

## 21. CONTEMPORARY METHODS OF INTRAOPERATIVE NAVIGATION IN BRAIN TUMOUR SURGERY.

**Author:** Vizir Cristian

**Scientific advisor:** Vasile Galearschi, MD, Associate Professor, Department of Neurosurgery, *Nicolae Testemitanu* State University of Medicine and Pharmacy of the Republic of Moldova.

**Introduction.** Contemporary methods of intraoperative navigation in brain tumour surgery are investigations that allow the neurosurgeon to obtain information about the lesion, the distance to it, and its relationship with adjacent structures.

**Aim of study.** To provide information about the advantages and disadvantages of the methods that are currently used in intraoperative neurosurgery.

**Methods and materials.** Galearschi V 2012 Metode Contemporane de reperaj in tumorile cerebrale (46-52) Pubmed.ncbi.nlm.nih.

**Results.** Computed tomography is a method that has the advantage of a higher anatomical resolution than USG, better visualisation of bone and calcified structures and faster imaging time than the MRI and is suitable to visualise bone destruction, hyperostosis, erosion or penetration. A disadvantage would be that the images obtained are only in the axial incidence, plus the images of the posterior fossa are limited as a result of bone artefacts. This method poses an increased risk of X-ray exposure and is only practised in specialised clinics. Ultrasonography as a method has gained confidence primarily due to its lack of invasiveness, plus it has a higher affinity for cystic formations than CT and MRI, it provides real-time data on intraoperative dislocation of brain anatomical structures and as a price-profit it is a cost-effective method. But some aspects may be disadvantageous because USG may fail to differentiate low-grade astrocytomas, plus it would require acoustic coupling, and imaging is limited by limited lateral resolution. MRI is considered a top investigation in neurosurgical screening because it has a number of advantages, such as early detection of brain tumours, allows a clearer picture of neuro-anatomical components, a very good view in case of cerebral edema, allows highlighting tumour boundaries, and the differentiation of the vascular structures from the bone artefacts, it allows to obtain images of very good resolution in a very short period of time. A major disadvantage would be that the availability of the use of this method is low, and its use is allowed only in specially equipped centres.

**Conclusion.** A conclusion based on these methods notes that neuronavigation development is accelerating, knowledge of these techniques is very important and necessary but the best, accessible and useful methods remain the eyes and knowledges of the neurosurgeon.