

The Affect of Water Quality on the Ultrasonic Attenuation of Bone Mimic

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Abstract : The propagation mechanisms in the trabecular bone are poorly understood and have been the subject of extended debate; also, steel wool has been evaluated as a potential bone mimic, Its advantages are ready availability, low cost and a wide range of sizes. In this study, both distilled and tap water were used to estimate the ultrasonic attenuation in coarse steel wool. It is clear from the results that the attenuation of coarse steel wool increased as the distance between the transducers decreased, and it is higher in tap water than distilled water. At 9cm distance between the transducers the attenuation was approximately 0.97 and 4.7 dB in distilled and tap water respectively. While it is 6.97 and 12.2 dB in distilled and tap water respectively at distance 4cm. This change in the attenuation between both distilled and tap water is probably due to gas bubbles in the tap water.

Keywords : bone mimic, porosity, tap water, distilled water, ultrasonic attenuation

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