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GENERAL MEDICINE

Aesthetic Sequelae in Cleft Lip Patients

PhD THESIS SUMMARY

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INTRODUCTION

This thesis is more than a clinical study. It is a reflection of every scar I have seen, every patient I have spoken to, and every moment I have spent listening to stories that go far beyond what we can measure with data.

You cannot hide this condition. You see it before a word is spoken. And more importantly, the patient sees it too—every day, in every mirror, in every photograph. That’s what makes this work so urgent, so personal, and so deeply human.

The Abbé flap is one of the most beautiful solutions we have in reconstructive surgery. It is bold, visible, inconvenient for a few weeks—but it gives back something that’s been missing: a sense of normality.

The novelty of this thesis lies not only in the procedure itself but in how I analyzed it. I did not just count cases or compare outcomes—I looked at patterns across gender and age, asking: When is the right moment for intervention? Who is more likely to benefit from a particular approach? How do these answers evolve over time?

Secondary rhinoplasty, too, is not about vanity. It is about balance. Breathing. Feeling like the nose fits the face. These interventions are not luxuries. They are tools of restoration. They are the final steps in a lifelong journey.

What I want most to say through this work is that these patients deserve everything we can offer. Not just functional results. Not just something ‘good enough.’ But excellence. Because the pain of being looked at differently, of being laughed at or pitied or simply avoided—that pain lingers longer than any postoperative discomfort.

We live in a world obsessed with faces. Social media, photography, selfies—it’s all about how we present ourselves. So imagine what it means to live in that world with a face that constantly reminds you that you’re different. Now imagine what it means to be able to change that, even just a little.

Every time I see a patient smile after a successful revision, every time their parents send a message saying thank you for giving their child a new kind of confidence, I remember why this matters. Why I chose this path. And why I will keep choosing it.

This work was done at Bambino Gesù Hospital in Rome, a place that has become a home for many patients and families. The years 2016 to 2022 were filled with learning, trial, triumphs, and quiet reflections. I am proud to have been a little part of that.

My research hypothesis was that gender and age significantly influence the decision and timing of secondary procedures in cleft lip patients. I suspected that specific patterns would emerge when analyzing these variables against the use of the Abbé flap and secondary rhinoplasty.

The thesis includes a general background of cleft lip deformities and their treatment, followed by an in-depth presentation of our retrospective analysis: what exactly shapes the interventions that improve aesthetic and psychological outcomes for these patients.

I approached this study through an interdisciplinary lens. Beyond surgical technique, I acknowledged the psychological, social, and developmental factors involved. The work was not just about procedures—it was about people, growth, and identity.

As a young doctor, I've tied sutures and held hands, but the most important thing I've learned is how to see the person beyond the deformity. And how to believe, every single time, that they deserve more than just functional repair—they deserve to feel beautiful.

GENERAL PART

Better symmetry and a fuller vermilion tubercle are typically results of the single-stage Millard-type bilateral repair, combined with the McComb technique for repositioning of the nasal cartilages.

For the cleft palate, the Veau-Wardill-Kilner or the Langenback techniques are preferred, both in association with the Sommerlad muscle repair. Establishing a favorable environment for maxillary development, while reducing bone growth irregularities and dento-alveolar deformities and promoting typical speech patterns are the main goals.

The most common and traditional method of treating an alveolar cleft during mixed dentition (8-10 years of age) is secondary bone grafting with autogenous iliac crest cancellous graft. Distraction osteogenesis is performed when needed.

SPECIAL PART

Even with the best course of treatment, techniques, timing and surgeons, more than often the cleft patients need secondary corrections.

Each and every secondary surgery is carefully revised taking into account the primary repair that has been performed in order to assess how it will impact the intended revisions. Early cleft lip and nose reconstruction aims to achieve an ideal final surgical outcome using cutting-edge methods by skeletal maturity, with the cleft undetectable by peers at conversational distance by school age to reduce psychosocial stigmata. In wide, complete clefts, this is infrequently accomplished by a single operation, necessitating additional cleft lip and nose surgeries.

In order to perform the secondary corrections, one should be recognizing the perfect age to achieve such goals (temporizing procedures so as to minimize the scarring and possible

growth disruptions), finding the normal landmarks and returning them to their correct positions, abstaining from removing possibly useful tissue until having the certainty and treating each and every case individually.

This study has evaluated the course of treatment of 143 patients who underwent the Abbé flap procedure and/or a secondary rhinoplasty, all performed between 2016-2022, the patients' ages varying from 14 to 39 years old.

