

SURGICAL PREVENTION OF COMPLICATIONS AFTER OPERATION OF DISCECTOMY OF THE LUMBAR SPINE

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✓ *Resume*

The study carried out a comparative analysis of complications in endoscopic discectomy according to J. Destandau, microsurgical discectomy with endoscopic support and traditional microsurgical discectomy. It has been shown that the techniques are highly effective.

The incidence of complications is similar in the three groups studied, but the number of recurrent disc herniation is higher with endoscopic discectomy.

Key words: discectomy, spine, lumbar spine, complications, prevention.

ХИРУРГИЧЕСКАЯ ПРОФИЛАКТИКА ОСЛОЖНЕНИЙ ПОСЛЕ ОПЕРАЦИИ ДИСКЭКТОМИИ ПОЯСНИЧНОГО ОТДЕЛА ПОЗВОНОЧНИКА

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✓ *Резюме,*

В исследовании проведен сравнительный анализ осложнений при эндоскопической дискэктомии по J. Destandau, микрохирургической дискэктомии с эндоскопической поддержкой и традиционной микрохирургической дискэктомией. Показано, что методики являются высоко эффективными.

Частота развития осложнений сходна в трех изучаемых группах, но количество рецидивов грыжи диска выше при эндоскопической дискэктомии.

Ключевые слова: дискэктомия, позвоночник, поясничный отдел, осложнения, профилактика.

UMURTQA POG'ONASI BEL QISMINING DISKEKTOMIYA OPERATSIYASIDAN SO'NGGI ASORATLARNI JARROHLIK PROFILAKTIKASI

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Tadqiqot davomida J. Destandau bo'yicha endoskopik disektomiya asoratlari, endoskopik qo'llab-quvvatlanadigan mikrosurgik disektomiya va an'anaviy mikrosurgik disektomiya bo'yicha qiyosiy tahlillar o'tkazildi. Texnikalarning yuqori samaradorligi ko'rsatildi.

Asoratlarning kelib chiqishi o'rganilgan uchta guruhda o'xshashdir, ammo endoskopik disektomiya bilan takrorlanadigan disk churrasi soni ko'proq.

Kalit so'zlar: disektomiya, umurtqa pog'onasi, bel umurtqasi, asoratlari, oldini olish.

Relevance

Despite the improvement in the surgical technique of surgical treatment of herniated intervertebral discs, the percentage of unsatisfactory results in the treatment of lumbar pain syndromes remains high. According to domestic and foreign authors (E.G. Pedachenko, M.V. Khizhnyak 2006, K.T. Khudaiberdiev, B.S. Mamazhonov, 2018, 2019), it is noted that a good result after discectomy is observed in 75% of

patients, complete regression of neurological symptoms occurs in only 21% of operated patients.

The development of complications in the postoperative period ranges from 2 to 16% of cases (Nekrasov A.K. et al., 2001). After discectomy, 40% of patients continue to suffer from movement limitations and pain syndromes, although most patients note a significant decrease

in the degree of paresis and pain intensity after surgery (Radchenko V.A. et al., 2003). At the same time, 15% of patients are operated on again due to unsatisfactory results of the first operation (Sun E.C., 2004). The reasons for the recurrence of postoperative pain syndrome, according to D.S. Baths (2006), are: cicatricial adhesion process, epiduritis, arachnoiditis, discitis. According to A. Malter et al (1998), 40% of patients in the postoperative period develop discomfort associated with the presence of postoperative cicatricial adhesive epiduritis, which necessitates the development of methods for its prevention.

Purpose of the study: to improve the results of surgical treatment of herniated intervertebral discs based on the development of methods for early diagnosis of complications and the use of pathophysiologically grounded methods for the prevention of cicatricial epiduritis.

Material and methods

An analysis of the data of clinical observations of surgical treatment of 215 patients with herniated intervertebral discs who were hospitalized in the neurosurgical department of the Andijan branch of the Russian Scientific Center for Emergency Medicine in the period from 2015 to 2020 was carried out.

