

Contents

History- Development- Prospects of Intraoperative Imaging

From Vision to Reality: The Origins of Intraoperative MR Imaging	3
Black, P., Jolesz, F.A., and Medani, K.	

Development of Intraoperative MRI: A Personal Journey	9
Fahlbusch, R.	

Lows and Highs: 15 Years of Development in Intraoperative Magnetic Resonance Imaging	17
Schmidt, T., König, R., Hlavac, M., Antoniadis, G., and Wirtz, C.R.	

Intraoperative Imaging in Neurosurgery: Where Will the Future Take Us?	21
Jolesz, F.A.	

Intraoperative MRI- Ultra Low Field Systems

Development and Design of Low Field Compact Intraoperative MRI for Standard Operating Room	29
Hadani, M.	

Low Field Intraoperative MRI in Glioma Surgery	35
Seifert, V., Gasser, T., and Senft, C.	

Intraoperative MRI (ioMRI) in the Setting of Awake Craniotomies for Supratentorial Glioma Resection	43
Peruzzi, P., Puente, E., Bergese, S., and Chiocca, E.A.	

Glioma Extent of Resection and Ultra-Low-Field ioMRI: Interim Analysis of a Prospective Randomized Trial	49
Senft, C., Bink, A., Heckelmann, M., Gasser, T., and Seifert, V.	

Impact of a Low-Field Intraoperative MRI on the Surgical Results for High-Grade Gliomas	55
Kırış, T. and Arica, O.	

Intraoperative MRI and Functional Mapping	61
Gasser, T., Szelenyi, A., Senft, C., Muragaki, Y., Sandalcioğlu, I.E., Sure, U., Nimsky, C., and Seifert, V.	

Information-Guided Surgical Management of Gliomas Using Low-Field-Strength Intraoperative MRI	67
Muragaki, Y., Iseki, H., Maruyama, T., Tanaka, M., Shinohara, C., Suzuki, T., Yoshimitsu, K., Ikuta, S., Hayashi, M., Chernov, M., Hori, T., Okada, Y., and Takakura, K.	
Implementation of the Ultra Low Field Intraoperative MRI PoleStar N20 During Resection Control of Pituitary Adenomas	73
Gerlach, R., Richard du Mesnil du Rochemont, Gasser, T., Marquardt, G., Imoehl, L., and Seifert, V.	
Intraoperative MRI for Stereotactic Biopsy	81
Schulder, M. and Spiro, D.	
The Evolution of ioMRI Utilization for Pediatric Neurosurgery: A Single Center Experience	89
Moriarty, T.M. and Titsworth, W.L.	
Intraoperative MRI - High Field Systems	
Implementation and Preliminary Clinical Experience with the Use of Ceiling Mounted Mobile High Field Intraoperative Magnetic Resonance Imaging Between Two Operating Rooms	97
Chicoine, M.R., Lim, C.C.H., Evans, J.A., Singla, A., Zipfel, G.J., Rich, K.M., Dowling, J.L., Leonard, J.R., Smyth, M.D., Santiago, P., Leuthardt, E.C., Limbrick, D.D., and Dacey, R.G.	
High-Field ioMRI in Glioblastoma Surgery: Improvement of Resection Radicality and Survival for the Patient?	103
Mehdorn, H.M., Schwartz, F., Dawirs, S., Hedderich, J., Dörner, L., and Nabavi, A.	
Image Guided Aneurysm Surgery in a Brainsuite[®] ioMRI Miyabi 1.5 T Environment	107
König, R.W., Heinen, C.P.G., Antoniadis, G., Kapapa, T., Pedro, M.T., Gardill, A., Wirtz, C.R., Kretschmer, T., and Schmidt, T.	
From Intraoperative Angiography to Advanced Intraoperative Imaging: The Geneva Experience	111
Schaller, K., Kotowski, M., Pereira, V., Rüfenacht, D., and Bijlenga, P.	
Intraoperative MRI - Ultra High Field Systems	
Intraoperative Magnetic Resonance Imaging	119
Hall, W.A. and Truwit, C.L.	
3 T ioMRI: The Istanbul Experience	131
Pamir, M.N.	
Intra-operative 3.0 T Magnetic Resonance Imaging Using a Dual-Independent Room: Long-Term Evaluation of Time-Cost, Problems, and Learning-Curve Effect	139
Martin, X.P., Vaz, G., Fomekong, E., Cosnard, G., and Raftopoulos, C.	

