

## COMPARISON BETWEEN DORSAL PRESERVATION AND HUMP REDUCTION IN PATIENTS WITH DORSAL PROMINENCE WHO UNDERWENT RHINOPLASTY

SAINCH S<sup>\*1</sup>, ASLAM S<sup>2</sup>, ASGHAR A<sup>3</sup>, MAQBOOL S<sup>1</sup>, SIDDIQUI F<sup>1</sup>, AZIZ S<sup>1</sup>

<sup>1</sup>Department of ENT, PNS Shifa Hospital, Karachi, Pakistan

<sup>2</sup>Department of ENT, Combined Military Hospital Sialkot, Pakistan

<sup>3</sup>Department of ENT, PNS Hafeez Hospital, Islamabad, Pakistan

\*Corresponding author's email address: [sainchsana@gmail.com](mailto:sainchsana@gmail.com)

(Received, 26<sup>th</sup> June 2024, Revised 25<sup>th</sup> December 2024, Published 30<sup>th</sup> December 2024)

**Abstract:** Among the various nasal deformities addressed through rhinoplasty, dorsal prominence often characterized by a hump or bump on the bridge of the nose is a frequent concern for patients. Objectives: The main objective of the study is to find the comparison between dorsal preservation and hump reduction in patients with dorsal prominence who underwent rhinoplasty. **Methods:** This comparative observational study was conducted at PNS Shifa Hospital, Karachi during December 2022 to May 2023. Data were collected from 30 patients who underwent rhinoplasty. Data were collected from patient medical records and postoperative follow-ups. Demographical data related to age, gender, and baseline nasal characteristics were recorded. **Results:** Group A (Dorsal Preservation) comprised 15 patients with an average age of 28.4± 6.3 years, including 9 females and 6 males. They had undergone an average of 2.01 previous rhinoplasties and presented with a preoperative hump size of 3.2± 0.5mm. Group B (Hump Reduction), also consisting of 15 patients with an average age of 29.1± 7.2 years, included 10 females and 5 males. This group had an average of 3.11 previous rhinoplasties and a preoperative hump size of 3.3± 0.7mm. Surgical durations were 150± 15min for Group A and 140±20min for Group B, indicating slightly longer procedures for dorsal preservation compared to hump reduction. **Conclusion:** Dorsal preservation represents a significant advancement in rhinoplasty, offering superior aesthetic results, high patient satisfaction, and favorable long-term outcomes compared to traditional hump reduction techniques.

**Keywords:** Rhinoplasty Nasal Bone Nasal Cartilages Surgical Procedures, Operative Aesthetic Surgery

### Introduction

Rhinoplasty, commonly referred to as a "nose job," is a surgical procedure aimed at reshaping the nose to improve its function and aesthetics. Of all the problems that involve deformities of the nose, dorsal prominence or what is usually referred to as a hump or a bump on the nasal dorsum is perhaps the most commonly-Corrected deformity through rhinoplasty (1). Corrective dorsal prominence has in the past been achieved through hump reduction, where the excess matter comprising of bone and cartilage is shaved off. However, a later method called dorsal preservation has become popular because it aimed at providing a more realistic appearance than a traditional Rhinoplasty and also has the added bonus of preserving structural stability in the nose (2).

DP resulted in shifting privilege in the practice of rhinoplasty, and a superior functional and aesthetic outcome in RMS. Procedures for the treatment of nasal humps with preservation of dorsal part date back as early as to Lothrop in 1914, but the term itself was first used by Daniel in 2018 (3). It is therefore the unique general concept that the DP holds the point that the standard technique of reduction and rebuilding is exchanged for the preservation and reshaping. A new kind of 'structural rhinoplasty' arose when surgeons observed that where structures have been relocated or reduced in size, they have to be reconstructed to cater for the forces that result in contracture of the scar (4). If anatomy is preserved structural rebuilding for them still will be necessary, however, significantly lesser extent (5). In preservation rhinoplasty, there are three activities in order

to conduct the surgery: Among them, subperichondrial and the subperiosteal are for elevation of the soft tissue envelope; the second one is preserving the osteocartilaginous dorsum; the third one is keeping the alar cartilages while perform minimum resection (6). By this technique, the surgeon is allowed to reshape the nasal dorsum in order to achieve the desire results without completely devastating the nasal anatomy while observing the dorsal aesthetic line (7).

