JURNAL
REKONSTRUKSI DAN ESTETIK

EARLY CLEFT LIP REPAIR: A LONG TERM FOLLOW-UP

Yefta Moenadjat
Department of Surgery,Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

ARTICLE INFO

Keywords: Cleft lip, cleft palate, alveolar cleft, maternal mortality, pediatric health

***Corresponding author*:**
Yefta Moenadjat
Email address:
yefta.moenadjat@ui.ac.id

***History*:**
Received: September 10, 2024
Revised: October 15, 2024
Accepted: November 2, 2024
Published: December 1, 2024

JRE : Jurnal Rekonstruksi dan Estetik
e-ISSN:2774-6062; p-ISSN: 2301-7937
DOI: 10.20473/jre.v9i2.60219
Open access :

Available at:
https://e-journal.unair.ac.id/JRE/

***How to cite*:** Moenadjat Y. EARLY CLEFT LIP REPAIR: A LONG TERM FOLLO- UP. Jurnal Rekonstruksi Dan Estetik.2024. 9(2):120-131.

ABSTRACT

Introduction: Published reports on the long-term outcomes of cleft lip surgery within the Indonesian population are limited, especially for those treated early in the neonatal period. This study presents follow-up data on early-managed cases, aiming to objectively evaluate the long-term results of such management.
Case Illustration: A newborn with a complete unilateral cleft lip and palate had surgery on day two, achieving a symmetrical lip and nasal base. At 12 months, cleft palate surgery was performed. Fifteen years later, the patient sought a lip revision, expressing satisfaction with the results and opting against further procedures. Case 2: Another newborn with an incomplete cleft underwent surgery on day five, followed by palate repair at 12 months. Ten years later, the parents reported satisfaction with the outcomes and no desire for further revisions.
Discussion: The discussion focused on the merit of early management and no negative impact on muscular and maxillary growth.
Conclusion: The positive effects of early management through muscle management were observed in the long-term follow-up, as shown in these two reported cases.

Highlights:

1. Early cleft repair benefits patients by reconstructing near-normal lip anatomy that persists after ten to fifteen years.
2. The early procedure did not result in muscular or maxillary hypoplasia in long-term follow-ups; rather, development occurred in tandem with normal growth.

INTRODUCTION

Case reports on the long-term outcomes of cleft lip management in the Indonesian population are rarely published. This scarcity reflects both the unique characteristics of cleft lip cases and congenital disorders in Indonesia. When patients experience no issues and accept the results, they often feel follow-up is unnecessary, which may contribute to the lack of reports on short- and long-term outcomes in this population.

Evaluations of cleft lip management in Indonesia were limited to prevalence,[1] charity (social works),[2] management during a pandemic,[3] and short outcomes of a single center.[4–6] There were long-term management evaluations, but they did not orient to early management.[7,8] The outcome of cleft lip surgery, particularly those managed early (in the neonatal period), is extremely rare. The fact is, early management is considered to not adhere to the general protocol, i.e., the rule of over ten (Wilhelmsen and Musgrave's, 1966)[9] as the prime time, but indeed, it adhered to clinical practice guidelines[10] and *Pedoman Nasional Praktik Klinik* (PNPK)[National Guidelines on Clinical Practice]released by Ministry of Health of Indonesia, such as 0-6 months of first life.[11] The other reason is the Indonesian characteristics described in the second sentence of this paragraph. The author reports cases managed early aimed to provide objective long-term outcomes of early management as the answer to the question asked in the past twenty years: What is the evidence of long-term effects of early management?

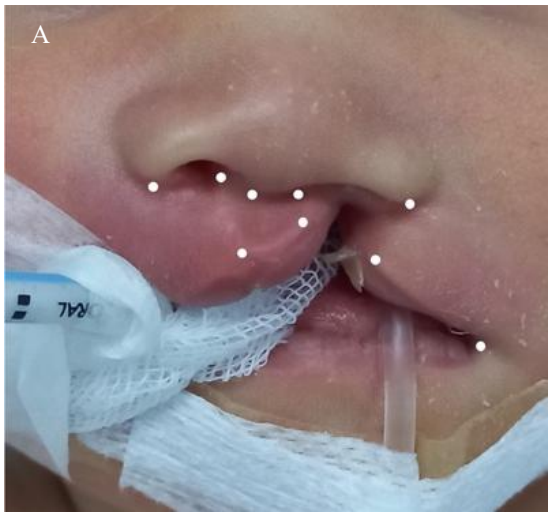
Additionally, Additionally, Awareness of the importance of early cleft lip management in Indonesia remains limited among healthcare professionals and the public, mainly due to a lack of information and training. Additionally, there is a belief that early intervention may not always yield significant outcomes. Therefore, exploring the long-term effects of early management is crucial to understanding its effectiveness. Increased research in this area can enrich the medical literature and help shift cleft lip management practices in Indonesia toward evidence-based policies.

