Abstracts

Monopole Antennas for Microwave Catheter Ablation

S. Labonte, A. Blais, S.R. Legault, H.O. Ali and L. Roy. "Monopole Antennas for Microwave Catheter Ablation." 1996 Transactions on Microwave Theory and Techniques 44.10 (Oct. 1996, Part II [T-MTT] (Special Issue on Medical Application and Biological Effects of RF/Microwaves)): 1832-1840.

We study the characteristics of various monopole antennas for microwave catheter ablation of the endocardium. The investigation is done with a computer model based on the finite-element method in the frequency domain. Three monopole geometries are considered: open-tip, dielectric-tip, and metal-tip. Calculations are made for the magnetic field, the reflection coefficient and the power deposition pattern of the antennas immersed in normal saline. The theoretical results are compared with measurements performed on prototypes and good agreement is obtained. The antenna characteristics suggest that the metal-tip monopole best fulfills the requirements of catheter ablation. The computer model is then used to compare metal-tip monopoles of different dimensions and to determine design trade-offs.

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