operative time, significantly shorter incision length, and lower postoperative serum creatinine kinase levels meaning less intraoperative multifidus muscle damage.
Conclusions. Both techniques provided similar clinical outcomes and fusion rates, but the CBT pedicle screw fixation has the additional benefits of a minimal access surgery technique, with less surgical morbidity, less pain and better functional recovery especially early postoperative. We suggest that CBT pedicle screw fixation is a reasonable alternative to the traditional pedicle screw fixation, if used to promote the posterior lumbar interbody fusion.
Key words: cortical bone trajectory, pedicle screw, posterior lumbar interbody fusion, MIDLF, degenerative spondylolisthesis

73. 3D VOLUME RENDERING FOR PREOPERATIVE PLANNING OF NEUROSURGICAL INTERVENTIONS

Author: **Alexandru Andrusca**
Co-author: Olga Gavriliuc
Scientific adviser: Victor Andronachi, MD, PhD, Associate Professor, Department of Neurosurgery, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. In Neurosurgery, even with modern diagnostic imaging modalities like CT and MRI, structural information is still usually provided to the neurosurgeon by 2D image stacks, albeit in different planes. The surgeon relies on his spatial-visual imagination of patient-specific anatomy for surgical planning and the surgery itself, which can be challenging. To overcome these limitations, 3D technology has emerged as a technique with the potential to provide to the user detailed information on the three-dimensional orientation of objects within the surgical site before surgery. At present, no special equipment is required to create 3D models, and it is possible by using a personal computer. These models can be used for preoperative planning, such as finding the best cranial approach, avoiding eloquent areas of the brain, measure different structures, or even 3D print the models to simulate the surgery beforehand. By using all these data, the neurosurgeon can achieve the best results with the least complications by choosing the most optimal approach, achieve total removal of a brain lesion with minimal healthy brain involvement.
Aim of the study. Our aim is to show the importance of 3d volume segmentation as a teaching and preoperative tool for neurosurgical interventions and to demonstrate our experience in clinical practice.
Materials and methods.. There are several 3D segmentation software. Due to the availability of fast and affordable technical support, we chose the "Inobitec DICOM" software. The first stage was a semi-automatic voxel approximation of the object, and then, a polygonal grid was generated around the voxel. Multiple objects were fused to form a final 3D scene of the patient-specific anatomy. The models were exported for subsequent editing in external programs, such as "Meshmixer" and "Blender". This option was needed to use certain features of these programs when viewing, such as variable transparency of objects, step-by-step navigation through the scene, different functions for vertex/object manipulation, and exporting the models to be displayed on mobile phones or other portable devices.
Results. We report a detailed methodology for picture acquisition, 3D reconstruction, and visualization with some surgical examples. We also demonstrate how these navigable models

can be used to build up composite images derived by the fusion of 3D intraoperative scenarios with neuroimaging-derived 3D models.
Conclusions. Our experience, in the Neurosurgical Department, has shown that this is an affordable technology with great opportunities. The models can be used for a variety of purposes (teaching, planning, 3d printing). The creation of individual 3D models for preparation for surgery is already actively used in several areas of neurosurgery.
Key words: segmentation, neurosurgery, 3d printing, reconstruction, planning

74. CRANIAL NEURONAVIGATION IN NEUROSURGERY: USEFULNESS IN RELATION TO TYPE AND SITE OF PATHOLOGY

Author: **Mihaela Țurcan**
Scientific adviser: Bodiu Aureliu, MD, PhD, University Professor, Department of Neurosurgery, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. Neuronavigation is an example of today's technological development applied to medicine that makes it more reliable, transforming surgical interventions into safer and less invasive procedures. Increasingly important is that the use of intraoperative image guidance like MRI, CT facilitates determining the location and the extent of the intraparenchymal lesions.
Aim of the study. The review of various aspects of neuronavigation, including a short history of the synergy between navigation and neurosurgery, as well as technical aspects applied in neurosurgery and clinical benefits in relation to type and site of pathology.
Materials and methods.. The review of literature and neurosurgical case examples of different type and site of pathology..
Results. Studies have shown that the use of neuronavigation improves the extent of resection, which in turn correlates with improved patient outcome and ensures a better preservation of function.
Conclusions. Neuronavigation improves intraoperative topographical orientation in neurosurgery. It is a helpful tool to define approaches, craniotomy flaps, borders of tumor resection or guidance of the endoscope in cases where visible anatomic landmarks are missing. Neuronavigation helps to prevent further neurological deficits making safer, less invasive, and more cost-efficient procedures.
Key words: neurosurgery, neuronavigation, contemporary methods

DEPARTMENT OF UROLOGY AND SURGICAL NEPHROLOGY

75. METHODS OF DIAGNOSTIC AND CONTEMPORARY TREATMENT OF RENAL SOLITARY CYST. CLINIC EXPERIENCE

Author: **Vladislav Rotari**
Co-author: Ceban Ilie
Scientific adviser: Emil Ceban, PhD, Professor, Department of Urology and Surgical Nephrology. *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova