

RSNA Press Release

MR Imaging During Brain Surgery Improves Tumor Removal

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OAK BROOK, Ill. - A specially adapted magnetic resonance imaging (MRI) scanner can help physicians remove brain tumors and all of the residual cancer during one surgical procedure, according to a study published in the October issue of the journal *Radiology*. Using intraoperative MR-guidance, surgical strategy was changed in one out of four cases.

"Imaging during surgery provides intraoperative quality control. It presents valuable information during the procedure that allows the surgeon an opportunity to adjust the strategy," said lead author Christopher Nimsky, M.D., an associate professor at the University Erlangen-Nürnberg in Germany.

Prior to intraoperative imaging, small parts of the tumor could be inadvertently missed. This tumor residue usually required repeated surgery, surveillance or further treatment.

The researchers reported their first clinical experience with intraoperative high-field MRI of 200 patients. They evaluated the extent of tumor removal depicted by intraoperative imaging and how surgical strategy was altered.

The investigators found that imaging quality was indistinguishable between the pre- and intraoperative scans. In 27.5 percent of cases, intraoperative MRI impacted surgical strategy, often depicting additional tissue that needed to be removed.

MR is the imaging modality of choice for preoperative diagnosis of brain tumors and epilepsy. In the mid 1990s the advancement of open MR systems extended its practicality to the operating room. The researchers have now applied high-field scanning capabilities to intraoperative MR. High-field MR produces better image quality with reduced scan time. However, high-field MR is still an expensive imaging modality and will be for at least the next few years.

Dr. Nimsky envisions that in the future, flat MR scanners might be placed underneath operating tables to further optimize the intraoperative application of MR imaging technology. He said that the optimal solution is a nearly invisible imaging system that provides real-time feedback to the neurosurgeon without disturbing the surgical workflow.

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"Intraoperative High-Field-Strength MR Imaging: Implementation and Experience in 200 Patients." Collaborating with Dr. Nimsky on this paper were Oliver Ganslandt, M.D., Boris von Keller, M.D., Johann Romstöck, M.D., and Rudolf Fahlbusch, M.D.

Radiology is a monthly scientific journal devoted to clinical radiology and allied sciences. The journal is edited by Anthony V. Proto, M.D., School of Medicine, Virginia Commonwealth University, Richmond, Virginia. *Radiology* is owned and published by the Radiological Society of North America, Inc. (radiology.rsna.org)

RSNA is an association of more than 35,000 radiologists, radiation oncologists and related scientists committed to promoting excellence in radiology through education and by fostering research, with the ultimate goal of improving patient care. The Society is based in Oak Brook, Ill. (rsna.org)

October is Breast Cancer Awareness Month. For story ideas or background, please visit RSNA.org/media/briefings/2004/ to access the Women's Breast Health Web cast archive and online press kit. Renowned experts in breast screening and breast cancer therapy discuss the latest trends in mammography, digital mammography, computer-aided detection, brachytherapy and thermal ablation. For interviews, contact Maureen Morley or Doug Dusik at (630) 590-7762. For B-roll, contact Danny Deraney at (323) 930-1030.

At A Glance

- High-field MR-assisted neurosurgery helps ensure removal of the entire tumor and eliminates tumor residue.
- Intraoperative MR image-guidance altered surgical strategy in more than 25 percent of cases studied.
- High-field MR provides clear images and reduced scan time.