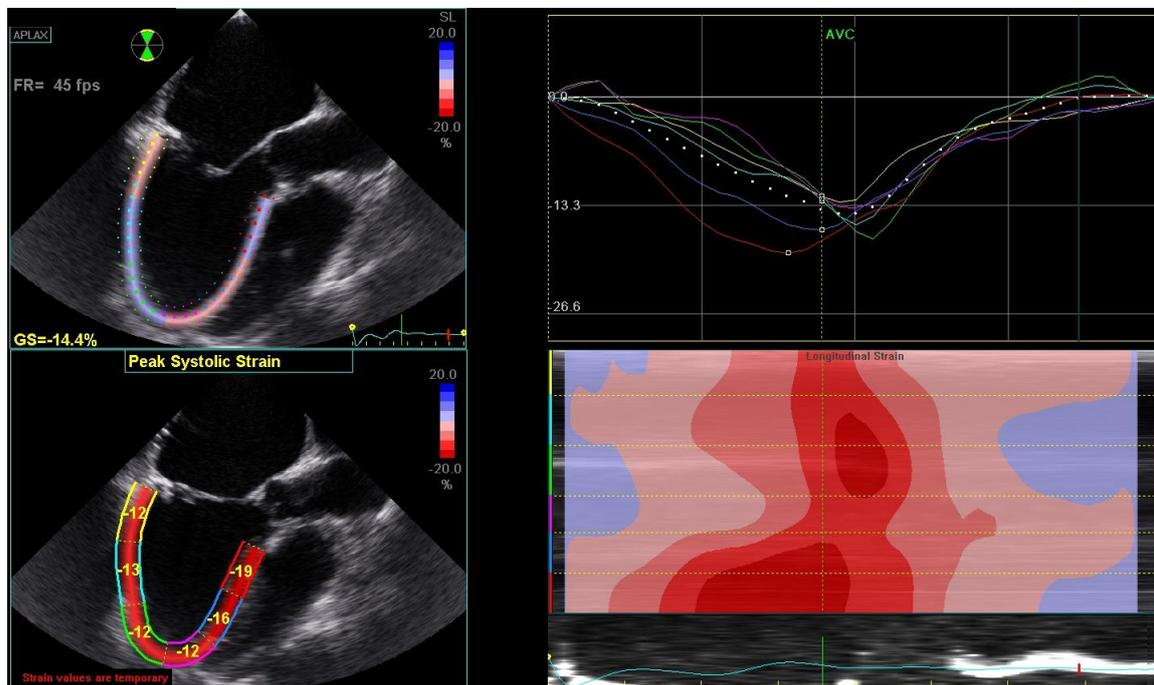Now the *Parametric systolic longitudinal strain LAX view* is displayed
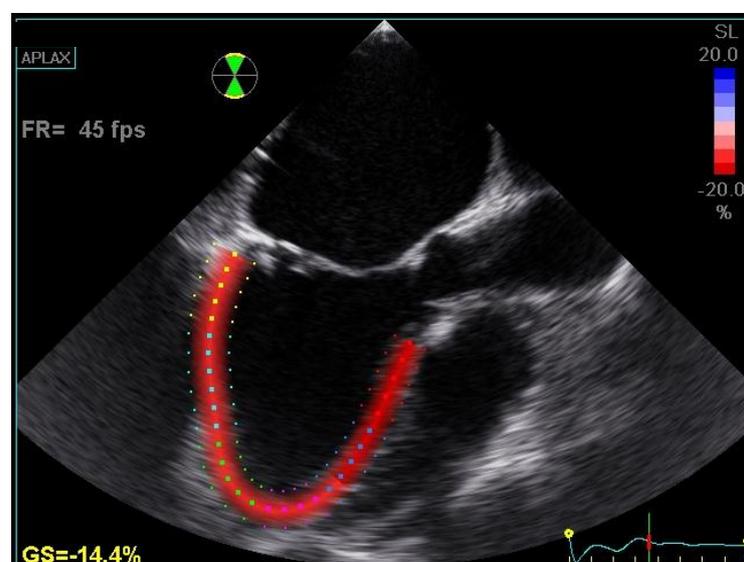
The quad screen

Press **quad screen** to see all information.
To change the peak marker position select it and move it to another position.

Press **Image store** to store the quad screen to the clipboard.

Next analysis:

- Take the 4CH view from the clipboard and do the same analysis again:
- Take 4 CH.
- Click on 4CH in the view selection menu.
- Mark the 3 points
- Check the tracking quality and approve
- Enter the quad screen and store

At the end do the same procedures for the 2 CH view.

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The Summary

Once all views are analysed the system will come up with a bull's eye and the traces from all three views.
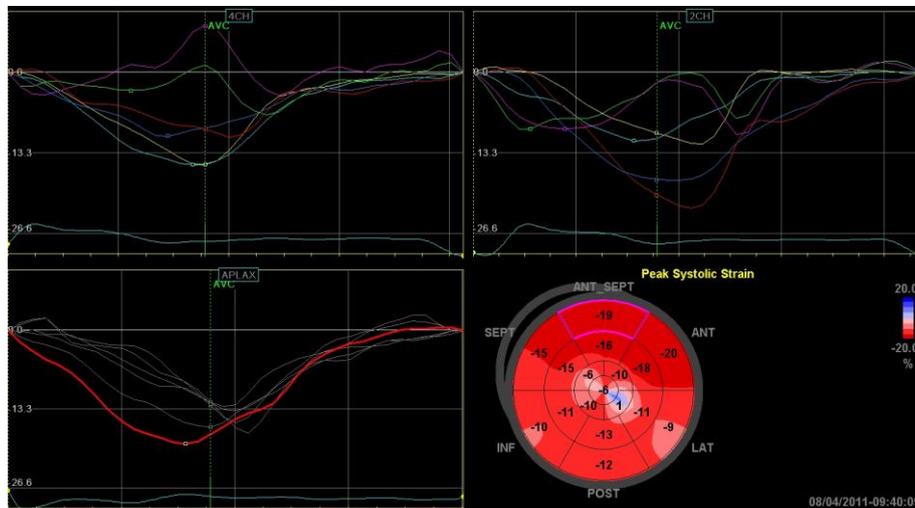
Global Strain

In order to get the global strain values for the different views, select the BE only.
The bull's eye gets enlarged over the screen and the global strain values are displayed.

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