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Features of Functional and Aesthetic Rhinoplasty

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Abstract This article is dedicated to functional and aesthetic rhinoplasty, one of the most common procedures in plastic surgery. The author presents research findings that demonstrate how the proper selection of a rhinoplasty approach can significantly enhance surgical effectiveness and minimize risks for the patient. The study emphasizes the importance of individualized treatment plans and highlights the impact of nasal deformities on both appearance and respiratory function.

Keywords Rhinoplasty, Functional rhinoplasty, Aesthetic rhinoplasty, Rhinoseptoplasty, Plastic surgery, Nasal deformity, Nasal breathing, Nasal obstruction

1. Introduction

Today, rhinoplasty is one of the most widespread and popular plastic surgeries worldwide [1]. Its popularity can be attributed to the fact that reshaping or resizing the nose not only brings aesthetic enhancements by making facial features more refined but also significantly improves breathing function.

According to the International Society of Aesthetic Plastic Surgery (ISAPS), rhinoplasty ranks among the top five most sought-after plastic surgeries globally. In 2022, ISAPS published its Global Survey on Aesthetic/Cosmetic Procedures, revealing that the total number of procedures performed by plastic surgeons had increased by 19.3% compared to previous years [2].

In 2020 alone, approximately 850,000 rhinoplasty procedures were performed worldwide. The primary indications for nasal surgery traditionally include congenital or acquired nasal deformities, post-traumatic nasal injuries, and difficulty in breathing.

In today's society, the demand for plastic surgery continues to grow steadily. People are paying increasing attention to their appearance and are willing to undergo surgical procedures to enhance their looks. Patients who seek aesthetic changes to their noses—such as reducing a dorsal hump, refining the nasal tip, straightening a crooked nose, or narrowing the nasal bridge—typically opt for cosmetic or aesthetic rhinoplasty.

Unlike aesthetic rhinoplasty, functional rhinoplasty is primarily aimed at improving nasal breathing and olfactory function without altering the nose's external shape. In most cases, functional improvements can be achieved without significant external modifications, such as through septoplasty or certain techniques to correct vestibular stenosis (nasal valve dysfunction).

Many patients wish to maintain their natural nasal shape, and in such cases, the plastic surgeon's goal is to enhance nasal function and expand the internal airways while preserving the nose's unique external appearance.

Reconstructive rhinoplasty is required in cases of congenital or acquired nasal deformities where external structural changes are necessary to restore or improve both nasal function and form. These reconstructive procedures aim to return the nose to its pre-morbid state and should not be considered elective cosmetic surgeries.

Examples of such cases include: Cleft lip-associated nasal deformities, Long-standing post-traumatic nasal injuries, Severe congenital nasal abnormalities.

In these situations, modifying the nose's shape is a necessity, as the primary objective is reconstruction and restoration, rather than purely cosmetic enhancement.

In all modern types of rhinoplasty, even in surgeries aimed solely at cosmetic modifications, it is crucial for the surgeon to inform the patient before the procedure that maintaining or improving nasal breathing is of primary importance.

Surgeons must fully understand and clearly explain to their patients that excessively aggressive narrowing of the upper, middle, or lower thirds of the nose can lead to persistent nasal obstruction symptoms, significantly impacting the patient's quality of life [3].

According to scientific literature, reports indicate varying rates of functional impairments following cosmetic rhinoplasty, with figures ranging from 15% to 68% [1; Yu et al., 2010]. Among these complications, nasal airway obstruction remains the most common reason for revision surgery [4].

Thus, balancing aesthetics with functionality is a critical aspect of rhinoplasty, requiring careful surgical planning to achieve both visual harmony and optimal respiratory function.

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2. Results and Discussion

During rhinoplasty, various parts of the nose can be reshaped and corrected, including the nasal bridge, alar wings, and nasal tip. The procedure can be performed using either an open or closed approach, with the choice depending on the specific clinical case and the surgeon's decision.