Multifunctional Surgical Suite (MFSS) with 3.0 T ioMRI: 17 Months of Experience	145
Beneš, V., Netuka, D., Kramář, F., Ostrý, S., and Belšán, T.	
Intra-operative MRI at 3.0 Tesla: A Moveable Magnet	151
Lang, M.J., Greer, A.D., and Sutherland, G.R.	
One Year Experience with 3.0 T Intraoperative MRI in Pituitary Surgery	157
Netuka, D., Masopust, V., Belšán, T., Kramář, F., and Beneš, V.	
Intraoperative CT and Radiography	
Intraoperative Computed Tomography	163
Tonn, J.C., Schichor, C., Schnell, O., Zausinger, S., Uhl, E., Morhard, D., and Reiser, M.	
Intraoperative CT in Spine Surgery	169
Steudel, W.-I., Nabhan, A., and Shariat, K.	
O-Arm Guided Balloon Kyphoplasty: Preliminary Experience of 16 Consecutive Patients	175
Schils, F.	
Intraoperative Ultrasonography	
Intra-operative Imaging with 3D Ultrasound in Neurosurgery	181
Unsgård, G., Solheim, O., Lindseth, F., and Selbekk, T.	
Intraoperative 3-Dimensional Ultrasound for Resection Control During Brain Tumor Removal: Preliminary Results of a Prospective Randomized Study	187
Rohde, V. and Coenen, V.A.	
Advantages and Limitations of Intraoperative 3D Ultrasound in Neurosurgery. Technical note	191
Bozinov, O., Burkhardt, J.-K., Fischer, C.M., Kockro, R.A., Bernays, R.-L., and Bertalanffy, H.	
Multimodality Integration	
Integrated Intra-operative Room Design	199
Ng, I.	
Multimodal Navigation Integrated with Imaging	207
Nimsky, C., Kuhnt, D., Ganslandt, O., and Buchfelder, M.	
Multimodality Imaging Suite: Neo-Futuristic Diagnostic Imaging Operating Suite Marks a Significant Milestone for Innovation in Medical Technology	215
Matsumae, M., Koizumi, J., Tsugu, A., Inoue, G., Nishiyama, J., Yoshiyama, M., Tominaga, J., and Atsumi, H.	
Improving Patient Safety in the Intra-operative MRI Suite Using an On-Duty Safety Nurse, Safety Manual and Checklist	219
Matsumae, M., Nakajima, Y., Morikawa, E., Nishiyama, J., Atsumi, H., Tominaga, J., Tsugu, A., and Kenmochi, I.	

Operating Room Integration and Telehealth	223
Bucholz, R.D., Laycock, K.A., and McDurmont, L.	
Other Intraoperative Imaging Technologies and Operative Robotics	
Intra-operative Robotics: NeuroArm	231
Lang, M.J., Greer, A.D., and Sutherland, G.R.	
Clinical Requirements and Possible Applications of Robot Assisted Endoscopy in Skull Base and Sinus Surgery	237
Eichhorn, K.W.G. and Bootz, F.	
Robotic Technology in Spine Surgery: Current Applications and Future Developments	241
Stüer, C., Ringel, F., Stoffel, M., Reinke, A., Behr, M., and Meyer, B.	
Microscope Integrated Indocyanine Green Video-Angiography in Cerebrovascular Surgery	247
Dashti, R., Laakso, A., Niemelä, M., Porras, M., and Hernesniemi, J.	
Application of Intraoperative Indocyanine Green Angiography for CNS Tumors: Results on the First 100 Cases	251
Ferroli, P., Acerbi, F., Albanese, E., Tringali, G., Broggi, M., Franzini, A., and Broggi, G.	
A Technical Description of the Brain Tumor Window Model: An In Vivo Model for the Evaluation of Intraoperative Contrast Agents	259
Orringer, D.A., Chen, T., Huang, D.-L., Philbert, M., Kopelman, R., and Sagher, O.	
Author Index	265
Subject Index	267



<http://www.springer.com/978-3-211-99650-8>

Intraoperative Imaging

Pamir, M.N.; Seifert, V.; Kiris, T. (Eds.)

2011, X, 272 p., Hardcover

ISBN: 978-3-211-99650-8