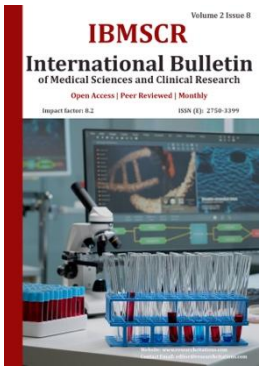

MINIMALLY INVASIVE DECOMPRESSION USING THE UBE TECHNIQUE FOR DEGENERATIVE SPINAL STENOSIS ASSOCIATED WITH SPECIFIC AND NON-SPECIFIC INFLAMMATION

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Summary: Most researchers use the term "spinal canal stenosis" to describe symptoms caused by anatomical narrowing of the spinal canal. Specific and nonspecific spondylodiscitis is, in the modern sense, edema of the bone marrow and bacterial inflammation in two adjacent vertebrae and the intervertebral disc located between them. **The aim** of the study was to analyze the results of surgical treatment of patients with spinal canal stenosis using the UBE technique of spinal canal decompression in specific and nonspecific spondylitis. **Materials and methods** In the period 2024-2025yy, 46 patients were hospitalized in the self-supporting department of the National Center for Rehabilitation and Prosthetics of Persons with Disabilities, including 31 men and 15 women, with an average age of 48+2.4 years. After preliminary preparation, all patients who was illness with specific and nonspecific some years ago. All patients underwent minimally invasive spinal canal decompression using the UBE technique. **Results:** The most common clinical manifestations upon admission to the hospital were vertebrogenic pain syndrome and neurogenic intermittent claudication syndrome. 76% of patients received good results after UBE surgery. **Conclusions:** the use of the UBE technique in spinal canal decompression makes it possible to eliminate factors causing compression of neurovascular structures from minimal access. At the same time, less muscle injury and the preservation of most structures of the posterior spine support complex make it possible to reduce intraoperative blood loss, to activate the patient early and to shorten the period of his stay in the hospital.

Keywords: UBE technique, specific and nonspecific inflammation, lumbar spine, decompression.

Most researchers use the term "spinal canal stenosis" to describe symptoms caused by anatomical narrowing of the spinal canal. Lumbar stenoses occur in 74-86% of patients and are one of the most common causes of vertebrogenic pain syndrome, which causes temporary and in some cases permanent disability [10, 11]. Conservative therapy gives a stable positive effect only in 44-69% of patients [4, 9, 16].

Spinal discitis (DM) is an inflammatory process of the spine that involves intervertebral discs, adjacent vertebrae and joints. The disease occurs against the background of a degenerative-dystrophic process of the spinal column or is formed after surgical interventions on the spine [1, 2, 3].

The urgency of the DM problem is determined by a violation of the basic functions of the spine: ensuring a stable vertical position of the trunk and protecting spinal neural structures [4]. The nonspecific clinical picture, the rare occurrence and, in this regard, the lack of awareness among doctors on infectious diseases of the spine, as well as the lack of a unified clinical guideline and protocols for the treatment of diabetes, lead to frequent errors in the

diagnosis of this pathology. As a result, the delay in diagnosis sometimes reaches 12 months, on average amounting to 4.3 months [3, 5-7].

In this regard, the number of surgical interventions in patients with spinal canal stenosis is increasing annually. Despite the rather rare narrowing of the spinal canal at the level of the arches, laminectomy remains the most common decompression method for spinal canal stenosis, followed by additional resection of elements of the posterior support complex (hypertrophied facets of intervertebral joints, yellow ligaments), causing compression of nerve structures [1, 16]. One of the main trends in modern surgery is the most effective and radical surgery with minimal iatrogenic effects. Following these principles, Young et al. [23] developed and described in 1988 a monolateral foraminotomy for bilateral microdecompression in spinal canal stenosis. This access was modified in 1991 by McCulloch et al. [12] and is described as microsurgical fenestration. Later, Foley et al. [5] developed TLIF in combination with bilateral decompression from a monolateral intermuscular approach [3, 5, 12, 23]. This technique is finding more and more supporters. The use of modern diagnostic studies (MRI, CT) makes it possible to identify all the factors leading to narrowing of the spinal canal and plan an operation to eliminate the pathological components causing its narrowing, with minimal resection of the structures of the spinal-motor segment. The method of sequential myodilation, specialized retractors and percutaneous transpedicular screws can reduce traumatization of surrounding soft tissues. [9, 15, 16, 21].

