



Aplio & Xario

3D/4D IMAGING GUIDE
FOR OBSTETRICS

OBSTETRICS



GUIDE TO 3D/4D IMAGING IN PRENATAL MEDICINE

Currently one out of every two patients requests a 3D/4D ultrasound scan from their obstetrician. Of course, fetal diagnostics is the primary focus of every examination, but once completed, parents usually like to receive some ultrasound images of their unborn offspring – an important aspect of maternal-fetal bonding.

This guide provides essential tips and tricks so you can quickly, easily, and efficiently generate 4D images. Complete the procedure in just a few steps, described here with photos to provide an even clearer explanation.

Wishing you every success,

Your Toshiba Ultrasound Team

Xario™ **Aplio™**
Platinum Series



THE PERFECT 4D IMAGE IN 5 STEPS

STEP 1:



Create a new patient record by pressing the button left to your Touch Command Screen (TCS). Then select exam type OB.

Enter the Patient ID and Name.

Enter the EDD/LMP, if known.

Select START or press F3 to start the examination.

IMPORTANT: The ID field must be completed with either a name or a number.

STEP 2:

SELECT PRESET/QUICK START

Select either a 4D User Preset or a Quick Start from the TCS. Different Quick Starts are provided on the TCS. Select the 3D/4D Quick Start here. This selection automatically activates the correct, pre-programmed settings and the appropriate 4D transducer.

IMPORTANT: Since the control panel and the TCS are freely programmable, the function keys may be arranged differently.



STEP 3: PREPARATION IN 2D

Position the profile of the fetus on a sagittal plane.

A clear image is only possible if there is an impedance mismatch or the tissue/face can be differentiated from the amniotic fluid. If the placenta, hands, feet, or umbilical cord are positioned directly in front of the face, no profile can be generated.



STEP 4: PREPARATION IN 3D/4D

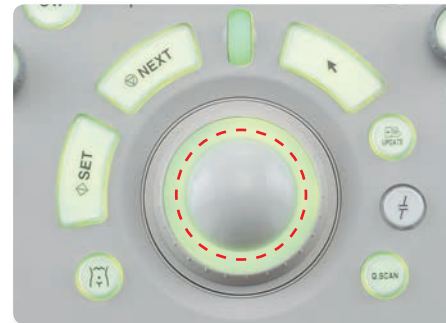
3D

Press the 3D or 4D button.

Check on the TCS that the correct 3D/4D Quick Start is selected depending on your examination (1st trim, 2nd trim, MPR, Spine, etc). Most of the parameters are already programmed for fast and easy workflow.

4D

An ROI (Region of Interest) appears which you place over the profile. Use the trackball (TB) and press NEXT to change the size of the ROI. Then press NEXT again to activate the cutline. Anything above the cutline will not be displayed. The active functionality of the TB is indicated at the bottom right of the monitor in the taskbar. 3D produces a high-resolution data set, known as a “single sweep”, while 4D shows the continuous movement of the fetus.



Trackball

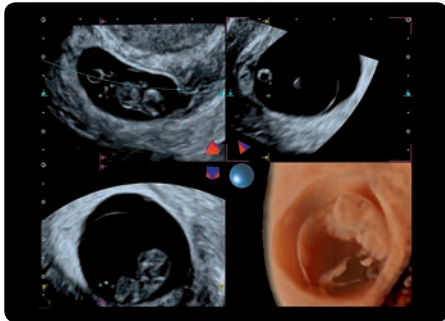
STEP 5: 4D ANGLE/RESOLUTION

If needed, this function can be changed directly in pre-3D/4D. During active 4D scanning it is located on the Mode/Settings screen of the TCS.

- 1) 4D Angle is used to set the degree of the scan angle.
When the scan angle is changed, the volume rate/sweep speed also changes.



- 2) 4D Resolution is used to improve the resolution in sweep direction, the volume rate/sweep speed also changes.



3D/4D

Press the 3D or 4D button again or switch to 4D Live or Single Sweep on the TCS to activate the 3D/4D image. Reduce the Gain using the control dial to generate a perfect image.

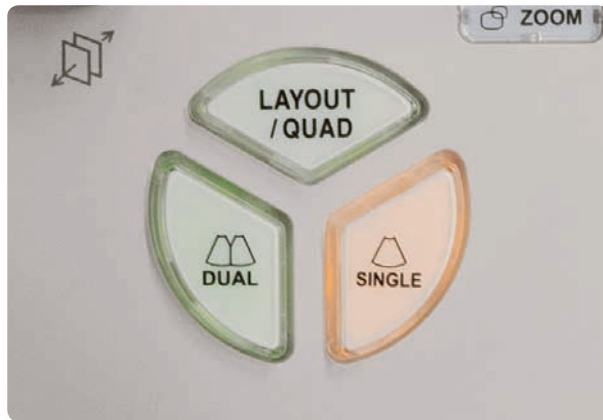


USE THE FOLLOWING PARAMETERS TO OPTIMIZE THE IMAGE

LAYOUT

The image is usually displayed either in DUAL mode or in SINGLE mode. The LAYOUT button can be used to switch to MPR mode.