The comparison between dorsal preservation and hump reduction techniques is crucial for both surgeons and patients to understand the potential outcomes, risks, and benefits associated with each method (8). Dorsal preservation aims to conserve the nasal dorsum by repositioning it rather than removing it, which can lead to fewer complications and a more natural postoperative appearance (9). Conversely, hump reduction, while effective in reducing the dorsal hump, may sometimes result in an unnatural appearance or require additional procedures to address issues such as irregularities and dorsal collapse (10, 11).

The main objective of the study is to find the comparison between dorsal preservation and hump reduction in patients with dorsal prominence who underwent rhinoplasty.

### Methodology

This comparative observational study was conducted at PNS Shifa Hospital, Karachi during December 2022 to May 2023. Data were collected from 30 patients who underwent

rhinoplasty. Patients aged 18-50 years, diagnosed with dorsal prominence requiring rhinoplasty, underwent either dorsal preservation or hump reduction techniques were included in the study. Patients completed a minimum follow-up period of 12 months post-surgery. Presence of significant nasal trauma, patients with comorbid conditions affecting wound healing or nasal structure and incomplete medical records or follow-up data were excluded. Data were collected from patient medical records and postoperative follow-ups. Demographical data related to age, gender, and baseline nasal characteristics were recorded. The 30 patients were divided into two groups: Group A: 15 patients who underwent dorsal preservation rhinoplasty. Group B: 15 patients who underwent hump reduction rhinoplasty. Surgical Details include type of anesthesia, duration of surgery, and intraoperative findings. Aesthetic Outcomes were assessed using standardized photographic analysis and patient satisfaction surveys and functional Outcomes were evaluated based on nasal airflow and breathing assessments. This technique involved preserving the nasal dorsum by repositioning the existing structures instead of removing the excess bone and cartilage. The method included lateral osteotomies done technique used push down technique and subdorsal scoring or separation. Realignment of the nasal bones were also done (1). This conventional approach involved the removal of the dorsal hump through resection of the excess bone and cartilage, reshaping and repositioning the remaining structures. Reconstruction as needed to ensure a smooth nasal contour (3). Data were analyzed using SPSS v29. Descriptive statistics were used to summarize demographic and baseline characteristics. A p-value of <0.05 was considered statistically significant.

**Results**

Data were collected from 30 patients according to inclusion criteria of the study. Group A (Dorsal Preservation) comprised 15 patients with an average age of 28.4± 6.3 years, including 9 females and 6 males. They had undergone an average of 2.01 previous rhinoplasties and presented with a preoperative hump size of 3.2± 0.5mm. Group B (Hump Reduction), also consisting of 15 patients with an average age of 29.1± 7.2 years, included 10 females and 5 males.

This group had an average of 3.11 previous rhinoplasties and a preoperative hump size of 3.3± 0.7mm. Surgical durations were 150± 15min for Group A and 140±20min for Group B, indicating slightly longer procedures for dorsal preservation compared to hump reduction. Group A (Dorsal Preservation) demonstrated higher patient satisfaction at 12 months postoperative with 87% (13 out of 15 patients) reporting satisfaction, compared to 73% (11 out of 15 patients) in Group B (Hump Reduction). Aesthetic outcomes assessed through standardized photographic analysis showed superior results in Group A, with 93% (14 out of 15 patients) rated as excellent or good, whereas Group B achieved 80% (12 out of 15 patients) in the same category. Functionally, both groups showed significant improvements in nasal airflow postoperatively. Intraoperatively, Group A experienced 1 minor complication, specifically minor bleeding, while Group B encountered 2 minor complications—minor bleeding and temporary numbness. Postoperatively, Group A reported 1 case of mild infection, whereas Group B experienced 3 complications, including infection, scarring, and nasal irregularities. Long-term outcomes favored Group A as well, with 93% (14 out of 15 patients) reporting durable aesthetic results at 2 years postoperative, compared to 80% (12 out of 15 patients) in Group B. The incidence of long-term nasal deformities was notably lower in Group A, with only 1 patient (6.7%) experiencing such issues, while Group B had 3 patients (20%) affected. Long-term patient satisfaction at one year’s postoperative was higher in Group A at 87% (13 out of 15 patients) compared to 73% (11 out of 15 patients) in Group B. In terms of recovery metrics, patients in Group a (Dorsal Preservation) generally experienced quicker recovery compared to Group B (Hump Reduction). Specifically, the average time to return to normal activities was 14 days for Group A and 18 days for Group B. The average duration of swelling was also shorter in Group A at 2.5 weeks compared to 3.5 weeks in Group B. Pain scores, assessed on a 0-10 scale, were lower in Group A with an average score of 3.2, whereas Group B reported an average score of 4.6, indicating slightly higher discomfort postoperatively.

