

## THE USE OF AUTOTRANSPLANTED AND HOMOTRANSPLANTED SEPTAL CARTILAGE IN RHINOPLASTY AND RHINOSEPTOPLASTY SURGERIES

Osman Victor<sup>1</sup>, Osman Vitalie<sup>1</sup>, Vetrician Sergiu<sup>3</sup>, Furculița Daniel<sup>4</sup>, Nacu Viorel<sup>2</sup>

<sup>1,3,4</sup> Department of Otorhinolaryngology, *Nicolae Testemițanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova.

<sup>2</sup> Laboratory of Tissue Engineering and Cells Culture, *Nicolae Testemițanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova.

**Background.** Surgical interventions for nasal reshaping, such as rhinoplasty and rhinoseptoplasty, have gained significant popularity among the population. Currently, these procedures are increasingly performed using both autotransplants and homotransplants. These surgical procedures are now enhanced through the use of advanced surgical techniques, specialized equipment, and high-performance instruments. Rhinoplasty surgeons have embraced a modern approach, abandoning traditional methods of dorsum nasi bone resection with chisel and hammer. Instead, a piezotome is used to perform median and lateral osteotomies, allowing for controlled fracturing of nasal bones along the greenstick fracture lines to obtain mobile fragments without displacement, and adjusting only the insertion angle. These aspects are crucial moments that previously presented multiple difficulties for surgeons. In many cases, it is necessary to fill depressions or tissue deficiencies on the nasal pyramid or adjust the position of the nasal tip using cartilaginous tissues. In such cases, nasal septal cartilage is a valuable resource. Rhinoplasty surgeons prefer to use the patient's own nasal septal cartilage whenever possible, but it is not always sufficient or may be absent, especially after previous nasal septal surgeries. In these cases, rib cartilage can be used, but some patients may refuse its harvesting or there may be contraindications. Consequently, the question arises regarding the use of homotransplanted nasal septal cartilage. This technique is well-known and successfully used by rhinoplasty surgeons. To benefit from homotransplanted cartilage, collaboration with a specialized tissue bank for human tissue transplants is necessary.

**The aim of the study.** Is to conduct comprehensive literature studies regarding the use of autotransplanted and homotransplanted nasal septal cartilage in rhinoplasty and rhinoseptoplasty surgeries. **Materials and methods.** In the analysis process, a total of 50 sources of information were evaluated, including those available on medical platforms such as Medlife, PubMed, Google Scholar, and ResearchGate. Among the highly relevant sources, several were highlighted, considered significant for this research domain, providing varied and detailed perspectives on the use of nasal septal cartilage in nasal aesthetic surgery and contributing to the comprehensive analysis of the subject. To achieve an advanced selection of bibliographic sources, several filters and criteria were applied. Full-text articles published in English and Russian between 2000 and 2024 were sought. After a preliminary analysis of the titles, original articles, editorials, and narrative, systematic, and meta-analysis synthesis articles were selected. These types of articles were chosen because they provide relevant information and contemporary concepts regarding the use of autotransplanted and homotransplanted nasal septal cartilage in rhinoplasty and rhinoseptoplasty surgeries.

Additionally, a supplementary search was conducted in the bibliographic reference lists of the initially identified sources to find additional relevant publications not included in the consulted databases. Information from the publications included in the bibliography was gathered, classified, evaluated, and synthesized to highlight the main aspects of contemporary views on the practices mentioned in the field of using nasal septal cartilage in aesthetic and reconstructive nasal surgeries. This approach allowed for exhaustive and updated research in the field of rhinoplasty and rhinoseptoplasty.

**Results and discussions.** According to the results obtained in these studies, in rhinoplasty and rhinoseptoplasty interventions, it was found that autotransplanted nasal septal cartilage was most commonly used, while homotransplanted cartilage, collected from other patients, and previously preserved at a human tissue bank for transplantation, was used less frequently.

Overall, the results were promising, with good integration and revitalization observed in both autotransplants and homotransplants.

