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Feasibility Study for Removing Atherosclerotic Plaque Using the Thermal Effects of a Planar Rectangular High Intensity Ultrasound Transducer

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Abstract : The aim of this paper was to conduct a feasibility study using a flat rectangular (3x10 mm2) MRI compatible transducer operating at 5 MHz for destroying atherosclerotic plaque using the thermal effects of ultrasound in in vitro models. A parametric study was performed where the time needed to ablate the plaque was studied as a function of Spatial Average Temporal Average (SATA) intensity, and pulse duration. The time needed to ablate plaque is directly related to intensity, and pulse duration. The temperature measured close to the artery is above safe limits and therefore thermal ultrasound does not have a place in removing plaques in arteries.

Keywords : ultrasound, atherosclerotic, plaque, pulse
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