DUAL is recommended to achieve best possible positioning in Live 4D; SINGLE to print or store.



VOLUME AND MULTIVIEW

Volume or MultiView can also be activated on the TCS.

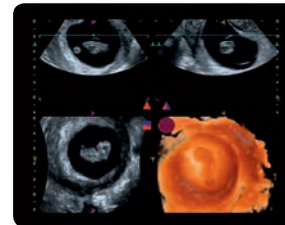
Volume

- 1) Volume produces the associated 3D image with the displayed planes (x, y, z) also called MPR.

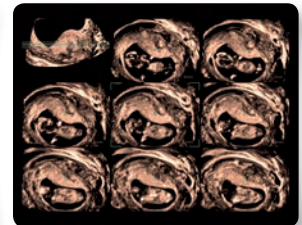
MultiView

- 2) MultiView produces a display similar to a CT image.

1) MPR with Volume Render Type



2) MultiView



IMPORTANT: Only active in Freeze mode.



VIEWING THE FETUS

M, PW and CDI can be used to change the view on the fetus and the sectional planes below (x-axis, y-axis, z-axis), even in Freeze mode.



In case the Volume image is active on the TCS:

- 1) M/x-axis: YES, for nodding head
- 2) PW/y-axis: NO, for turning head
- 3) CDI/z-axis: MAYBE, for bowing head



- 1) Flip right/left.



- 2) Rotate up/down in 90-degree increments.



- 3) Pan: The fetus can be positioned quickly using the trackball. Optimizes rendering and filters out artefacts or structures positioned over the face. Can also be employed using the 2D control dial if Volume image is active on the TCS.



- 4) Flexible Cutline: Corresponds to the cutline in 2D and can be positioned using the trackball.



CUT

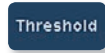


- 1) The scissors button can be used to remove structures. Press this button, move around the area to be cut out, and confirm by pressing the Set key.



- 2) Press this button to undo the previous cut process.

THRESHOLD/TRANSPARENCY



- 1) The threshold is the tissue density and, depending on the intensity, provides more or less information.



- 2) Transparency makes fetal tissue more transparent.

4D SMOOTH



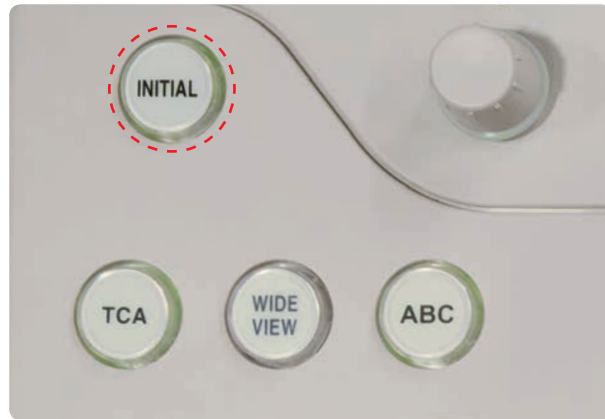
- 3) The 4D rendering image can be smoothed using this control dial.

IMPORTANT: Only active in Freeze mode.



INITIAL

This key can usually be found at the top left of the panel. Pressing it returns to the original image position. Any previous adjustments are deleted.



LUMINANCE (Option for Aplio only)

When used with the 3D/4D option, the Luminance module generates impressively realistic images of the unborn baby. This imaging is possible thanks to innovative rendering algorithms. A virtual light source, which can be freely positioned, is used to influence lighting and shadowing effects individually, so that volumes with surprising physical depth are generated.



1) Press this button to activate the Luminance function.



2) Use Light Position to determine the position of the light source. You can change the position using either the trackball or the TCS.

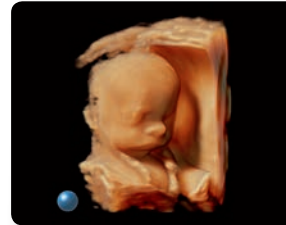
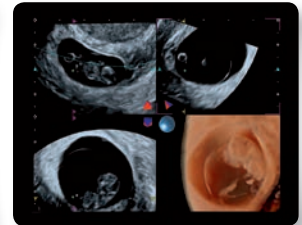
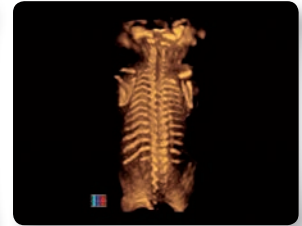
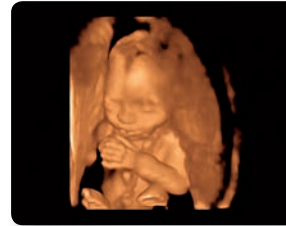


STORE

Images are saved with STILL STORE, sequences with CLIP STORE, and raw data with RAW STORE. Raw data can also be edited at a later time. These buttons can usually be found at the right bottom of the panel.

QUIT

Press QUIT on the TCS or the 2D button to exit the 3D/4D menu and return to the B-image.



Should you have any questions, please contact your local Toshiba application specialist for assistance.

Good luck!

Your Toshiba Ultrasound Team

TOSHIBA MEDICAL SYSTEMS CORPORATION

<http://www.toshibamedicalsystems.com>

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