A Review on Ultra Sound Radiography

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Review Article

Ultrasound imaging uses a transducer or probe to generate sound waves and produce pictures of the body's internal structures. It does not use ionizing radiation, has no known harmful effects, and provides a clear picture of soft tissues that don't show up well on x-ray images. Ultrasound is often used to help diagnose unexplained pain, swelling and infection. It may also be used to provide imaging guidance to needle biopsies or to see and evaluate conditions related to blood flow. It's also the preferred imaging method for monitoring a pregnant woman and her unborn child [1]. The soft tissues and bones of arms are not overlapping the lung field. Proper exposure is evidenced by visualization of the ribs through the heart, lung markings, and sharp outlines of the hemidiaphragms [2]. These various X-ray methodologies utilize several different types of interactions between X-rays and matter that may be employed for imaging and analysis [1]. First, X-rays can be absorbed or scattered by the tissue thereby attenuating the transmitted X-ray intensity. This is the most widely used technique for structural, vasculature, and gastrointestinal tract imaging. This procedure requires little to no special preparation. Your doctor will tell you how to prepare, including whether you should not eat or drink beforehand. Leave jewelry at home and wear loose, comfortable clothing. You may need to change into a gown [2]. Doppler ultrasound is a special ultrasound technique that evaluates movement of materials in the body. It allows the doctor to see and evaluate blood flow through arteries and veins in the body.

There is a significant difference in x-ray attenuation between the air-filled lung and soft tissues such as the mediastinum and diaphragm, precluding uniform exposure and increasing the scatter. One way to obtain a uniform exposure is the use of scanning equalization radiography (SER). This is a computer-assisted, electronically enhanced radiography technique in which a narrow x-ray beam is scanned over the patient, and its attenuation is measured. The beam intensity is then modulated, depending on this information to equalize the regional x-ray film exposure. An artificial dark band is created at the interfaces of high contrast, such as the diaphragm-lung interface. It is not always possible to obtain a PA view (e.g., in an intensive care unit [ICU] setting); sometimes one can use an additional view to answer a specific clinical question. However, many views that were formerly used are no longer performed due to the easy availability of CT, which gives a more definite answer. Note that the cost of an additional radiographic view is still significantly less than a CT scan, and an additional view may solve a particular clinical question quickly and economically [4]. A good understanding of bisecting angle technique is necessary to correct dimensional errors associated with placement difficulties as well as instances when occlusal techniques are utilized for intraoral radiographic imaging particularly with rigid digital receptors.

Conventional ultrasound displays the images in thin, flat sections of the body. Advancements in ultrasound technology include three-dimensional (3-D) ultrasound that formats the sound wave data into 3-D images.

References

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