

UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
"CAROL DAVILA", BUCUREȘTI
ȘCOALA DOCTORALĂ
DOMENIUL MEDICINĂ

TEZĂ DE DOCTORAT

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Student - doctorand:

URS RODICA

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Studiu comparativ privind rezultatele chirurgicale funcționale și estetice (anatomice) în rinoplastia structurală, rezecțională versus rinoplastia de preservare

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Mulțumiri...

Realizarea acestei lucrări doctorale a fost posibilă datorită competenței și bunăvoinței unor personalități medicale cărora doresc să le adresez mulțumirile și gratitudinea mea:

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1. Anghel I, Ene P, Dumitru M, **Urs R**, Anghel AG, Anghel AO. Surgical Management of the Nasal Vault Defects in Rhinoplasty. *Rhinology*. Vol. 56. Issue 27. 2018.
2. **Urs R**, Anghel AG, Bunea A, Caciandone M, Ghițulescu A, Neboleanu M, Anghel I. New concepts of Rhinoseptoplasty.
3. **Urs R**, Anghel I, Rajput Anghel AO, Anghel AG. Risks and complications in rhinoplasty. A comparative study in structural vs preservation rhinoplasty. *Romanian Medical Journal*. 2022, Vol. 69 Issue 2, p82-86. 5p
4. **Urs R**, Anghel I, Rajput Anghel AO, Anghel AG. Traditional rhinoseptoplasty vs Preserving rhinoplasty – Literature Review. *Ro J Med Pract*. 2022;17(1)

Lista cu abrevieri și simboluri

CT	Computerized tomography
FACE-Q	ROE tool
MRI	Magnetic resonance imaging
ROE	Rhinoplasty Outcomes Evaluation
PR	Preservation rhinoplasty
P-PR	Partial preservation rhinoplasty
SR	Structural rhinoplasty

Introduction

Rhinoplasty is one of the most difficult, but, at the same time, rewarding surgical procedures performed by facial plastic surgeons. A large proportion of patients suffer from defects and deformations of the nasal pyramid, congenital or acquired. In addition to aesthetic problems, part of the population faces functional problems, which often lead to the development of somatic pathologies [1, 2].

This thesis, beyond the clinical and technical aspects presented, emphasizes the need to perform a surgical intervention on the nasal pyramid that provides the patient with medium and long-term comfort, comparing structural rhinoplasty with preservation rhinoplasty.

The theoretical part presents in detail current data from the specialized literature, with reference to the structure of the nasal pyramid, the physiology of the nose, methods and types of rhinoplasty, comparison between preservation and structural rhinoplasty. The original part is based on the practice during the study and includes the study objectives, methods, materials, personal contributions and conclusions.

The results obtained indicate that preservation rhinoplasty is a safer and more effective method compared to traditional, structural, resection rhinoplasty, a fact proven by the number of complications arising from the interventions, their severity and the difficulty of their treatment.

The practical part also captures three clinical cases with the presentation of the results of rhinoplasty surgery.

The main purpose of this work is the benefit and well-being of the patient.

I. The general part

1. Primary structural rhinoplasty

1.1. The learning curve of rhinoplasty

The history of rhinoplasty is as old as the history of plastic surgery in general. Rhinoplasty has been practiced since ancient times, being known to the peoples of Egypt, India, Arabia and other countries.

Rhinoplasty represents a general framework that captures various specific surgical interventions at the level of the nasal pyramid that must be in harmony both the aesthetic and the functional part. The development of rhinoplasty consisted in perfecting the various methods of remodeling the nasal pyramid, both through classic techniques of resection and reconstruction, as well as through techniques for preserving the various structures of the nose.

1.2. Preoperative considerations in rhinoplasty

Surgical techniques have been perfected due to knowledge of the correlations between the anatomy and morphology of the nasal passages, facial balance and respiratory physiology. The surgeon must follow certain geometric measurements to give a pleasant and harmonious appearance.

Thus, preoperative preparation, narioscopy, anterior and posterior rhinoscopy, photographs according to the Frankfurt plan and investigations including radiography, computed tomography (CT), MRI, nasal endoscopy, rhinomanometry are necessary.

1.3. Anatomy and aesthetic analysis of the nasal pyramid in rhinoplasty

A proper nasal analysis to allow for a personalized surgical treatment plan that encompasses both aesthetic and functional issues can only be made after a thorough understanding of the underlying nasal anatomy and physiology [7].

