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Results of Previous Discectomy and Implantation of Peek Intervertebral Keys for Cervical Interdiscular Hernia

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Abstract: Intervertebral disc herniation is one of the most pressing problems in neurosurgery, traumatology, and neurorehabilitation, due to long-term spinal cord injury, severe functional impairments associated with patients' ability to self-care, control limb and pelvic functions, a high level of disability, and numerous complications associated with the complexity of patients' socio-psychological adaptation.

Herniated discs and spinal cord compression account for 15–30–42% of all spinal diseases [1, 13]. In large industrial cities of Russia (St. Petersburg, Nizhny Novgorod, Irkutsk), the incidence of herniated discs and spinal cord compression is 5.58–7.6 cases per 10,000 population [5, 7, 10], in Kazakhstan – 4.3 cases [1], and in Ukraine – 6.4 cases [13]. According to Murphy KP [14], the incidence of herniated discs and remote spinal cord injuries in the USA is 0.2–0.5 cases per 10,000 population. In Russia, the number of cases of herniated discs and spinal cord compression increases by 8,000 annually. In the USA, 10,000 new cases of herniated discs and spinal cord compression are registered annually [2, 14].

Cervical osteochondrosis is the second most common disorder after lumbar osteochondrosis and most often occurs in working-age patients aged 25–60. The danger of cervical disc herniation is associated with a high risk of developing myelopathy, which leads to serious neurological disorders, decreased quality of life, and disability.

Aim: Analysis of the results of surgical treatment of the cervical spine using anterior decompression and the intercorporeal cage stabilization developed by us.

Keywords: instability, tracts, decompression, stabilization, MESH-system.

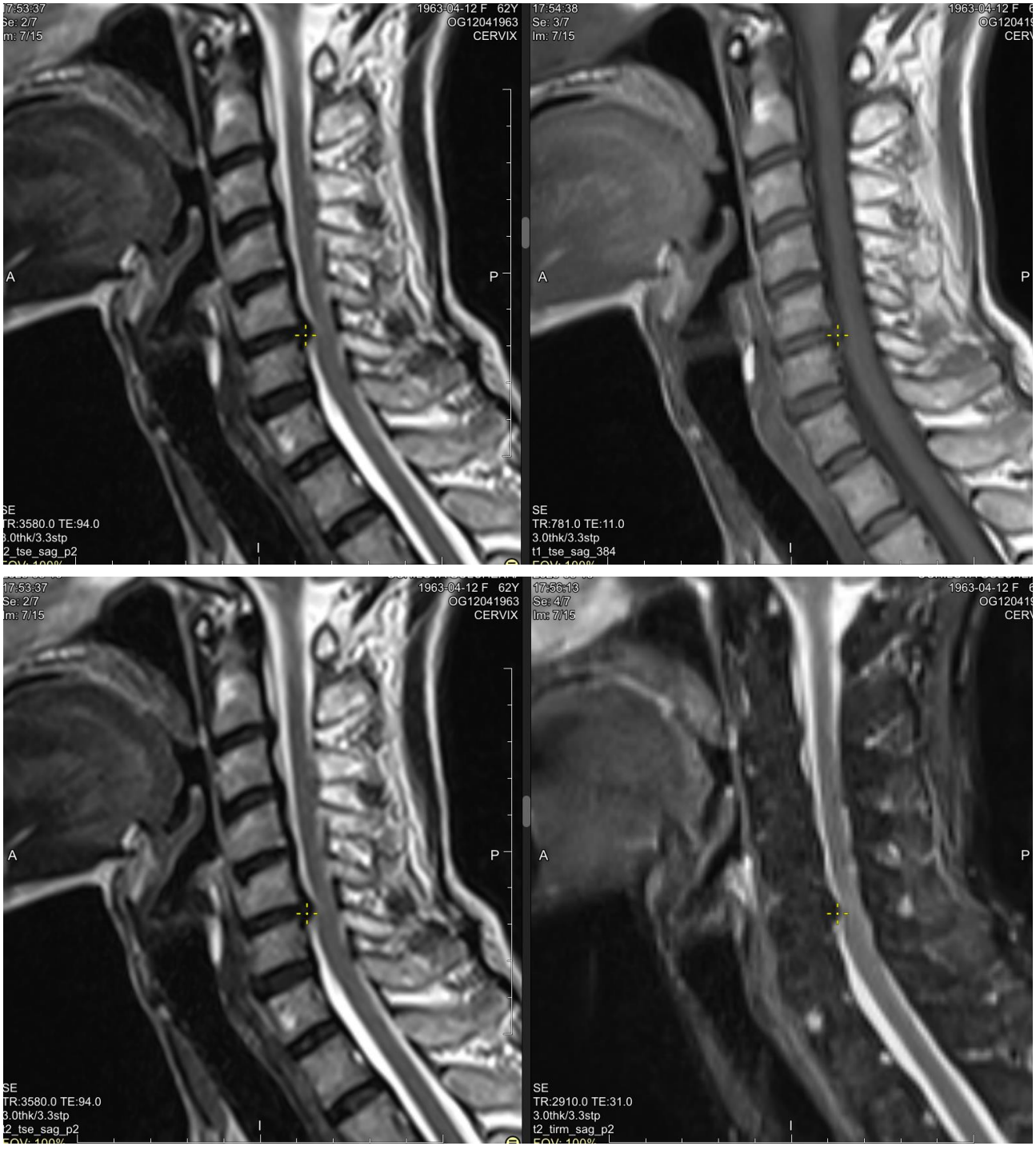
Materials and methods. The object of the study were 57 patients with degenerative cervical spinal stenosis, treated in the neurosurgical department of the multidisciplinary clinic of Samarkand State Medical University in the period from 2023 to 2025. Of these, 41 were men and 16 were women. The average age of the patients was 39 years. Most patients were of working age, that is, from 30 to 55 years old. The distribution of the pathological process by anatomical levels was as follows: at the C3-C4 level - 5 patients (11%), at the C4-C5 level - 6 patients (10.7%), at the C5-C6 level - 26 patients (45.6%), at the C6-C7 level - 20 patients (35%). Discogenic compression was detected in 49 patients at one level, myelopathy at two levels in 8 patients, radiculopathy in 33 patients, and radiculopathy in 14 patients. All patients underwent a clinical examination (including neurological assessment) and neuroradiological examinations (MRI, MSCT). To ensure decompression of the spinal cord and neural elements, all patients underwent surgical intervention involving anterior intercorporeal decompression with