The aim of the study was to analyze the results of surgical treatment of patients with spinal canal stenosis using the UBE technique of spinal canal decompression in aseptic spondylitis.

Materials and methods In the period 2024-2025yy, 46 patients were hospitalized in the self-supporting department of the National Center for Rehabilitation and Prosthetics of Persons with Disabilities, including 31 men and 15 women, with an average age of 48+2.4 years. All patients underwent a complex of diagnostic tests (examination by related specialists, instrumental laboratory tests). After preliminary preparation, all patients underwent minimally invasive spinal canal decompression using the UBE technique. The most common indications for surgery were spinal canal stenosis in patients with spondylitis. The main clinical manifestations of the disease are pain in the legs and buttocks, impaired sensitivity in the legs, constant pain in the lumbar spine, and static disturbances. According to MRI and CT scans, all patients showed signs of inflammation and narrowing of the spinal canal. The selection criteria for surgical treatment were clinical manifestations, confirmed by CT and MRI, and the lack of effect from at least three months of complex conservative therapy. The pain intensity was assessed by VAS before surgery, after surgery, and 6 months after surgery.

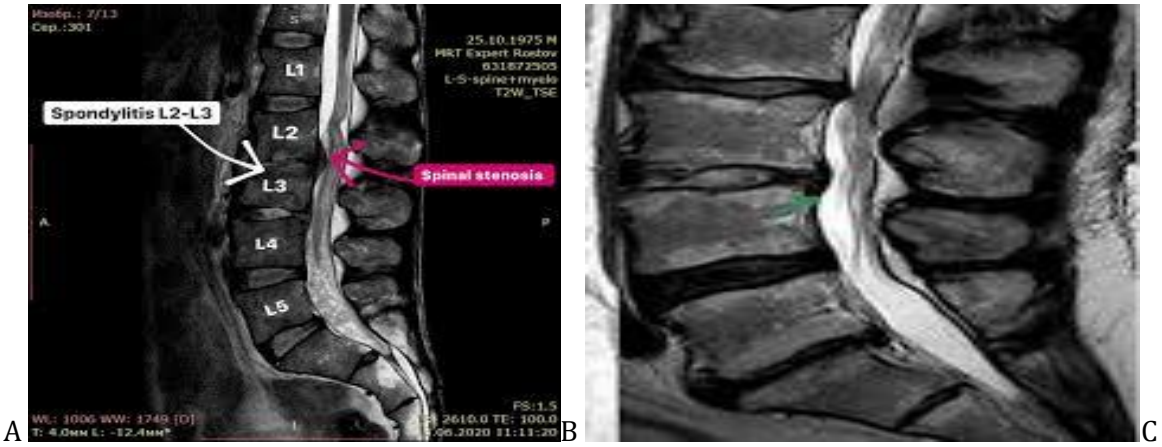

Fig – 1. Patient D, 42y, before and after operation MR picture. specific inflammation between VL2-3(A) and disc herniation (B), after operation by technique UBE(C).

Surgical technique. The operations were performed by unilateral parasedinal access 3-5 cm laterally to the spinous process line with two incisions and a port. The intervertebral joint and the intervertebral space were accessed transmuscularly. A partial resection of the lower edge of the upper half-arch and, to a lesser extent, the upper edge of the lower half-arch of the vertebrae was performed. A medial facetectomy was performed on the ipsilateral side. Subsequently, while preserving the yellow ligament, resection of the spinous process base and medial facetectomy on the contralateral side were performed using a high-rotation drill and bone pliers to protect the dura mater. After that, the yellow ligaments were resected and decompression was performed in the area of the radicular canals. Patients with signs of instability underwent percutaneous transpedicular surgery fixation and TLIF in 8 patients. In 27 cases, in the absence of clinical and radiological signs of instability during preoperative examination and preservation of more than 50% of the articular surface during resection.

