

Analysis of the Application Value of Comprehensive Nasal Cosmetic Surgery Treatment Methods

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Abstract: *Objective:* To analyze the application value of comprehensive surgical treatment methods for nasal cosmetic plastic surgery. *Methods:* From August 2024 to July 2025, 70 patients were selected for comprehensive rhinoplasty surgery. They were divided into groups using random number tables, with 35 patients in each group. The experimental group used closed plastic surgery, and the control group used open plastic surgery. The data differences between the groups were compared. *Results:* Compared with the control group, the total effective rate of the experimental group was significantly higher, the nasal resistance was significantly lower after treatment, the nasal ciliary movement rate was significantly higher after treatment, the QOL scale score and NSS scale score were significantly higher after treatment, and the complication rate was significantly lower, $P < 0.05$; Comparing the nasal resistance, nasal ciliary movement rate, QOL scale score and NSS scale score between the two groups before treatment, $P > 0.05$. *Conclusion:* The application value of closed plastic surgery as a comprehensive surgical treatment method for cosmetic nose plastic surgery is high.

Keywords: Cosmetic nose plastic surgery; Closed Plastic surgery; Open plastic surgery; Application value

Online publication: March 16, 2026

1. Introduction

The most common projects in the field of clinical plastic surgery include cosmetic rhinoplasty surgery. Among the facial features, the nose is a core hub, and its morphological beauty is directly related to the overall coordination of the face. At the same time, complete physiological functions of the nasal cavity are very important for basic physiological activities such as breathing and smelling. Based on this, during the process of rhinoplasty for patients, both cosmetic effects and physiological function repair need to be taken into consideration. Currently, there are two types of surgical procedures involved in clinical comprehensive rhinoplasty surgery, which are divided into closed and open ^[1]. There are significant differences between the two in terms of surgical approach, operating difficulty, and postoperative effects, and their clinical application value is controversial. Open plastic surgery fully exposes the surgical field, which is conducive to the correction of complex deformities, but large incisions easily increase the risk of postoperative scars and nasal tissue damage. Closed plastic surgery is used for patients with a hidden approach, which has smaller trauma and good scar concealment, but its limited field of view will affect the accuracy of the operation ^[2]. In order to further clarify the clinical applicability of the two surgical techniques and optimize the rhinoplasty treatment plan, this study selected 70 patients to

analyze the application value of comprehensive rhinoplasty surgical treatment methods.

2. Materials and methods

2.1. Information

In the hospital from August 2024 to July 2025, 70 patients who underwent comprehensive rhinoplasty surgery were selected and divided into groups using a random number table. There were 35 patients in each group. The experimental group was 6 men and 29 women, aged 18–42 (27.65 ± 4.25) years old, and the control group was 5 men and 30 women, aged 19–41 (27.64 ± 4.24) years old. Comparing the two sets of data, $P > 0.05$ was obtained.

Inclusion criteria: willingness to perform cosmetic rhinoplasty surgery; no contraindications to surgery such as coagulation disorders, nasal infections, systemic diseases, etc.; good preoperative communication and informed consent; and complete follow-up data.

Exclusion criteria: mental illness; pregnancy or lactation; allergy to surgical materials; previous history of nasal surgery.

2.2. Method

The control group used open plastic surgery, lying on their backs under general anesthesia. An inverted “V”-shaped incision was made at the base of the columella of the patient. The patient’s skin and subcutaneous tissue were incised in sequence, and the columella and alar cartilage were separated on both sides to fully expose the deep tissue and cartilage structure of the nose. Prosthetic implantation, cartilage shaping, and alar reduction were performed based on the patient’s nose shape needs. After the operation, the patient was completely hemostatic, a drainage strip was placed, the incision was sutured layer by layer, and a nose clip was used to fix the patient’s nose.

The experimental group used closed plastic surgery, lying on their back under general anesthesia, and made a mucosal incision on the medial wall of the patient’s bilateral nostrils. The patient’s nasal dorsal fascia and nose cartilage were separated through the incision to construct a surgical operating space. Special instruments were used to shape the patient’s nasal cartilage and bone tissue. Appropriate prosthetic materials were implanted, and the nose shape was adjusted until it was satisfactory. The patient’s bleeding was stopped after the operation without the need to place a drainage strip. The patient’s medial nostril wall incision was sutured, and a nose clip was used to fix the patient’s nose.

The patient was treated with anti-infective drugs for 3–5 days after the operation, and the nose was cleaned and kept dry. The sutures and nose clips were removed for the patient 7–10 days after the operation, and the patient’s recovery was followed up and observed regularly.

2.3. Observation indicators

- (1) Compare the total effectiveness of the two groups. After 3 months of evaluation, the patient’s nose shape is natural and beautiful, the facial features are coordinated, there are no obvious surgical traces, and the patient’s satisfaction is extremely high, so it is judged to be effective. Compared with the preoperative comparison, the nose shape is significantly improved, the facial features are basically coordinated, the surgical traces are slight, and the patient’s satisfaction is high, so it is judged to be effective; in other cases, it is judged to be invalid. Total efficiency = 100% - inefficiency.
- (2) Compare the nasal resistance and nasal ciliary movement rate between the two groups.
- (3) Compare the QOL scale scores and NSS scale scores between the two groups. Evaluation using the quality of life scale (QOL) and nasal cosmetic rating scale (NSS).
- (4) Compare the incidence of complications between the two groups.