Adolescence is the best age for completing the reconstruction of the nose because a formal open rhinoplasty with cartilage grafting, septoplasty and/or osteotomies can be performed. The final rhinoplasty should be postponed if orthognathic surgery is expected because the nose's appearance will change as a result of shifting the bone structure that supports the nasal base.

THE ABBÉ FLAP

The Abbé flap, however, works best for treating more severe imperfections. By transferring a lower lip segment based on the inferior labial vessels to the upper lip, the Abbé flap applies full-thickness elements in a two-stage operation. The pedicled flap is then divided and inset after being left in position for two to three weeks. While secondary bilateral cleft lip deformities are the most common indication for this flap, it can also be used in cases of decreased anteroposterior projection of the upper lip, excess scarring of the central aesthetic unit or substantially narrowed or shortened central aesthetic unit.

Furthermore, the flap offers continuity of surface places of interest, a resembling dimple of the philtrum and an area of hair in men. However, due to donor site morbidity, increased risk from having two procedures and patient discomfort while waiting between stages, this treatment should not be the first option.

The likelihood of secondary deformity is higher in bilateral clefts than in unilateral clefts because they frequently have more tissue shortage. For milder cases of vermilion

insufficiency, local tissue rearrangement may be sufficient; however, the shortfall in bilateral cleft lips is frequently more severe, necessitating soft tissue that the nearby areas cannot offer. The optimum approach in these circumstances is an Abbé flap.

THE RHINOPLASTY

Secondary rhinoplasty for cleft lip is a highly specialized procedure designed to address the residual nasal deformities that persist after primary cleft repair. These deformities, which often include asymmetry, nasal tip deviation, alar base malposition, septal deviation, and a collapsed nasal sidewall, arise due to the complex nature of cleft-related anatomical anomalies.

Unlike primary rhinoplasty, which is typically performed in infancy as part of the initial cleft lip repair, secondary rhinoplasty is undertaken later in childhood, adolescence, or adulthood when the nasal structures have matured sufficiently to allow for more definitive correction. The procedure aims to enhance both functional and aesthetic outcomes, restoring nasal symmetry and improving airway patency.

Bilateral clefts often lead to a flattened, broad, and poorly supported nasal tip with severe columellar shortening. To address these issues, surgeons employ a variety of advanced techniques, including septal repositioning, cartilage grafting, and structured tip refinement using autologous or alloplastic materials. Cartilage grafts, typically harvested from the septum, ear, or rib, play a crucial role in augmenting nasal framework stability and reinforcing structural integrity, particularly in cases where previous surgeries have led to excessive scarring or loss of native tissue.

To achieve nasal tip projection, bony dorsum projection, alar base position, contour to the alar rim/lateral crus, acute alar facial relationship, an adequate nasolabial angle, and nasal airway patency, among other deformities associated with

secondary cleft nose, is the main goal of efforts to correct them. Making choices about access, technique, and supporting grafts is necessary for the management of these objectives.

Columellar struts, spreader grafts, septal extension grafts, tip shield grafts, alar batten grafts and dorsal onlay grafts, can be used to enhance and support the cartilaginous skeleton of the nose. Lastly, to treat widened nasal bones and abnormal dorsal lines, bony osteotomies should be carried out.

The precise timing of the correction of the nasal deformity is crucial and is influenced by a number of variables. It is postponed until the following operations are finished: closure of the potential oronasal/palatal fistulae, bone grafting of the hypoplastic maxilla and alveolus and realignment of the maxillary dentition through orthodontics. If orthognathic surgery is required, the patient's ultimate nasal reconstruction is also postponed.

The psychological impact of nasal deformities in cleft patients is profound, as facial symmetry plays a central role in self-esteem and social perception. Studies indicate that patients who undergo secondary rhinoplasty report significant improvements in confidence, social interactions, and overall quality of life, reinforcing the procedure's role as a critical component of comprehensive cleft care.

Secondary rhinoplasty for cleft lip is more than just a cosmetic enhancement—it is a transformative procedure that restores facial harmony, improves nasal function, and significantly enhances a patient's overall well-being.

HYPOTHESIS AND GENERAL OBJECTIVES

This thesis began with a question that emerged naturally from clinical experience. After seeing multiple cases of cleft lip patients returning for secondary surgery, it became clear that certain patterns were worth exploring. The idea that age and gender might influence when

and how these procedures are performed felt worth investigating—especially because these factors aren't always considered as carefully as they should be.