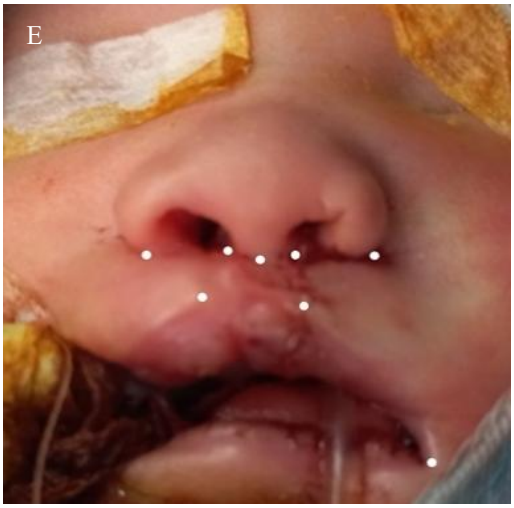
CASE ILLUSTRATION

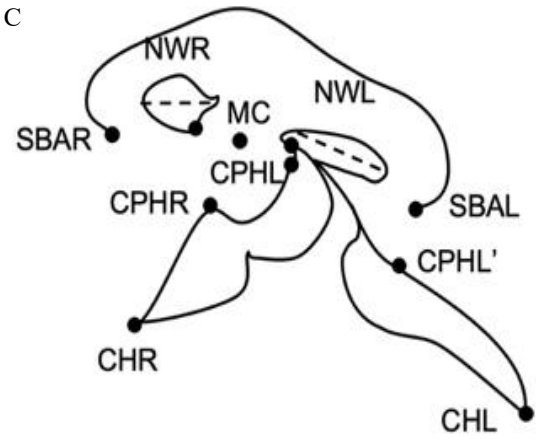
Case 1

A full-term newborn delivered through Caesarean section weighed 3300g and had an Apgar score of 10. The pediatrician consulted regarding complete clefts of the lips, gums, and palate. The patient presented with a left-sided complete unilateral cleft (Figure 1) and an asymmetrical alar base. The alar base of the cleft side moved laterally, posteriorly, and caudally (detailed in Figure 1 A,B,C).

After a comprehensive explanation, including informed consent, it was decided to proceed with cleft lip correction on the second day of life. The Millard method was applied, incorporating muscle management, which involved dissection and mobilization of the nasal base (including the cartilage lobe) and the orbicular muscles on the cleft side to achieve cranio-medio-anterior projection, fixed to the nasal spine. Flap C was used to cover the nasal base posteriorly to the nostril, but it did not reconstruct the columellar base. The immediate postoperative results showed a symmetrical lip and alar base, although the nostril appeared relatively small on the cleft side, with kinking of the alar cartilage (Figure 1 D, E, F).







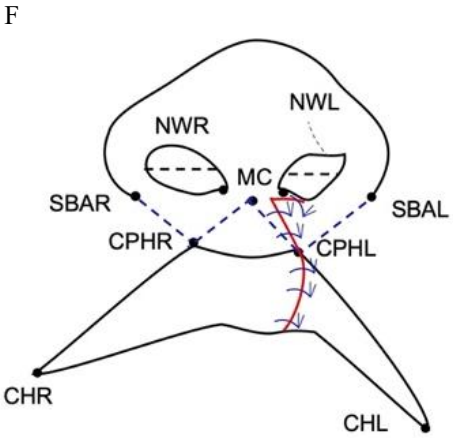


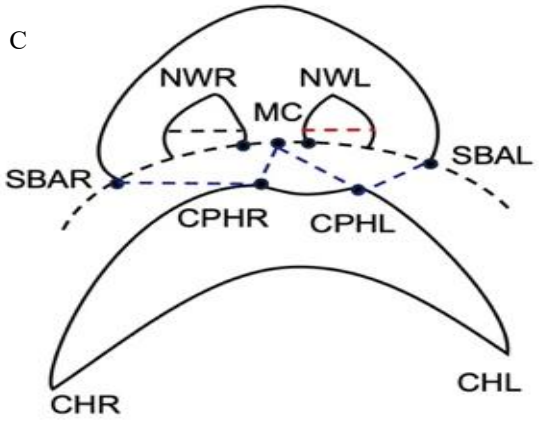
Figure 1. A Newborn with a Complete Cleft Lip And Palate Underwent Early Cleft Lip Repair on The Second Day of Early Life. Preoperative (A) Anterior Aspect, (B) Mento-Occipital Aspect and Immediate Postoperatively (C) Anterior Aspect, (D) Mento-Occipital Aspect.

