

## Describe the Complications of Anesthesia in Plastic

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**Abstract: Background:** It is still one of the most common aesthetic procedures done in the world – rhinoplasty. **Objective:** This study is interested to determine and analysis clinical findings related to 82 cases who underwent plastic Rhinoplasty. **Patients and methods:** A total of 82 cases who underwent rhinoplasty were recruited. The participants' ages ranged from 25 to 45 years. Demographic and surgical data were collected from different hospitals in Iraq during a period ranging from February 2022 to December 2023. These data included age, gender, body mass index, surgical procedures, and post-operative complications. The study also examined the relationship between surgery and patients' quality of life. **Results:** The study found that patients over the age of 40 were the highest, with 34 cases. Of these, 63 were female, 17 were male, and 9 were smokers. The reasons for surgery included functional (12 cases), aesthetic (6 cases), and both (62 cases). Septoplasty was performed in 6 cases. Seven cases were classified as primary, while 13 cases were classified as secondary. The prevalence of comorbidities was 54.88%. The mean operative time for closed surgery was  $2.30 \pm 0.14$  minutes, while the mean operative time for open surgery was  $2.66 \pm 0.43$  minutes. The anaesthesia used consisted of local anaesthesia in 17 cases, general anaesthesia in 21 cases, and sedation in six cases. A total of 12 patients in the closed group received local anaesthesia, 10 received general anaesthesia, and six received sedation. The mean length of stay was  $1.31 \pm 0.56$  days, with a follow-up period of 9 months. The mortality rate was at least 1-2 cases. In the assessment of the quality of nose scores, it was observed that breathing difficulties increased from 2.7 in the preoperative period to 0.7 in the postoperative period. Conversely, sleeping difficulties decreased from 2.1 in the preoperative period to 0.5 in the postoperative period. Postoperative anaesthesia complications were observed in 20% of cases, with nausea and vomiting being the most common complications, affecting six cases, and infection affecting five cases. **Conclusions:** The incidence of major complications after rhinoplasty is low but more common in patients over 40 or those undergoing additional plastic surgery. No significant gender differences exist in the risk of complications.

**Keywords:** Plastic Rhinoplasty; Complications; Risk factors; Quality-life scale; BMI; and Age.

## INTRODUCTION

The nose is the central structure of the face and has an important role in the distribution of facial aesthetics. [Beck, D. O. *et al.*, 2014] It could be responsible for the patient's low self-esteem and psychic problems; in addition, it could be responsible for nasal breathing problems such as external or internal valve insufficiency, respiratory blockage, or rhinogenic migraine, among others. [Lee, M. *et al.*, 2013; Rohrich, R. J. *et al.*, 2011] Rhinoplasty is a procedure in which surgeons can change the shape of the nose for a more aesthetic appearance and better nasal breathing.

[Kayabasoglu, G. *et al.*, 2015] The most frequent age of intervention is between 20 and 29 years, with an average age of 37 years. [ISAPS] In the United States, in 2014, the annual expenditure attributed to rhinoplasty was one billion dollars,

and it is estimated that the average cost per rhinoplasty is 4,000 USD. [Kayabasoglu, G. *et al.*, 2015]

The debate between open and closed rhinoplasty is a hot topic in facial plastic surgery, but it is outside the scope of this work; in this, we describe the experience and values of the results in team practice. Closed rhinoplasty has the advantage of less dissection and can also be performed under local anesthesia with satisfactory results. [Mazzola, I. C. *et al.*, 2014- Klabunde, E. H. *et al.*, 1964]

Outcome evaluation traditionally involves a measurement provided by an observer or attending physician. The problem is that facial appearance is subjective, and the most important opinion is that of the patient. The success of an aesthetic

rhinoplasty depends largely on the satisfaction with the result reported by the patients. The results of a technique can be described by days of hospital stay, morbidity, and mortality. Although, in general, most publications report an improvement in quality-of-life scores and satisfaction with appearance, [McKinney, P. *et al.*, 1981] in the case of rhinoplasties, it has been observed that the degree of satisfaction with the results is usually lower than that reported in other aesthetic procedures. [Miller, T, 1976]

