
Photograph by Misael Moreno

## Ultrasounds ~ Ultra Safe or Ultra Damaging?

Our collective experience over the past two years has drastically changed our relationship with the medical establishment. For generations people in *developed* nations have accepted and trusted the necessity of medical intervention in their daily lives, rarely searching to understand the motivations or biases of the system in general. One such example of this blind trust is with Obstetric Ultrasonography.

**THE TECHNOLOGY**

In 1956 Scottish Obstetrician Dr. Ian Donald and engineer Tom Brown developed the first prototype system for ultrasound based on the military instrument SONAR that had been used to detect enemy submarines and industrial flaws in ships. Modern engineering uses for ultrasound include disintegrating and blending materials and welding steel, as ultrasound is an effective synergist.

Obstetric ultrasonography involves using a transducer wand on the skin to emit non-ionizing radiation and pulsed *ultrasonic* sound waves at body structures or tissues and then detecting the echoes that

bounce back. This echo bounce-back builds an image of a fetus, placenta, and uterus to ensure that a baby is developing normally, what gender it is, where it is positioned, and to check for abnormalities like ectopic pregnancy, risk of Down syndrome, placental praevia, and spina bifida.

Few expecting parents have a technological understanding of how ultrasound works and that this is the same type of radiation emitted by cell phones, cell towers, cordless phones, baby monitors, and wi-fi signals. Many of these devices come with proximity warnings and have known risks of increased cancer rates.

**POPULARIZATION**

Although it was developed in the 1950s, the regular administration of ultrasounds during pregnancy did not become widely adopted in western nations until the 1970s. Currently, most women in North America undergo at least four ultrasounds throughout their pregnancy. Not warned of potential harm, expecting mothers encouraged by their Obstetricians, enthusiastically await the image of their unborn child often solidifying the first stage of emotional bonding.

Although the International Society of Ultrasound in Obstetrics and Gynecology disapproves of the use of ultrasound for souvenir images, the world-wide business of non-medical fetal ultrasound continues to gain wider acceptance in cultural and even medical societies. In some Asian countries ultrasound is used to determine the sex of the fetus and may potentially lead to abortion if the fetus is deemed female and less desirable. The latest advancements in ultrasound technology, using Doppler and Transvaginal Ultrasound, produce 3D and 4D imaging that can now show the infant's face more clearly and can produce a live three dimensional video effect.

**THE RISKS**

An abstract from 1978, published in the National Library of Medicine, noted "the effects of diagnostic levels of ultrasound on DNA…increased immunoreactivity…strongly suggestive of unwinding of the [DNA] helix or single-strand break induction…" In the 1980s a prominent researcher named Doreen Liebeskind concluded that "a single exposure to ultrasound produced cellular and DNA damage similar to 250 chest X-rays, which was permanent and heritable for ten generations and beyond."

From between 1986 and 1993, the FDA increased the allowable acoustic output of ultrasound machines (measured in milliwatts per square centimeter) from 46mW/cm2 to 720mW/cm2, because doctors and sonographers wanted sharper pictures. After the increase of acoustic output in 1993, ultrasound devices were required by the AFDA to measure two safety markers: thermal and nonthermal effects. Ironically, autism became an epidemic around this same time in history and new research, released by the University of Washington has shown a direct correlation between diagnostic ultrasound, in the first trimester of pregnancy, and increased severity of autism symptoms in children with genetic predisposition. The European Perinatal Health Report also stated that the prevalence of all anomalies per 10,000 births was 1478 in 1980 jumping to 16,787 in 1999, many of which were likely false-positives causing undue stress for the expecting mother as well as unnecessary interventions.

In the late 1980s, the Chinese Human Studies sought to find conclusive evidence about the safety of ultrasound for developing human embryos and fetuses. In the study, Chinese women scheduled for abortions were exposed to carefully controlled diagnostic ultrasound. Later, the aborted fetal tissue was studied and showed aberrations and injuries to organs, tissues, cellular structures, as well as damage to cytokine signalling in molecules, red blood cells, damage to neurons as well as mitochondria.

In 2007 the American Institute of Ultrasound in Medicine published the Practice Guideline for the Performance of Obstetric Ultrasound Examinations and stated that "diagnostic ultrasound studies of the fetus are *generally considered safe* during pregnancy" as if the science is settled, and even though dozens of epidemiologic studies have shown no benefits for the health of children. Rigorous scientific testing of the levels at which ultrasound becomes dangerous is highly discouraged by the medical establishment, because the testing is deemed unethical. According to Dr. Robert Mendelsohn, author of *How to Raise a Healthy Child in Spite of Your Doctor*, "ultrasound is…an unproven technology being sold to the public as being 'perfectly safe'."

Human embryos may be especially vulnerable to Thermally Induced Teratogenesis, or hyperthermia (overheating). Potentially significant side-effects could occur in highly sensitive neural tissue, cerebral vessels, and in fetal bone in the second and third trimester. Non-thermal effects, including non-ionizing radiation, are indicated by the mechanical index. Animal studies have shown non-thermal damage to fetuses, proportional to duration and intensity of the beam, including capillary bleeding in gas-containing organs, like the lungs and intestines. These risks are more significant in early gestation during rapid cell division.

Unfortunately, many of the doctors and sonographers performing fetal ultrasound are not fully aware of the safety parameters, aren't regularly retrained, or even bother to follow the safety standards set by the AFDA including not allowing the transducer to remain stationary (to get a better picture) or using the technology in the first trimester of pregnancy when the embryo cannot dissipate excess heat. Manuel Casanova, a researcher at the University of South Carolina-Greenville who correlated ultrasound exposure with autism characteristics, has also frankly stated that at least 40% of ultrasound equipment is defective.

**THE ALTERNATIVES**

Skilled midwives are trained to use non-invasive tools, such as the Pinard's horn (or fetoscope), for use in monitoring fetal heart rate. Another non-invasive procedure, calculation of the measurement of fundal height, is safe and effective for monitoring normal fetal growth rate throughout pregnancy. Experienced practitioners can also accurately determine fetal position during the third trimester of pregnancy with palpation.

New tests from blood samples alone are now sensitive enough to detect the sex of the fetus as well as fetal DNA to help identify potential chromosomal abnormalities with 98% accuracy. For those seeking information on ultrasound risks and how to have a non-invasive healthy pregnancy and birth, Dr. Sarah Buckley's articles are highly recommended for parents-to-be as well as birth professionals.

As with most elective, allopathic choices on the menu today, it is unlikely that lucrative ultrasound technology will be banned in the near future. Mothers-to-be must withdraw their consent and roll back the overuse of these imaging technologies, originally developed for warfare. An expecting mother has the right to request the use of non-invasive tools during her pregnancy, rather than technologies associated with a long list of potential serious side-effects. Informed consent goes way beyond the latest notorious inoculations. Let's have the courage to re-examine everything that we have ever been told is safe and healthy and begin building a new medical database that empowers humanity. Future generations are counting on us!

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