The morphology of the nasal pyramid is closely related to the anatomy of the elements it is composed of, i.e. the osteo-cartilaginous, muscular, adipose and skin tissue.

The nasal pyramid represents the external part of the nose, being delimited from the neighboring structures by the naso-palpebral, naso-genial and naso-labial grooves. The nasal pyramid is a triangular pyramid, consisting of 2 lateral faces that join and form the nasal dorsum, a posterior face, 2 lateral edges, a lower base and a tip. [4, 5, 6]

1.4. Functional aspects in rhinoplasty

The term "functional rhinoplasty" can best be explained as changing the anatomy of the nasal pyramid to improve nasal breathing and other functions. The risks of post-rhinoplasty nasal obstruction increase if a patient requests narrowing of the bony and middle thirds, a narrowed nasal tip or base, or a very narrow nasal dorsum. There are several anatomical structures that contribute to normal nasal function, including the vibrissae, nasal fossae, nasal cartilages, septum, and inferior turbinates. Internally, nasal valve obstruction, external valve collapse, and deviated septum are commonly believed to be the major causes of nasal airway obstruction and are the primary targets in functional rhinoplasty [8].

1.5. Basic techniques in structural rhinoplasty

Rhinoseptoplasty techniques, over time, have been perfected along with technological progress, thus two main philosophies regarding the surgical approach can be distinguished:

A - radical approach (resection/reconstruction rhinoplasty)

B - conservative approach (preservation rhinoplasty).

Basically, modern rhinoplasty methods are a continuation of endonasal methods. The two techniques, the open and the closed, involve the modification of the shape and dimensions of the nose with the help of two different types of access, which differ from each other, in the case of

open rhinoplasty, by the presence of an additional incision with the different modification in the region of the columella.

1.6. Structural septo-rhinoplasty

Septo-rhinoplasty aims to correct the nasal pyramid, but also the septum, with the main aim of solving respiratory problems. Septorhinoplasty removes any obstruction blocking the nasal airways, and can also have a role in improving the external appearance of the nasal pyramid.

1.7. Complications of primary rhinoplasty

Complications of primary rhinoplasty can be divided into: intra-operative (bleeding), early post-operative and late post-operative.

Thus, hemorrhagic complications (hemorrhage, septal hematoma), traumatic complications, infectious complications, rare complications with major risk are presented. At the opposite pole, there are the late complications that can be of an aesthetic or functional nature and the psychological complications.

1.8. Revision rhinoplasty

Revision rhinoplasty is one of the most difficult operations that plastic surgeons perform given the complex three-dimensional anatomy of the nasal pyramid and the psychological impact it has on patients. Every rhinoplasty surgery is performed with the intention of improving the appearance and nasal breathing and achieving a satisfactory result. Despite efforts in recent years, revision rhinoplasty varies in the literature between 5% and 15.5%. In a recent retrospective review, Dr. VanderWoude et al. identified the risk factors for post-operative patient dissatisfaction and the reason for revision rhinoplasty [9]. Post-operative complications, history of nasal fractures, lack of anatomical harmony were considered risk factors for patient dissatisfaction. Postoperative infections, displaced nasal grafts or casts, and scarring negatively influenced outcomes.

1.9. Post-rhinoplasty results evaluation questionnaire

An important component of rhinoplasty success is patient-reported satisfaction with the results of the surgery. Patient satisfaction after structural rhinoplasty was evaluated using a specially designed tool - The Rhinoplasty Outcome Evaluation (ROE - The Rhinoplasty Outcome Evaluation). The Rhinoplasty Outcomes Assessment Questionnaire is a quick and easy-to-apply tool for standard and reliable assessment of quality of life after rhinoplasty. It qualitatively measures aspects such as social, emotional and psychological variables [11].

The FACE-Q Rhinoplasty Module [12] is an instrument designed to assess Patient Reported Outcomes (PRO) before and after rhinoplasty and to assess nasal adverse effects.

2. Preservation rhinoplasty

2.1. The learning curve of preservation rhinoplasty

Preservation rhinoplasty or conservation rhinoplasty is based on the preservation of several anatomical structures, including the nasal bones, lateral cartilages and ligaments of the nose, when possible.