Men - 97 (48.4%), women - 118 (51.5%) people. With the distribution of patients by age: from 20 to 30 years, the number of patients was

29 (11.8%), from 30 to 40 years - 85 (25.3%), from 40 to 50 years - 76 (41.4%) patients, at the age of 50 and older - 25 (21.5%) people. Thus, the majority of patients were people of working age. In the period from 2 to 12 months after the onset of the disease, 156 (82.7%) patients were operated on, in the period of 1–5 years - 46 (11%) people, 5 years or more after the onset of the disease - 13 (6.3%) patients ...

To clarify the localization of the pathology, all patients underwent the following studies: magnetic resonance imaging (MRI), computed tomography (CT), functional spondylograms. On the basis of the studies carried out, the state of the affected spinal segment was assessed. MRI was performed in 188 (93.5%) patients, computed tomography - in 27 (6.5%) patients. On the basis of CT and MRI studies, disc herniation was assessed by their location: they were divided into posterolateral - in 130 (43.3%) patients; paramedial - in 61 (38.8%) patients; medial - in 9 (7.2%); foraminal - in 15 (10.6%) cases.

Hernial protrusions at the L4 – L5 level were detected in 112 (45.8%) cases, at the L5 – S1 level - in 83 (41.7%) patients; disc protrusions at two levels were significantly less common: L5 – L6 - 12 (2, 9%) and L3 – L4 - 8 (1.5%) observations. In 34 (8.2%) patients, hernial protrusions were found simultaneously at two levels - L4 – L5, L5 – S1.

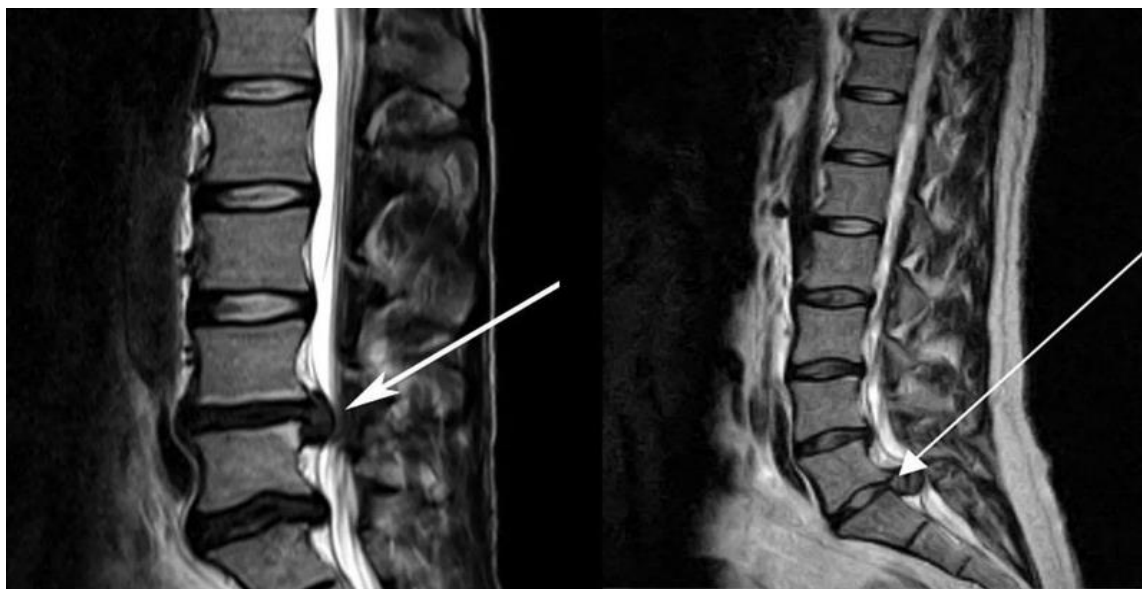


Fig. 1. MRI signs of a hernia of the lumbar spine.