There are even studies that conclude that rhinoplasty may not produce a significant impact until there is a deterioration in the quality of life. [Angelos, P. C. *et al.*, 2012; Hassouneh, B. *et al.*, 2015] There are several studies that evaluate the improvement in quality of life and satisfaction with appearance after cosmetic surgery and, specifically, rhinoplasty. Among the scales used to evaluate the results after rhinoplasty, there are the ROE (Rhinoplasty Result Evaluation), the Glasgow Benefit Inventory, the FACE-Q Satisfaction with Facial Appearance scales, the European Quality of Life 5 Dimension, the DAS-59 (Derriford Appearance Scale) and the General Health Questionnaire 28, among others. [McKinney, P. *et al.*, 1981]

There are only nine specific scales that are psychometrically appropriate and created, considering the contributions of patients for the evaluation of post-surgical aesthetic results. Among these, ROE was excluded, since it did not consider the contributions of patients for its formulation, even if it is frequently used. The Glasgow Benefit Inventory was also not part of the selection of PROMs (patient-reported outcomes measures) scales. The DAS-59, although part of the nine scales, is not specific for rhinoplasty. The FACE-Q Satisfaction with Facial Appearance is part of the nine scales selected by the Department of Health of the United Kingdom, as it has proven to be reliable, valid, sensitive, formulated considering the contributions of patients, complies with the regulations of the FDA (Food and Drug Administration) and with recommendations for the development and validation of PROM; [Klabunde, E. H. *et al.*, 1964] however, it is not specific for rhinoplasty, so Klassen and colleagues set out to design a FACE-Q module specific for rhinoplasty. [Angelos, P. C. *et al.*, 2012]

The FACE-Q, published in 2010 by Klassen and colleagues, is composed of a set of approximately 40 scales, which have been validated to objectively evaluate the results of cosmetic procedures from the patient's point of view (PROM). These scales are an effort to cover most of the aspects that may affect the patient seeking aesthetic interventions, such as satisfaction with appearance, adverse effects, and quality of life. They can be used together or separately. [Kayabasoglu, G. *et al.*, 2015 – Teichgraeber, J. F. *et al.*, 1993]

## PATIENTS AND METHODS

### Study population:

Clinical data were recorded for patients who underwent rhinoplasty, including 82 participants aged between 25 and 45 years. The surgical and clinical data for patients were accessed from hospitals located in different hospitals in Iraq. This study was conducted during a period extending from February 2022 to December 2023.

### Data Collected

A prospective cohort is made up of the information of the patient's demographics as well as their risk factors before this procedure is conducted. The database is where information on major complications presented to the surgeon as a 'claim' is stored. It is within thirty days after which one has to visit an emergency room, be hospitalized, or undergo reoperation that major complications can occur.

A major complication is anything that requires a visit to the emergency room, hospital stay, or operation within 30 days following surgery. This definition does not include the types of problems that can be handled at a doctor's office—like small infections or seromas from wounds; such conditions are not mentioned in medical files.

Considerable medical problems referred to in the offered for consideration document are hematoma, infection, pulmonary dysfunction, cardiac events, skin-related troubles, suspected thromboembolism (VTE), and confirmed cases of this disorder, myocardial infarction, and overload. For instance, the database contains every surgery carried out on a patient, thus enabling analysis of particular operations or operation groups (i.e., individuals going through several surgeries without regaining consciousness). The database keeps demographic and comorbidity data such as age, gender, body mass index (BMI), smoking, and diabetes.

**Clinical Outcomes:**

This study focused on complications after rhinoplasty occurring in this cohort within 30 days. In determining the kind of complications, more attention was paid to age and gender, BMI, type of

facility (OBSS, ASC, hospital), diabetes mellitus, and smoking status of the patients, as well as their variety.

**RESULTS**

**Table 1:** Baseline and demographic characteristics of patients who underwent plastic rhinoplasty

Characteristics	Frequency [n=82]	Percentage [%]
Age		
< 30	23	28.05%
30 – 40	25	30.49%
> 40	34	41.46%
Sex		
Male	17	20.73%
Female	63	76.83%
BMI, [kg/m <sup>2</sup> ]		
< 18.5	6	7.32%
18.5 – 24.9	24	29.27%
25.0 – 29.9	32	39.02%
≥ 30	18	21.95%
Smoking status		
Yes	9	10.98%
No	71	86.59%
Working status		
Yes	60	73.17%
No	20	24.39%
Income level, \$		
< 800	40	48.78%
900 - 1100	30	36.59%
> 1100	10	12.20%