The idea of preserving the dorsal nasal architecture was introduced in 1899 by the otolaryngologist Goodale [13, 14]. In 1946, Cottle found that while attempting to fracture the nasal bones downwards - in the case of nasal fractures - the cartilaginous septum resisted their movement and that excision of the premaxillary cartilage allowed adequate mobilization [15].

2.2. Preoperative considerations in rhinoplasty

Patients with tense or cartilage-predominant nasal pyramids and shorter nasal bones are considered good candidates for this type of surgery. Those with a larger bony component, deep naso-frontal angle, or irregular bony pyramid fall into the category of poor candidates [16].

Straight deviations of the nasal pyramid can be addressed with an asymmetric bone resection in a "let down" procedure.

The main indications are for patients whose nose presents with or without a moderate hump, deviated nasal septum, tense dorsum with elongated vertical nostrils, for elderly patients with a hump and fine skin, and those with severe congenital malformations. Relative indications refer to those patients who have a deformed nasal septum and are at risk of septal destabilization, patients who have a deep root with a convex profile, or those patients who have a wider nasal dorsum [1, 2, 3].

2.3. Anatomy and aesthetic analysis of the nasal pyramid in preservation rhinoplasty

Although preservation rhinoplasty techniques have been implemented relatively recently, they have been found to result in consistent maintenance of dorsal aesthetic lines with successful reduction of dorsal humps. Preservation rhinoplasty prevents the irregularities that can occur with osteotomies to close open roof defects and prevents the need for middle vault reconstruction.

2.4. Basic techniques in preservation rhinoplasty

The principles of preservation rhinoplasty are preservation of the integument, dorsum, and alar cartilage. The goal is to replace resection with preservation, excision with manipulation, and secondary reconstruction of the rib with minimal revision.

Disadvantages of preservation rhinoplasty: subperichondrial (alar) dissection, increased alar malleability, more demanding septum surgery, multiple major osteotomies, total mobilization of the bony portion of the nasal pyramid, mastery of new techniques and limited application [2].

2.5. Hybrid rhinoplasty

Hybrid rhinoplasty is a combination of preservation and structural rhinoplasty. This involves combining two philosophies: dorsal preservation techniques in combination with structural grafting to optimize patient outcomes for the nasal dorsum and structural grafting techniques to manage the lower third of the nasal pyramid.

II. THE PRACTICAL PART OF PERSONAL CONTRIBUTION (ORIGINAL)

1. Introduction

Rhinoplasty is one of the most common interventions in facial plastic surgery. A large proportion of patients suffer from defects and deformations of the internal or external nose, congenital or acquired. For this reason, patients encounter many problems of an aesthetic nature, problems that constitute an obstacle for social-psychological adaptation and personality formation. In addition to aesthetic problems, there are also functional problems that often lead to the development of somatic pathologies [9, 10].

2. Degree of study of the researched topic

The specialized literature describes different methods of performing rhinoplasty using different types of approach. Both the advantages and disadvantages of each method are explored.

In our opinion, at the moment, the use of new surgical approach techniques determines the main directions for the development of rhinoplasty.

3. Working hypothesis and research objectives

The retrospective and prospective research included 100 patients who required rhinoseptoplasties, selected between 2018 and 2021.

The objectives of this work were the following:

- Correct assessment of the factors that influence the external appearance and functionality of the nose (covering skin, osteo-cartilaginous skeleton, lining of the nasal mucosa).
- Promotion of proposed, achievable and sustainable surgical outcomes.
- Appropriate choice of valid approach techniques in rhinoseptoplasty.

The purpose of the present study included the following points:

- Establishing the advantages and disadvantages of different approach techniques in structural rhinoplasty versus preservation rhinoplasty.

- Creation of rhinoplasty practice protocols to obtain optimal patient and rhinoplasty results.
- Assessment of changes in breathing functions in patients after rhinoplasty surgery.
- Improving the quality-of-life post-preservation rhinoplasty.

4. General research methodology

Protocol

The experience gained as a doctor in the ENT department of the Carol Davila Central Military Emergency University Hospital, Bucharest, guided me towards the development of the following study protocol:

- Study of specialized literature: original articles, reports, international guides, specialized books, etc.), mostly by accessing medical Databases PubMed®, Google Scholar, Embase, Ebsco, Cochrane;
- Elaboration of the patient's informed consent;
- Establishing the period (2018-2021) and study directions;
- Obtaining the approval of the Ethics Commission (from the Central Military Emergency University Hospital Carol Davila, Bucharest);
- Selection of patients in need of primary rhinoplasty in the period 2018 - 2021, their screening;
- Evaluation of inclusion and exclusion criteria;
- Follow-up of patients according to the study protocol;
- Centralization and statistical processing of clinical data, extracted from the FO and from the data selection form, with the establishment of conclusions;

- Elaboration and publication of scientific papers, as well as elaboration of the doctoral thesis.

