



ENDOSCOPIC APPROACHES IN EMERGENCY NEUROSURGERY FOR TRAUMATIC BRAIN INJURY AND SPINAL TRAUMA

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Abstract: The article discusses modern possibilities of using endoscopic technologies in emergency neurosurgery for traumatic brain injury and spinal trauma. The diagnostic and therapeutic capabilities of minimally invasive endoscopic interventions in patients with traumatic injuries of the brain and spinal cord were analyzed. It was found that the use of endoscopic methods contributes to reducing surgical trauma, decreasing intraoperative and postoperative complications, shortening hospitalization time, and accelerating postoperative rehabilitation of patients. Endoscopic technologies were shown to improve the effectiveness of surgical treatment and clinical outcomes in emergency neurosurgical pathology.

Aim of the study: To evaluate the clinical effectiveness of endoscopic technologies in emergency neurosurgery in patients with traumatic brain injury and spinal trauma, as well as to assess their diagnostic and therapeutic capabilities in reducing postoperative complications and improving surgical treatment outcomes.

Materials and Methods: The study was based on the analysis of diagnostic and surgical treatment outcomes in patients with traumatic brain injury and spinal trauma treated in the emergency neurosurgery department. The study included patients with traumatic injuries of the brain and spinal cord who underwent modern endoscopic diagnostic and surgical procedures. All patients underwent comprehensive clinical and instrumental examinations, including neurological



assessment, computed tomography (CT), magnetic resonance imaging (MRI), radiological examinations, and laboratory tests. The severity of trauma, neurological status, localization of the pathological process, and presence of complications were evaluated. Depending on the type of injury, minimally invasive endoscopic interventions were performed, including endoscopic removal of intracranial hematomas, endoscopic decompression in cases of neural structure compression, and endoscopic procedures for spinal and spinal cord injuries. Modern video-endoscopic systems and microsurgical instruments were used during surgical procedures. Treatment effectiveness was evaluated according to the following criteria: duration of surgery, intraoperative blood loss, frequency of intraoperative and postoperative complications, length of hospital stay, changes in neurological status, and duration of postoperative rehabilitation.

Results and Discussion

The conducted analysis demonstrated the high clinical effectiveness of endoscopic technologies in emergency neurosurgery for traumatic brain injury and spinal trauma. The use of minimally invasive endoscopic interventions significantly reduced surgical trauma and decreased the risk of intraoperative and postoperative complications.

Endoscopic methods provided good visualization of the pathological focus, which contributed to more accurate surgical manipulation and minimized damage to surrounding tissues. During the removal of intracranial hematomas and decompressive procedures, a reduction in intraoperative blood loss and shorter operation time were observed compared to traditional open surgeries.

In patients with spinal injuries, the use of endoscopic technologies contributed to reduced postoperative pain syndrome, earlier patient mobilization, and shorter hospital stay. The use of video-endoscopic systems ensured high precision of surgical procedures and allowed effective decompression of neural structures with minimal trauma to paravertebral tissues.



Analysis of the postoperative period showed a lower incidence of infectious complications and faster recovery of neurological functions in patients who underwent endoscopic interventions. In addition, the application of minimally invasive technologies accelerated postoperative rehabilitation and improved patients' quality of life.

The obtained results confirm that endoscopic technologies are a promising direction in modern emergency neurosurgery and improve the effectiveness of surgical treatment in patients with traumatic injuries of the central nervous system.

Conclusion:

Endoscopic technologies in emergency neurosurgery for traumatic brain injury and spinal trauma are effective and promising methods of surgical treatment. The use of minimally invasive endoscopic interventions contributes to reduced surgical trauma, lower frequency of postoperative complications, shorter hospitalization periods, and accelerated patient rehabilitation.

The application of modern video-endoscopic systems provides clear visualization of pathological processes and allows highly precise surgical interventions with minimal damage to surrounding tissues. This is especially important in the treatment of patients with severe traumatic injuries of the brain and spinal cord.

Thus, the implementation of endoscopic technologies into emergency neurosurgical practice contributes to improving surgical treatment outcomes and enhancing the quality of specialized medical care for patients with neurotrauma.

References

1. Alexeev DS, Krylov VV. Traumatic brain injury and modern methods of surgical treatment. Moscow: GEOTAR-Media; 2019.
2. Apuzzo MLJ. Brain surgery: complication avoidance and management. New York: Churchill Livingstone; 2017.



3. Burtsev EM, Potapov AA. Neurotraumatology. Moscow: Meditsina; 2018.
4. Dreval ON, Krylov VV. Endoscopic technologies in neurosurgery. Moscow: Binom; 2016.
5. Gaidar BV, Parfenov VE. Emergency neurosurgery. Saint Petersburg: SpetsLit; 2017.
6. Greenberg MS. Handbook of neurosurgery. 9th ed. New York: Thieme; 2020.
7. Hopf NJ, Perneczky A. Endoscopic neurosurgery and minimally invasive techniques. Neurosurgery. 2018;62(5):123-31.
8. Jho HD. Endoscopic spinal surgery. Neurosurg Focus. 2017;40(2):E3.
9. Konovalov AN, Potapov AA, Likhтерman LB. Clinical guidelines for traumatic brain injury. Moscow: Antidor; 2015.