The symmetrical nasal base and upper lip. Preoperatively, the vertical height of the lip (from the alar base to the Cupid's bow) on the non-cleft side (SBAR-CPHR) was 1.2 cm, while on the cleft side (SBAL-CPHL) it was 1.4 cm. The midline columella crease to Cupid's bow (MC-CPHR) measured 1.0 cm on the non-cleft side, compared to 0.8 cm on the cleft side. The nostril width on the non-cleft side (NWR) was 0.5 cm, whereas on the cleft side (NWL) it was 0.8 cm. Postoperatively, the vertical height of the lip from the alar base to the Cupid's bow was 1.2 cm on both

the right and left sides. The midline columella crease to Cupid's bow (MC-CPH) measured 1.0 cm on both sides, and the nostril width was 0.5 cm on the non-cleft side (NWR) and 0.4 cm on the cleft side (NWL). The horizontal lip length to the commissure was 1.6 cm for both the non-cleft side (CHR-CPHR) and the cleft side (CHL-CPHR).

Postoperatively, the neonate was immediately given a bottle for feeding, discharged, and followed up on the seventh day after surgery. No problems with the surgical wounds were observed until the 14-day and 30-day follow-up visits. The next step in the treatment plan was cleft palate surgery, which was performed at 12 months of age. The von Langenbeck method was used for the palate repair, and the alveolar gap was closed with a lip mucosal interposition flap. Additionally, the alveolar bony defect was filled with an absorbable surgical sponge. Postoperatively, an immediate change in the infant's voice was objectively noted, and both parents were aware of this change. There were no oral-nasal fistulas or other complications during the one-month follow-up, and the surgical site healed well. However, despite the plan for an alveolar bone graft procedure at the age of 6 years, the family unfortunately did not follow up for further care, potentially impacting long-term outcomes and the child's development.

After fifteen years, the patient came for the possibility of lip revision (Figure 2) after orthodontic treatment for the last two years (Figures 3A and 3B).



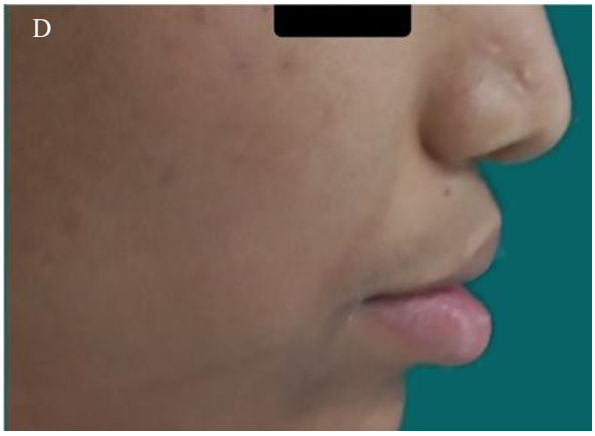


Figure 2. Fifteen Years After Early Cleft Lip Repair

The following observations were made fifteen years after the early cleft lip repair: (Figure 2A) Anterior aspect, (Figure 2B) Mento-occipital aspect. A long-term symmetrical nasal base is maintained. The muscular bundle on the cleft side (Figure 2D) resembles that of non-cleft individuals (Figure 2C), with a relatively larger lower lip volume, often referred to as a stigma of clefts. The vertical height of the lip, measured from the alar base to Cupid's bow, was 2.5 cm on both the right and left sides. The midline columella crease to Cupid's bow (MC-CPH) was 1.8 cm on both the right and left sides, while the nostril width measured 1 cm on the non-cleft side (NWR) and 0.9 cm on the cleft side (NWL). The horizontal lip length to the commissure was 3 cm (CHR-CPHR) on both sides.

Figure 3. A well-aligned alveolar arch is maintained clinically with orthodontic treatment (A), although the cleft remains (B) untreated with bone grafting yet.

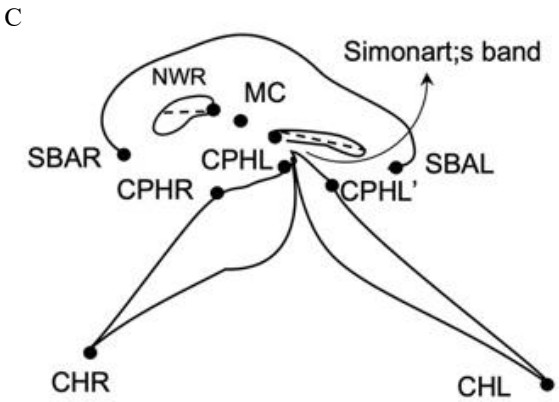
Both the patient and his parents were not concerned about the alveolar cleft and disagreed with proceeding with a bone grafting procedure or maxillary osteotomy. The lip corrections performed included scar revision, white-line approximation for natural alignment, and fat grafting for volume correction on the cleft side (Figure 4). The patient and parents were delighted with the surgical results, including the nasal shape. However, they realized that there is nothing perfect in the world.