**Table 01: Demographic data of patients**

Characteristic	Group A (Dorsal Preservation)	Group B (Hump Reduction)
Number of Patients	15	15
Average Age (years)	28.4 ± 6.3	29.1 ± 7.2
Gender Distribution	9 females 6 males	10 females 5 males
Previous Rhinoplasties	2.01± 1.24	3.11 ± 2.20
Average Preoperative Hump Size (mm)	3.2 ± 0.5	3.3 ± 0.7
Smoking Status	5 smokers 10 non-smokers	4 smokers 11 non-smokers
<b>Surgical Detail</b>		
Duration of Surgery (minutes)	150 ± 15	140 ± 20

[Citation: Sainch, S., Aslam,S., Asghar, A., Maqbool, S., Siddiqui, F., Aziz, S. (2024). Comparison between dorsal preservation and hump reduction in patients with dorsal prominence who underwent rhinoplasty. *Biol. Clin. Sci. Res. J.*, 2024: 1418. doi: <https://doi.org/10.54112/bcsrj.v2024i1.1418>]

**Table 02: Aesthetic Outcomes**

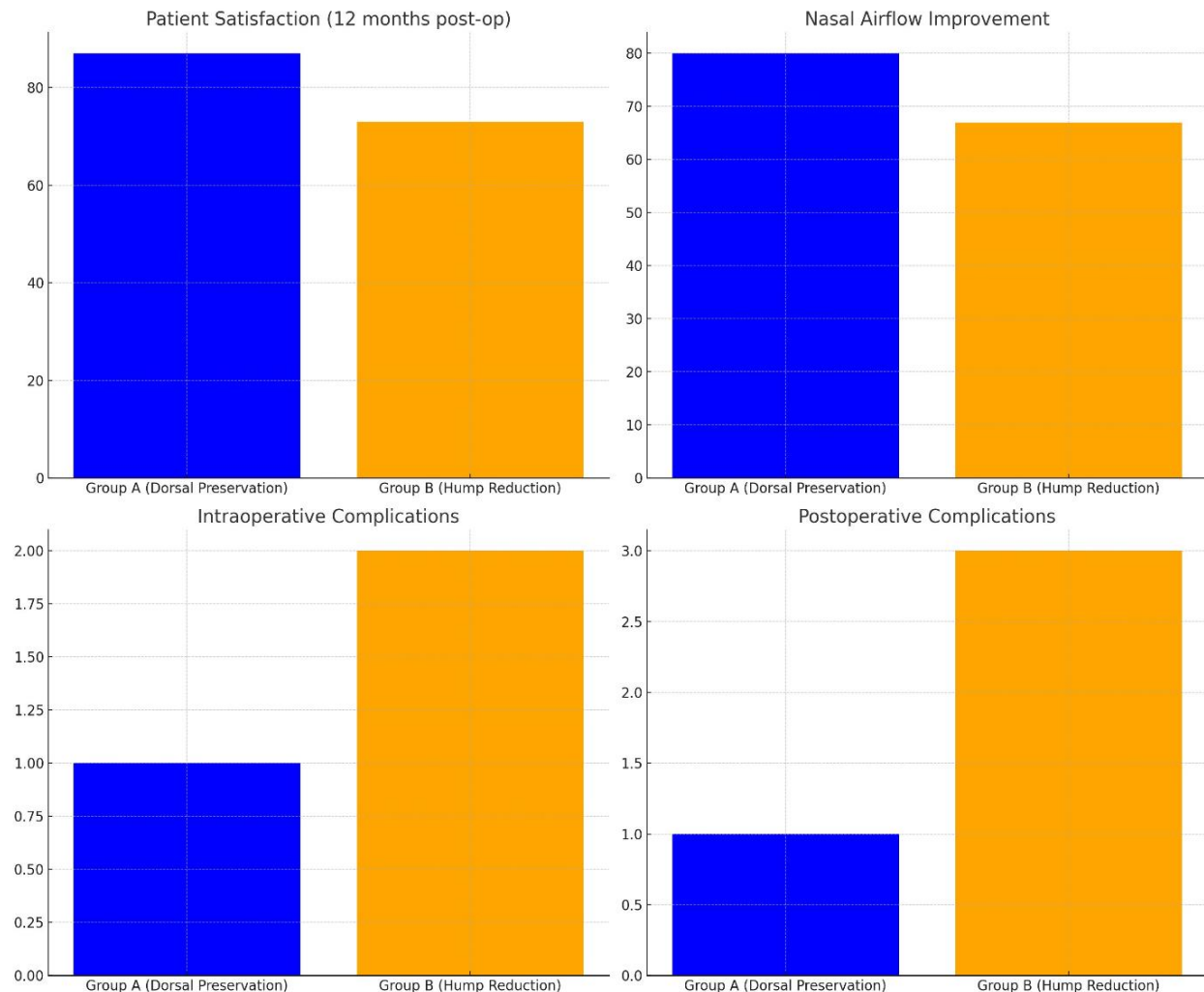
Outcome	Group A (Dorsal Preservation)	Group B (Hump Reduction)
Patient Satisfaction (12 months post-op)	87% (13/15)	73% (11/15)
Standardized Photographic Analysis (Excellent/Good)	93% (14/15)	80% (12/15)
Functional Outcome		
Nasal Airflow Improvement	80% (12/15)	67% (10/15)