Patient selection

The objective of the research was on patients with deformities of the nose, of different etiology. The research was carried out on a group of 100 patients. The study is retrospective and prospective consisting of patients admitted to the ENT clinical section of the Central Military Emergency University Hospital Carol Davila, Bucharest and the clinic "Dr. Anghel Medical Center" Bucharest. Patients over 18 years of age who signed the informed consent were included in the study.

All were candidates for a primary rhinoseptoplasty. 50 candidates were operated by structural, classic, resection rhinoplasty techniques and 50 patients were operated by preservation rhinoplasty techniques.

The exclusion criteria were represented by patients who did not sign the informed consent, under 18 years of age, patients with multiple comorbidities, malformations, tumor formations at the level of the nasopharynx, patients who suffered a trauma and have significant mental problems that could have negatively influenced the final result.

Group 1: 50 patients with dysmorphia who underwent primary structural rhinoplasty. The pre- and post-operative evaluation of aesthetic and functional complications in primary structural, resection rhinoplasty (clinical, photographic, tomographic and rhinomanometric at 6 months, 12 months and 2 years) took place in this group.

Group 2: 50 patients with dysmorphias who were operated by the preservation rhinoplasty technique. In this batch, the assessment of pre-operative aesthetic and functional complications in preservation rhinoplasty was carried out, as well as the assessment of the results after rhinoplasty at 6 months, 12 months and 2 years.

All patients underwent clinical and laboratory investigations in preparation for surgery, signed informed consent.

Surgical techniques have been perfected due to knowledge of the correlations between the anatomy and morphology of the nasal passages, facial balance and respiratory physiology. The

surgeon must follow certain geometric measurements to give a pleasant and harmonious appearance. Careful examination of all the anatomical and supporting structures of the nose is necessary in order to develop an optimal nasal correction.

Statistical analysis of medical data

In this doctoral work, to process and group the medical data, the following programs were used: Microsoft Excel® and IBM SPSS Statistics Subscription, version 29.0.0.0 The variables were presented nominally, ordinally and scalar. Variables that presented statistically significant correlations in the univariate analysis and that presented $p < 0.01$ were considered eligible to be entered in the multivariate analysis. Descriptive statistics procedures (Frequencies and Crosstab) were used to validate the data, applying the Chi Square test and the Fisher test. The Chi Square test compares two categorical variables by calculating the statistical value that it compares to a critical value, thus allowing us to assess whether the observed frequency is significantly different from the expected frequency.

5. Results

5.1. General characteristics of the studied cohort:

Table V.1. Characteristics of patient groups

Parameter	Total cohort	Primary structural rhinoplasty	Preservation rhinoplasty	p value
Number of patients, n (%)	100	50	50	
Females, n (%)	72 (72%)	47 (94%)	25 (50%)	< .001

Table V.2. Age distribution in patients with dysmorphia undergoing intervention

Age	2018	2019	2020	2021	Total
18-20	12	28	4	2	46
21-30	6	18	2	2	28

31-40	6	6	0	0	12
41-50	2	6	0	2	10
Peste 50	0	4	0	0	4
	26	62	6	6	100

5.2. Study 1:50 cases with structure Rhinoplasty

In the first study cohort, we monitored 50 cases of primary rhinoseptoplasties, from the period 2018-2021, which were present in the ENT clinical section of the Central Military Emergency University Hospital "Dr. Carol Davila" Bucharest and the clinic "Dr. Anghel Medical Center" " Bucharest.

