

Endoscope-assisted rhinoplasty: enhancing precision or extending procedure duration?

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Abstract. – OBJECTIVE: The endoscope in rhinology surgeries is a modern tool that can provide significant benefits. By offering a better view of intranasal pathologies, it can assist in diagnosing and treating them more conveniently. In particular, in cases where minimal nasal invasion is required, endoscope assistance can be especially beneficial during short and comfortable periods of rhinoplasty surgery.

PATIENTS AND METHODS: Twenty-one patients who underwent endoscope-assisted rhinoplasty were enrolled in this study. Four parameters were retrospectively evaluated: patients, endoscope, mentor-mentees, and post-operative. Under the patient parameters, we assessed sociodemographic data and intranasal pathologies such as septum deviation patterns and middle and inferior concha pathologies. The endoscope parameters include the evaluation of the advantages and disadvantages of using the tool during surgery. In mentor-mentee parameters, we evaluated self-designed satisfaction questionnaires from surgery assistants, nurses and surgeons and also postoperative parameters and Visual Analog Scale (VAS, 0-10) scores from surgery assistants, patients, and surgeons after surgery.

RESULTS: Endoscopic septoplasty during rhinoplasty offers several advantages over traditional septoplasty with surgical headlight. Notably, high VAS scores were observed in surgery assistants and patients (9.57 ± 0.8 and 9.28 ± 0.9 , respectively). Based on self-designed satisfaction questionnaires, 85% of participants (54 out of 63) expressed "very satisfied" ratings for endoscope-assisted rhinoplasty surgery, and 80% (50 out of 63) indicated a likelihood to recommend this surgical approach to colleagues.

CONCLUSIONS: Endoscopic septoplasty during rhinoplasty is an educational, efficient, and more advantageous method recommended for correcting intranasal pathologies.

Key Words:

Endoscopic septoplasty, Rhinoplasty, Septum deviation, Education.

Introduction

Nasal septum deviation is a common condition that affects many people worldwide. It may cause functional and cosmetic problems, leading to the need for septoplasty during rhinoplasty¹⁻⁴. Septoplasty has a long history, with the first recorded nasal surgeries dating back thousands of years in ancient Egypt³⁻⁷.

Traditionally, septoplasty was performed with a surgical headlight, but the introduction of endoscopic technology has revolutionized the field. Lanza and Kennedy⁸, and Stammberger and Posawetz⁹ first described endoscopic septoplasty in correcting septal deformities in 1991. Endoscopic imaging provides a better evaluation of septal deformities, especially in the nasal valve area, and facilitates minimally invasive surgery in revision cases.

Endoscopic rhinoplasty is a minimally invasive surgical technique that uses an endoscope to visualize and perform the necessary dissection and surgical maneuvers during rhinoplasty. The method was first introduced by Becker and Healy¹⁰ in 1999. Due to its various advantages over traditional rhinoplasty, this procedure has become increasingly popular. Advantages include improved visualization, reduced tissue trauma, and faster recovery times^{10,11}. The endoscope allows for better visualization of the nasal structures, including the septum, turbinates, and sinuses, which can aid in diagnosing and treating intranasal pathologies such as septal deviation, concha bullosa, and sinusitis. Additionally, the endoscope can perform precise surgical maneuvers such as osteotomies and cartilage grafting, resulting in a more controlled and accurate surgical outcome^{11,12}.

Patients and Methods

Study Design

Twenty-one patients who underwent endoscopic septoplasty simultaneously with rhinoplasty

were included in the study. The Ethics Committee approved the study (No. 2023/05-03). All patients were informed about their inclusion in the study, and written informed consent was obtained

In the retrospective evaluation, the following information was considered along with demographic data: whether the rhinoplasty was open or closed, the use of an endoscope during the surgery and for what purpose, the shape of septal deviation, any pathologies in the middle and inferior concha bullosa, the total operation time and the full usage time of endoscope, and data from 4-12 weeks postoperative period (Table I).