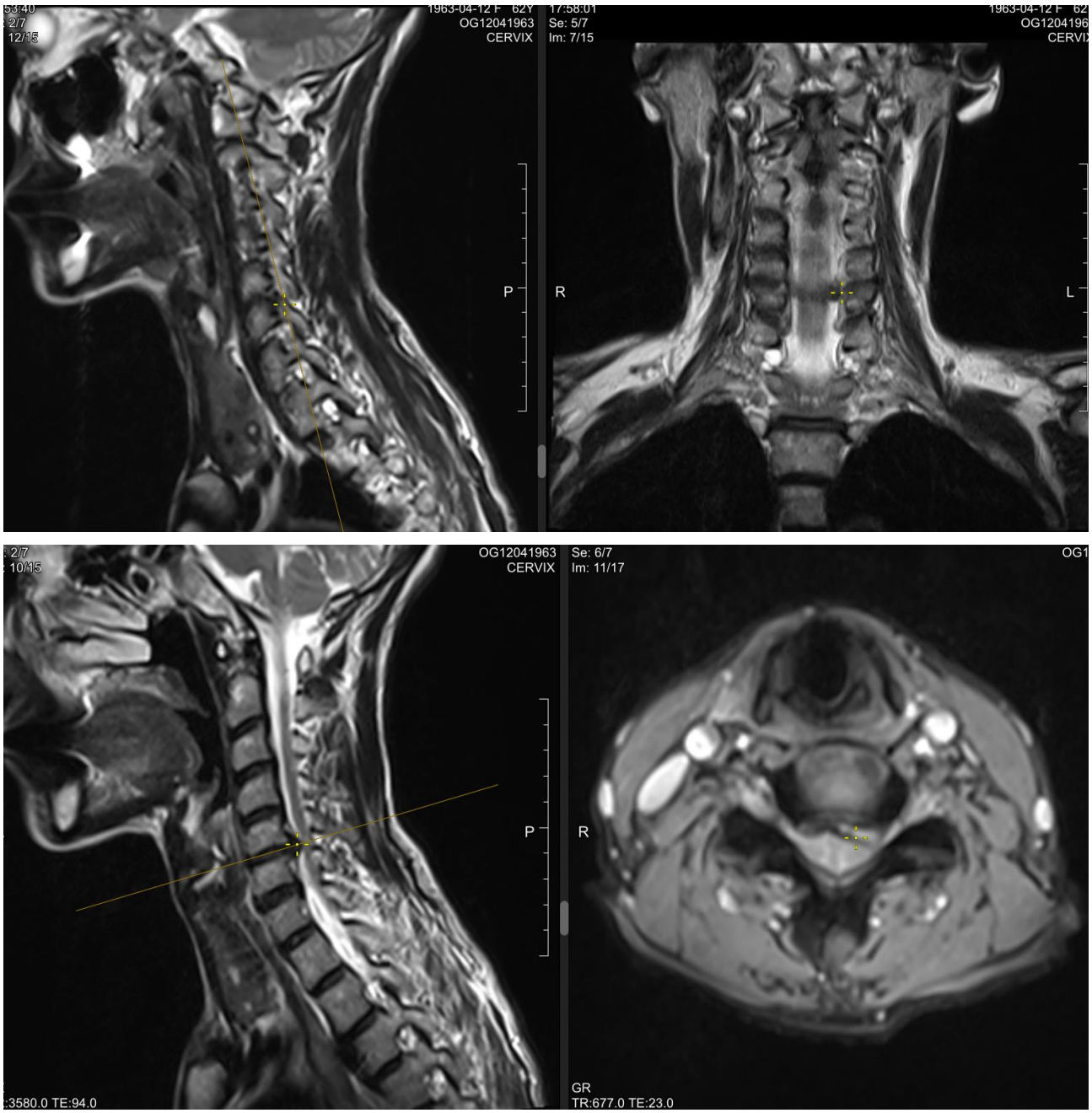
a crown burr and intercorporeal stabilization of the cervical spine with a PEEK cage manufactured on our 3D printer.