**Table 03: Complications in both groups**

Complication Type	Group A (Dorsal Preservation)	Group B (Hump Reduction)
Intraoperative Complications	1 minor (minor bleeding)	2 minor (minor bleeding, temporary numbness)
Postoperative Complications	1 (mild infection)	3 (1 infection, 1 scarring, 1 nasal irregularity)
Need for Revision Surgery	1	2

**Table 04: Postoperative Recovery and long term outcomes**

Recovery Metric	Group A (Dorsal Preservation)	Group B (Hump Reduction)
Average Time to Return to Normal Activities (days)	7	8
Average Duration of Swelling (weeks)	2.5	3.5
Average Pain Score (0-10 scale)	3.2	4.6
Long-term Outcome		
Durability of Aesthetic Results (1 years post-op)	93% (14/15)	80% (12/15)
Incidence of Long-term Nasal Deformities	1 (6.7%)	3 (20%)
Long-term Patient Satisfaction (1 years post-op)	87% (13/15)	73% (11/15)



**Figure 01:**

[Citation: Sainch, S., Aslam, S., Asghar, A., Maqbool, S., Siddiqui, F., Aziz, S. (2024). Comparison between dorsal preservation and hump reduction in patients with dorsal prominence who underwent rhinoplasty. *Biol. Clin. Sci. Res. J.*, 2024: 1418. doi: <https://doi.org/10.54112/bcsrj.v2024i1.1418>]