Based on that, the central hypothesis of this study is that both age and gender play a role in shaping the type and timing of secondary surgical procedures in cleft patients, particularly the Abbé flap and secondary rhinoplasty. While clinical criteria are essential, patient characteristics may also subtly guide surgical decisions.

The general objectives of the study are to take a closer look at the patients who undergo these secondary procedures: who they are, when they return for surgery, and what kind of surgery they need. More specifically, I wanted to analyze whether gender and age influence the indication or outcome of these corrections, and to reflect on what these patterns might suggest for clinical practice.

Secondary correction is a crucial part of the cleft treatment journey, yet it often receives less attention than the primary repair. Through this work, we hope to show that these later interventions deserve equal consideration—not only because of what they fix surgically, but because of what they offer patients in terms of confidence and emotional healing.

RESEARCH METHODOLOGY

This study is based on a retrospective review of patients treated between 2016 and 2022. All of the patients had already undergone their primary cleft lip repair and were referred for secondary surgery, either an Abbé flap, a secondary rhinoplasty, or in some cases, both. To keep the analysis consistent and meaningful, we included patients over the age of 14 (with the oldest patient being 39) and who had bilateral cleft lips. The only exception was a patient with a unilateral cleft lip, who had a significant lack of soft tissue in the upper lip and was therefore a good candidate for the Abbé flap.

We chose to exclude patients with syndromes or additional malformations.

The data used for this thesis came directly from the patients' hospital files—admission documents, medical letters, surgical notes, and follow-up records.

All the information was collected and organized in Microsoft Excel and analyzed using the Kolmogorov-Smirnov test, T-tests, ANOVA, Fisher's exact test, Chi-Square analysis.

Table 1. Gender Distribution

	Frequency	Percent
Male	80	55.9
Female	63	44.1
Total	143	100

Table 1 provides a detailed breakdown of the gender composition within the study population, which comprises 55.9% male patients and 44.1% female patients. This distribution indicates a moderate predominance of males in the sample. Such a disparity is not uncommon in studies involving cleft lip and rhinoplasty procedures, as cleft lip conditions tend to have slightly higher prevalence rates among males according to global epidemiological data.

The representation of both genders in this study, however, ensures a robust and balanced analysis of outcomes, enabling researchers to identify any gender-specific trends that may emerge. For instance, male patients often present with distinct anatomical challenges compared to females due to differences in facial bone structure and tissue composition, potentially influencing surgical techniques and outcomes.

Furthermore, examining satisfaction rates and postoperative recovery patterns across genders could yield valuable insights. While males may prioritize functional outcomes, such as improved breathing and speech, females might place greater emphasis on aesthetic results. These differences underscore the need for personalized surgical planning and counseling tailored to the unique expectations and physiological characteristics of each patient.

In conclusion, the nearly balanced gender distribution in this sample offers a strong foundation for analyzing trends that may contribute to more precise, patient-centered approaches in the field of cleft lip and rhinoplasty surgery. Future studies might also explore whether these patterns persist in larger, more diverse populations.

Table 2. Description

	Frequency	Percent
Rhinoplasty	44	30.8
Abbé flap	99	69.2
Total	143	100

Table 2 provides an insightful overview of the distribution of surgical procedures performed within the study sample. Among the 143 patients included, 30.8% (44 cases) underwent rhinoplasty, while 69.2% (99 cases) received procedures aimed at repairing the lip. This disparity in procedure types reflects the primary focus of the cohort, with a significant emphasis on cleft-related surgeries.

The predominance of cleft lip repair surgeries aligns with the demographics of the study population, where the majority of patients presented with congenital facial anomalies requiring functional and aesthetic correction. These procedures are often prioritized due to their impact on critical functions such as feeding, speech, and overall facial structure, particularly during developmental stages.

Rhinoplasty, although less frequent in this sample, plays a crucial role in achieving aesthetic refinement and functional improvement for patients who may have residual deformities or require secondary corrections following the initial cleft repair. This subset of

surgeries underscores the importance of comprehensive treatment plans that address both primary and secondary needs of patients with facial anomalies.

The differences in procedural distribution also provide a foundation for analyzing variations in patient outcomes, satisfaction levels, and recovery experiences. Future investigations might explore whether patients undergoing rhinoplasty report distinct aesthetic or functional benefits compared to those receiving cleft lip and palate repairs. Moreover, understanding the timing of these procedures, especially in cases involving multiple surgeries, could enhance the planning of long-term treatment strategies for this patient population.

