
A SYSTEM FOR HYPERTHERMIA
RETREATMENT OF RADIATION
FAILURES IN A FREE STANDING
RADIATION THERAPY CENTER

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Air cooled microwave applicators* for use in the hyperthermic treatment of tumors in several regions of the body have been designed and tested both for physical characteristics, heat distribution in phantoms and treatment fields in patients. Homogeneity of temperatures and minimum leakage levels were determined and found satisfactory. Routinely, treatment temperatures of 44-45 degrees Centigrade were obtained at tumor depth while surface was kept at 37 degrees Centigrade. Using 300 MHz increased the effective penetration beyond 5 cm, the blood flow acting as an homogenizing factor.

Similar results were obtained using intracavitary antennae, typically introduced in the mouth, pharynx, esophagus or rectum. Regional temperatures of 44-45 degrees Centigrade could be routinely achieved in the treated area, with a minimum of reaction from the hollow viscera containing the device. Again, the use of 300 MHz gave an extended treatment field.

40 tumors were treated with a multifraction regime. The overall series still shows upwards of 90 percent tumor response, with 50 percent or more total response, depending on the region. Radiation dose was either 2000 rads or 4000 rads, depending if the previous radiation dose was above or below 6200 rads. Typically patients received 20 radiation fractions and 10 hyperthermia treatments over a 5 week period.

*Equipment supplied by MEDTRA, Inc.