Results. The results of the clinical and paraclinical study will contribute to increase safety in approaching diagnostic and treatment techniques.
Conclusions. Knowledge on esophageal combustion from a clinical point of view is very important in view of ensuring the safety and comfort of the patient. The practical value of the correlation between organs and tissues of the given region shows increased interest within the clinic.
Key words: combustion, Esophagus, Children, Surgery, Anatomy

DEPARTMENT OF NEUROSURGERY

72. CLINICAL AND RADIOLOGICAL OUTCOMES COMPARISON OF THE POSTERIOR LUMBAR INTERBODY FUSION WITH CORTICAL BONE TRAJECTORY SCREW FIXATION (MIDLF) AND CONVENTIONAL PEDICLE SCREW FIXATION FOR LOW-GRADE DEGENERATIVE SPONDYLOLISTHESIS.

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Introduction. Pedicle screw fixation is currently the mainstay technique to promote the lumbar spinal fusion, but it has some important drawbacks, including high surgical morbidity, the risk of superior facet violation, significant dissection and muscle damage, frequent screw loosening, and the increased risk of neurovascular injury. Minimally access surgery techniques have evolved in an attempt to reduce these procedure related complications, the Cortical Bone Trajectory (CBT) being one of the most promising of them. Numerous studies have analyzed the biomechanical features of the CBT screws but few studies have examined clinical outcomes in patients and compared them to the traditional technique.
Aim of the study. To compare the effectiveness of the posterior lumbar interbody fusion (PLIF) using the cortical bone trajectory (CBT) and the traditional pedicle screw (PS) fixation techniques.
Materials and methods.. We enrolled 112 patients with degenerative low-grade spondylolisthesis and assigned them to one of the 2 surgical groups: CBT-PLIF (MIDLF) or PS-PLIF. The primary outcome measure was the intervertebral fusion rate, evaluated by thin cut 3D CT-scan reconstructions. Secondary outcome measures included: visual analog scale (VAS) for perioperative back and leg pain intensity, Oswestry Disability Index and 12 – Item Short Form Health Survey (SF-12) scores for functional status improvement assessment, overall patient satisfaction, intraoperative muscle damage (serum CK levels), operative time, total incision length, intraoperative blood loss and perioperative complications. The data were collected prospectively between December 2015 and December 2019. Minimal follow-up period was 12 months.
Results. There were no significant differences in the fusion rates at the 12 months follow-up points. Also, the improvement in pain VAS score and functional status were similar in both groups. Additionally, the CBT group experienced significantly less blood loss, quicker

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

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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