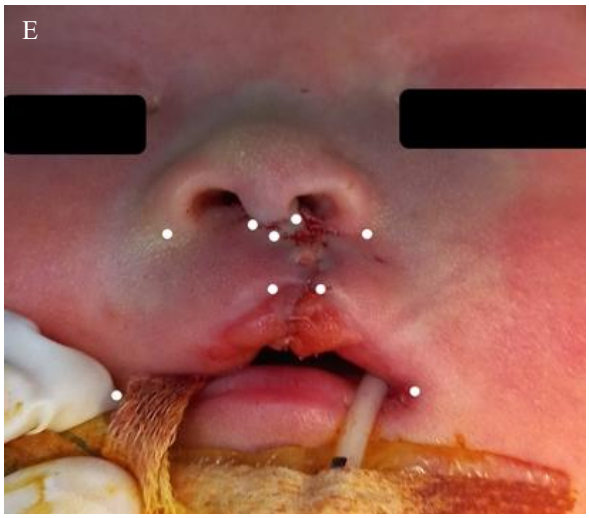
Figure 4. Immediate Picture after Scar Revision and Buccal-Fat Grafting to Fill Up The Lip Volume on The Cleft Side.

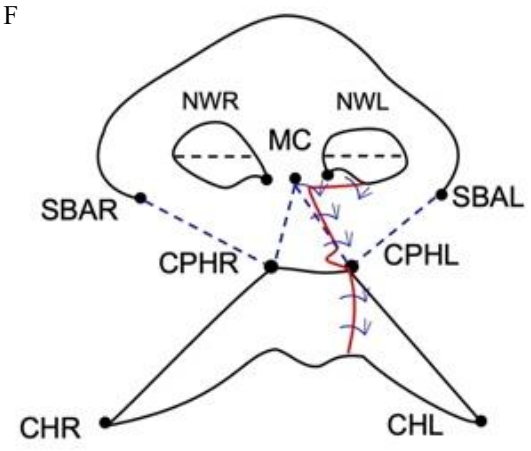
Case 2

A full-term newborn delivered through Caesarean section weighed 3200g and had an Apgar score of 10. The pediatrician was consulted for an incomplete cleft in the lips,

alveolus, and palate. Upon examination, complete clefts were identified, along with a Simonart's band and a narrow-type alveolus and palate. The alar base on the cleft side was positioned laterally and caudally (detailed in Figure 5 A, B, C).







Note: Clinically symmetrical nasal base and upper lip.

Figure 5. Early Cleft Lip Repair in a Newborn with Complete Cleft Lip and Palate

A newborn with a complete cleft lip and palate underwent early cleft lip repair on the second day of life. Preoperative images show (Figure 5A) the anterior aspect and (Figure 5B) the mento-occipital aspect, with notable Simonart's band. Immediate postoperative images depict (Figure 5C) the anterior aspect and (Figure 5D) the mento-occipital aspect.

Preoperatively, the vertical height of the lip (from the alar base to Cupid's bow) on the non-cleft side (SBAR-CPHR) was 1.1 cm, and on the cleft side (SBAL-CPHL) was also 1.1 cm. The midline columella crease to Cupid's bow (MC-CPHR) measured 1.0 cm on the non-cleft side, while on the cleft side (MC-CPHL), it was 0.8 cm. The nostril width on the non-cleft side (NWR) was 0.5 cm, compared to 0.9 cm on the cleft side (NWL).

Postoperatively, the vertical height of the lip from the alar base to Cupid's bow was 1.1 cm on both sides. The midline columella crease to Cupid's bow (MC-CPH) measured 1.0 cm on both sides, and the nostril width was 0.5 cm on both the non-cleft side (NWR) and the cleft side (NWL). The horizontal lip length to the commissure was 1.5 cm on both sides (CHR-CPHR and CHL-CPHR).

The surgical lip correction was performed on the fifth day after delivery, following the same steps applied in the previous case, as the bilirubin level was below 10 mg/dL. The nostril retainer was used solely for 2-3 weeks after surgery. Cleft palates were managed using the Langenbeck procedure. After the cleft palate surgery, the alveolar cleft was addressed. The mucoperiosteal flaps were released from the bony alveolus, and the alveolar margins on both sides were decorticated from the dental margin to the pterygoid to facilitate alveolar bone formation. A surgical sponge was inserted into the defect, which was then closed with a mucosal interposition flap. These procedures were completed over 12 months. After the last follow-up visit, the patient did not return for a month. Ten years later, he came for a follow-up, and the parents felt it was unnecessary to proceed with any revision and expressed their gratitude for the satisfactory outcomes (Figure 6 A, B, C, D).