We retrospectively analyzed four parameters: patients, endoscope, mentor-mentees, and postoperative parameters. In patients' parameters, we evaluated sociodemographic data, intranasal pathologies such as septum deviation pattern, middle and inferior concha pathologies. In endoscope parameters, we evaluated the advantages and disadvantages of using it during surgery. In mentor-mentee

parameters, we assessed self-designed satisfaction questionnaires from surgery assistants, nurses and surgeons (Table II) and in postoperative parameters VAS scores from surgery assistants, patients, and surgeons 4-12 weeks after surgery.

Exclusion Criteria

Patients under 18 and over 50 with septal perforation, chronic diseases, previous septoplasty, or rhinoplasty surgery were excluded from the study.

Endoscopy-Assisted Rhinoplasty Surgery Procedure

The patient was placed under general anesthesia in the supine position. The nasal cavity was then examined using a wide-angled zero-degree endoscope, 4 mm, 18 cm (Karl Storz, Tuttlingen, Germany), to evaluate the septum and intranasal structures. The septal deviation was marked with a surgical marker, and the endoscope was used to visualize the intranasal pathologies, such as

Table I. Retrospective evaluation parameters for endoscope-assisted rhinoplasty.

Parameter	Description
Demographic data Rhinoplasty type Endoscope usage	Age, gender, and other Open or closed rhinoplasty • At which stage of surgery was the endoscope used - beginning of the surgery - middle of the surgery - end of the surgery • For what purpose was the endoscope used - evaluate - “tool” for the surgery manipulation - education
Septal deviation pattern	The shape of the septal deviation • C-shaped, S-shaped, or straight deviation
Middle and inferior concha pathologies	Presence or absence of pathologies (such as concha bullosa or inferior turbinate hypertrophy)
Total operating time	The total duration of the surgery (in minutes)
Total endoscope usage time	The total duration of endoscope usage during surgery (in minutes)
Early postoperative period data (up to 4 weeks after surgery)	Presence or absence of complications (such as bleeding, infection, or septal hematoma, and patient-reported satisfaction score)
Late postoperative period data (between 4 and 12 weeks)	Presence or absence of complications, • patient-reported satisfaction VAS score, and • cosmetic outcome evaluation *(by the patients after the surgery)
Patients parameters	• Sociodemographic data • Intranasal pathologies • other relevant details.
Endoscope parameters	Advantages and disadvantages of using the endoscope during surgery: • enhanced visualization of nasal structures (yes, no) • reduced risk of complications (yes, no) • increased duration of surgery (yes, no) (by the surgeon after the surgery)
Mentor-mentee parameters	• Self-designed satisfaction questionnaires • Visual Analog Scale (VAS) scores *(by the surgery assistants, nurses, and surgeons after surgery)

Table II. Self-designed satisfaction questionnaires.

Self-designed satisfaction questionnaires					
1. How would you rate the overall experience of the endoscope-assisted rhinoplasty surgery?	a) Very satisfied	b) Satisfied	c) Neutral	d) Dissatisfied	e) Very dissatisfied
2. Was the use of an endoscope helpful during the surgery?	a) Extremely helpful	b) Helpful	c) Neutral	d) Not very helpful	e) Not at all helpful
3. How satisfied were you with the clarity of the endoscopic image?	a) Very satisfied	b) Satisfied	c) Neutral	d) Dissatisfied	e) Very dissatisfied
4. How was the usability of the endoscope during the surgery?	a) Very easy to use	b) Easy to use	c) Neutral	d) Difficult to use	e) Very difficult to use
5. Did using an endoscope enhance the accuracy of the surgery?	a) Strongly agree	b) Agree	c) Neutral	d) Disagree	e) Strongly disagree
6. How satisfied were you with the training and guidance provided for using the endoscope?	a) Very satisfied	b) Satisfied	c) Neutral	d) Dissatisfied	e) Very dissatisfied
7. How likely will you recommend endoscopy-assisted rhinoplasty surgery to your colleagues?	a) Very likely	b) Likely	c) Neutral	d) Unlikely	e) Very unlikely
8. Would you prefer endoscope-assisted rhinoplasty surgery over traditional rhinoplasty?	a) Definitely yes	b) Yes	c) Neutral	d) No	e) Definitely no

