学術参考資料

The 3rd Quadrennial Meeting of the World Federation of Neuro-Oncology,
and the 6th Meeting of the Asian Society for Neuro-Oncology
May 12 (Tue) 1st Day: Room2:303(3F) 8:00-10:30 Surgery for Malignant Glioma :O020:

Development of the compact Magnetic Resonance Imaging system for intraoperative imaging.

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Introduction: Magnetic resonance imaging (MRI) during surgery has been proven to improve surgical resection rate and to reduce postoperative complication during brain tumor surgery. However, current commercially available intraoperative MRI system is relatively large and requires extra room for installment. To distribute such technique in world wide, we need to build a small intraoperative MRI system with good imaging quality. Method: With collaboration with Yoshida MFG. Co. Ltd., we created a new MRI system. Our concept in creating the machine is, 1) the 5 gauss line is with in the circle of 3m in diameter and 2) the system weighs less than 3 tons, which will be the limit of routine hospital elevator carriage. 3) Also, we desired imaging time to obtain essential intraoperative imaging series should be less than 30minutes. Results: Our system called “Vesalius”, fulfilled our requirements. The size of the system is half of the currently available systems and the 5 gauss line was confined within 2.2m in diameter around the center of the machine. However, to reduce outer magnetic influence, we need limit the inter-polar gap to 35cm. With this limitation, we improved operative bed and head clamping system. High quality images (including T1, T2, Flair) with less image distortion was obtained within 30min. We are now starting clinical application. Conclusion; We have build new intraoperative small low magnetic field MRI system, with high imaging quality. We believe this system will significantly improve future brain tumor surgery.

Key word: intraoperative magnetic resonance imaging, brain tumor surgery, low magnetic field

Disclosure:

The first and second authors has no financial relation ship with the manufacturing company. The last author is an employee of the company involved in the development of this system.