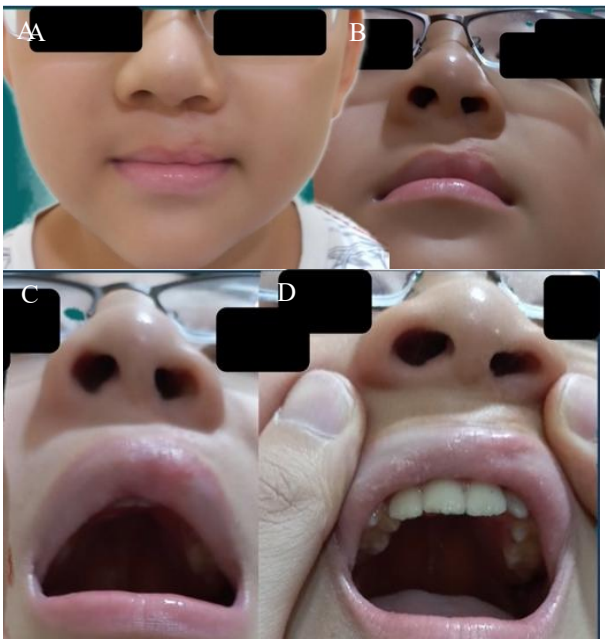


Figure 6. Figure 6. Ten Years after Early Cleft Lip Repair

Ten years after the early cleft lip repair, the following observations were made: (Figure 6A) Anterior aspect and (Figure 6B) mento-occipital aspect. A long-term symmetrical nasal base is maintained, although the left alar on the cleft side is relatively smaller. Due to certain limitations, the author was unable to proceed with measurements. However, the alveolar arch appears well-aligned.

DISCUSSION

More than twenty years ago, the author presented a case series on early cleft lip surgery performed during the neonatal period at a scientific meeting. Nineteen cases were managed within 2 to 24 days, with the perspective of safety and immediate postoperative outcome. However, the peer

group rejected this approach, arguing that early management did not conform to the standard protocol (specifically, the "rule of ten").[9] In addition, the concept was considered an intention to change the protocol and was not supported by the evidence, particularly the long-term outcomes, as shown by Hammoudeh et al.[12]

However, the author proceeded with early management in a non-teaching hospital. The rationale for this procedure was based on critical thinking: Why not perform it earlier? Of course, patient safety is fundamental.[13,14] Early correction can provide benefits for patients and families. Early reconstruction of a 'normal' lip configuration allowing the normal sucking achieved earlier.[12,15,16] Such normal sucking is not achieved solely by bringing the cleft side and the non-cleft one together. The author proceeded with muscle management, which allowed a normal anatomical configuration of the upper lip (arch) and nasal base at once,[17] as proposed by Fara (1972) and applied by Millard (discussed in the cleft craft).[18] Alar base and alar nasalis muscle dissection of the cleft side freed up from its attachment in the incisura nasalis (piriform aperture), allowing alar cartilage mobilization and moving medially and fixed to the nasal spine. Aligning the lateral muscular fibers involved an approximation to the non-cleft side with adjustments to achieve a symmetrical nostril.[19–24] Nasal symmetry is established early, potentially reducing the need for secondary cleft lip nose correction later, which often yields unsatisfactory results.[23,25] In both cases, the noses are nearly symmetrical, as seen from the anterior aspect. Even though, in the occipital-mental aspect, the nostril on the cleft side appears smaller in Case 1 (Figure 1d and 1e). Further, no defect (basin) is denoted in the alar base of the cleft side (Figure 1e), although the alveolar cleft remains unmanaged with the alveolar bone graft.

This observation may challenge the previous notion that both the alveolar cleft and hypoplastic maxilla are responsible for the asymmetrical nasal base and alveolar arch. The flat columellar base on the cleft side (Case 2) is likely due to the use of Flap C to close the defect at the nasal base during cleft lip surgery, rather than advancing it to the alar base of the cleft side, as in the traditional Millard method.[26] However, neither the patients nor the parents in both cases accepted this outcome as it was.

Muscle management at an early date may control the growth of the protrusive arch on the cleft side and maintain the alveolar arch in complete cleft lip and palate cases.[19,27] This procedure adheres to the principles established by Gillies in 1949, specifically principles 3, 4, 6, and 9. Principle 3 emphasizes the importance of respecting normal anatomy by restoring it to its proper position and preserving it. Principle 4 advises against discarding living tissue until it has been definitively deemed unnecessary. Principle 6 warns against compromising one aspect of care to benefit another, emphasizing the need to avoid tension in the process. Finally, Principle 9 asserts that there should be no standardized approach; each case should be treated uniquely, without adhering to a fixed routine or model, regardless of practices from East Grinstead or St. Louis.