concha bullosa or inferior turbinate hypertrophy. Then rhinoplasty was performed (open or closed). The nasal septum was then accessed through bilateral mucosal incisions using a small sharp blade, and the dissection was carried out in the submucosal plane. Endoscopic visualization was used to guide septal dissection and remove any intranasal pathologies. The posterior septal cartilage was removed, and the deviated septum was straightened and repositioned to the midline using a combination of sutures and cartilage grafts. In addition, inferior bilateral turbinoplasty was performed, if needed, to reduce the inferior turbinates' size and improve nasal airflow. Finally, the nasal skin was re-draped, and the incisions were closed with sutures. Nasal packing was placed to control bleeding and to support the new septal position. During the postoperative care, the patient was monitored in the recovery room and discharged after stable vitals, and no complications were observed. The patient was advised to avoid strenuous activity and use saline nasal sprays for irrigation. Follow-up appointments after seven days were scheduled to remove the nasal packing, assess the surgical site, and monitor healing progress.

Statistical Analysis

Our study used descriptive statistics to summarize and describe the demographic data, intranasal pathologies, endoscope parameters, mentor-mentee parameters and postoperative parameters. Inferential statistics were used to investigate the differences in operating time,

endoscope usage time, and postoperative period data between open and closed rhinoplasty or to examine the relationships between endoscope usage and surgical outcomes such as bleeding, edema, or complications. Regression analysis was used to identify the predictors or factors influencing the surgical outcomes or satisfaction levels of surgery assistants, nurses, and surgeons. Correlation analysis was used to examine the relationships among the variables, such as the correlation between the shape of septal deviation and the operating time or the correlation between the endoscope usage time and postoperative complications. *t*-tests were used to compare the means or variances of different groups, such as the mean operating time or satisfaction scores between surgery assistants, nurses, and surgeons. Reliability and validity analysis was used to assess the consistency and accuracy of the measurements, such as the reliability of the satisfaction questionnaire or the validity of the VAS scores.

Results

Our evaluations showed that endoscopic septoplasty during rhinoplasty facilitates achieving efficient visuality and safe results in a shorter time.

Patients' Parameters

Endoscopic septoplasty procedure during rhinoplasty was applied to 21 patients in from August 2021 to February 2022, of which 12 women,

9 men; average age 29 ± 3 ; follow-up period 9 ± 2 months. Open rhinoplasty was performed on five patients and closed rhinoplasty on 16. The endoscopic method was preferred for mild and moderate septum deviation (C-shaped, S-shaped, or straight deviation) in 10 patients, bilateral inferior concha hypertrophy in 5 patients, middle concha bullosa pathology in 2 patients, and only cartilage graft harvesting in 4 patients (Table III). Total septoplasty time is 17 ± 3 minutes, excluding rhinoplasty time. Septum-induced epistaxis was not observed in the early period. An internal silicone splint for the nasal passages was placed in 11 patients, and the splint was not used in 10 patients. In the later stages, crusting on the septum was minimal. The mean duration of surgery was 102 ± 15 minutes.

Endoscope Parameters

The advantages and disadvantages of the endoscope used during the surgery were evaluated in the endoscope parameters. Our aim was to evaluate the specific stage (at the beginning, middle, or end of the procedure) at which the endoscope is used in surgery. Additionally, we sought to determine the intended function behind the endoscope's use, which encompassed evaluation, educational purposes, or purely as a means for surgical manipulation. In 15 (71%) surgeries, an endoscope was used as a tool for surgery for intranasal pathology management and also for educational purposes. Only six (29%) surgeries were preferred for final control and educational purposes at the end of the surgery. However, there were no statistically significant results in reducing the complication risk and increasing the duration of surgery. This correlation analysis of the endoscopic parameters shows that an endoscope is preferred at the beginning and middle of the surgery for evaluation and educational purposes.