Open rhinoplasty is considered the classical technique in nasal plastic surgery. The history of modern aesthetic nasal surgery began with this approach, and to this day, many rhinoplastic surgeons prefer open access due to its proven effectiveness, precision, and reliable post-operative outcomes.

The open method provides: Excellent visibility and access to nasal structures, High surgical accuracy in reshaping complex deformities, A well-established approach with predictable outcomes, A smooth post-operative recovery process.

For these reasons, our clinic also performs rhinoplasty using the open technique, ensuring high-quality results and patient satisfaction.

A total of 182 patients (80 men and 102 women, average age 32±3.0 years) who underwent rhinoplasty for aesthetic reasons at different times (from 1 to 3 years ago) were examined. All patients subjectively assessed the aesthetic results of rhinoplasty and the state of nasal breathing at the examination stage using questionnaires. Since nasal obstruction is the most significant of the functional problems that arise after rhinoplasty, we used the previously well-proven NOSE (Nasal Obstruction Symptom Evaluation) questionnaire [5].

The proposed questionnaire contained 4 main points: "difficulty in nasal breathing", "nasal congestion", "sleep quality" and "shortness of breath during physical exertion". The patient was asked to answer to what extent each of these criteria was problematic for him. The patient's answer "no problem" was assessed as 0 points, "minor problem" corresponded to 1 point, "moderate problem" - 2 points, "significant problem" - 3 points, "very serious" - 4 points. Accordingly, the overall average score for all points was calculated, its minimum value could be 0 points, the maximum - 16. The result was assessed as positive if the sum of points did not exceed 4. The questionnaire we used to assess the aesthetic result of the surgery, which we tried to make as simple and understandable for the patient as possible, contained only one question - "how, in your opinion, has the shape of the nose changed as a result of the intervention?" Five answer options were offered: "the nose has become significantly worse" (5 points); "the nose has become slightly worse" (4); "has not changed" (3); "has become slightly better" (2); "significantly better" (1), i.e. the highest value corresponded to the worst result and vice versa. Only 110 (60.4%) of the operated patients indicated that they were satisfied with nasal breathing and appearance. Complaints related to the shape and/or function of the nose were present in 72 (39.6%) patients, of whom 22 (12.1%) noted severe difficulty in nasal breathing (4 points), 21 (11.5%) were dissatisfied with the shape of the external nose.

A subjective evaluation of nasal breathing across the study sample indicated moderate nasal obstruction, with an overall mean score of 6.25 on the NOSE (Nasal Obstruction Symptom Evaluation) scale. The poorest responses were recorded for the criterion "nasal breathing during physical activity", which had a mean score of 10.02 ± 2.25. Other criteria were rated as follows:

Nasal congestion: 5.25 ± 1.25 points, Difficulty breathing through the nose: 7.2 ± 2.3 points, Sleep quality: 2.3 ± 1.4 points.

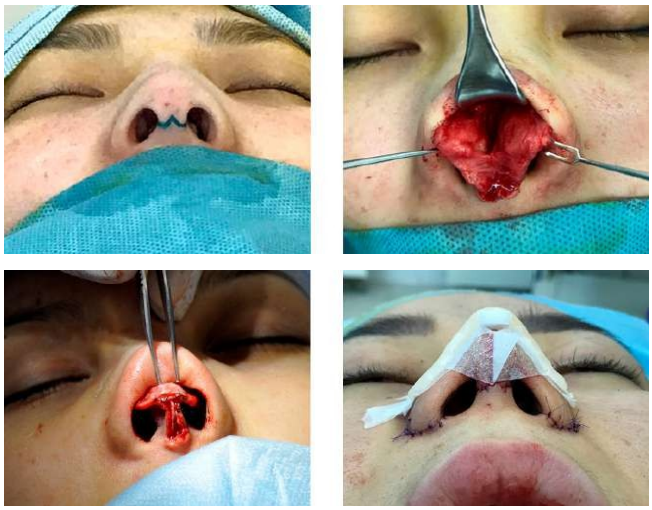

Figure 1. Stages of open rhinoplasty approach

Table 1. Distribution of subjective assessments of respondents (n=182) for each assessment feature (NOSE scale)

