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Japan

Dr Yoshihiro Muragaki received the M.D. degree from Kobe University in 1986, Ph.D. degree in Medical Science from Tokyo Women's Medical College in 1997, and Ph.D. degree in BioMedical Science from Waseda University in 2014. He was a certified neurosurgeon from 1992 and a professor from 2011 at the Faculty of Advanced Techno-Surgery, Tokyo Women's Medical University (TWMU). He was also a director of Medical AI Center of TWMU from 2019 and has become a professor of the Center for Advanced Medical Engineering Research and Development of Kobe University since 2022. He engages in brain tumor treatment, intraoperative MRI, smart cyber operating theater (SCOT). His typical award is the Japan Open Innovation Prize. His publication articles, total number of citations, and H-index were 356, 4300, and 37, respectively.

Topic: Smart Cyber Operating Theater (SCOT) for Information-guided Glioma Resection

In recent years, evidence has been accumulating showing an association between aggressive removal of gliomas and improved prognosis. Because of the possibility of coexistence with functional tissue, there is a conflict between improving removal rates and reducing complications. In order to achieve these two opposing goals, we have constructed a system (SCOT) that digitizes various information using technology and links the data via a network. Intraoperative MRI/navigation, neuromonitoring/awake surgery, and 5ALA/rapid flowcytometry each provide anatomical, functional, and histological information, and these high-quality data with time-synchronized and spatial position information are displayed on the strategy desk. We have used it in more than 400 cases, mainly gliomas, and are also using AI for planning with 3D data and remote surgical guidance. We will present actual cases in SCOT and introduce future directions.