

"IMPROVEMENT OF THE METHOD OF RADIATION DIAGNOSTICS OF DEGENERATIVE CENTRAL STENOSIS OF THE CERVICAL SPINAL CANAL"

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Annotation

Data on the prevalence of symptomatic degenerative lumbar stenosis are very contradictory, and information about the clinical characteristics of its morphological subtypes (features of pain syndrome, functional and neurological deficits, and the degree of decline in quality of life) is not sufficiently studied.

Keywords: decline in quality, numerous randomized studies, quantitative interpretation

Introduction

Despite the results of numerous randomized studies confirming the superiority of surgical treatment over conservative treatment, the existing classifications of lumbar stenosis and methods of their quantitative interpretation indicate the absence of a "gold standard" necessary for making the main decision by a vertebrologist - when and to what extent to carry out surgical treatment.

The generally accepted tasks of surgical interventions are the most effective decompression of neurovascular structures, the elimination of pathological mobility and gross deformities in the vertebral-motor segments with maximum preservation of compensatory and adaptive mechanisms of adaptation of the patient's musculoskeletal system to a continuously progressive degenerative process. However, the effectiveness of most of the known minimally invasive technologies is limited by the complexity of visual control, the technical conditions of their implementation and accessibility; while traditional open surgical interventions are a source of increased surgical and anesthetic risk, require a long recovery period and often - numerous revision interventions, especially in patients of older age groups.

The Degree of Elaboration of the Research Topic

Magnetic resonance imaging (MRI) is generally recognized as the main method of visual confirmation of the clinical diagnosis of degenerative stenosis of the lumbar

spine and planning its subsequent treatment, and the study that determines surgical tactics in many cases is multipara computed tomography (MSCT) due to a more detailed display of bone anatomy. Nevertheless, there is no consensus on the terms necessary for the formulation of a radiological diagnosis, as well as the degree of correlation of symptoms of degenerative lumbar stenosis with radiological findings during MRI and MSCT.

In addition to pain syndrome and neurological deficit caused by compression of nerve and vascular elements, a significant impact on the nature of the clinical course and the prognosis of the disease is provided by concomitant instability and deformities of the lumbar segments, which in most cases, aggravate the course of stenosis with local, regional and global biomechanical disorders.

According to European registries, the average annual level of surgical interventions for lumbar stenosis has increased 2-3 times over the past 20 years. The range of technologies used in this case is wide and is steadily being updated from purely decompressive to reconstructing relationships in the vertebral-motor segments. Along with traditional extended laminectomy, more economical and less destabilizing micro endoscopic decompression methods are increasingly being used with the maximum possible preservation of all biomechanically important elements of the vertebral-motor segments and the supporting function of the spine. At the same time, the use of new minimally invasive methods of selective decompression of the zone of dominant stenosis does not exclude the development of complications requiring revision intervention, both in connection with inadequately performed primary intervention and with the development of iatrogenic instability of the segment in the postoperative period.

Despite the continuing increase in the number of operations ending with the implementation of various methods of spinal fusion, the indications and effectiveness of their use in various clinical and morphological variants of stenosis continue to be actively debated.

On the one hand, spinal fusion has a number of advantages that encourage its use, especially in destabilizing decompressive interventions, on the other hand, being an additional stage, increases the time of surgery, blood loss and increases the risk of various complications, especially in elderly patients with concomitant diseases. Significantly better results after performing spinal fusion are achieved in patients with deformities accompanied by instability of the spinal-motor segments, spondylolisthesis, as well as after performing direct extensive decompression.

The widespread use of open and minimally invasive decompressive and decompressive-stabilizing interventions has led to an increase in re-operations, in more than half of cases, due to the preservation or emergence of new symptoms, the progression of clinically significant degenerative changes in adjacent vertebral segments and infectious complications. Underestimation at the stage of surgical planning of the condition of the joints of the lower extremities, the muscular corset,

the nature of segmental disorders, compensatory mechanisms aimed at maintaining balance, even against the background of a technically flawlessly performed surgical procedure, can lead to the development or progression of secondary deformities, including those accompanied by imbalance.

Thus, research aimed at improving the quality of diagnosis, predicting treatment results against the background of the further course of degenerative-dystrophic processes in both operated and adjacent segments and areas of the spine, optimizing surgical tactics and developing new effective minimally invasive technologies for the treatment of patients with symptoms of degenerative stenosis of the lumbar spine remain relevant.

The Purpose of the Study

The aim of the study was to substantiate the system of rational surgical treatment of symptomatic lumbar stenosis by improving diagnostics, developing new minimally invasive technologies and creating a tactical algorithm based on the analysis of clinical and morphological and the construction of mathematical models.

1. To establish clinical and radiological correlations in patients with symptoms of degenerative stenosis of the lumbar spine according to multipara computed tomography.
2. Based on the data obtained, to clarify the diagnostic and tactical value of MSCT in the decision-making algorithm in patients with the proposed clinical and morphological models of stenosis.
3. To develop the technology of bilateral osteotomy and extension of the legs of the lumbar vertebrae and to justify its safety and effectiveness in experiments on kinematic anatomical and computer models, as well as in vivo in experiments on large animals.
4. To conduct clinical testing of the developed minimally invasive technology of lumbar pediculoplasty, to evaluate its safety and effectiveness in a prospective group of patients for at least 6 years.
5. To perform a comparative analysis of the immediate and long-term results of the use of classical and minimally invasive surgical technologies in patients with the proposed clinical and morphological models of stenosis with an emphasis on quality of life and satisfaction from the treatment.
6. To study the causes, frequency and nature of complications after traditional and minimally invasive interventions in each clinical and morphological model of stenosis, to clarify the scope of revision interventions.
7. To develop mathematical models of individual prediction of intraoperative and postoperative complications.
8. Based on a comprehensive assessment of the results of our own clinical material, to substantiate the algorithm of rational surgical treatment of symptomatic lumbar stenosis using classical and minimally invasive technologies.

Scientific Novelty of the Study

For the first time, the interdependence of a large number of morphometric indicators of MSCT and the predominant clinical syndrome of degenerative stenosis was studied using staged regression analysis.

A fundamentally new approach to the diagnosis and differentiated surgical tactics of symptomatic lumbar stenosis is substantiated from the position of distinguishing its three clinical and morphological models: stable, unstable and deformed.

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