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King Fahad Medical City, Saudi Arabia

Impact of neuronavigation on neurosurgical practice

Neurological surgery has always been a highly technological profession. Neuronavigation is this surgical technology that continues to transform neurosurgical interventions into safer and less-invasive procedures. Among other medical technologies, neuronavigation has pushed the limits of conventional neurosurgery, helping in re-defining new and more precise approaches. Its power lies in the ability to virtually combine imaging data to extract comprehensive information that is used to strategize and guide the neurosurgical interventions. What was once a simple localization tool is today a surgical reality tool and an essential piece of technology in the operating theaters (OT). It is used as an information center for providing surgical crew with the right information when it is needed the most. During the surgery, an interactive real-time display can demonstrate the otherwise hidden information that has been generated from multi-modal volumetric images. The information defined during the preoperative plan of the surgical approach can be deployed in the surgical field, enabling selection of the appropriate scalp incision, minimizing the extent of the craniotomy, and thus decreasing considerably the potential risks to the patient. Also during surgery, the navigation accuracy decreases because of the brainshift and tissue removal. The use of intraoperative imaging will redress for these inaccuracies by refreshing the imaging data used by the neuronavigation. Furthermore, intraoperative imaging is allowing the assessment of surgery's objectives (i.e. amount of tumor removal), within the OT itself, while the patient still on the surgical table and before skin closure. Understanding the association between anatomy and imaging for surgical purposes remains a challenge and neuronavigation, when appropriately used, can bridge the gap between them and assist in performing surgery more dexterously and safely. Available new technologies bring a promise of a better and safer tomorrow for neurosurgical interventions. Having these great technological tools should indeed help us in delivering great care

Biography

Lahbib Soualmi is an expert in Image Guided Neurosurgical Navigation. He has been, from 1998 until 2008, Director of Neuronavigation Unit, in Montreal Neurological Institute and Hospital, McGill University Health Center (MUHC) and Assistant Professor in the Department of Neurology and Neurosurgery, McGill University, Montreal, Canada. He holds an MS and a PhD in Biomedical Engineering from Ecole Polytechnique of Montreal. In 2008, he relocated to the National Neuroscience Institute at King Fahad Medical City in Riyadh, Saudi Arabia, where he is currently, Consultant of Image Guided Neurosurical Navigation and the Head of Neuronavigation Unit and Intraoperative Surgical Imaging. Furthermore, he has been a Consultant Faculty in the Biomedical Technology Department, King Saud University, Riyadh, Saudi Arabia from 2008 to 2013.

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