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# SURGICAL TREATMENT FOR LUMBAR DISK HERNIATION IN AN ADOLESCENT PATIENT: CLINICAL CASE STUDY

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**ABSTRACT** — Osteochondrosis of the spine refers to one of the leading problems of modern medicine. This disease is most characteristic of patients aged 25 to 55 years. It is noted that adolescents are increasingly suffering from osteochondrosis of the spine and its complications in the form of a hernia of an intervertebral disc. The purpose of this report: to analyze the clinical picture and the results of surgical treatment of a rare clinical case in childhood, represented by a hernia of the lumbar intervertebral disc with radicular syndrome. Surgical treatment consisted of a combination of microdiscectomy and foraminotomy under the control of endoscopic techniques.

**KEYWORDS** — osteochondrosis, herniation of an intervertebral disc, microdiscectomy, foraminotomy.

## INTRODUCTION

According to the data of the neurosurgical service of the Russian Federation, about 50 thousand patients per year are operated on for a hernia of an intervertebral disc. Among them, 0.5–2% patients tend to be adolescents under 18 years of age. The article presents a clinical case of successful surgical treatment for a hernia of an intervertebral disc in a 15-year-old adolescent [1–4].

## CASE DESCRIPTION

Patient M., 15 years old. Growth and development took place in accordance with gender and age.

**Medical history.** Back pain started 6 months prior to the first examination. Conservative treatment produced no effect. On admission the MRI of the lumbosacral region showed a paramedian right-sided hernia of the L4–L5 intervertebral disc up to 10 mm with stenosis of the intervertebral foramen on the right and compression on the nerve root.

On examination: complaints of pain in the lumbar region with radiation to the right lower limb, gait disturbance, numbness of the right lower limb. In neurological status, hypoesthesia was noted in the

right lower leg, paresis of the right foot up to 3 points, tingling of the right leg when walking. Weight — 57 kg. Height — 164 cm.

In a preoperative examination, weak myopia, mitral valve prolapse of the I–II degree, and vegetative symptoms were diagnosed.

A microsurgical operation was performed as follows: microdiscectomy L4–L5, foraminotomy, radiculolysis L5 on the right with video endoscopic assistance.

**Progress of the operation.** A linear incision was made in the lumbar region in the projection L4–L5 ~ 3.5 cm with installation of operating microscope. Radiculolysis of the root L5 was performed. The posterior longitudinal ligament above the herniation of the intervertebral disc was dissected, the latter was removed. The procedure was controlled by of a 30-degree endoscope, Foraminotomy and decompression of nerve structures were performed in the projection of the L5 root.

The postoperative period. Pain syndrome regressed on the first day. The child was vertical on the second day.

Histological examination of a removed hernia of the intervertebral disc revealed signs of connective tissue dysplasia in the form of extracellular matrix disorganization sites.

At discharge (on the 4<sup>th</sup> day) the patient was at a satisfactory condition, had no complaints; movements and sensitivity in the right lower limb were recovered.

The teenager was discharged with a diagnosis of “Juvenile osteochondrosis: right-sided paramedian hernia of the L4–L5 intervertebral disc with stenosis of the foraminal opening, persistent lumbar ischialgia on the right.”

At the follow-up examination after 3 months no complaints and neurological deficit were observed.

MRI control of the lumbar spine noted no signs of compression of the structures of the spinal cord; spinal canal, foraminal openings was not narrowed.

## DISCUSSION

Currently, spinal osteochondrosis in children is considered as one of the common forms of chronic systemic damage to connective tissue [5–8]. Surgical intervention in the form of microdiscectomy in

combination with foraminotomy under the control of endoscopic technique helped to achieve a good treatment effect in this clinical case. In the expanded foraminal opening, a reserve space is created for the nerve root, which reduces the risk of adhesions in the postoperative period, which can manifest as radicular pain [9].

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## REFERENCES

1. **XIE L, WU WJ, LIANG Y.** Comparison between Minimally Invasive Transforaminal Lumbar Interbody Fusion and Conventional Open Transforaminal Interbody Fusion: An Updated Metaanalysis. *Chinese Medical Journal*. 2016; 129: 1969–1986. <https://doi.org/10.4103/0366-6999.187847>
2. **KONOVALOV NA, NAZARENKO AG, ASYUTIN DS, ZELENKOV PV, ONOPRIENKO RA.** Modern methods of treatment of degenerative disease of the intervertebral disk. Literature review. *Voprosy neirokhirurgii im. N.N. Burdenko*. 2016; 80 (4): 102–108. (In Russ). <https://doi.org/10.17116/neiro2016804102-108>
3. **SHARIF S, AFSAR A.** Learning Curve and Minimally Invasive Spine Surgery. *World Neurosurgery*. 2018; 119: 472–478. <https://doi.org/10.1016/j.wneu.2018.06.094>
4. **BOGDUC N.** Functional anatomy of the spine. *Handbook of Clinical Neurology*. 2016; 136: 675–688. <https://doi.org/10.1016/B978-0-444-53486-6.00032-6>
5. **BRYANT J, MOHAN R, KOOTTAPPILLIL B, WONG K, YI PH.** Minimally Invasive Spine Surgery: Analyzing Internet-based Education Material. *Clinical Spine Surgery*. 2018; 31 (3): E166–E170.
6. **KREINEST M, RILLIG J, GRUTZNER PA, KUFFER M, TINELLI M, MATSCHKE S.** Analysis of complications and perioperative data after open or percutaneous dorsal instrumentation following traumatic spinal fracture of the thoracic and lumbar spine: a retrospective cohort study including 491 patients. *European Spine Journal*. 2017; 26 (5): 1535–1540. <https://doi.org/10.1007/s00586-016-4911-8>
7. **PAK LM, FOGEL HA, CHAUDHARY MA, KWON NK, BARTON LB, KOEHLMOOS T, HAIDER AH, SCHOENFELD AJ /** Outpatient Spine Clinic Utilization is Associated with Redbed Emergency Department Visits Following Spine Surgery. *Spine* 2018; 43 (14): E836–E841. <https://doi.org/10.1097/BRS.0000000000002529>
8. **GRABEL ZJ, HART RA, CLARK AJ, PARK SH, SHAFREY CI, SHEER JK, SMITH JS.** Adult Spinal Deformity Knowledge in Orthopedic Spine Surgeons: Impact of Fellowship Training, Experience, and Practice Characteristics. *Spine Deformity* 2018; 6 (1): 60–66. <https://doi.org/10.1016/j.jspd.2017.06.003>
9. **FEHLINGS MG, TETREAU L, NATER A, CHOMA T, HARROP J, MROZ T, SANTAGUIDA C, SMITH JS.** The Aging of the Global Population: The Changing Epidemiology of Disease and Spinal Disorders. *Neurosurgery*. 2015; 77 (Suppl 4): S1–S5. <https://doi.org/10.1227/NEU.0000000000000953>