DOI: https://doi.org/10.53555/nnmhs.v9i4.1646 Publication URL: https://nnpub.org/index.php/MHS/article/view/1646

MANAGEMENT IN CLEFT LIP AND PALATE SURGERY : A SYSTEMATIC REVIEW

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Abstract

Cleft lip and palate, sometimes referred to as labioplatoschizis, is one of the most common types of congenital disorders found in Indonesian babies. A person is said to have cleft lip and cleft palate if they have a cleft in their upper lip as well as a cleft in the roof of their mouth, which results in a direct connection between their nostril and mouth. This condition is also known as cleft lip and palate syndrome. This disorder could be hereditary or it could be acquired. Both the cleft lip and the cleft palate can happen on their own (just the cleft lip or just the cleft palate), or they can happen simultaneously. (cleft lip and cleft palate). The embryological process of facial structure creation is integrally related to the pathophysiology of orofacial clefts, which can occur on the lip (labioschisis), palate (palatoschisis), or both. Orofacial clefts can be divided into three categories: labioschisis, palatoschisis, and both. (also known as labiopalatoschisis). Clefts of the lip or palate are a possibility. Cleft lips are caused by the failure of the maxillary bone to fuse with the bones of the palate and the nasal passageway. No matter what kind of tissue is involved, the technique for surgical removal is the same. The surgeon will work to restore the patient's normal anatomy and physiology and will also make an effort to rehabilitate their mental health. There is an increased likelihood of death or morbidity in those who have cleft lips, palates, or labiopalatoschisis. Syndromes associated with cleft palate are associated with an increased risk of death and morbidity. Morbidity is increased when there are complications.

Keyword: *Cleft lip and palate; Correction; Labioplatoschizis; Surgery*

INTRODUCTION

Labioplatoschizis, also known as cleft lip and palate, is a prevalent form of congenital disorder in Indonesia. If a person has a cleft in their upper lip as well as a cleft in the roof of their mouth, resulting in a direct connection between their nostril and mouth, they are said to have cleft lip and cleft palate. This condition may be inherited or acquired. Cleft lip and cleft palate can occur separately (either cleft lip or cleft palate alone) or together (cleft lip and cleft palate).[1,2] Cleft lip incidence varies by ethnic group. There were 2.10 births per 1000 Asians, 1 births per 1000 Caucasians, and 0.41 births per 1000 African-Americans.[1,3,4]

Cleft lip and palate occur between 3,000 to 6,000 times every year in Indonesia, or one case per thousand newborns. Cleft lip and palate accounted for 46% of all cases, cleft palate (isolated cleft palate) for 33%, and cleft lip alone accounted for 21%. Left-sided clefts are twice as common as right-sided ones. Cleft lip and palate are more common in males, but cleft palate is more common in females.[1,3,4] A cleft lip and palate can be produced by a combination of environmental causes, such as teratogenic chemical exposure, and inherited factors during fetal development.[5,6]

Smoking during pregnancy doubled the risk of cleft palate. Cleft lip and palate are congenital deformities linked to alcohol, retinoic acid, and other anticonvulsants. Folate, vitamin B6, and zinc deficiencies may also cause cleft deformities.[5,6] The embryological process of facial structure formation is integrally tied to the pathophysiology of orofacial clefts, which can occur on the lip (labioschisis), palate (palatoschisis), or both (also known as labiopalatoschisis). Lip or palate clefts can occur. Cleft lips occur when the maxillary bone fails to fuse with the palate and nasal passage bones.[6,7]

Lip and palate clefts can cause speech and dietary issues. Infants with lip or palate clefts have trouble breastfeeding or eating liquid food. Malnutrition and weight loss may ensue. Verbal communication is more challenging for people with cleft palates and lips.[2,6] Cleft lip and palate therapy is difficult. For greatest results, cleft care must be ongoing from infancy to adulthood. Cleft lips and palates can sometimes be repaired. This condition can cause an asymmetrical face, nutritional issues, hearing and speech issues, ear infections, abnormal tooth growth, and, most importantly, aesthetic issues that may affect psychological development. and the patient's mental health.[2,8]

Various medical specialists must work together to treat cleft palate. Cleft teams, which treat cleft palates and provide long-term follow-up, provide interdisciplinary care. The multidisciplinary team that treats cleft palates typically includes surgeons, dentists, medical social workers, medical rehabilitation / physiotherapy specialist, ear, nose, and throat (ENT) specialist (to assess children's hearing and treat ear infections), pediatrician, pediatrician, ophthalmologist (to check the eyesight of children who may have a syndrome), nutritionists, psychiatrists (to assist mothers in observing child health and child care).[9,10] The presentation of information regarding management in cleft lip and palate surgery.

