TISSUE-MIMICKING PHANTOM OF FEMALE REPRODUCTIVE SYSTEM ORGANS FOR ULTRASOUND IMAGING

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Ultrasound (US) imaging is one of the most widely used methods of medical visualization in clinical practice. Tissue-equivalent phantoms, which mimic the acoustic response of tissues and organs to produce observable US images, are used to train specialists and to validate new techniques in US visualization, including contrast-enhanced US. One of the methods of US visualization is hystero-salpingo contrast sonography (HyCoSy), which involves contrast-enhanced visualization of the organs of the female reproductive system. One advantage of HyCoSy is the ability to visualize the fallopian tubes, the obliteration (obstruction) of which can be a cause of infertility. We are therefore developing a phantom of the female reproductive system for US visualization, specifically a fallopian tube phantom, which is suitable for training US visualization specialists and for testing contrast agents. A schematic design of the phantom is shown in Figure 1 (a). The phantom approximates the real dimensions and the materials used correspond to the density, acoustic impedance and longitudinal wave velocity of the tubal tissues visualized by US, thus enabling realistic US imaging. Figure 1 (b), (c) shows an image of the finished phantom in B mode and in contrast mode with microbubble contrast agent introduced. The phantom is easy to manufacture and use, making it commercially available for production. This tissue-equivalent phantom may find application in training US diagnostic physicians as well as testing US contrast agents under near-natural *in vitro* conditions.

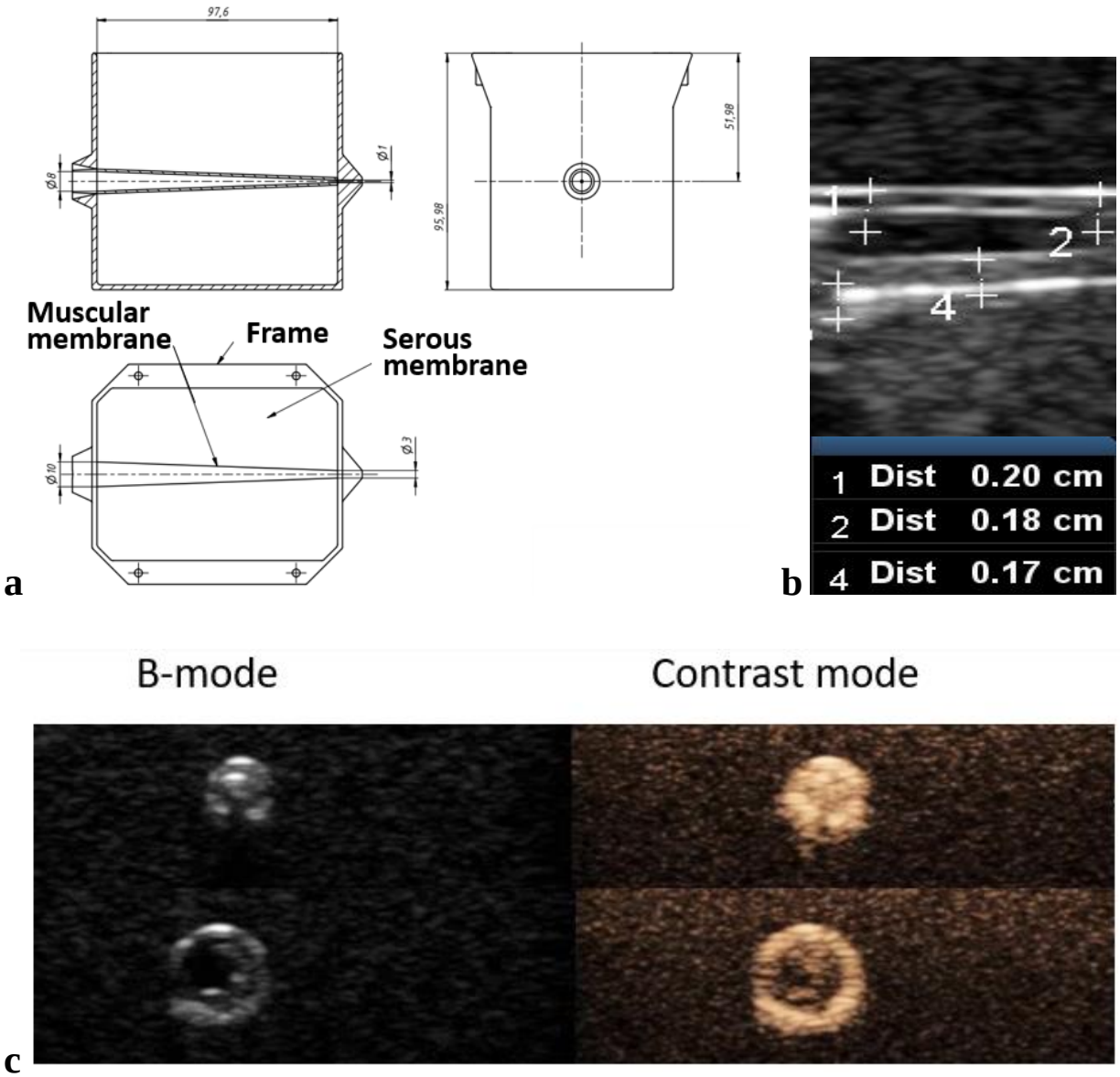

Figure 1. schematic drawing and ultrasound images of the phantom. (a) Design of phantom. (b) Ultrasound imaging of the phantom in B-mode. Measuring the thickness of the muscle membrane. (c) Ultrasound image of the phantom in B-mode and in contrast mode with a microbubble contrast agent injected into it.