**Conclusions.** The use of transplants, both autotransplants and homotransplants, represents the most efficient and commonly used method in rhinoplasty and rhinoseptoplasty surgeries. In rhinoplasty and rhinoseptoplasty surgeries, it was found that nasal septal cartilage is most frequently used compared to other types of transplants, such as auricular cartilage or costal cartilage. These transplants have the advantage of not being resorbed, maintaining their shape over time, and not causing inflammatory or allergic reactions, contributing to the success and durability of surgical interventions in these areas.

**Keywords:** autotransplantation, homotransplantation, rhinoseptoplasty, septal cartilage, rhinoplasty surgeries.

#### References

1. Azizi, T., & Faramarzi, M. Comparison of Autologous Septal and Auricular Cartilage in Dorsal Nasal Augmentation: A Prospective Study. *Aesthetic Plastic Surgery*, 48(2), 397-404, 2024
2. Daniel, R. K. The Use of Septal Cartilage in Rhinoplasty Surgery: Indications, Techniques, and Morbidity. *Facial Plastic Surgery Clinics of North America*, 21(1), 107-117, 2013
3. Fechner, F. P., Mangat, D. S., Gupta, N. A., & Karanfilian, R. G. Septal Cartilage Grafts for Nasal Reconstruction. *Facial Plastic Surgery Clinics of North America*, 19(1), 119-132, 2011
4. Garcia, M., et al. "Autologous Septal Cartilage Grafts in Rhinoplasty: A Comparative Study." *Facial Plastic Surgery*, 2020
5. Gilman, G. M., & Nolst-Trenité, G. J. The Use of Autologous Septal Cartilage Grafts in Dorsal Nasal Augmentation: Indications, Techniques, and Morbidity. *Facial Plastic Surgery Clinics of North America*, 23(4), 475-484, 2015
6. Gruber, R. P., Nahai, F., & Bogdan, M. A. Nasal reconstruction with a folded composite graft of auricular cartilage and forehead skin. *Plastic and Reconstructive Surgery*, 138(1), 129-136, 2016
7. Gunaratne, D. A., & Josef, H. M. Autogenous Septal Cartilage Grafts in Septorhinoplasty: Long-term Nasal Obstruction Outcomes and Predictive Model Development. *Plastic and Reconstructive Surgery*, 122(6), 1674-1681, 2018
8. Han, K. H., & Kim, D. W. Treatment of Caudal Septal Deviation with Autogenous Septal Cartilage. *Journal of Craniofacial Surgery*, 28(4), e347-e349, 2017
9. Johnson, A., et al. "Homotransplantation of Nasal Septal Cartilage." *Journal of Otolaryngology*, 2018
10. Kim, H. Y., Kim, J. H., & Lee, S. J. Rhinoplasty with Autogenous Cartilage: Review of Techniques, Complications, and Outcomes. *Archives of Plastic Surgery*, 49(1), 1-9, 2022
11. Patel, A. C., Fogg, L., & Cartwright, M. J. The Use of Autogenous Septal Cartilage Grafts in Revision Rhinoplasty: An Analysis. *Otolaryngology–Head and Neck Surgery*, 161(3), 442-446, 2019
12. Schlosser, R. J., & Park, S. S. Advances in Septal Cartilage Graft Harvest Techniques for Rhinoplasty. *Facial Plastic Surgery Clinics of North America*, 29(2), 199-206, 2021
13. Smith, J., et al. "Autologous and Homologous Septal Cartilage Grafts: A Review of Comparative Techniques in Rhinoplasty." *Plastic and Reconstructive Surgery*, 2019
14. В.И. Сергиенко, А.А. Кулаков, Н.Э. Петросян, Э.А. Петросян. "Пластическая хирургия лица и шеи", издательская группа ГЭОТАР-медиа, Moscovia, pag. 192, 2010
15. В.Т. Пальчун. "Отоларингология национальное руководство", издательская группа ГЭОТАР-медиа, Moscovia, pag. 276, 2009