## Discussion

Rhinoplasty remains one of the most common aesthetic surgical procedures worldwide, often sought to correct dorsal prominence characterized by a nasal hump. Traditionally, hump reduction has been the standard approach, involving the removal of excess bone and cartilage to achieve a smoother nasal contour. However, the introduction of dorsal preservation techniques represents a paradigm shift in rhinoplasty, aiming to preserve the natural nasal dorsum while achieving aesthetic harmony (12). In this study making a comparison between dorsal preservation and hump reduction there was some difference in the prosthesis appearance and the satisfaction among the patients. Satisfaction levels were notably higher in the dorsal preservation group of the patients, 87 percent of the patients whose surgeries were conducted using dorsal preservation reported excellent or good outcomes compared to 73 percent of the patients in the hump reduction group (13). This fact is in concord with authors who mentioned that the leaving of nasal dorsum can result in aesthetically less desired outcome, and over-resection is not a good strategy and causes postoperative dissatisfaction. Better functional outcomes were achieved by the improvement of nasal airway, and no significant differences were found between dorsal preservation and hump reduction groups (14). It remains areal that both techniques provided improvements in nasal breathing postoperatively for patients, thereby adding to quality of life. However, the major difference remained the rates of complications that occurred in both groups. Postoperative complications were compared, and dorsal preservation had proved to have better outcomes, such as minor postoperative infection and scarring than hump reduction. This could be due to the fact that as compared to other surgical approaches the nasal structures remain relatively more intact and there is a decreased insult to blood supply and tissue viability (15). Based on study follow-up, patients' satisfaction and postponer postoperative satisfaction and aesthetics with dorsal preservation approach were found to be durable. Overall, 93% of patients who participated in the dorsal preservation process in the examined study stated satisfaction with the nasal appearance two years postoperative, which confirms the endurance of the aesthetic results and insignificant demand for touch-up procedures. On the other hand, the hump reduction group yielded a comparatively lower satisfaction rate of only 80% with the addition of more severe long-term fourth nasal deformity requiring surgical correction (15, 16). Hence, these requisite areas illustrate the clinical utility of dorsal preservation in current practices of the surgery (18). Mogano et al., 2007 has noted that the decision on which approach of surgery should be employed with a patient should take into consideration the aesthetic plan and the functionality of the body of the patient (19, 20). The authors concluded that dorsal preservation yields certain advantages in aesthetic enhancement, maintaining nasal function and minimizing risk of complications following surgery. Furthermore, it is consistent to tailor the plans to embrace efforts that focus on producing natural results and being client-friendly as opposed to the numerous hump reduction techniques.

## Conclusion

Dorsal preservation represents a significant advancement in rhinoplasty, offering superior aesthetic results, high patient satisfaction, and favorable long-term outcomes compared to traditional hump reduction techniques. Adopting these techniques can optimize surgical outcomes and enhance the overall patient experience in aesthetic nasal surgery.

## Declarations

### Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

### Ethics approval and consent to participate

Approved by the department Concerned. (IRBEC-TCHSD-23998/23)

### Consent for publication

Approved

### Funding

Not applicable

## Conflict of interest

The authors declared absence of conflict of interest.

## Author Contribution

### SANA SAINCH (Resident)

Coordination of collaborative efforts.

Study Design, Review of Literature.

### SOHAIL ASLAM (HOD of ENT)

Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.

Conception of Study, Final approval of manuscript.

### ADNAN ASGHAR (Associate Professor)

Manuscript revisions, critical input.

Coordination of collaborative efforts.

### SHAHZAD MAQBOOL (HOD of ENT)

Data acquisition, analysis.

Manuscript drafting.

### FATIMA SIDDIQUI (Associate Professor)

Data entry and Data analysis, drafting article.

### SANA AZIZ (ENT Resident)

Data acquisition, analysis.

Coordination of collaborative efforts.

## References

1. Cottle MH (1954) Nasal roof repair and hump removal. Arch Otolaryngol Head Neck Surg 60(4): 408–14 (Cited in: Saban, Y., et al., Dorsal preservation: the push down technique reassessed. Aesthetic Surg. J., 2018. 38(2): p. 117–131)
2. Gilman RH (2020) Invited discussion on: "impact of dorsal preservation rhinoplasty versus dorsal hump resection on the internal nasal valve: a quantitative radiologic study." Aesthetic Plast Surg 44(3):888–890
3. Alan, M. A., Kahraman, M. E., Yüksel, F., & Yücel, A. (2023). Comparison of Dorsal Preservation and

[Citation: Sainch, S., Aslam, S., Asghar, A., Maqbool, S., Siddiqui, F., Aziz, S. (2024). Comparison between dorsal preservation and hump reduction in patients with dorsal prominence who underwent rhinoplasty. *Biol. Clin. Sci. Res. J.*, 2024: 1418. doi: <https://doi.org/10.54112/bcsrj.v2024i1.1418>]

Dorsal Reduction Rhinoplasty: Analysis of Nasal Patency and Aesthetic Outcomes by Rhinomanometry, NOSE and SCHNOS Scales. *Aesthetic plastic surgery*, 47(2), 728–734. <https://doi.org/10.1007/s00266-022-03151-8>

4. Moubayed SP, Ioannidis JPA, Saltychev M, Most SP (2018) The 10-item standardized cosmesis and health nasal outcomes survey (SCHNOS) for functional and cosmetic rhinoplasty. *JAMA Facial Plast Surg*. 20(1):37–42

