



# **SURGICAL TREATMENT OF COMBINED INJURIES OF THE NOSE AND PARANASAL SINUSES**

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## **Abstract**

Combined injuries of the nose and paranasal sinuses are complex maxillofacial traumas that often result in both functional impairment and aesthetic deformities. This study analyzes clinical features, surgical management, and treatment outcomes in 140 patients with such injuries. All patients underwent comprehensive clinical examination, radiological imaging, and, when indicated, computed tomography (CT). Surgical treatment was performed in 80 patients (57%), including closed reduction, open reduction with internal fixation, septoplasty, and functional endoscopic sinus surgery. The results demonstrated that timely surgical intervention significantly improves functional recovery, restores nasal anatomy, and reduces complication rates. The study confirms that individualized surgical strategies based on injury severity are essential for optimal outcomes.

**Keywords:** Nasal trauma, paranasal sinuses, combined injury, rehabilitation, frontal sinus, acoustic rhinometry, rhinomanometry, olfactory dysfunction.

## **Introduction**

Injuries to the nose and paranasal sinuses are among the most frequent types of facial trauma encountered in otorhinolaryngology practice. Due to the central anatomical position of the nose and its close relationship with the orbit, cranial



base, and maxillary structures, such injuries often lead to both structural and functional disturbances.

Combined injuries involving the paranasal sinuses are particularly severe, as they may affect multiple anatomical regions simultaneously, including the nasal bones, septum, maxillary sinus walls, frontal sinus, and ethmoid complex. These injuries may result in nasal obstruction, chronic sinusitis, anosmia, facial deformity, and impaired quality of life.

Surgical treatment remains the main therapeutic approach in moderate and severe cases. However, the choice of surgical technique and timing remains a critical issue in modern otorhinolaryngology.

The aim of this study was to evaluate the results of surgical treatment in patients with combined injuries of the nose and paranasal sinuses and to analyze its clinical effectiveness.

### **Materials and Methods**

This retrospective clinical study included 140 patients with combined injuries of the nose and paranasal sinuses treated at a multidisciplinary ENT and maxillofacial surgery department. The study population consisted of patients aged 18 to 65 years. Patients with isolated nasal injuries, chronic untreated fractures, or incomplete medical records were excluded from the study. All patients underwent detailed clinical examination, including anterior rhinoscopy, posterior rhinoscopy, palpation of nasal structures, and assessment of nasal airway function. Clinical symptoms such as pain, edema, nasal obstruction, and facial asymmetry were recorded.

Radiological evaluation was performed using standard X-ray imaging in all cases. Computed tomography (CT) of the facial skeleton was performed in 78% of patients to assess the extent of bone and sinus involvement. Endoscopic examination was used in selected cases for further evaluation of intranasal structures.

Surgical treatment was indicated in patients with displaced fractures, severe deformities, or sinus involvement. The surgical techniques included closed reduction of nasal bone fractures, open reduction with internal fixation, septoplasty, and functional endoscopic sinus surgery (FESS). In cases of maxillary sinus involvement, drainage procedures were performed. Postoperative



management included antibiotic therapy, anti-inflammatory treatment, nasal packing, and regular follow-up. Patients were monitored for 3 to 12 months after surgery.

## **Results**

Among the 140 patients, 98 (70%) were male and 42 (30%) were female. The majority of patients belonged to the 31–45 years age group, indicating higher exposure to trauma in the working-age population. The main causes of injury were domestic trauma (40%), road traffic accidents (30%), occupational injuries (15%), and sports-related injuries (15%). Nasal bone fractures were identified in 61% of patients, while combined injuries involving the maxillary sinuses were observed in 23%, and frontal or ethmoid sinus involvement in 16%.

Surgical treatment was performed in 80 patients (57%). Closed reduction was carried out in 45 cases (56% of surgical patients), open reduction with internal fixation in 20 cases (25%), septoplasty in 10 cases (12%), and sinus-related surgical procedures in 5 cases (7%).

Postoperative outcomes showed restoration of nasal breathing in 85% of patients and satisfactory cosmetic results in 78%. Functional recovery was achieved in 74% of cases.

Complications included residual nasal deformity in 12% of patients, persistent nasal obstruction in 10%, and post-traumatic sinusitis in 8%. Minor postoperative complications such as edema and infection occurred in 6% of cases. CT findings showed a strong correlation with intraoperative results in 92% of cases, confirming its high diagnostic accuracy in preoperative planning.