This extensive dissection was formerly believed to negatively impact muscular and maxillary growth. However, the author found a normal alveolar arch one year after cleft lip surgery—when proceeding with cleft palate surgery—despite the alveolar cleft remaining. The alveolar cleft was closed using an interposition flap (lip mucosa) along with palatoplasty, effectively closing the oro-nasal relation on the cleft side.[31] However, in Case 1, a wide gap is noted in the panoramic dental x-ray, but an acceptable alveolar arch was achieved through orthodontic treatment. To our knowledge, the treatment aims to establish a good arch rather than merely close the gap. In contrast, the small gap in

Case 2 was remarkably undetected clinically, even though no alveolar bone graft was performed—only decortication and a surgical sponge were used. The author did not present a panoramic dental x-ray to avoid unnecessary exposure to radiation.

Early management, particularly muscle manipulation (dissection of the orbicularis muscle—the muscle abuts the alar base, freeing the muscles of the alar base from their attachment at the piriform aperture of the maxilla)[19,24,33] had no negative effects in the short- or long-term, particularly on maxillary growth. In short, the author did not find fibrosis in the nasal base of the cleft side during assessment prior to palatoplasty (12 months post-surgery). In the long term, the orbicularis muscle developed normally and maintained the shape of the nasal ridge during the 10- to 15-year follow-up. The author did not observe any negative impact from earlier muscle management on the maxilla (which appeared hypoplastic), but rather noted a normal alveolar arch. The muscles developed well, with no hypotrophy, and the position of the alar base was maintained long-term.

Patients were discharged 2-3 days post-surgery with safety precautions for breastfeeding, ensuring that mothers fed their babies properly. This contrasts with extended hospitalizations reported by Lee and his colleagues.[34]

There is merit in early management. Firstly, a symmetrical lip and nose immediately after surgery without pretreatment. No plaster fixation or lip adhesion is required, nor is nasoalveolar molding (NAM) necessary to treat an asymmetrical nose before surgery. Indeed, The surgical correction aimed at treating the cleft lip results in a symmetrical nasal base, eliminating the need for later rhinoplasty, even without a nasal retainer. This outcome is due to the focus on building a fundamental unit configuration—the upper lip—which establishes the foundation of the nasal unit, rather than simply closing the cleft defect. The most significant achievement comes from the outcome achieved through a single procedure. With earlier management, the healing is remarkable, benefiting both the patient and their parents, particularly during school age, and helping to avoid cleft-related bullying.

This concept differs from most approaches that aim for purely aesthetic results. The author is more concerned with achieving a near-normal anatomical configuration. However, a challenging issue in early management is the need for precision. An imperfect scar was anticipated from the outset and discussed during the consent process, as the tissue had not yet fully developed. Achieving a symmetric lip shape was nearly impossible due to the underdeveloped hard and soft tissue on the cleft side. Nevertheless, approximating the landmarks (the white line and red line of the cleft and non-cleft sides) should be addressed using a surgical loop, which the author did not do.

CONCLUSION

The positive effects of early management by applying muscle management observed in long-term follow-up, as shown in these two reported cases. This fact answers the questions in the past regarding early management, counters the presumed negative effects of early management at once, and may contribute to better knowledge of cleft lip surgery.

CONFLICT OF INTEREST

The author discloses no conflict of interest.

FUNDING DISCLOSURE

No funding.

AUTHOR CONTRIBUTION

YM was responsible for all aspects of the case report. This included conceptualizing the study, managing the patient care throughout the surgical process, and performing follow-up assessments. YM conducted a comprehensive literature review to contextualize the findings and authored the manuscript, ensuring that all relevant details were included. Additionally, YM analyzed the long-term outcomes of the surgical intervention and contributed to the discussion on implications for practice. The author is solely accountable for the content and integrity of this case report.