Only percutaneous transpedicular fixation was performed on the appendages. 11 patients showed signs of spontaneous bone block formation according to preoperative CT, and therefore fixation was not performed.

Results: The most common clinical manifestations upon admission to the hospital were vertebrogenic pain syndrome and neurogenic intermittent claudication syndrome. 44(95%) patients had leg pain before surgery, 36(78.2%) had sensitivity disorders, 38(82.6%) had paresis, and 6(13%) had pelvic organ dysfunction.

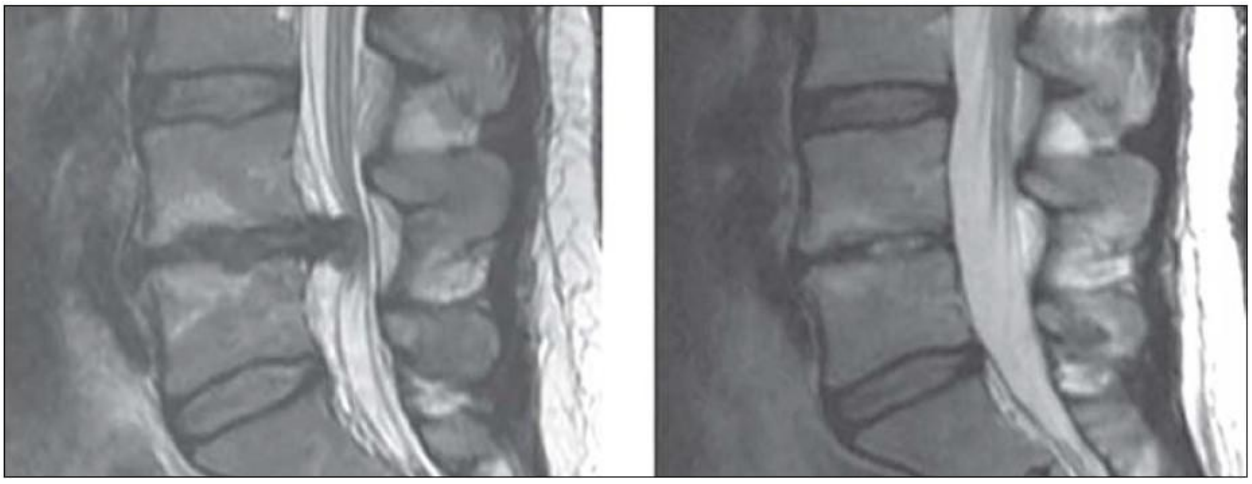

Fig – 2. Patient B, 34y, before and after operation MR picture. Nonspecific(staphylococcus) inflammation between VL4-5 and disc herniation (A), after operation with UBE technique (B).

In 23(50%) cases, decompression was performed at one level, in 16(34.7%) – at two, in 7(15.2%) – at three level. There was no significant blood loss during the operation.
During the control CT scan, the size of the spinal canal and the correctness of the transpedicular screws were evaluated within 24 hours after surgery. Damage to the dura mater during the operation occurred in 1 patient. No infectious complications were observed in any of the patients. Tuberculosis was detected in 12 patients, staphylococcal infection in 25 patients, and streptococcal infection in 9 patients.

Conclusions: the use of the UBE technique in spinal canal decompression makes it possible to eliminate factors causing compression of neurovascular structures from minimal access. At the same time, less muscle injury and the preservation of most structures of the posterior spine support complex make it possible to reduce intraoperative blood loss, carry out early activation of the patient and shorten the period of his stay in the hospital. In case of instability of the spinal-motor segment, it is advisable to carry out percutaneous stabilization.

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