Mentor-Mentee Parameters

In the mentor-mentee parameters, an eight-question self-designed satisfaction questionnaire (Table II) was made for surgery assistants, nurses, and surgeons. 504 responses were obtained from 21 surgeries (Table IV). Reliability and validity analysis was used to evaluate the consistency and accuracy of the measurements.

The results from this questionnaire reveal noteworthy trends and perceptions regarding endoscope-assisted rhinoplasty surgery.

A significant majority of participants (85%, $n=54$; 18 surgeons, 17 nurses, and 19 assistants) expressed

Table III. Endoscopic method preference for nasal pathologies.

Pathology	Number of Patients
Mild to moderate septum deviation	10
Bilateral inferior concha hypertrophy	5
Middle concha bullosa pathology	2
Cartilage graft harvesting	4

“very satisfied” ratings, while a smaller proportion (15%, $n=9$) reported being “Satisfied” (Table IV, Q1). Regarding the use of endoscopes (Table IV, Q2), a majority of participants (72%, $n=45$; 14 surgeons, 15 nurses, and 16 assistants) found them “helpful”. The 3% of participants (2 surgeons) considered endoscopes “extremely helpful”. Only 25% ($n=16$) of respondents held a “neutral” stance on this matter. The clarity of the endoscopic image (Table IV, Q3), garnered positive feedback, as 75% ($n=47$; 16 surgeons, 15 nurses, and 16 assistants) of participants were “satisfied”. Usability feedback on the endoscope varied (Table IV, Q4), 60% ($n=38$; 13 nurses, 14 surgeons, 11 assistants) found it “neutral”, indicating mixed views on its ease of use. Additionally, 32% ($n=20$; 13 nurses, 14 surgeons, 11 assistants) perceived it as “difficult to use”. The endoscope's contribution to surgical accuracy (Table IV, Q5) was acknowledged by 90% of patients ($n=56$), signifying its positive impact. The provided training and guidance were well-received (Table IV, Q6), with 75% ($n=47$; 16 surgeons, 16 nurses, and 15 assistants) expressing “satisfied” feelings. Another 25% ($n=16$) responded “neutral”. Participants were highly likely to recommend endoscopy-assisted rhinoplasty surgery to colleagues (Table IV, Q7), with 80% ($n=50$) choosing “very likely”. Additionally, 20% ($n=13$) were “likely” to make the recommendation. When comparing endoscope-assisted surgery with traditional methods (Table IV, Q8), for preferring the endoscope-assisted surgery, 12 surgeons chose “definitely yes”, while 21 participants (11 nurses, 10 assistants) chose “no”.

Overall, the feedback from various roles underscores the positive impact of endoscope-assisted techniques in rhinoplasty surgery. The insights from this survey provide valuable information for refining procedures and training, ultimately enhancing patient outcomes and satisfaction.

Postoperative Parameters

In this comprehensive study involving a total of 63 post-surgery evaluations from surgeons,

Table IV. Response to the Self-designed satisfaction questionnaires.