Below are the results of a clinical case of surgery for disc herniation between VC5-6.

ACDF – anterior cervical discectomy and fusion

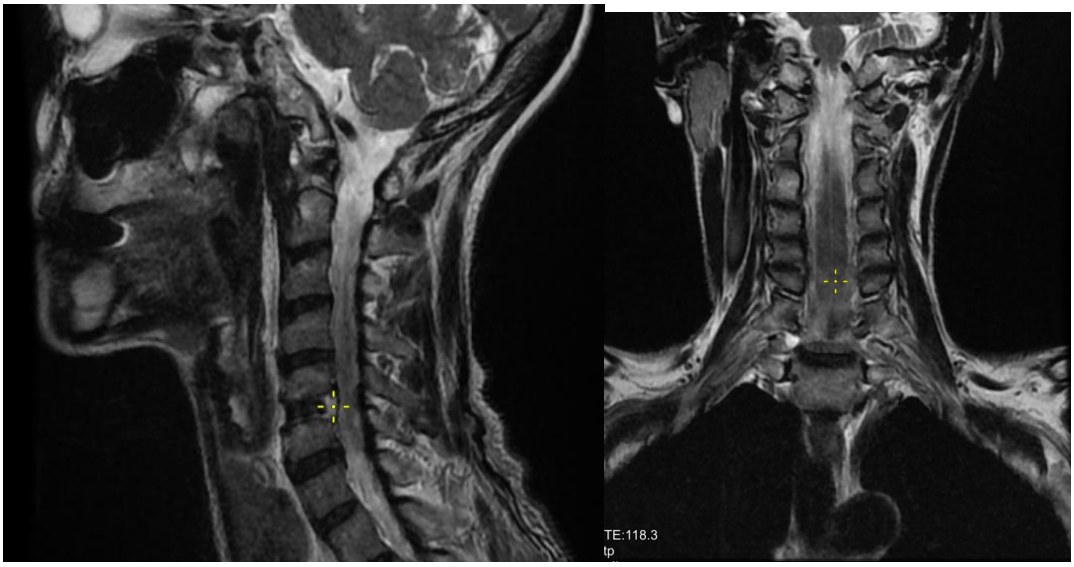
Pic1. MRI of the cervical vertebras. Disc herniation between VC5-6.





Results. Long-term treatment outcomes were studied in 57 patients, ranging from one to five years after surgery. The results of surgical treatment for cervical spinal stenosis were assessed using the Odom criteria, the VAS (visual analogue scale), and the Japan Orthopaedic Association criteria (the JOA scale was used in the presence of an underlying syndrome, cervical myelopathy). The initial neurological status, musculoskeletal function of the cervical spine, and the anatomical and biomechanical axis of the operated spinal segment were assessed. At long-term follow-up, radiographic examination revealed signs of interbody fusion formation in all patients. According to Odom criteria, an excellent outcome was considered complete resolution of all preoperative symptoms and pathological signs. Postoperatively, this outcome was observed in 18 patients (38%). A good outcome was defined as minimal persistence of preoperative symptoms and improvement or absence of changes in pathological signs. A good outcome was observed in 21 patients (44%).

A satisfactory outcome was observed in 7 patients (15%). This was characterized by some improvement in preoperative symptoms, but no change or only minor improvement in other pathological signs. An unsatisfactory outcome was observed in 1 patient (4%). In this patient, symptoms and pathological signs associated with cervical spinal stenosis remained unchanged.



Pic 2. MRI after surgery

Conclusion. Remote results of surgical interventions using the ACDF method in patients with degenerative-dystrophic diseases have demonstrated high efficiency, reliability and safety.

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