REFERENCES

1. Sundoro A, Hilmanto D, Soedjana H, Lesmana R, Harianti S. Epidemiology of cleft lip and palate charity mission surgery at Bandung Cleft Lip and Palate Center, Indonesia: a 14-year institutional review. *Archives of Craniofacial Surgery.* 2024;25(2):62–70. DOI:10.71 81/acfs.2023.00416
2. Anggraini S. Clinical Evaluation of 51 Patients with Cleft Lip and/or Palate in Social Work at Hospital. *Journal of Syntax Literate.* 2024;9(6):3473–8. DOI: 10.36 418/syntaxliterate.v9i6
3. Sundoro A, Hilmanto D, Soedjana H, Lesmana R, Suryadinata KL. Cleft lip and palate surgery during COVID-19 pandemic in Indonesia: a 36-month experience at the Bandung Cleft Lip and Palate Center. *Archives of Craniofacial Surgery.* 2023;24(3):111–116. DOI: 10. 7181/acfs.2023.00213
4. Rizal S, Amirsyah M, Putra R, Razali R, Putra D. Profile of post operative cleft lip and palate in Aceh cleft lip and palate center period of November 2018 - October 2019. *Jurnal Kedokteran Syiah Kuala.* 2022;Ed Khusus: 1–5. DOI:10.24815/jks.v0i0.29693
5. Datusanantyo R, Hutagalunng M, Rizaliyana S. Modified Cleft Lip Evaluation Profile (MCLEP) Index for Unilateral Cleft Lip Repair Outcome Assessment in Surabaya CLP Center. *Jurnal Rekonstruksi & Estetik,* 2020; 5(1):6–12. DOI: 10.20473/jre.v5i1. 24316
6. Datusanantyo RA, Hutagalung MR, Rizaliyana S, Marzoeki D. Anthropometric Outcome of Primary Unilateral Cleft Lip Repair in Indonesia. *The Cleft Palate-Craniofacial Journal,* 2021; 58(10): 1236–11. DOI: 10.1177/105566562 0982757
7. *Deki F, Hatibie M, Oley MCh, Langi FG. Evaluasi Hasil Labioplasti Menggunakan Skor CLEFT-Q. e-CliniC.* 2021;9(2):561–567. DOI: 10.35790 /ecl.v9i 2.35939
8. Sumardi S, Latief BS, Kuijpers-Jagtman AM, Ongkosuwito EM, Bronkhorst EM, Kuijpers MAR. Long-term follow-up of mandibular dental arch changes in patients with complete non-syndromic unilateral cleft lip, alveolus, and palate. *Peer J.* 2021;9:1–20. DOI: 10.7717 /peerj.12643
9. Millard DR Jr. Optimum time for cleft lip surgery. In: Millard DRJ, editor. Cleft Craft. The Evolution of Its Surgery: The Unilateral Deformity. *Boston: Little Brown and Co*. Vol.1. 1976. p. 73.
10. Mink van der Molen AB, van Breugel JMM, Janssen NG, Admiraal RJC, van Adrichem LNA, Bierenbroodspot F, et al. Clinical practice guidelines on the treatment of patients with cleft lip, alveolus, and palate: An executive summary. *Journal of clinical medicine.* 2021;10(21):1–14. DOI: 10.3390/jcm10214813
11. Ministry of Health, Republic of Indonesia. Keputusan Menteri Kesehatan Republik Indonesia [Decree of the Minister of Health, Republic of Indonesia] No. HK01.07/Menkes/321/2019. Jakarta, Indonesia: Kementerian Kesehatan RI; 2019 p. 1–44. Available at: https://paralegal.id/peraturan/keputusan-menteri-kesehatan-nomor-hk-01-07-menkes-321-2019/
12. Hammoudeh JA, Imahiyerobo TA, Liang F, Fahradyan A, Urbinelli L, Lau J, et al. Early Cleft Lip Repair Revisited: A Safe and

Effective Approach Utilizing a Multidisciplinary Protocol. *Plastic and Reconstructive Surgery–Global Open.* 2017 Jun 1;5(6): 1–9. DOI:10.1097/GOX.0 00000000000 1340

