

INTERSTITIAL RADIOTHERMOTHERAPY: TECHNICAL ASPECTS

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At the University Hospital of Freiburg, an interstitial radiothermotherapy-study has been performed at the carcinoma of the prostate. The concept of the study includes an interstitial application followed by an external radiation therapy. After the HDR-brachytherapy the hyperthermia is carried out using a MECS (**M**ultiple **E**lectrode **C**urrent **S**ource)-system with up to 16 antennas. For the application the same plastic needles can be used as in brachytherapy. Each antenna has two electrodes, each of them can be controlled individually. For the monitoring of the temperature, each antenna contains 7 thermocouples. In this way the temperature-distribution in the whole target volume can be measured and used as an input parameter for the adaptive control of the system.

According to the protocol the application takes one hour, aiming at a temperature of 43°C. In the initial phase the gradient lasts about 4-5 minutes. In the study presented 36 interstitial radiothermotherapy-applications are analyzed. About 90 percent of the measured points in the volume reached the target temperature of 42°C, a temperature, which could be maintained for more than 55 minutes.

A detailed evaluation of the results is presented.