Criterion			Number of ratings, abs (%)			
0 point	1 point	2 point	3 point		4 point	total
Nasal congestion	110 (60,4)	7 (3,9)	5 (2,7)	28 (15,4)	32 (17,6)	182 (100)
Difficulty in nasal breathing	110 (60,4)	11 (6,1)	24 (13,2)	15 (8,2)	22 (12,1)	182 (100)
Quality of sleep	110 (60,4)	61 (33,5)	6 (3,3)	3 (1,6)	2 (1,1)	182 (100)
Status of nasal breathing during physical exertion	110 (60,4)	15 (8,2)	24 (13,2)	23 (12,6)	10 (5,5)	182 (100)

During patient history collection, the techniques used in previous surgeries were reviewed. The findings revealed that: Open rhinoplasty was performed in 98 cases (53.8%), Closed (endonasal) rhinoplasty was performed in 84 patients (46.2%).

Interestingly, patient satisfaction did not correlate with the surgical approach used. No statistically significant relationship was found between aesthetic outcomes and the type of surgical access chosen.

The rhinoplasty procedures in this study were conducted by both plastic surgeons and otolaryngologists (ENT specialists).

Patients operated on by plastic surgeons were generally more satisfied with the nasal shape, but they experienced greater impairment in nasal breathing.

Conversely, patients who underwent primary rhinoplasty performed by ENT specialists were more satisfied with nasal function.

However, in both groups, there were cases where patients were dissatisfied with both the aesthetic and functional results.

In most cases, achieving long-term improvements in both nasal shape and breathing function requires the use of cartilage grafts of specific dimensions: Length: 40-50 mm, Width: 3-5 mm, Thickness: 1-3 mm.

The success of cartilage grafting depends on maintaining a relatively smooth surface and ensuring ease of shaping and processing, which is crucial for achieving both structural stability and functional enhancement in rhinoplasty.

3. Conclusions

In conclusion, it is essential to emphasize that rhinoplasty is not merely a cosmetic procedure that alters the shape of the nose, but rather a complex and sequential process aimed at correcting both aesthetic and functional issues for each individual patient.

Rhinoplasty is a highly personalized surgery, tailored to address the specific needs and concerns of every individual. Given this, a surgeon must possess not only technical surgical expertise but also a deep understanding of psychology. It is crucial to recognize that form and function are inseparable, and achieving a perfect nasal shape is impossible if the nasal function is compromised.

Rhinoplasty is a technically demanding procedure that requires a high level of expertise, deep anatomical knowledge, and experience in handling various nuances. Depending on the goal of the nasal reshaping, the procedure may involve: Restructuring the nasal shape, Adjusting the nasal angle, Resecting excess bone or soft tissues.

A successful rhinoplasty does not simply involve enhancing nasal aesthetics—it must also preserve facial harmony and maintain the patient's unique individuality.

The selection of the surgical technique is one of the most crucial steps in achieving the desired outcome. The integration of new technologies in surgical practice enables more precise corrections, reduces the risk of complications, and accelerates recovery, thereby ensuring optimal results. A combination of traditional surgical methods and advanced ultrasonic technologies has proven to be an optimal approach in modern rhinoplasty.

Rhinoplasty remains one of the most popular plastic surgery procedures worldwide. Patients seek functional and/or aesthetic rhinoplasty for various reasons, whether to improve breathing or to enhance facial appearance. However, before performing surgery, the surgeon must carefully evaluate not only the patient's desires but also their nasal anatomy to determine what changes can be made safely without compromising health or functionality.

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