

The Effect of Choke on the Efficiency of Coaxial Antenna for Percutaneous Microwave Coagulation Therapy for Hepatic Tumor

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Abstract : There are many perceived advantages of microwave ablation have driven researchers to develop innovative antennas to effectively treat deep-seated, non-resectable hepatic tumors. In this paper a coaxial antenna with a miniaturized sleeve choke has been discussed for microwave interstitial ablation therapy, in order to reduce backward heating effects irrespective of the insertion depth into the tissue. Two dimensional Finite Element Method (FEM) is used to simulate and measure the results of miniaturized sleeve choke antenna. This paper emphasizes the importance of factors that can affect simulation accuracy, which include mesh resolution, surface heating and reflection coefficient. Quarter wavelength choke effectiveness has been discussed by comparing it with the unchoked antenna with same dimensions.

Keywords : microwave ablation, tumor, finite element method, coaxial slot antenna, coaxial dipole antenna

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