13. Sandberg D, Magee W, Denk M. Neonatal Cleft Lip and Cleft Palate Repair*. AORN Jounal*. 2002; 75(3): 490–499. DOI:10.1016/S0001-2092 (06)61171-X
14. Roohani I, Trotter C, Shakoori P, Moshal TA, Lasky S, Manasyan A, et al. Lessons Learned from a Single Institution's Eight Years of Experience with Early Cleft Lip Repair. *Medicina (Lithuania).* 2023;59(10): 1741. DOI:10.3390/medicina59101 741
15. Wlodarczyk JR, Wolfswinkel EM, Liu A, Fahradyan A, Higuchi E, Goel P, et al. Early Cleft Lip Repair: Demonstrating Efficacy in the First 100 Patients. *Plastic and reconstructive surgery.* 2022; 150(5): 1073–80. DOI:10.1097/PRS.000000 0000009634
16. Kondra K, Stanton E, Hammoudeh J. Rethinking the Rule of 10s: Early Cleft Lip Repair Improves Weight Gain. *The Cleft Palate Craniofacial Journal*. 2012. 60(3): 306-312. DOI:10.1177/1055 6656211062042
17. Liu A, Wlodarczyk J, Fahradyan A, Urata M, Hammoudeh J. The Effect of Early Cleft Rhinoplasty on Nasal Molding. *Journal of Oral and Maxillofacial Surgery.* 2020; 78(10): e60. DOI: 10.1016/j.joms.20 20.07.120
18. Millard DRJ. Increasing vertical length of celft edges. In: Millard DR Jr, editor. Cleft Craft. The Evolution of Its Surgery: The Unilateral Deformity. *Boston: Little Brown and Co.* 1976. Vol.1.p. 97.
19. Moenadjat Y. Tata laksana dini Berorientasi sistem muskularis [Early management oriented towards the musculoskeletal system]. editor. Jakarta: Departemen Klinik Ilmu Bedah Fakultas Kedokteran Universitas Indonesia; 2021.
20. Bennun RD, Genecov D. Unilateral cleft lip and nose repair. In: Bennun RD, Harfin JF, Sandor GK, Genecov D, editors. Cleft lip and palate management A comprehensive atlas. *New Jersey: Wiley Blackwell;* 2016. p. 113–42. DOI:10.1002/97811190508 58.ch9
21. Alonso N and Raposo-Amaral C. Unilateral Cleft Lip Repair. In: Alonso N, Raposo-Amaral C, editors. Cleft Lip and Palate Treatment: A Comprehensive Guide. Cham, *Switzerland: Springer International Publishing AG*; 2018. p. 83–110. DOI:10.1007/978-3-319-63290-2
22. Tse RW, Fisher DM. Unilateral Cleft Lip Repair: Anatomic Subunit Approximation Technique. In: Global Cleft Care in Low-Resource Settings. Swanson, JW. *Springer Nature Switzerland; 2021*. p. 129–141. DOI:10.1007/978-3-030-59 105-2_13
23. Strenacikova V, Malina R. Primary Repair of Cleft Lip and Nose in the Neonatal Period. *Acta Medica Martiniana*. 2018; 18(1): 42–8. DOI:10.2478/acm-2018-0006
24. Millard DR Jr. The original advancement gradually changes. In: Millard DR Jr, editor. Cleft Craft. The Evolution of Its Surgery: The Unilateral Deformity. *Boston: Little Brown and Co.*1976. 1: 235.
25. Tse R. Unilateral cleft lip: Principles and practice of surgical management. *In Seminars in plastic surgery*. 2012;4:145-155. Thieme Medical Publishers. DOI:10.1055/s-003 3-1333884
26. Millard DR Jr. The evolution of the rotation and the elevation of Flap c. In: Millard DR Jr, editor. Cleft Craft. The Evolution of Its Surgery: The Unilateral Deformity*. Boston: Little Brown and Co*. 1976. 1:217.
27. Ogimoto M, Yokota Y, Isomura ET, Tanaka S, Kogo M. 3D morphological changes of the lip and face in patients with cleft lip and alveolus: The comparison of the lip development of incomplete and complete cleft lips under 3 months of age. *Oral Science International.* 2023; DOI: 10.1002/osi2.1219

28. Piccinini PS, Girelli P, Dias GF, Chedid GB, Ramos RFM, Uebel CO, et al. History of plastic surgery: Sir Harold Gillies, a pioneer of reconstructive plastic surgery. *Revista Brasileira de Cirurgia Plástica,* 2017; 32(4): 608–15. DOI:10.59 35/2177-1235.2017RBCP 0099
29. Thompson JF. Harold Gillies, pioneer of modern plastic surgery, and Donald Morton, pioneer of modern surgical oncology: Master problem-solvers and surgical role models.*Journal of Plastic, Reconstructive & Aesthetic Surgery.* 2023; 87: 24–32. DOI:10.1016/j.bjps.2023.09. 047
30. Elkalla H, Awad SM, Sadakah AA, Elhousseiny AY. Effect of Cleft Palate Repair Using Alveolar Extension Palatoplasty Technique on Eruption of Primary Teeth. *Mansoura Journal of Dentistry.* 2021;8:36–40.
31. Agrawal K. Cleft palate repair and variations. *Indian Journal of plastic surgery.* 2009; 42(S01): S102-S109. DOI:10.1055/s-0039-1699382
32. Carstens MH. Alveolar Extension Palatoplasty_ The Role of Developmental Field Reassignment in the Prevention of Sequential Vascular Isolation and Growth Arrest. In: Carstens MH, editor. The Embryologic Basis of Craniofacial Structure. *Cham: Springer International Publishing*; 2023. p. 1307–1387. DOI:10.1007/978-3-031-15636-6_15
33. Salyer KE, Rozen SM, Genecov ER, and Genecov DG. Unilateral cleft lip-approach and technique. *In Seminars in plastic surgery,* 2005. 19(4):313-328. Copyright© 2005 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. DOI: 10.1055/s-2005-925904
34. Lee MK, Yen SLK, and Allareddy V. Hospitalization outcomes of cleft lip repair in neonates across the United States. *The Cleft Palate-Craniofacial Journal.* 2018; 55(4): 528–35. DOI:10.1177/ 1055665617726531