An objective assessment of the neurological state and pain syndrome before and after surgery in patients with herniated intervertebral discs at the level of the lumbosacral spine was carried out on the basis of standardized scales and was measured in points.

The severity of pain syndrome was assessed using the International PainScoreScale. According to this scale, the maximum severity of pain before surgery was found in 189 (60%) patients.

Clinical and neurological disorders were assessed on a five-point scale of vertebral

neurological symptoms (Belova A.N., 2004). Before the operation, the overwhelming majority of patients (90.8%) had a pronounced degree of radicular symptoms ranging from 1 to 4 points.

To study movement disorders, the Medical Research Committee scale was used, while muscle strength was assessed from 0 to 5 points. Before surgery, 235 (56.6%) patients had movement disorders with a severity of 2–3 points.

Functional results were studied using the J. MacNab scale (1971) at 1 and 12 months after discectomy. Highlighted good, satisfactory and unsatisfactory treatment results.

The patients were divided into two observation groups: the 1st (control) included 137 patients, the surgical treatment and postoperative period of which corresponded to the standard method, the 2nd (main) - 78 patients with a similar pathology, the treatment of which was carried out by the new proposed method.

Results and Discussions. The immediate and long-term results of surgical treatment have been studied. Immediate results were assessed based on the characteristics of the functional and neurological status of patients immediately after surgery (1 month); distant - on the basis of CT and MRI data, the state of neurological functions, complaints and the degree of social adaptation of patients, assessed within a year after surgery.

Evaluating the results of surgical treatment of 137 patients from the control group, there was a significant decrease (0–1 points) after surgery in

pain syndrome according to the International Pain Scale in 115 (82.4%) patients. However, 22 (17.6%) patients with pains of varying intensity continued to bother them. Stable and pronounced pain syndrome (3 points) in 3 (12.4%) patients in the early postoperative period was caused by the development of spondylodiscitis or unrepaired radicular compression syndrome.

In the study of clinical neurological disorders on a five-point scale of vertebro-neurological symptoms in the control group before surgery, the mean score was 5.39 ± 0.06 , after surgery after 1 month - 2.36 ± 0.08 and after 12 months - 2.39 ± 0.07 . In a detailed study of the radicular syndrome in 253 (82.4%) patients, the degree of impairment ranged from 0 to 1 point, with complete restoration of walking at a considerable distance. Movement disorders in these patients and limitation of movements in the lumbar spine were not observed. 12 months after microdiscectomy, patients with this degree of radicular dysfunction accounted for 76.9%.

Radicular symptoms with a severity of 2–3 points were detected in 16 (5.2%) patients after 1 month, but after 12 months, these disorders were noted in 53 (17.3%) patients.

The complex group consisted of patients who developed spondylodiscitis in the early postoperative period (5 - 4.2%), and patients with insufficiently adequately corrected compression of the nerve root (25 - 8.14%).



Fig. 2. MRI picture of spondylodiscitis of the lumbar spine at the level of L3-L4 L5 vertebrae.

At the same time, the limitation of the range of motion in the lumbar spine was up to 75-100% with pronounced radicular symptoms of 3-4 points. In the long-term period (after 12 months),

18 (5.9%) patients showed a pronounced degree of manifestation of vertebrogenic and radicular syndrome, which in most cases, according to MRI data, is due to the development of a

cicatricial adhesion process in the operated segment of the spine.

The results of surgical treatment by the method of discectomy according to the criteria of

the J. MacNab scale in the control group in the early and late postoperative periods are presented in table. one.

The results of the surgical treatment of patients in the immediate and long-term periods.

Treatment results	After 1 month		After 12 months	
	abs	%	abs	%
Good	117	85,4	107	78,1
Satisfactory	12	12,1	19	13,8
Unsatisfactory	8	9,6	11	8,0

From table. 1 shows that in the near future, the noted good results in 82.4% of patients decreased over the year to 76.9%. At the same time, the percentage of unsatisfactory results after 12 months also decreased by 2.1 times in comparison with the immediate results.