## **Discussion**

The results of this study demonstrate that combined injuries of the nose and paranasal sinuses are predominantly observed in young and middle-aged males, mainly due to higher exposure to trauma-related risk factors. Surgical intervention remains the most effective treatment method in moderate and severe cases. Closed reduction is suitable for simple fractures, whereas open reduction and fixation are required for complex injuries. Septoplasty significantly improves nasal airflow in patients with septal deviation. Functional endoscopic sinus



surgery plays an important role in managing sinus involvement and preventing long-term complications such as chronic sinusitis.

Early surgical intervention (within 7–10 days after trauma) was associated with significantly better functional and cosmetic outcomes. Delayed treatment increased the risk of complications and secondary deformities. The study confirms that CT imaging is an essential diagnostic tool, providing detailed anatomical information for surgical planning.

### **Conclusion**

Surgical treatment of combined injuries of the nose and paranasal sinuses is highly effective when based on accurate clinical and radiological assessment.

1. Most patients require surgical intervention due to the severity of injuries.
2. Early surgical management improves functional and aesthetic outcomes.
3. CT imaging is essential for accurate diagnosis and surgical planning.
4. Individualized surgical approach significantly reduces complication rates.

### **References**

1. Bailey B.J., Johnson J.T., Newlands S.D. Head & Neck Surgery – Otolaryngology. Lippincott Williams & Wilkins, 2014.
2. Djuraev J.A., Soatov I.O. MET (Tyrosine Kinase Receptor Gene) Gene Polymorphism Among Patients with Chronic Polyposis Rhinosinusitis and Chronic Rhinosinusitis. *Klinicheskaya Meditsina (Clinical Medicine)*, Tashkent Medical Academy Journal, 2023, № 1, pp. 113–116. ISSN 2181-7812. Tashkent Medical Academy, Tashkent, Uzbekistan.
3. Djuraev J.A., Soatov I.O., Rakhimjanova G.A., Mardonov Kh.A. Results of a Clinical-Cytomorphological Study Conducted to Identify Different Forms of Chronic Polyposis Rhinosinusitis. *Eurasian Journal of Otorhinolaryngology – Head and Neck Surgery*, 2024, Vol. 3, Issue 4, pp. 56–61. Tashkent Medical Academy, Tashkent, Uzbekistan. DOI: <https://doi.org/10.57231/j.ejohns.2024.3.4.0010>
4. Djuraev Jamolbek Abdulkakhovich, Soatov Ilyosjon Olim ugli. Comparative Analysis of the Frequency of the MMP9 Gene rs3918242 Polymorphism in a Group of Patients with Chronic Polyposis Rhinosinusitis.

- Problems of Biology and Medicine, 2024, No. 4 (155), pp. 73–76. Tashkent Medical Academy, Tashkent, Uzbekistan. ISSN 2181-7812.
5. Flint P.W., Haughey B.H., Lund V.J. et al. Cummings Otolaryngology: Head and Neck Surgery. Elsevier, 2015.
  6. Hwang K. Analysis of facial bone fractures. Indian Journal of Plastic Surgery.
  7. Khasanov U.S., Soatov I.O., Khodjanov S.H., Axundjanov N.O., Rakhimjanova G.A. Results of an Analysis of the Prevalence of the rs20417 Polymorphism in the COX2 Gene Among Patients with Chronic Polyposis Rhinosinusitis and Chronic Rhinosinusitis and in the Control Group. American Journal of Medicine and Medical Sciences, 2024, 14(12): 3149–3153. DOI 10.5923/j.ajmms.20241412.13 Tashkent Medical Academy, Tashkent, Uzbekistan.
  8. Lee K. Surgical management of nasal fractures. Otolaryngology Clinics of North America.
  9. Mondin V. et al. Management of nasal fractures. Acta Otolaryngologica.
  10. Soatov Ilyosjon Olim o‘g‘li, Djuraev Jamolbek Abdukaxarovich. Pathomorphological Structure of Polypoid Tissue of Patients with Chronic Polypoid Rhinosinusitis. Medical Journal of Uzbekistan, 2023, № 2, pp. 59–64. Tashkent Medical Academy, Tashkent, Uzbekistan.
  11. Soatov Ilyosjon Olim o‘g‘li. Biomarkers and Genotyping in the Development of Chronic Polyposis Rhinosinusitis. Association of Pulmonologists of Central Asia, 2024, pp. 100–103. Tashkent Medical Academy, Tashkent, Uzbekistan. ISSN: — (article published in Pulmonologiya Markazi Bulletin, <https://tbcenter.uz/>)
  12. World Health Organization. Global Status Report on Injury Prevention. WHO, 2018.