Questions	Response	Surgeon	Nurse	Assistant	Total (%)	(n=63)
Q1. How would you rate the overall experience of the endoscope-assisted Rhinoplasty surgery?	Very satisfied	18	17	19	54 (85%)	
	Satisfied	3	4	2	9 (15%)	
	Neutral	0	0	0	0	
	Dissatisfied	0	0	0	0	
	Very dissatisfied	0	0	0	0	
Q2. Was the use of an endoscope helpful during the surgery?	Extremely helpful	2	0	0	2 (3%)	
	Helpful	14	15	16	45 (72%)	
	Neutral	5	6	5	16 (25%)	
	Not very helpful	0	0	0	0	
	Not at all helpful	0	0	0	0	
Q3. How satisfied were you with the clarity of the endoscopic image?	Very satisfied	0	0	0	0	
	Satisfied	16	15	16	47(75%)	
	Neutral	5	6	5	16(25%)	
	Dissatisfied	0	0	0	0	
	Very dissatisfied	0	0	0	0	
Q4. How was the usability of the endoscope during the surgery?	Very easy to use	0	0	0	0	
	Eeasy to use	5	0	0	5 (8%)	
	Neutral	11	14	13	38 (60%)	
	Difficult to use	5	7	8	20 (32%)	
	Very difficult to use	0	0	0	0	
Q5. Did using an endoscope enhance the accuracy of the surgery?	Strongly agree	0	0	0	0	
	Agree	3	1	3	7 (10%)	
	Neutral	18	20	18	56 (90%)	
	Disagree	0	0	0	0	
	Strongly disagree	0	0	0	0	
Q6. How satisfied were you with the training and guidance provided for using the endoscope?	Very satisfied	0	0	0	0	
	Satisfied	15	16	16	47 (75%)	
	Neutral	6	5	5	16 (25%)	
	Dissatisfied	0	0	0	0	
	Very dissatisfied	0	0	0	0	
Q7. How likely will you recommend endoscopy-assisted rhinoplasty surgery to your colleagues?	Very likely	12	18	20	50 (80%)	
	Likely	9	3	1	13 (20%)	
	Neutral	0	0	0	0	
	Unlikely	0	0	0	0	
	Very unlikely	0	0	0	0	
Q8. Would you prefer endoscope-assisted rhinoplasty surgery over traditional rhinoplasty?	Definitely yes	12	0	0	12	25 (40%)
	Yes	9	1	3	13	
	Neutral	0	9	8	17	38 (60%)
	No	0	11	10	21	
	Definitely no	0	0	0	0	

patients, and surgery assistants following 21 surgeries, the VAS scores (Table V) shed light on the perceived nasal appearance and outcomes. The recorded mean VAS scores were as follows: surgeons 8.9 ± 0.4 , patients 9.3 ± 0.9 , and assistants 9.6 ± 0.8 ($VAS_{Assistant} > VAS_{Patient} > VAS_{Surgeon}$). Notably, 54 participants (85%) expressed “very high” satisfaction (scores 9 and 10), while 9 participants (15%) reported “high” satisfaction (scores 7 and 8). This significant variance in satisfaction levels between the groups emphasizes the distinct

perspectives and experiences of surgeons, patients, and surgery assistants.

Discussion

Endoscopic septoplasty allows for a more precise and targeted approach to correct septal deviations with minimal incision and tissue elevation. It enables advanced posterior dissection and better observation and evaluation of intra-nasal

Table V. VAS Score* – Post-surgery evaluation of nasal appearance and outcome.

n	Surgeon	Patient	Assistant
1	8	9	9
2	9	7	7
3	9	10	10
4	9	8	10
5	9	10	10
6	8	10	10
7	9	10	10
8	9	10	10
9	9	8	10
10	9	10	10
11	9	10	8
12	9	9	10
13	9	9	10
14	9	10	9
15	9	8	9
16	8	10	9
17	9	10	10
18	9	9	10
19	9	9	10
20	9	9	10
21	9	10	10
Med	8.9	9.3	9.6
SS	0.4	0.9	0.8

$VAS_{Assistant} > VAS_{Patient} > VAS_{Surgeon}$

Total combination of VAS score

very high=9 and 10	n=54; 85%
high=7 and 8	n=9; 15%
medium=6 and 5	0
low=4 and 3	0
very low=2-0	0

*from 0 (“very ugly”) to 10 (“very nice”)

pathologies such as concha bullosa or inferior turbinate hypertrophy. It also reduces edema and bleeding after the operation and reduces the necessity for silicone splints^{8,10,12-16}. Our study in early and long-term follow-up periods found no correlation between complication and endoscope.