Repeated surgical interventions were performed in 16 (15%) of 137 patients in the control group. Analysis of the reasons for repeated interventions showed the following. In the early period, reoperations were performed in 8 (9.1%) patients. The most common reason for their implementation in the early period was the preservation of compression of the nerve root or cauda equina, caused by the residual substance of the disc in 3 patients or disc herniation at a different level in a two-level process in 10 patients. The development of postoperative spondylodiscitis required an operation in 3 patients. In 2 patients, the reoperation was due to the development of segmental instability.

12 months after discectomy, 8 (5.9%) people needed a second surgery due to the development of cicatricial adhesive epiduritis. In addition, in 3 patients, epiduritis was combined with recurrent disc herniation and scar tissue did not allow the root to move under the pressure of a disc fragment.

Thus, when analyzing the results of treatment of patients in the control group, the most significant cause of unfavorable treatment outcomes is the development of spondylodiscitis and cicatricial adhesive epiduritis.

The clinical picture of spondylodiscitis manifested itself on the 3rd - 5th day from the moment of surgery and is characterized by constant pain in the lower back, which are sharp, bursting in nature and exceed the pain syndrome before the operative period, are not stopped by analgesics and narcotics. The pain intensifies with the slightest physical exertion, change in body position, and turning in bed. The course of the

disease is accompanied by an increase in body temperature to 38.0–39.5 ° C, chills, weakness, spasm of the paravertebral muscles. During MRI examination, three types of the nature of changes in the intervertebral disc, adjacent vertebral bodies and surrounding tissues were identified. The first type of changes on MRI was detected in 6 patients and was characterized by a lesion of the intervertebral disc, limited by narrowing of the intervertebral space with erosion of the endplates. The fuzziness of the endplate lines, according to MRI data, indicated initial inflammatory manifestations.

In the second type, the MRI showed a narrowing of the intervertebral space and erosion of the endplates, which were combined with the involvement of more than half of the spongy substance of the adjacent vertebrae adjacent to the affected disc into the inflammatory process (4 cases). The obtained changes on the part of the spongy substance of the vertebral bodies make it possible to think about a change in the alteration phase with the exudation phase and indicate the peak of the inflammatory reaction.

With type 3 changes in 3 patients, the inflammatory process in the vertebral bodies was combined with the spread of destruction under the posterior longitudinal ligament and the presence of an epidural abscess. With repeated surgery, these patients were found to have cicatricial changes at the level of the disk fragment, which captured the anterior and lateral sections of the epidural space at the level of the affected root. When a discoradicular conflict occurs, the root is affected not only by compression by disk fragments, but also

by the inflammatory process at the root, epidural space and endplates.

The results of the immunological examination of the main group after treatment indicated a normal content of leukocytes in the peripheral blood and high ESR values, i.e. the patients retained the peculiarities of changes in the leukocyte reaction revealed in the acute postoperative period.

Analysis of the results of treatment of patients in the main group

The main group consisted of 108 patients with herniated discs, operated on by the method of discectomy, in which a piece of adipose tissue was placed at the site of the bone defect in order to prevent the development of cicatricial epiduritis after discectomy. At the risk of developing spondylodiscitis, we used our improved treatment regimen for this pathology.

Spondylodiscitis treatment included the proposed set of drugs and measures:

- 1) the use of broad-spectrum antibiotics, tropic to bone and cartilage tissue;

- 2) intraosseous administration of antibiotics into the spinous processes of the affected vertebrae during the erosion of the endplates with the involvement of more than half of the spongy substance of the vertebrae in the inflammatory process;

- 3) immunostimulation (cycloferon);

- 4) epidural administration of a mixture of anesthetic drugs;

- 5) improvement of bone tissue regeneration (bivalos);

- 6) immobilization of the lumbar spine with a corset.