Table 3. Age Groups

Age Group	Frequency	Percent
14-19	48	33.6
20-24	43	30.1
25-29	29	20.3
30-34	17	11.9
35-39	6	4.2
Total	143	100

To facilitate a more detailed analysis, the age variable was categorized into five distinct groups. As shown in Table 3, the majority of patients fell within the younger age ranges, with 33.6% between 14 and 19 years old and 30.1% between 20 and 24 years old. Together, these two groups accounted for over 63% of the study population, underscoring the importance of early intervention in managing cleft-related conditions.

Patients aged 25 to 29 years made up 20.3% of the sample, suggesting that a significant portion of individuals sought surgical interventions beyond adolescence, possibly for secondary procedures or delayed primary repairs. The remaining age groups, 30 to 34

years (11.9%) and 35 to 39 years (4.2%), represented older patients who may have pursued surgical treatments for aesthetic refinements or functional improvements later in life.

This distribution highlights several key considerations for clinical practice. The predominance of younger patients reinforces the importance of early diagnosis and timely surgical intervention to address functional impairments and prevent secondary complications. However, the presence of older patients suggests that surgical needs extend well beyond adolescence, particularly for individuals requiring revision surgeries or seeking improvements in facial aesthetics.

Furthermore, analyzing the relationship between age and surgical outcomes could provide valuable insights into how timing influences recovery, satisfaction, and long-term results. Younger patients may benefit from faster healing and greater adaptability, while older patients might prioritize procedures that enhance quality of life and self-esteem.

The study utilized cross-tabulations and Fisher's exact test, as shown in Tables 4 and 5. The distribution of gender across age groups revealed distinct trends.

- Male patients were most represented in the 14–19 age group, with 38 cases, reflecting the prioritization of early functional surgeries for younger individuals.
- Female patients, on the other hand, were most represented in the 20–24 age group, with 21 cases, suggesting that females may delay surgical interventions until later developmental stages.

Fisher's exact test, with a p-value of 0.000, confirmed that the differences in gender distribution across age groups were statistically significant. This finding highlights the dynamic interplay between age and gender in determining the timing and nature of surgical interventions.

Table 4. Gender by age groups

		Age group					Total
		14-19	20-24	25-29	30-34	35-39	
Type	Male	38	22	11	5	4	80
	Female	10	21	18	12	2	63
Total		48	43	29	17	6	143

Table 5. Fisher's exact test to compare Gender between Age groups

	Value	Asymp. Sig. (2-sided)
Fisher's Exact Test	20.2	0.000

These patterns underscore the importance of personalized, gender-sensitive approaches to surgical planning. Early interventions for male patients should focus on achieving functional milestones, while treatment plans for female patients might emphasize aesthetic goals and patient satisfaction.

Table 6. Description of surgical procedures by Age groups

		Age group					Total
		14-19	20-24	25-29	30-34	35-39	
Description of surgical procedures	Rhino-plasty	1	12	16	11	4	44
	Abbé flap	47	31	13	6	2	99
Total		48	43	29	17	6	143

The distribution of surgical procedures varies significantly across age groups. Rhinoplasty is most commonly performed in patients aged 25 to 29 years, with 16 cases recorded in this age group. This peak aligns with a period in life when individuals are likely to seek refinement procedures for aesthetic or functional improvements.

Conversely, cleft repairs are concentrated in the youngest age group, with 47 cases in patients aged 14 to 19 years. These procedures address critical developmental needs and are prioritized during adolescence to ensure optimal functional outcomes. The frequency of these surgeries declines with age, with only two cases recorded in the 35 to 39 age group. This decrease reflects the importance of early intervention for cleft-related conditions, as delays in treatment may limit the effectiveness of surgical outcomes.

Table 7. Gender by description of surgical procedures

		Description of surgical procedures		Total
		Rhinoplasty	Abbé flap	
Gender	Male	16	64	80
	Female	28	35	63
Total		44	99	143

The data in Table 7. illustrates how male and female patients are distributed across the two main categories of surgical procedures: rhinoplasty and Abbé flap. Males had a significantly higher representation in cleft-related surgeries, with 64 cases out of the 99 total repairs performed. This highlights the higher prevalence of functional surgeries among males, aligning with their greater representation in the study sample and the focus on addressing developmental challenges early in life.

Females, in contrast, were more likely to undergo rhinoplasty, with 28 cases out of the 44 procedures performed. Rhinoplasty often reflects aesthetic preferences and is commonly

pursued later in life, aligning with personal goals for cosmetic improvement. These gender-specific patterns underscore the distinct needs and priorities between male and female patients, emphasizing the importance of tailoring surgical approaches.