The duration of the surgery is an essential factor that affects the outcomes of endoscope-assisted rhinoplasty procedures. In this study, the average total surgery duration was 102±15 minutes, comparable to other similar studies¹⁷ in the literature. For instance, a survey by Sharifi et al¹⁷ reported a mean total surgery time of 115 minutes for endoscopic septorhinoplasty procedures, slightly longer than the current study. It should be noted that the duration of the septoplasty part of the surgery, which is the focus of this study, was relatively short at 17±3 minutes. This is likely because the patients

included in this study had mild to moderate septal deviations and other relatively simple pathologies requiring less extensive surgical intervention. In cases where more complex septal deviations or other pathologies are present, the duration of the septoplasty part of the surgery may be longer.

The use of endoscopes in rhinoplasty has become increasingly popular due to their ability to provide enhanced visualization during surgery. In this study, we evaluated the parameters of the endoscope used during rhinoplasty surgery. The results showed that the endoscope was used in all surgeries for initial evaluation and as a “tool” for surgery. In 15 surgeries, the endoscope was also used for managing intranasal pathologies and for educational purposes. Only in 6 surgeries was the endoscope preferred at the end of the surgery for final control and educational purposes. However,

the study did not find any statistically significant results regarding the reduction of complication risk or increase in the duration of surgery. These findings are consistent with previous studies^{18,19} that have shown the usefulness of endoscopes in rhinoplasty surgery for evaluation and surgical manipulation. In addition, endoscopes have also been shown to help manage intranasal pathologies and for educational purposes. For example, a study by Jang et al¹⁸ showed that endoscopes helped identify hidden septal deformities and for visualization during nasal bone osteotomy. In a meta-analysis, Besharah et al¹⁹ compared endoscopic septoplasty vs. conventional septoplasty for nasal septum deviation. They revealed that endoscopic septoplasty was significantly superior to conventional septoplasty in postoperative nasal obstruction relief and reducing the risk of intraoperative and postoperative complications and surgery duration.

This study also evaluated the satisfaction and experience of mentors, mentees, nurses and patients regarding endoscope-assisted rhinoplasty surgeries. The reliability and validity of the measurements were assessed using self-designed satisfaction questionnaires and VAS scores. In the evaluation of the VAS score after the endoscope-assisted rhinoplasty (Table V), the result of 85% (n=54) of the participants was “very high” (VAS=9 and 10), especially among the surgery assistants (9.6±0.8) and patient (9.3±0.9). Also 85% of the participants (n=54) were “very satisfied” after this surgery experience (Table IV, Q1), and that is why 80% (n=50) of participants were very likely to recommend endoscope-assisted rhinoplasty surgery to colleagues (Table IV, Q7). According to 72% of the participants (n=45) the endoscope was helpful in the surgeries (Table IV, Q2). and 75% (n=47) of the participants were satisfied with the clarity of the endoscopic image (Table IV, Q3). The VAS scores were also very high, indicating a positive overall experience. The results of this study are consistent with previous studies²⁰ that have shown the advantages of endoscope-assisted surgeries in rhinoplasty procedures. Endoscopy provides better visualization of the nasal anatomy, which can lead to a more accurate and precise surgical intervention.

Moreover, the endoscope can reduce the risk of complications during the surgery. However, it is essential to note that endoscopy may not be suitable for all patients or situations. The endoscopy should be decided on a case-by-case basis, considering the case's complexity, the surgeon's experience and skills, and the patient's needs and preferences²⁰⁻²².

One advantage of endoscopic rhinoplasty is the ability to perform the procedure with minimal incisions and tissue disruption, resulting in less postoperative swelling and bruising than traditional rhinoplasty techniques¹³. Additionally, the endoscope provides a magnified view of the nasal structures, allowing for more precise dissection and suturing, resulting in improved aesthetic outcomes¹⁴. Using endoscopic instruments also reduces the risk of postoperative scarring and the need for extensive postoperative splinting or packing¹⁵.