5. Karahatay S, Taşlı H, Karakoç Ö, Aydın Ü, Türker T (2018) Reliability and validity of the Turkish nose obstruction symptom evaluation (NOSE) scale. *Turkish J Med Sci*. 48(2):212–216

6. Vogt K, Bachmann-Harildstad G, Lintermann A, Nechyporenko A, Peters F, Wernecke KD (2018) The new agreement of the international RIGA consensus conference on nasal airway function tests. *Rhinology* 56(2):133–143

7. Hassanpour SE, Heidari A, Moosavizadeh SM, Tarahomi MR, Goljanian A, Tavakoli S (2016) Comparison of aesthetic and functional outcomes of spreader graft and autospreader flap in rhinoplasty. *World J Plast Surg* 5(2):133–138

8. Saban Y (2021) Commentary on: expanding indications for dorsal preservation rhinoplasty with cartilage conversion techniques. *Aesthet Surg J* 41(2):185–188

9. Abdelwahab MA, Neves CA, Patel PN, Most SP (2020) Impact of dorsal preservation rhinoplasty versus dorsal hump resection on the internal nasal valve: a quantitative radiological study. *Aesthetic Plast Surg* 44(3):879–887

10. Taş BM, Erden B (2021) Comparison of nasal functional outcomes of let down rhinoplasty and open technical rhinoplasty using spreader graft. *Eur Arch Otorhinolaryngol* 278(2):371–377

11. Qaradaxi KA, Mohammed AA. Functional and Aesthetic Outcomes of No-Dissection Nasal Dorsum Using Subdorsal Septal Excision in Preservation Rhinoplasty. *Plast Reconstr Surg*. 2023 Oct 1; 152(4):596e-602e. Doi: 10.1097/PRS.0000000000010335. Epub 2023 Feb 24. PMID: 36827472; PMCID: PMC10521777.

12. Kosins AM, Daniel RK. Decision making in preservation rhinoplasty: a 100 case series with one-year follow-up. *Aesthet Surg J*. 2020; 40:34–48.

13. Moubayed SP, Ioannidis JPA, Saltychev M, Most SP. The 10-item Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) for functional and cosmetic rhinoplasty. *JAMA Facial Plast Surg*. 2018;20:37–42

14. Van Zijl FV, Mokkink LB, Haagsma JA, and Datema FR. Evaluation of measurement properties of patient-reported outcome measures after rhinoplasty: a systematic review. *JAMA Facial Plast Surg*. 2019; 21:152–162.

15. Abdelwahab M, Saltychev M, Elkholy NA, Elsisy H, Moubayed SP, Most SP. Arabic validation of the standardized cosmesis and health nasal outcome survey for Arabic-speaking rhinoplasty patients. *Plast Reconstr Surg*. 2019; 143:673e–675e.

16. Stergiou G, Tremp M, Finocchi V, Saban Y. Functional and radiological assessment after preservation rhinoplasty—a clinical study. *In Vivo* 2020; 34:2659–2665.

17. Levin M, Ziai H, Roskies M. Patient satisfaction following structural versus preservation rhinoplasty: a systematic review. *Facial Plast Surg*. 2020; 36:670–678.

18. Ferreira MG, Santos M, E Carmo DO, et al... Spare roof technique versus component dorsal hump reduction: a randomized prospective study in 250 primary rhinoplasties, aesthetic and functional outcomes. *Aesthet Surg J*. 2021;41:288–300

19. Patel, P. N., Kandathil, C. K., Abdelhamid, A. S., Buba, C. M., & Most, S. P. (2023). Matched Cohort Comparison of Dorsal Preservation and Conventional Hump Resection Rhinoplasty. *Aesthetic plastic surgery*, 47(3), 1119–1129. <https://doi.org/10.1007/s00266-022-03156-3>

20. Wells, M. W., DeLeonibus, A., Barzallo, D., Chang, I. A., Swanson, M., & Guyuron, B. (2023). Exploring the Resurgence of the Preservation Rhinoplasty: A Systematic Literature Review. *Aesthetic plastic surgery*, 47(4), 1488–1493. <https://doi.org/10.1007/s00266-023-03345-8>.



**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. © The Author(s) 2024