



Artifacts in Diagnostic Medical Ultrasound, Volume 1, Greyscale Artifacts (paperback)

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This book is a comprehensive review of the full range of artifacts encountered in the usual practice of diagnostic ultrasound. It includes an account of acoustic artifacts (relating to the interaction of the ultrasound pulses with body tissues), as well as the misleading appearances that sometimes occur because of control settings applied by the operator (TGC, multiple focal zones, dynamic range, frame rate, spatial compounding, harmonics and others). One of its many strengths is that it describes the causes of the artifacts/appearances and includes mention of ways to avoid or eliminate those that are unhelpful or undesirable.

The book is divided into thirteen chapters, with more than 230 images and explanatory diagrams, including colour images. Examples of everyday life optical equivalents of the phenomena causing the ultrasound appearances are shown and allow a better understanding of the mechanisms at play. The ultrasound images have reproduced well, with relevant features easily seen, often indicated by arrows or superimposed lines.

The explanations of the origin of various artifacts are concise, without excessive technical detail. Examples are presented from a wide range of ultrasound applications, including abdominal, obstetric, vascular and musculoskeletal specialties. Examples of the same artifact, as it appears in images from different

applications, are given. For this reason, the book is useful for anyone using diagnostic ultrasound equipment.

Scanning tips, such as the need for orthogonal views to explain some appearances, are given throughout the book. Basic principles of transducers and beam formation are mentioned in the context of their effect on image quality, leading to an understanding of why and when to use a stand-off pad, or which transducer to select for a given application. Mention is made of the need for constant critical analysis of images to differentiate between echoes representing artifact and those representing pathology. A good example from abdominal sonography is the non-recognition of lung pathology because the echoes are mistaken as mirror images of liver or spleen, the most common cause of echoes above the diaphragm.

A minor criticism can be made about the description of the phenomenon of anisotropy, described in the chapter on attenuation effects and also under refraction effects. The variation in brightness of echoes in a structure such as a tendon is ascribed to refraction effects, but is mainly due to the reduced return of echo signal to the transducer as the angle of approach to the fibrils varies from ninety degrees. Nevertheless, the need for caution and careful technique when scanning anisotropic structures is clearly conveyed.

This book is a very useful and practical read for all who are using diagnostic equipment, regardless of background or the specialty of application. Anyone who reads and applies the advice in this publication should have a much better understanding of diagnostic ultrasound artifacts and is unlikely to make errors in diagnosis because of their misleading appearances.

It should be in every department's library and read on a regular basis.

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