

Ultra portability without sacrificing superb imaging capability

Philips VISIQ ultrasound system

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Summary

The Philips VISIQ ultrasound system is a novel ultrasound device that combines capabilities familiar to those accustomed to Philips ultrasound equipment, but in a sleek and highly portable design. Approximately the size of a tablet, the Philips VISIQ ultrasound system represents a powerful technological advance with a pioneering USB connection for its compact transducer, built-in wireless communications for connectivity to image archival systems, and an intuitive touchscreen interface for user control of the ultrasound system. This article provides an overview of our experience with field-testing the utility, capabilities, and image quality of the Philips VISIQ ultrasound system in our practice.

At the forefront of outstanding perinatal care in the Southwest

Experienced maternal-fetal medicine specialists, sustained practice growth throughout the state, and a constant drive toward improvement make Perinatal Associates of New Mexico the leading perinatal practice in the state. Perinatal Associates of New Mexico is well known for outstanding patient care and a leading role in the field, providing perinatal services at the largest hospital in New Mexico.

Dr. Michael S. Ruma, the author of this paper, joined Perinatal Associates of New Mexico in 2008 after completing his fellowship training in Maternal-Fetal Medicine at the University of North Carolina at Chapel Hill. He also holds a Master of Public Health degree in Health Policy and Administration.



Background

With more than 25 years of experience providing maternal-fetal care and prenatal ultrasound diagnosis, Perinatal Associates of New Mexico embraced the opportunity to assess the Philips VISIQ ultrasound system and its innovative capabilities.

PHILIPS

Challenge

Establish a new standard in portable ultrasound for obstetric patients that provides for excellent imaging quality and clinical capabilities in a system that offers intuitive use and high portability.

Study objectives

Evaluate the Philips VISIQ ultrasound system with regard to portability, imaging capability, user interface, and ease of calculations in a busy perinatal practice.

Study methods

The VISIQ ultrasound system was extensively evaluated throughout the practice's outpatient office and in the hospital inpatient settings of labor and delivery, as well as maternal special care units. Patients approached for this study underwent routine obstetric ultrasound exams for various indications at the request of their referring healthcare providers. After obtaining informed consent, each patient's scheduled evaluation was completed using the practice's current equipment – either the Philips iU22 or Philips CX50 ultrasound systems – followed by an examination conducted using the VISIQ ultrasound system.

A patient questionnaire administered at the end of each exam assessed how the use of the VISIQ ultrasound system might affect patient satisfaction with the care provided by her doctor.

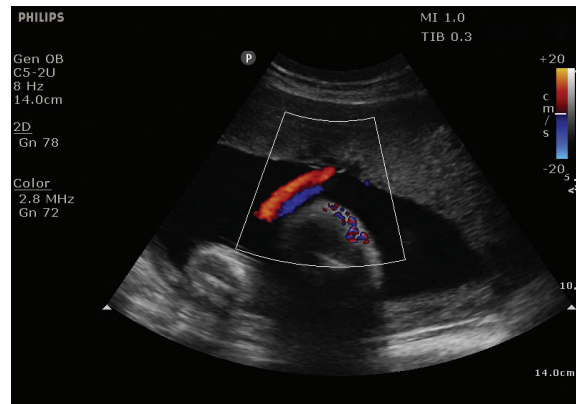
The evaluation of the Philips VISIQ ultrasound system at Perinatal Associates of New Mexico was conducted under institutional review board approval provided by both Western IRB and Presbyterian Healthcare Services IRB.

Exam types

The Philips VISIQ ultrasound system was evaluated during a variety of exam types. The device was used to perform biophysical profiles, fetal anatomic surveys, fetal echocardiograms, and Doppler evaluation of the umbilical and middle cerebral arteries. Our team conducted these exams both in office ultrasound exam rooms and in hospital inpatient rooms of the labor and delivery and antepartum units.

Study findings

Data was collected on the clinical performance and image quality of the VISIQ ultrasound system using 2D, color, pulsed wave Doppler, and M-mode ultrasound.



Portability

VISIQ and its stand are light, easy to maneuver, and remarkably simple to adjust as needed to accommodate different environments – ranging from the standard clinical office setup that allows the ultrasound machine to be used while the operator is seated next to a patient bed, to the normally tight quarters of labor and delivery triage that requires the ultrasound machine to be angled in next to the patient's gurney and the user squeezed in standing at bedside. The device's battery power allows the user to quickly conduct an ultrasound exam without the routine hassle of finding an available electrical outlet to plug into, as required with other ultrasound systems.

Imaging capability

Our team found the 2D image quality, including patients of normal size and those with elevated body mass index, to be comparable to that of the Philips CX50 and iU22 ultrasound systems. The programmed presets (harmonics and SonoCT) enhanced the 2D images similarly to the preset performance on both the Philips CX50 and iU22. AutoSCAN effectively optimized 2D images throughout exams in contrast to repeatedly utilizing iSCAN as with other devices. Of the other portable ultrasound devices we have used, we prefer the image quality of the VISIQ ultrasound system.

We believe the image quality of VISIQ provided the users diagnostic confidence.

User interface

In our experience, the user interface is intuitive from the moment VISIQ is turned on. With the patient's data entered and exam type selected, the transducer is then easily used to obtain ultrasound images.

Maneuvering through the VISIQ ultrasound system's touchscreen interface to adjust gain, change from 2D to color Doppler, and to zoom in and out is analogous to movements found on the latest smartphone. Calipers for fetal biometry measurements are easily applied and adjusted for measurement, and pulsed wave gates and M-mode lines of insonation are targeted with simple digital touchscreen adjustment.