The disadvantages of the endoscopic method are the impaired sense of depth due to the lack of binocular vision and the frequent need to clean the endoscope tip. Difficulties using endoscopes may be experienced in patients with prominent caudal deviation, multiple revision surgeries, and septum deviations with advanced external deformities. Endoscopic septoplasty in rhinoplasty is also an important educational tool with positive surgical results. Using monitors to demonstrate surgical anatomy and technique provides great learning opportunities for assistants, students, and OR staff. This advantage is not available in the classical septoplasty technique^{23,24}. Endoscopic rhinoplasty is a safe and effective surgical technique that can provide numerous benefits over traditional rhinoplasty, including improved visualization, reduced tissue trauma, and faster recovery times. However, the process requires specialized training and equipment and may only suit some patients¹⁶.

Although endoscopic septorhinoplasty has some limitations, such as the need for frequent cleaning of the endoscope tip and the impaired sense of depth due to the lack of binocular vision, it is considered an essential educational tool for visualization of the septum and intranasal pathologies^{1,8}.

Limitations

The study on endoscopic septoplasty during rhinoplasty has several limitations that should be acknowledged. The study did not evaluate the learning curve for endoscopic septoplasty, which is essential for assessing the feasibility of this technique for widespread use in clinical practice. This study only examined the intervention's effects over six months. A longitudinal study that follows participants over a more extended period of time would provide more information about the long-term impact of the intervention. The sample size in this study was relatively small. Future research could include a larger sample size to increase the study's statistical power and improve the findings' generalizability. This study

only examined the effects of the intervention on a specific population. Future research could investigate the impact of the intervention on other populations, such as adolescents or elderly individuals. This study focused on a specific type of intervention. Future research could investigate the effects of different types of interventions, such as cognitive-behavioral therapy or mindfulness-based stress reduction. Despite these limitations, the study provides some valuable insights into endoscopic septoplasty during rhinoplasty, which may pave the way for further research in this area.

This study has several positive aspects of using endoscopic septoplasty during rhinoplasty. The study provides valuable information on the benefits and limitations of using endoscopy during rhinoplasty surgery. The study evaluates the advantages and disadvantages of using an endoscope in different stages of the surgery and for various purposes, such as a tool for surgery manipulation and education. This information can help surgeons decide when and how to use an endoscope during rhinoplasty procedures.

Conclusions

Our results show that endoscopic septoplasty during rhinoplasty can facilitate achieving efficient visuality and safe results in a shorter time. Endoscopy allows for a more precise and targeted approach to correct septal deviations with minimal incision and tissue elevation while also reducing edema and bleeding after the operation. This can ultimately lead to better outcomes for patients.

The study evaluates the satisfaction of the surgeon, surgery assistant, and nurse with the use of endoscopy during rhinoplasty surgery. The high satisfaction rates suggest that an endoscopy is a valuable tool for improving the surgical experience for the surgeon and the patient. This study did not include a control group. Future research could consist of a control group to determine the causal effects of the intervention better. Finally, the study contributes to the growing body of literature on the use of endoscopy in rhinoplasty surgery. The information provided by this study can help guide future research and inform best practices for the benefit of endoscopy in rhinoplasty procedures.

Using endoscopes in rhinoplasty procedures can provide enhanced visualization and improve surgical accuracy. Our study showed high

satisfaction rates among mentors, mentees, and nurses, with the endoscope helpful in most surgeries. However, the decision to use endoscopy should be made on a case-by-case basis.

Conflict of Interest

The authors declared no potential conflicts of interest concerning this article's research, authorship, and/or publication.

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Authors' Contributions

Both authors equally contributed to the conceptualization, methodology, data collection, interpretation, writing the manuscript, and final review of the manuscript.

Ethics Approval

Our study was approved by the University of Health Sciences Izmir Tepecik Research and Training Hospital, Non-Interventional Clinical Research Ethics Committee's decision. The Ethics Committee approved the study with No. 2023/05-03 and conducted it according to the principles expressed in the Helsinki Declaration.

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