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Optimized design of microwave antenna for the removal of liver tumor

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In the field of microwave coagulation therapy (MCT), the use of minimally invasive antenna is recognized as a very promising technique for the treatment of small tumors because a very thin antenna can be easily inserted inside the body and precisely localized using the advanced 3D imaging techniques and surgical robots. In this paper we describe specifically designed thin microwave coaxial antenna that is used as base antenna for the other antennas used in microwave coagulation therapy. Using finite element simulation microwave coaxial antenna operating at 2.45 GHz has been optimally designed for removal of liver tumor. By several optimization steps the antenna is simulated and optimized by comparing the values of specific absorption ratio (SAR) with the variations of dimensions of slot from 1mm to 1.7 mm.