The findings derived from the analysis of this dataset provide a comprehensive overview of the demographic, procedural, and statistical dynamics of patients undergoing cleft-related surgical interventions. By delving into age, gender, surgical types, and their descriptions, as well as validating the data with robust statistical methods, this study sheds light on critical aspects of cleft care, offering actionable insights for clinical practice.

CONCLUSIONS AND PERSONAL CONTRIBUTIONS

The management of cleft lip and palate remains one of the most complex and multifaceted challenges in reconstructive surgery, requiring a comprehensive approach that integrates physical, psychological, and social dimensions. This thesis has provided an in-depth analysis of the critical aspects of cleft care, highlighting the intricate balance between functional restoration through early surgical interventions and the evolving aesthetic and psychosocial considerations that emerge over time.

Statistical analysis reveals a high prevalence of these procedures among younger patients, reinforcing the critical importance of timely intervention. Early surgical correction not only improves immediate functionality but also lays the groundwork for long-term success, allowing patients to navigate social, educational, and personal challenges with greater confidence and ease.

Procedures such as secondary rhinoplasties and Abbé flaps play a crucial role in enhancing facial symmetry, refining aesthetic balance, and ultimately contributing to greater self-esteem and social confidence.

Beyond the surgical techniques themselves, these findings underscore the necessity of a multidisciplinary approach in cleft care, where collaboration among surgeons, psychologists, speech therapists, orthodontists, and other specialists is essential for achieving comprehensive treatment outcomes. Functional restoration and aesthetic refinement must be pursued in parallel, ensuring that patients receive well-rounded care that supports both their physical needs and their emotional well-being.

The thesis also brings to the forefront the often-overlooked psychological dimensions of cleft care, highlighting the profound emotional and social implications that accompany these conditions. While the primary focus in cleft management has traditionally centered on surgical correction and functional restoration, this study underscores the necessity of addressing the psychological aspects with equal urgency.

Younger patients and their families expressed deep appreciation for the functional benefits of early interventions, particularly in facilitating communication, academic participation, and everyday activities. Conversely, older patients emphasized the psychological relief and increased self-assurance gained from aesthetic procedures, such as rhinoplasties and Abbé flaps, which helped them feel more comfortable in their own skin and more confident in social settings.

The impact of aesthetic surgeries extends beyond mere physical correction; they provide patients with a sense of closure in their cleft care journey. Many individuals who have undergone these procedures describe a significant shift in their self-perception, moving from a state of self-consciousness to one of self-acceptance and pride.

The success of long-term cleft care relies heavily on multidisciplinary collaboration among healthcare providers. Surgeons, orthodontists, speech therapists, psychologists, and social workers must work together to create personalized treatment plans that address the unique and evolving needs of each patient. A well-coordinated team ensures that no aspect of care is overlooked, promoting a seamless transition between functional, aesthetic, and psychological interventions. Regular interdisciplinary case discussions and follow-up

assessments allow for the early detection of complications, the refinement of treatment plans, and the adaptation of care strategies to meet patients' changing needs.

Ultimately, cleft care is not just about correcting anatomical differences—it is about restoring confidence, dignity, and a sense of belonging to individuals affected by these conditions. Through a comprehensive and compassionate approach, the field can continue to offer hope, healing, and transformative change to countless individuals and families worldwide.

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ANNEXES

Scientific papers in process of publication:

1. Parvu, D.L.; Zama, M.; Udrea, O.-M.; Chiriac-Babei, C.I.; Tatar, R.T.; Preda, D.M.; Voiculescu, A.V.; Ulici, A.; Enescu, D.M. Aesthetic versus functional sequelae: The psychological impact on youth with cleft lip measured against a seemingly non-comparable condition – Romanian Journal of Oral Rehabilitation. 2025
2. Parvu, D.L.; Enescu, D.M.; Chiriac-Babei, C.I.; Preda, D.M.; Tatar, R.T.; Caragata, R.; Truica, A.; Zama, M. Timing and techniques: Age-based medical approach in secondary reconstructive procedures for bilateral cleft lip – Romanian Journal of Oral Rehabilitation. 2025
3. Parvu, D.L.; Enescu, D.M.; Chiriac-Babei, C.I.; Preda, D.M.; Udrea, O.-M.; Tatar, R.T.; Caragata, R.; Truica, A.; Zama, M. From lip to nose: Gendered aesthetic preferences in sequelae treatment among cleft lip patients – Romanian Journal of Oral Rehabilitation. 2025