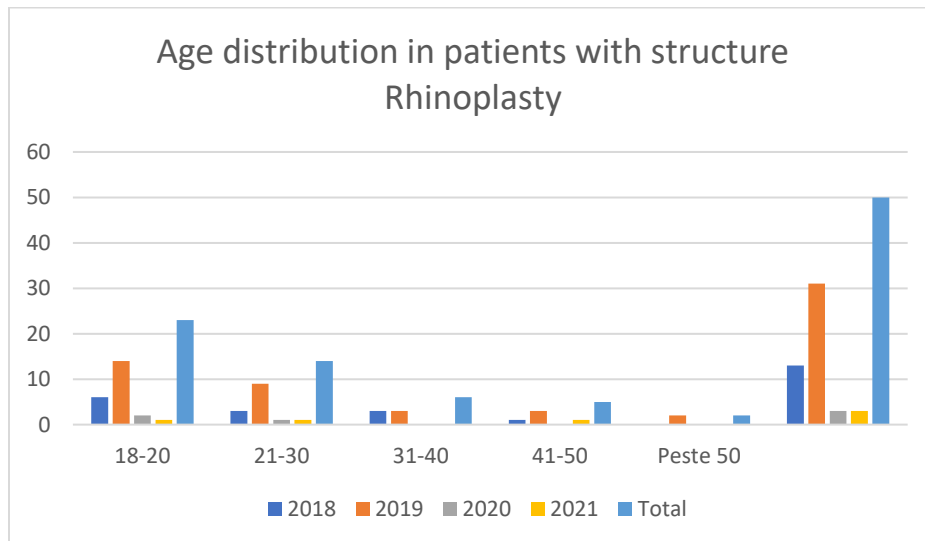


Fig. 5.3. Age distribution of group 1

As for the entire group of patients included in the study, most of the patients undergoing traditional rhinoplasty fell into the age category of 18-20 years, followed by the next category of 21-30 years, as shown in the previous table (Fig. 5.3.).

The osteotomies performed were made with a chisel in 60% of the patients and with a saw in 40% of the patients (Table 5.III., Fig 5.4.).

Table V.3. Types of osteotomies practiced

		Osteotomies			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hammer	20	40.0	40.0	40.0
	Chisel	30	60.0	60.0	100.0
	Total	50	100.0	100.0	