2.4. Statistical analysis

Data calculation was completed with the statistical SPSS 28.0 software. Measurement data were described with Mean \pm

SD, t-test, and count data were described with %, χ^2 test, $P < 0.05$ indicating statistically significant.

3. Results

Compared with the control group, the total effective rate of the experimental group was significantly higher, the nasal resistance was significantly lower after treatment, the nasal ciliary movement rate was significantly higher after treatment, the QOL scale score and NSS scale score were significantly higher after treatment, and the complication rate was significantly lower, $P < 0.05$; comparing the nasal resistance, nasal ciliary movement rate, QOL scale score and NSS scale score between the two groups before treatment, $P > 0.05$ (Tables 1–4).

Table 1. Comparison of the total effective rate (%) between the two groups

Group	Effective	Valid	Invalid	Always efficient
Experimental group ($n=35$)	20 (57.14)	13 (37.14)	2 (5.71)	33 (94.29)
Control group ($n=35$)	12 (34.29)	15 (42.86)	8 (22.86)	27 (77.14)
χ^2	-	-	-	4.2000
P	-	-	-	<0.05

Table 2. Comparison of nasal resistance and nasal ciliary movement rate between the two groups

Group	Nasal resistance (Pa/cm ³)		Nasal ciliary movement rate (mm/min)	
	Before treatment	After treatment	Before treatment	After treatment
Experimental group ($n=35$)	0.32±0.07	0.15±0.02	6.90±0.92	8.37±0.95
Control group ($n=35$)	0.33±0.04	0.20±0.05	6.84±0.88	7.91±0.59
t	0.7338	5.4929	0.2788	2.4335
P	>0.05	<0.05	>0.05	<0.05

Table 3. Comparison of QOL scale scores and NSS scale scores (points) between the two groups

Group	QOL scale score		NSS scale score	
	Before treatment	After treatment	Before treatment	After treatment
Experimental group ($n=35$)	67.99±4.36	92.71±2.61	5.32±0.68	8.81±0.61
Control group ($n=35$)	68.35±4.11	85.42±3.27	5.25±0.72	8.05±0.57
t	0.3555	10.3081	0.4182	5.3856
P	>0.05	<0.05	>0.05	<0.05

Table 4. Comparison of complication rates between the two groups (%)

Group	Delayed healing	Blood supply disorder	The stent is partially absorbed	total
Experimental group ($n=35$)	1 (2.86)	0	0	1 (2.86)
Control group ($n=35$)	3 (8.57)	2 (5.71)	2 (5.71)	7 (20.00)
χ^2	-	-	-	5.0806
P	-	-	-	<0.05

4. Discussion

The core carrier of facial aesthetics and function is the nose. As the technology in the field of medical beauty matures, nose cosmetic surgery has become an item with continued growth in demand. Traditional single surgical procedures gradually show limitations in local adjustment and cannot meet the patient's comprehensive demands for refined nose shaping, natural aesthetic presentation, and functional protection. Clinical practice has proven that comprehensive nose cosmetic plastic surgery, combined with the patient's nasal anatomical characteristics, facial contour proportions, and individual needs, can collaboratively optimize subunits such as the patient's nose bridge, nose tip, nose alar, and columella^[3-4]. Clinical attention is paid to its clinical application value and technical advantages. This study analyzes the clinical effects, safety, and patient satisfaction of comprehensive surgery from multiple dimensions and provides a reference for clinical standardization of the diagnosis and treatment of patients with cosmetic rhinoplasty.

The results of this study show that the total effective rate of the experimental group after treatment with closed plastic surgery was 94.29%, which was significantly higher than that of the control group. After treatment, the nasal cavity resistance of the experimental group was significantly lower, the nasal ciliary movement rate was significantly higher, the QOL scale score and NSS scale score were significantly better than those of the control group, and the complication rate of 2.86% was also much lower than that of the control group. There was no significant difference in the indicators between the two groups before treatment. There was a significant difference ($P>0.05$). The reasons for the analysis results are: (1) From the perspective of surgical trauma and tissue protection, the difference in the two surgical approaches leads to different treatment effects. The control group made an inverted "V"-shaped incision to fully expose the deep tissue and cartilage structure of the nose. Although it can provide a clear field of vision for the correction of complex deformities, the incision is long and in a conspicuous position on the face, resulting in a postoperative appearance. It is easy to form scars, and extensive tissue separation will damage the integrity of the local anatomical structure of the patient's nose and affect the patient's local blood circulation. The experimental group was operated on through mucosal incisions on the medial walls of both nostrils. The incisions were hidden. The patients had no obvious external scars after the operation, and the patients had a faster healing speed of the mucosal incision. In addition, there was limited separation under the dorsal nasal fascia and around the alar cartilage. The necessary surgical operating space is constructed to minimize damage to the normal tissue of the patient's nose, avoid tissue edema, blood supply disorders, and other problems caused by extensive separation of the patient during open surgery, and promote rapid postoperative recovery. The above is also the reason why the incidence of complications in the experimental group is significantly lower than that in the control group. The reasons for complications in the control group are greater surgical trauma and increased burden of tissue repair.

