Ultrasound

What Is An Ultrasound?

An ultrasound, also known as sonography, is a medical imaging technique that uses high-frequency sound waves to create images of the inside of the body. These sound waves are beyond the range of human hearing and are emitted by a small probe called a transducer. The transducer is placed on the skin, and as the sound waves encounter internal structures, they bounce back as echoes. These echoes are then converted into real-time images, allowing healthcare professionals to visualize organs, tissues, and blood flow.

Why Is It Done?

1. **Diagnostic imaging:** Ultrasound is commonly used for diagnostic purposes to visualize various organs, including the heart, liver, kidneys, gallbladder, uterus, and more. It helps in detecting abnormalities, such as tumours, cysts, or structural issues.
2. **Pregnancy monitoring:** Obstetric ultrasound is widely used to monitor the development of a fetus during pregnancy. It provides detailed images of the fetus, placenta, and amniotic fluid, helping healthcare providers assess fetal growth and anatomy, and detect any potential issues.
3. **Guidance for procedures:** Ultrasound is often utilized to guide medical procedures, such as biopsies or injections. Real-time imaging allows healthcare professionals to precisely target specific areas for intervention.
4. **Vascular studies:** Doppler ultrasound, a specialized form of ultrasound, is used to assess blood flow in arteries and veins. This is valuable for diagnosing conditions such as deep vein thrombosis (DVT) or evaluating blood vessel abnormalities.
5. **Monitoring organs in real-time:** Ultrasound enables real-time monitoring of organ function and blood flow, aiding in the assessment of conditions like heart function, liver disease, and kidney disorders.

What Are The Possible Risks?

Ultrasound is generally considered safe and non-invasive, with minimal risks. However, it's important to note the following considerations:

1. **No ionising radiation:** Unlike X-rays or CT scans, ultrasound does not use ionising radiation. This makes it a safer imaging option, especially during pregnancy, as it doesn't pose a known risk to the developing fetus.
2. **Temperature elevation:** Prolonged exposure to ultrasound in certain tissues may cause a slight temperature elevation. However, modern ultrasound equipment and protocols are designed to minimize this effect, and the temperature increase is usually negligible.
3. **Cavitation:** In rare cases, the formation and collapse of tiny bubbles (cavitation) in body fluids may occur due to the application of ultrasound. This is typically not harmful, and extensive research is ongoing to ensure the safety of ultrasound procedures.
4. **Operator dependence:** The quality of the ultrasound images can depend on the operator's skill and experience. In some cases, inaccurate interpretations may occur if the operator is not proficient in using the equipment.