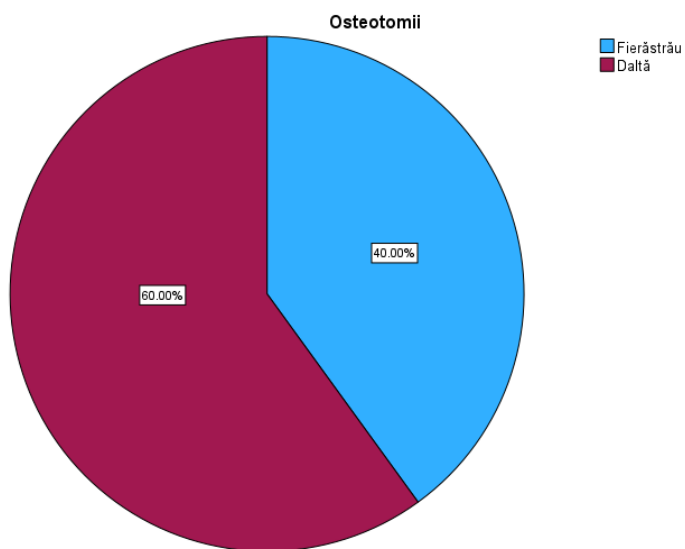


Fig. 5.4. Types of osteotomies practiced

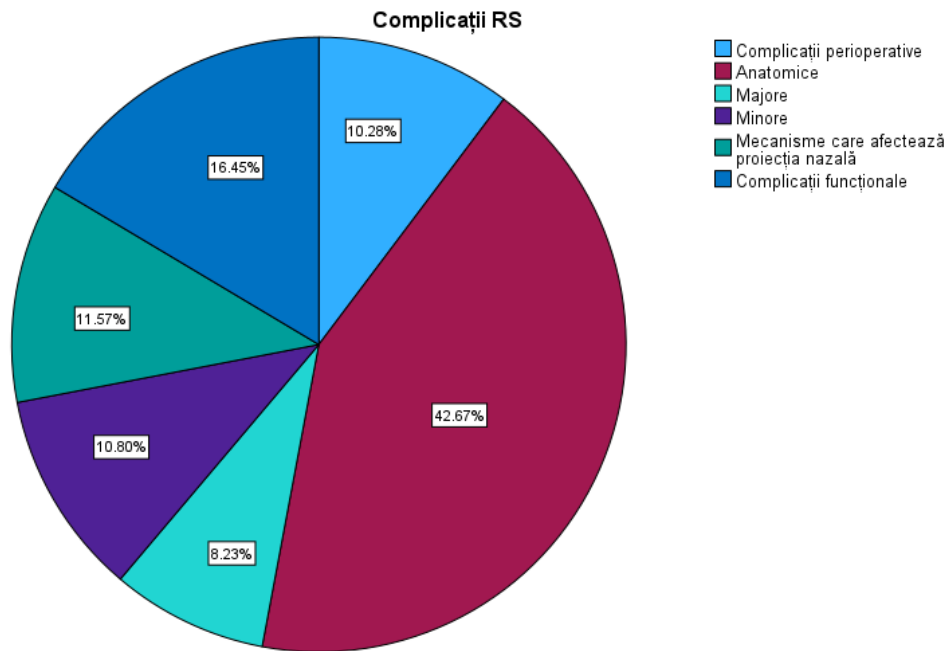


Fig. 5.5. Complications of structural rhinoplasty from total number of complications

The most frequent complications were the anatomical ones (47%) out of 353 complications that occurred, followed by the complications on the mechanisms that affect the nasal projection (12.7%), the minor complications and the intra-operative ones.

For 8 patients, revision rhinoplasty was performed, the reasons being "parrot beak" nose, inverted "V", wide nasal base, retracted columella and irregular nasal dorsum.

Table V.4. Causes of revision rhinoplasty

Causes	RR
Revision rhinoplasty	8
Pollybeak nose	4
Inverted "V"	2
Wide nasal base	1
Retracted columella	1
Irregular dorsum	1

5.3. Study 2:50 cases with preservation Rhinoplasty

Of the 50 patients, 25 of them underwent preservation rhinoplasty using the closed technique and another 25 patients underwent rhinoplasty using the open technique. Like the entire group of patients included in the study, most of the patients undergoing traditional rhinoplasty fell into the age category of 18-20 years, followed by the next category of 21-30 years, as shown in the previous table (Table V.4.).

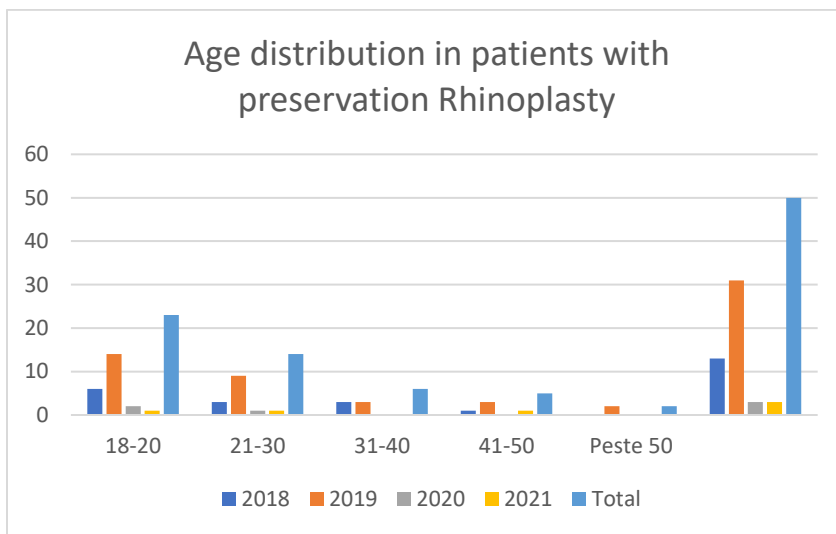


Fig. 5.6. Age distribution of group 2

Tabel V.5. Technique used in preservation rhinoplasty

		PR Technique			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Push down (close approach)	25	50.0	50.0	50.0
	Let down (open approach)	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