Starting from the analysis of the protection of nasal physiological functions, after treatment, the nasal resistance of the experimental group was significantly lower than that of the control group, and the movement rate of nasal cilia was significantly higher than that of the control group. The reason for the analysis results: the movement rate of nasal cilia is directly related to the discharge of nasal secretions, foreign body clearance, and the integrity of mucosal defense functions. The nasal resistance is closely related to the patient's postoperative breathing comfort. During open plastic surgery for patients, tissue exposure will indirectly stimulate or damage the nasal mucosa and cilia, temporarily inhibiting the patient's postoperative nasal cilia. For motor function, the patient has mucosal edema, which will further increase the resistance of the patient's nasal cavity. Closed plastic surgery is performed for the patient. The incision is hidden, and the patient can perform delicate operations. During the operation, the main functional areas of the patient's nasal mucosa are avoided, and the degree of interference with ciliary and mucosal tissues is significantly reduced. At the same time, minimally invasive surgery can significantly reduce the degree of tissue edema for the patient after surgery, which is beneficial to the patient in retaining the normal physiological structure and function of the nasal cavity. The patient can breathe more smoothly after the operation and quickly restore the defensive function of the nasal cavity.

Analyzing from the perspective of cosmetic effect and patient satisfaction, the postoperative QOL scale score and NSS scale score of the experimental group were significantly higher than those of the control group. The reason for the analysis results: the core demand for nasal cosmetic surgery is to improve the shape, and also pursue natural coordination,

try to ensure no traces of surgery, and have good aesthetic results. We provide patients with Closed plastic surgery can be achieved. Although the field of view is relatively limited, the patient's nasal cartilage and bone tissue can be accurately shaped through special shaping equipment, organically combined with the patient's facial contour proportions, and personalized adjustments can be made to help the patient have a smoother and more natural nose shape after surgery, and coordinate facial features. At the same time, concealed incisions can effectively prevent patients from being affected by columella scars during open surgery, and there will be no obvious external surgical marks after surgery. In addition, closed plastic surgery is performed for patients, which involves less trauma. Patients are less prone to discomfort symptoms such as swelling and pain after surgery. The recovery period is short, and the degree of postoperative discomfort that affects daily life is significantly reduced. In addition, the incidence of complications is low. These factors can significantly improve patients' subjective satisfaction and quality of life scores. The control group underwent open surgery, which not only resulted in obvious postoperative scars and slow swelling but also delayed healing and other complications in some patients, which affected the aesthetic appearance of the nose and resulted in a poor postoperative experience for the patients.

Starting from the analysis of the applicability of the surgical operation, both surgical techniques have their own clinical positioning. For patients with severe nasal deformity correction and complex nose repair surgeries, including severe saddle nose, malunion repair of nasal bone fractures, repairs after multiple failed nose surgeries, etc., open plastic surgery is suitable because the surgical field can be fully exposed and the field of view is clear, allowing clinicians to handle the complex anatomy of patients with unusual precision. However, the patients included in this study did not have severe deformities, had no history of previous nose surgeries, had good basic nasal conditions, and did not need to have tissues extensively exposed. Therefore, closed plastic surgeries have more prominent surgical advantages for patients. When patients undergo closed plastic surgery, clinicians can use tactile feedback and precise judgment to complete shaping under a limited field of view. They can use preoperative three-dimensional imaging assessment and intraoperative special instrument assistance to make up for the limited field of view. In this study, the reason why two patients in the experimental group were ineffective was that the basic conditions of the nose were complicated, and intraoperative shaping adjustments could not be accurately carried out. Therefore, for some patients with large differences in the morphology of nasal subunits, the surgical method should be carefully selected based on preoperative evaluation.

This study has limitations: first, the sample size is limited (70 cases) and comes from a single hospital, so there is selection bias, and the universality of the results needs to be further verified; secondly, with a 3-month follow-up, there is insufficient data to support the stability of the long-term cosmetic effects of rhinoplasty, prosthesis compatibility, and long-term recovery of nasal cavity function; in addition, the study did not stratify patients of different ages and basic nasal shapes, and did not clarify the differences in suitability of closed plastic surgery among different groups of people. In subsequent studies, the sample size can be expanded, a multi-center study can be conducted for patients, the follow-up can be extended to more than 1 year, and stratified analysis can be performed to further clarify the applicable population and long-term efficacy of closed plastic surgery.

In summary, closed plastic surgery is a comprehensive surgical treatment method for rhinoplasty. It has high application value. The nasal resistance is significantly lower after treatment, the ciliary movement rate of the nasal cavity is significantly higher after treatment, the QOL scale score and NSS scale score are significantly higher after treatment, and the complication rate is significantly lower. Hence, it is worthy of clinical use and promotion.

Disclosure statement

The author declares no conflict of interest.

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