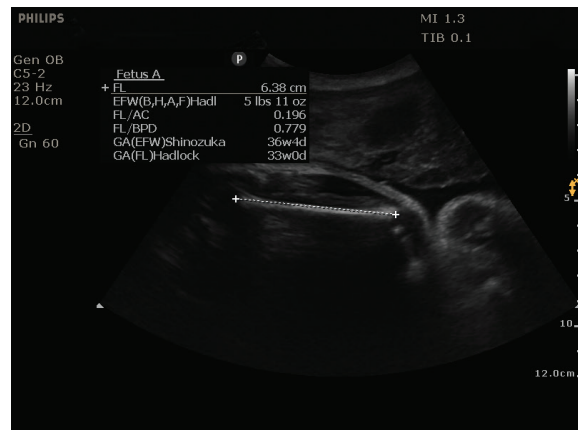
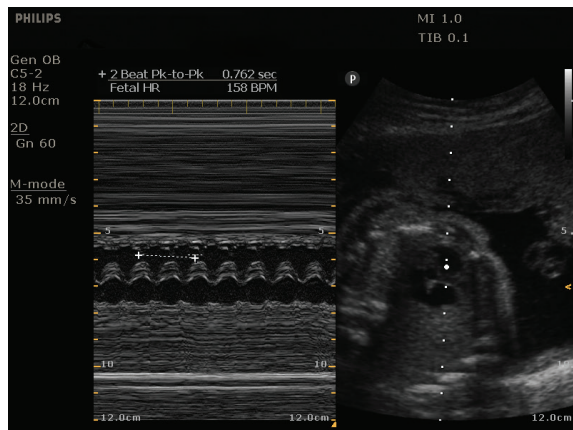
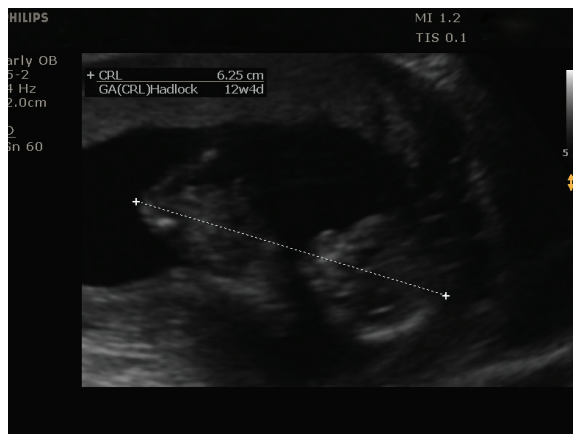
Freezing and capturing of images is done with ease, and we found image post-processing including zoom and gain adjustments extremely useful.

Calculations

The fetal biometry calculation package installed on VISIQ is straightforward and comparable to other Philips ultrasound systems.

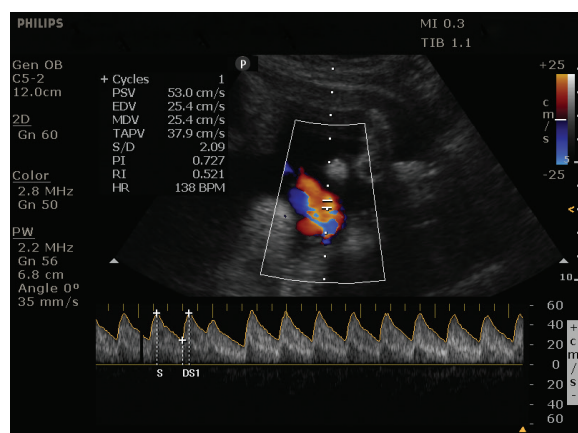
As fetal biometry measurements are obtained, the estimated fetal weight is simultaneously displayed on the system's screen. Amniotic fluid volume measurements are similarly collected with calculation of the amniotic fluid index shown onscreen as well.

Doppler vessel measurements are equally simple to obtain as VISIQ incorporates the advanced technology of Philips High Q automatic Doppler analysis setting. A final ultrasound report with comments may be generated using the touchscreen keyboard and then printed with USB connectivity.



Observations about the patient experience

The Philips VISIQ ultrasound system made a positive impression on the patients in our practice. When asked, each of the patients in the study stated they would tell a friend or family member about their experience being scanned with this portable system. Patients also expressed their preference for use of this type of device in their general obstetrician's office during each of their prenatal visits, stating that their satisfaction with the care provided and their confidence in their provider would likely increase.



Discussion

In our opinion, while the Philips VISIQ ultrasound system will likely not replace premium performance ultrasound systems, its performance will most likely earn its use in the general obstetrician's office as a daily tool to document fetal viability, potentially replacing the fetal doptone, which provides only audible evidence of fetal cardiac activity to the provider and patient.

Its portability will place it in the hands of women's care providers in numerous settings from tertiary-level hospitals and rural clinics to field clinic sites in developing countries. The capabilities of VISIQ will allow it to be used to confidently diagnose fetal growth restriction, umbilical artery Doppler abnormalities, and fetal anomalies.

Conclusion

This ultrasound system stands as a remarkable advancement in compact, portable ultrasound. In obstetric and perinatal care, the availability of ultrasound has revolutionized the healthcare of pregnant women and prenatal diagnosis of the fetus. The Philips VISIQ ultrasound system pushes the capabilities of ultrasound by providing a uniquely high-quality, small, light, and portable device.

Please visit www.philips.com/VISIQ



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Printed in The Netherlands
4522 991 05011 * JUL 2014