

## **INITIAL EXPERIENCE WITH COMPLEX HEPATIC SURGERY AIDED BY A 1.5 TESLA MOVEABLE MR SYSTEM**

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**Background.** Resection represents the gold standard treatment for potentially curable liver tumors. The role of radiofrequency ablation (RFA) in the treatment of these lesions is not well defined. RFA has a number of technical limitations which may limit the curative potential of this technology. One obstacle is the difficulty in monitoring the extent of ablation, as ultrasound does not clearly define the boundaries of the burnt zone. This is particularly problematic when larger lesions are targeted, as it is difficult to monitor the effects of multiple applications of heat. To address this problem, we performed open hepatic surgery in an operating room equipped with a unique, retractable 1.5 Tesla magnet.

**Patients and Methods.** Patients were selected because it was anticipated that RFA (with, or instead of resection) was a likelihood and that intraoperative MRI (iMRI) might be helpful in making intraoperative decisions. After a baseline MRI, lesions were further assessed by ultrasound, at the time of open surgery. Lesions were resected and/or ablated, and further imaging confirmed the margins of the procedure.

**Results.** Nine patients had the procedure: one with metastatic carcinoid, 4 with hepatocellular carcinoma, and 4 with colorectal liver metastases. In 4 patients, iMRI had an effect on decision making. Complications included a bile leak from a burn injury to the bile duct and a postoperative myocardial infarction. In 5 individuals, there were recurrences, but none were local recurrences.

**Conclusion.** Intraoperative MRI could potentially impact operative decision making when ablating extensive disease. Its ability to prevent local recurrences must be determined. Moreover, the role of these techniques in the overall treatment armamentarium needs to be defined.