

4D Ultrasound Technology Healthy Life Magazine, Summer 2006

Baby's First Photo: The clarity of the 4D Ultrasound

For a woman expecting a child, hearing her baby's heartbeat for the first time is a very moving experience, and confirmation of the new life developing inside her womb. As technology progresses, not only is she able to listen to her baby's heartbeat, but she is now able to see advanced images so remarkably clear that she can even watch her unborn child blink.

For more than 35 years, ultrasound technology has provided an exciting experience for parents- the opportunity to watch their child developing in the womb, months before being born. Ultrasounds have traditionally been used for clinical and diagnostic purposes, and are completely safe for both mother and baby. Confirming due dates, checking for anomalies, and assessing the size, health and position of the baby are all part of a routine prenatal ultrasound exam.

Until recently, the images produced by an ultrasound exam were somewhat challenging to distinguish by the untrained eye. It was common for sonographers or ultrasound technicians to print images for parents to take home, complete with labels pointing out features such as the baby's face, or arm.

Now, new 4D technology is using the traditional 2D ultrasound images to create a more recognizable surface image. The 4D ultrasound produces images with incredible detail - facial features so clear that the family is already trying to decide which parent the baby resembles, months before the mother's due date!

All ultrasound technology works by sending high-frequency sound waves, emitted from a transducer, into the mother's body. The waves bounce back off the baby and are processed by a computer that produces an image. 2D ultrasounds advanced to 3D using specialized computers with fast processors that take many "slices", or 2D images, and stitch them together to create a 3D image.

The 4D technology works in a similar way - except that the processing speed is so fast that it actually captures movement in what is very close to real time. Parents can watch their baby yawn, suck his thumb, stick out his tongue and even blink.

"The advances in 4D technology are helping researchers to learn a great deal about the early stage development of a fetus," explains Dr. Dhruv Agneshwar of Santé Comprehensive Women's Healthcare in Endicott, NY. "It also allows the earlier diagnosis of problems or anomalies."

While the 4D will help diagnose surface anomalies, such as a cleft lip, the 2D is still the gold standard and will remain an important diagnostic tool - particularly for viewing the baby's internal organs. Many hospitals with 3D or 4D technology still opt to use 2D

ultrasounds for diagnostic purposes and for routine cases. The newer technology is used as needed for specific diagnostic purposes, or as an elective procedure.

Santé Comprehensive Women's Healthcare has offers the 4D ultrasound in their Endicott office since February 2006. "It's been a great addition to our practice. Parents love it," says Kristine Glenn, RNBS of Santé. "It seems to really enhance the bonding experience when parents can actually see the baby's features so clearly."

An ultrasound exam is a simple, non-invasive procedure. Expectant mothers lie comfortably on an examination table. A special gel is applied to allow the transducer (a wand-like instrument) to move smoothly over her abdomen, emitting high frequency sound waves. When the waves enter the mother's body, they bounce off the baby and send back images that are instantly processed by the computer and displayed on a screen.

Santé Sonographer Kathy Peguero, RDMS has done more than 100 of the 4D ultrasounds since their new Phillips HD11 machine was installed in February. "The machines are much better and user-friendly," says Peguero. "Gone are the days of needing a full bladder, too."

Moving images from the 4D ultrasound are collected on a disk that can be taken home for viewing by family and friends. "It's wonderful! Parents are sharing their 4D ultrasounds via e-mail with family and friends out of town," adds Peguero.

Dr. Agneshwar typically orders three to four traditional 2D ultrasounds during the course of a normal pregnancy and one 4D. "It puts parents at ease when they can recognize the baby and see it moving," says Dr. Agneshwar.

There have been about thirty births since the practice began using the 4D system. "We've been told that parents are bringing the images to the hospital so that they can compare them to the baby at birth," says Glenn. "And, the parents we've talked to say the images have been pretty accurate."

For all expectant mothers' interested in having a 4D ultrasound, remember that while many doctors and hospitals have the technology, it is still considered elective unless there is a diagnostic purpose that requires the more advanced 4D exam. Check with your healthcare provider for details.