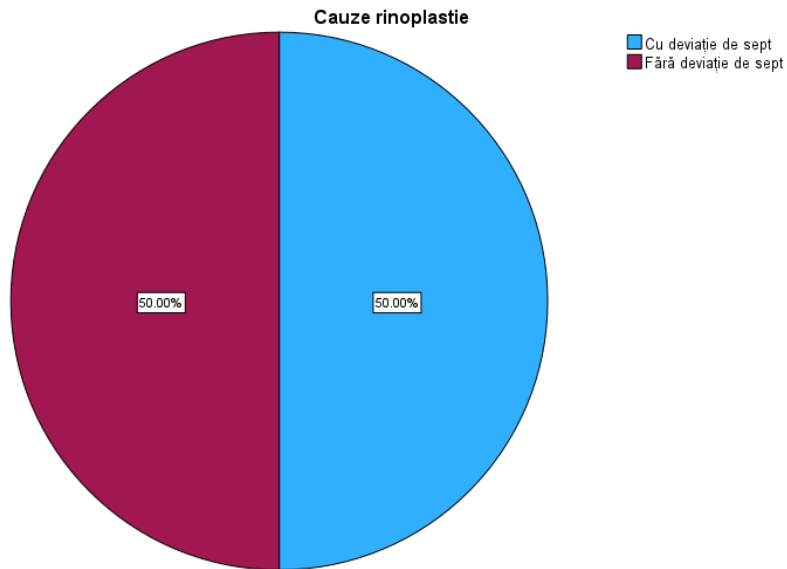


Fig. 5.7. Rhinoplasty causes

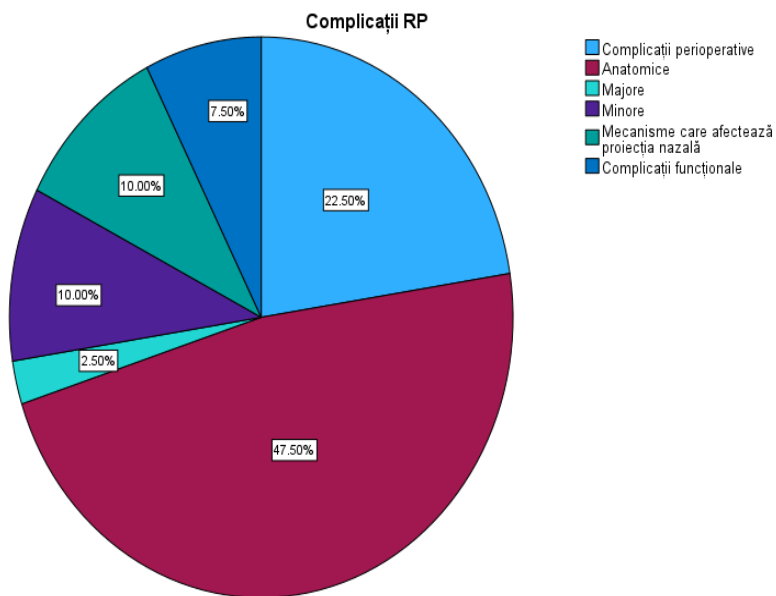


Fig. 5.8. Complications of structural rhinoplasty from total number of complications

The most frequent complications were the anatomical ones (47.5%) out of 80 complications that occurred, followed by the perioperative complications (22.5%), the minor complications and those on the mechanisms that affect the nasal projection (10%). Major complications were the least, which means that the technique represents a safe and effective surgical intervention (Fig. 5.8)

5.4. Comparative study of post-rhinoseptoplasty complications resulting from the 2 groups of patients

From the above, it is obvious that an unsatisfactory pre-operative planning and the insufficient level of communication with the patient lead to a series of intra-operative and post-operative complications, which also motivated me in choosing the theme of this paper in order to more in-depth research.

As I mentioned in the general part of the paper, its purpose is to compare the two rhinoseptoplasty interventions. Thus, in the following I will analyze and present the complications that occurred to the patients included in the group and subjected to the two types of interventions: traditional rhinoplasty and preservation rhinoplasty.

Table V.6. Chi Test applied for both cohorts

Complications	P Value	Statistically significant (yes/no)
Perioperative complications	p < 0.001	Yes
<i>Vascular complications</i>	<i>p = 0.105</i>	<i>No</i>
Septal hematoma	p = 0.392	No
Epistaxis	P = 0.150	No
<i>Traumatic complications</i>	<i>P = 0.031</i>	<i>Yes</i>
Rhino-liquoral fistulas	P = 1.000	No
Epiphora	p = 0.150	No
Blindness	P = 1.000	No
Dental trauma	p = 0.012	Yes
Skin necrosis	P = 1.000	No
Nasal septal perforation	p = 0.043	Yes
Anatomic (Aesthetic complications)	p < 0.001	Yes
Lower third deformity	p = 0.017	Yes
Middle third deformity	p = 0.021	Yes
Upper third deformity	p = 0.214	No
Major complications	p < 0.001	Yes
Pollibeak	p = 0.028	Yes
Saddle nose	p = 0.011	Yes
"V" inverted	p < 0.001	Yes
Retracted columella	p = 0.017	Yes