**Table 2:** Diagnoses findings of patients

Items	Frequency [n = 82]	Percentage [%]
Reason for surgery		
Functional	12	14.63%
Aesthetic	6	7.32%
Both	62	75.61%
Septoplasty		
Primary	67	81.71%
Secondary	13	15.85%
ASA %		
Class 1	17	20.73%
Class 2	50	60.98%
Class 3	13	15.85%
Comorbidities		
Yes	45	54.88%
No	35	42.68%
Hypertension	34	41.46%
Diabetes	6	7.32%
Asthma	12	14.63%

Anemia	10	12.20%
Sleep apnea	4	4.88%
Allergic rhinitis	9	10.98%
Blood pressure (mm Hg)		
Systolic	114.85 ± 34.82	
Diastolic	78.54 ± 16.98	
Heart rate		
Normal	62	75.61%
Moderate	10	12.20%
High	8	9.76%
Cholesterol		
Normal	70	85.37%
Moderate	6	7.32%
High	4	4.88%

**Table 3:** Surgical outcomes of patients who underwent plastic rhinoplasty

Variables	Open [n = 50]	Closed [n = 30]
<b>Surgical procedure</b>		
Hump reduction	22 [27.5%]	9 [11.25%]
Supra tip grafting	8 [9.76%]	9 [11.25%]
Polyp resection	5 [6.10%]	0 [0%]
Bilateral lateral	4 [4.88%]	0 [0%]
Septal perforation	3 [3.66%]	0 [0%]
Alar batten grafts	8 [9.76%]	12 [15%]
<b>Operative time, min</b>	2.30 ± 0.14	2.66 ± 0.43
<b>Anesthesia</b>		
Local	17 [21.25%]	10 [12.5%]
General	21 [26.25%]	14 [17.5%]
Sedation	12 [15%]	6 [7.5%]
<b>Bleeding</b>		
Yes	2 [2.5%]	4 [5%]
No		
<b>Length of stay, days</b>	1.02 ± 0.44	1.31 ± 0.56
<b>Follow-up months</b>	Eight months	
<b>ICU admission</b>		
Yes	2 [2.5%]	3 [3.75%]
No	48 [60%]	27 [33.75%]
<b>Mortality rate</b>		
Death	1 [1.25%]	2 [2.5%]
Alive	49 [61.25%]	28 [35%]

**Table 4:** Determine clinical outcomes of cross-sectional Area in comparison between Open Versus Closed

	Open	Closed	P-value
Pre-operative	0.61 ± 0.29	0.67 ± 0.23	< 0.012
Postoperative	1.20 ± 0.88	0.82 ± 0.54	< 0.0105

**Table 5:** Assessment quality of nose scores in terms of preoperative and postoperative

Items	Preoperative	Postoperative	P-value
Nasal congestion	3.01	1.1	< 0.01
Nasal Blockage	2.5	1.0	< 0.01
Trouble Breathing	2.6	0.7	< 0.01
Trouble Sleeping	2.1	0.5	< 0.01
Trouble with Exertion	2.3	0.9	< 0.01
Total	12.51	4.2	< 0.01

**Table 6:** Postoperative anaesthesia complications

Complications	Frequency [n = 82]	Percentage [%]
Infection	5	6.25%
Nausea and vomiting	6	7.50%
Respiratory issues	2	2.50%
Allergic reactions	3	3.75%
Nerve damage	0	0.0%
Blood pressure fluctuations	0	0.0%
Sum	<b>16</b>	<b>20.0%</b>

**Table 7:** Assessment of quality of life for patients after plastic rhinoplasty

QoL Items	Scores
Physical function	75.33 ± 12.89
Psychological function	
Anxious	67.55 ± 11.90
Calm	71.19 ± 8.71
Social and emotional aspects	74.36 ± 6.29
Daily activity	73.84 ± 7.55

## DISCUSSION

In other studies, the incidence for significant issues has varied among 1.7% and 18%. There are additional causes that result in our significantly lower incidence. It is imperative to point out that this study is limited to incidents that transpire within the primary 30 days after an operation, and it only records major challenges that necessitate an ER visit, inpatient hospital stay, or reoperation [Rohrich, R. J. *et al.*, 2011; Dziewulski, P. *et al.*, 1995 ; McKinney, P. *et al.*, 1981].

