

In vivo temperature mapping of prostate during treatment with TherMatrix TMx-2000 device: Heat field and MRI determinations of necrotic lesions

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Background and Purpose: The effectiveness of any thermotherapy device is determined by the temperatures created and how long they are applied. Understanding the heating characteristics of a thermotherapy device is vital to its correct implementation. Interstitial temperature mapping was used to determine the heat field created within the prostate by the TherMatrix TMx-2000 transurethral microwave thermotherapy (TUMT) device. Gadolinium-enhanced MRI was used to determine the extent, type, and pattern of coagulation necrosis caused by TUMT. Patients and **Methods:** Interstitial temperature mapping was performed during treatment in five patients with benign prostatic hyperplasia using 24 temperature sensors inserted through the perineum and arrayed throughout the prostate under ultrasound and X-ray guidance. Gadolinium-enhanced MRI scans were performed on all patients 1 week after treatment. **Results:** Interstitial temperature mapping found the heat field created to peak at the urethral surface