All stages of surgery, including removal of the herniated disc, in the main and control groups were performed according to the generally accepted technique. In the main group, after discectomy and careful hemostasis, a piece of adipose tissue was placed in the place where the root left the dural sac. Tight suturing of the aponeurosis ensured the localization of adipose tissue at the site of the removed disc. The function of adipose tissue is a barrier, and the purpose of application is to isolate the inflammatory process at the site of the removed disc, to delimit the root from the process of reactive inflammation.

Comparative analysis in two groups showed that 1 month after the operation in the main group, the results of treatment are better than in the control group. A good result in the main group was found in 85.2% of patients. In these patients, pain and radicular syndromes did not limit motor and physical activity, and they did not need further drug treatment.

A satisfactory treatment result was obtained in 7.4% of patients in the main group, while the patients needed periodic medication, they remained moderate pain syndrome, discomfort with prolonged walking and physical exertion. Unsatisfactory results of treatment in the control group were obtained in 12.4% of patients in whom the development of spondylodiscitis was noted or the sequestration was not completely removed. In the main group, unsatisfactory results were obtained in 7.4% of patients and were caused by unrepaired compression of the nerve root. There was no development of spondylodiscitis in the study group.

Comparative analysis of the treatment results in the two study groups showed that in the main group, compared with the control group, the number of good treatment results increased by 1.2 times. The number of patients with unsatisfactory results in the main group decreased 6.6 times.

Evaluating the results of treatment in patients of the main group after 12 months, we found only one (0.9%) case of the development of cicatricial-adhesive epiduritis in the long-term period, where a second operation was required.

Thus, the use of the proposed method for preventing the development of cicatricial adhesions epiduritis and early diagnosis of spondylodiscitis make it possible to achieve 1.2 times more good treatment results and in the long-term period to steadily reduce the number of unsatisfactory results by 6.6 times.

Conclusion

1. The reasons for repeated surgical interventions in the early period are as follows: preservation of root compression - 6.4%; disc herniation at a different level - 5.7%; spondylodiscitis - 10.7%, segmental instability - 7.2%. In the long-term period, repeated surgery in 100% of cases is due to the development of cicatricial epiduritis.

2. The most significant causes of poor treatment outcomes in the early period are the development of spondylodiscitis in 4.2% of patients, in which a sharp limitation of the range of motion in the lumbar spine to 75-100% is revealed, and a pronounced radicular symptomatology of 3-4 points.

3. In discectomy, prophylaxis of cicatricial epiduritis by means of adhesion of adhesion tissue increases the efficiency of surgical treatment of herniated discs of the lumbar spine, which makes it possible to achieve 99.1% of good and satisfactory long-term results of treatment, while the unsatisfactory ones are only 0.9%.

LIST OF REFERENCES:

1. Gaidar B.V. Practical Neurosurgery: A Guide for Physicians. SPb., 2002.
2. Rusova T.V., Bankov E.S., Baikalov A.A., Krutko A.V., Rabinovich S.S., Novokshonov A.V. Biochemical features of recurrent lumbar intervertebral disc hernias at different stages of their degeneration. 2012. No. 2. S. 87-93.
3. Nekrasov A.K. Analysis of the causes of unsatisfactory clinical outcomes of surgical treatment of herniated discs of the lumbar spine. Nekrasov, M.A. Nekrasov // Topical issues of damage and diseases of the nervous system. - Ivanovo, 2001. - S. 124.
4. Chertkov A.K., Kutepov S.M., Mukhochev V.A. Treatment of osteochondrosis of the lumbar spine with intervertebral disc prosthetics with functional endoprotheses // Traumatology and Orthopedics of Russia. 2000. No. 3. S. 58-62.
5. Connolly ES. Surgery for recurrent lumbar disc herniation. ClinNeurosurg. 1992; 39: 211-216.
6. Fairbank JC, Couper J, Davies JB, O'Brien JP. The Oswestry low back pain disability questionnaire. Physiotherapy. 1980; 66: 271-273.

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