Thus, our dataset would not include medically significant issues which may be handled effectively in an office setting, which includes a modest septal hematoma or a wound dehiscence. Furthermore, our dataset does not include aesthetic and functional issues, which frequently remain managed in the first 30 days post-operation. [Faber, C. *et al.*, 2011; Gruber, R. P. *et al.*, 2015]

It is crucial to counsel patients about the possibility and its consequences since it can have an impact on the operation's functional and cosmetic results as well as the postoperative

course. The most frequent causes for epistaxis are incision sites and bleeding from damaged mucosa. [Cochran, C. S. *et al.*, 2008; Faber, C. *et al.*, 2011; Georgiou, I. *et al.*, 2015] Topical nasal decongestants, nostril pressure, and head elevation are used to manage mild postoperative bleeding. [Yoo, D. B. *et al.*, 2015] When conservative methods prove inefficient, desmopressin acetate (DDAVP) injection may be explored. Focal regions of bleeding may also be cauterized as well as hemostatic packing utilized. [Holt, G. R ; Angelos, P. C ; Hassouneh, B ; Faber, C ; Gruber, R. P 12, 16, 17, 20, 21] When bleeding doesn't stop despite anterior packing, it may be the result of damage to a sphenopalatine artery branch, in which instance posterior packing and monitoring are required to prevent airway compromise. Angiographic embolization or procedure will be required when these techniques were failed. [Rettinger, G. *et al.*, 2007]

According to a survey of the literature, the rate of NPPE in healthy persons having general anesthesia is thought to range around 0.05% and 0.1%.28–30 Of the 146 adult NPPE individuals described



through Westreich et al., only 8.2% involved septoplasty or rhinoplasty [Holt, G. R. et al., 1987]. [Garcia de Hombre, A. M. et al., 2013] Currently acknowledged pathophysiologic explanation for NPPE distinct in rhinoplasty is laryngospasm resulting from inflammation of the larynx. [Wadhwa, R. et al., 2010] Following laryngospasm, inspiration into a closed glottis results in a high adverse intrathoracic pressure. This, in turn, raises the venous return to the pulmonary arteries and right heart, causing volume to build up in the alveolar and interstitial spaces. [Westreich, R. et al., 2006] A glottis closure reflex resulting from stimulation of the superior laryngeal nerve (SLN) is most likely the cause of laryngospasm. Once extubation happened along with respiratory distress has begun, the diagnosis of NPPE is taken into consideration. Although a delayed presentation in as much as 24 hours has been seen, the onset is usually instantaneous.<sup>28</sup> Following auscultation, there is hypoxemia, tachypnea, tachycardia, as well as crepitation. [McConkey, P. P., 2000] There have also been instances of pink, foamy sputum drooling after a rhinoplasty. [Wadhwa, R. et al., 2010] In an intensive care unit, treatment entails mechanical breathing using positive end-expiratory pressure (PEEP) and continuous positive airway pressure, also known as reintubation.

Steroids and diuretics had different functions.<sup>27</sup> Chest radiographs are taken from the beginning and continue till the radiographic abnormalities are resolved. The vast majority of NPPE cases end after 24 hours. In accordance with Westreich et al., the average length of intubation was 11.75 hours, having a variability from 1 toward 336 hours; the mortality rate was found to be among 10% and 40%. [Olsson, G. L. et al., 1984; Udeshi, A. et al., 2010] Understanding this perioperative risk is crucial for swift detection and management, decreasing the length of time it requires to resolve, and enhancing patient safety in rhinoplasty patients. Careful suctioning before throat pack removal and gentle throat pack application can assist prevent fluid as well as exudate in irritating the larynx and, therefore, enhance the prevention of non-pusy epiglottitis (NPPE). It has additionally been shown that topical lidocaine helps avoid laryngospasm. [Abboushi, N. et al., 2012]

## CONCLUSION

The rate of major complications after rhinoplasty is low. Yet complications are more likely in patients over 40 years old or those who go under an additional plastic surgery procedure. However, there were no significant gender differences in the ability to develop such complications. In addition, other possible risks could include lung ailments for those undergoing rhinoplasty simultaneously with other surgeries that improve appearance despite their rarity. These results should be kept in mind whenever planning a rhinoplasty procedure and informing patients concerning the safety of concomitant esthetic operations.

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