Minor complications	p < 0.001	Yes
Bossae	p = 0.032	Yes
Irregular dorsum	p = 0.005	Yes
Hanging columella	p = 0.003	Yes
Wide nasal base	p = 0.113	No
Mechanisms that affect nasal projection	p < 0.001	Yes
Overprojection	p < 0.001	Yes
Underprojection	p = 0.028	Yes
Overrotation	p = 0.009	Yes
Underrotation	p = 0.224	No
Tip asymmetry	p = 0.076	Yes
Alar retraction	p = 0.011	Yes
Functional complications	P = 0.001	Yes
Respiratory complications	p = 0.001	Yes
Internal nasal valve dysfunction	p = 0.011	Yes
External valve dysfunction	p = 0.001	Yes
Collapse alar	p = 0.001	Yes
Residual anterior septal deviation	p = 0.001	Yes
Hyposmia	p = 0.001	Yes
Anosmia	P = 1.000	No
Psychological complications	P = 1.000	No

From the previous table, we can extract the fact that preservation rhinoplasty is more effective, its related complications being fewer or even absent.

On the other hand, the two surgeries are similar when we discuss vascular (septal hematoma, epistaxis), traumatic (epiphora, nasal septum perforation), anatomical (upper third deformity), minor (wide nasal base), mechanisms affecting projection complications. nasal (subrotation). Some of the complications for which the p-value was 1,000 were not encountered in either cohort and thus may be excluded from the comparative analysis.

5.5. Clinical cases

Four clinical cases were presented to exemplify structural rhinoplasty, closed-preservation rhinoplasty, and hybrid approach rhinoplasty.

6. Discussions

The results of studies comparing preservation rhinoplasty with structural rhinoplasty are varied and depend on multiple factors, including the surgical methods used, the skill and experience of the surgeon, and the characteristics of the patients involved in the study.

A study published in the *Aesthetic Surgery Journal* in 2020 compared the results of traditional and preservation rhinoplasty in 169 patients. The authors found no significant differences in the incidence of postoperative complications between the two groups, including complications such as septal hematoma, epistaxis, and nasal base deformity. This is consistent with our findings that there was no significant difference in the incidence of complications related to epistaxis, septal hematoma, and nasal base deformity [18].

Another study published in the *Journal of Craniofacial Surgery* in 2017 compared the results of traditional and preservation rhinoplasty in 87 patients. The authors found that conservation rhinoplasty was associated with a significantly lower incidence of postoperative complications such as nasal obstruction and septal perforation, which is inconsistent with our findings [19].

Overall, comparison with other studies in the literature suggests that the results of our study are consistent with some previous studies but not with others. It is important to consider the limitations of these studies and the potential for confounding factors that could influence the results. Additional research is needed to better understand the comparative risks and benefits of traditional and preservation rhinoplasty.

7. Conclusions

Optimal results are when the anticipated outcome is satisfactory to both the patient and the surgeon, which prompts a more careful and thorough approach to the preoperative analysis.

The decision regarding the choice between preservation and structure rhinoplasty should be made after an in-depth discussion with an experienced plastic surgeon, who can evaluate the specifics of the case and recommend the most suitable surgical approach according to the patient's goals and expectations.

From the results of the PhD thesis on preservation rhinoplasty versus structural rhinoplasty, it can be seen that preservation rhinoplasty is a surgical technique that can provide good aesthetic results, being less invasive and having a faster recovery than structural rhinoplasty.

However, compared to structural rhinoplasty, preservation rhinoplasty can be more technically challenging, requiring more experience on the part of the surgeon.

The risk of complications may be lower in the case of preservation rhinoplasty, especially in terms of perioperative and anatomical complications (aesthetic complications), but there is no significant difference in the case of vascular complications, septal hematoma, epistaxis and epiphora.

Preservation rhinoplasty can be a good option for patients who want a slight and subtle modification of the nasal pyramid, while structure rhinoplasty is more suitable for patients who need a more complex reconstruction of it.

The incidence of complications will continue to decrease as a result of understanding the anatomic, physiologic, and pathologic factors involved in nasal function and aesthetics.

This work could constitute an impetus to new surgical techniques emerging in rhinoplasty and for the creation of a guideline for the intra-operative and post-operative evaluation of possible complications, with the aim of minimizing their occurrence, and could be used as an essential argument for changing some new methods of medical-surgical approach.

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