METHODS

The Recommended Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 initiative met the data collecting, processing, and reporting standards. A variety of factors affected the decision to adopt new restrictions. This literature review looks at the management of cleft lip and palate surgery. According to the study's main findings, all written documents pertaining to management in cleft lip and palate surgery must be written in English. This systematic review looked at scholarly articles published after 2015 that met the inclusion criteria for the study. Editorials, entries without a DOI, reviews of previously published books, and duplicate journal articles that are excessively long will be excluded from the collection.

The search for studies to be included in the systematic review was carried out from April, 10th 2023 using the PubMed and SagePub databases by inputting the words: “cleft”, “lip”, “palate” and “surgery”. Where *("cleft lip"[MeSH Terms] OR ("cleft"[All Fields] AND "lip"[All Fields]) OR "cleft lip"[All Fields]) AND ("palatalization"[All Fields] OR "palatalized"[All Fields] OR "palatally"[All Fields] OR "palatals"[All Fields] OR "palate"[MeSH Terms] OR "palate"[All Fields] OR "palatal"[All Fields] OR "palates"[All Fields]) AND ("surgery"[MeSH Subheading] OR "surgery"[All Fields] OR "surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "general surgery"[MeSH Terms] OR ("general"[All Fields] AND "surgery"[All Fields]) OR "general surgery"[All Fields] OR "surgery s"[All Fields] OR "surgerys"[All Fields] OR "surgeries"[All Fields])* is used as search keywords.

The acceptability of studies was influenced by their abstracts as much as their names. As a result, they must rely on historical documents. Because study results are generally consistent, unpublished English papers are required. Only studies that matched the inclusion criteria were examined for inclusion in the systematic review. This limits the search results to to those that meet the criteria. The evaluation procedure is divided into the following sections. Authors, publishing dates, geographical locations, activities, and reasons were all considered in the study. The database ran through and eliminated any duplicate articles after EndNote had logged the results of a search.

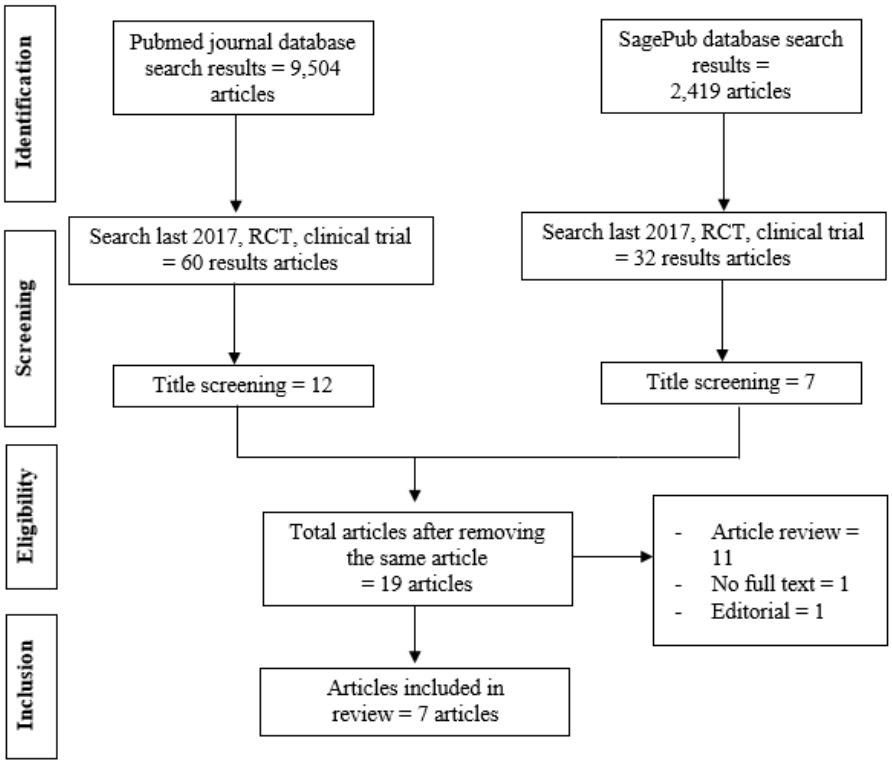

Figure 1. Article search flowchart

It was decided that two persons would go over the titles and abstracts of the various papers. Each writer carefully analyzed both the abstract and title of the relevant article before picking which article to discuss. Every paper that meets the review criteria will be submitted to a thorough and in-depth study. After we have completed our investigation, we will go over any pertinent scholarly publications that we may have overlooked the first time around. This rule specifies the criteria to be applied for analyzing documents. For maximum efficiency, the process of identifying objects that will be inspected in the future should be streamlined. Why was one study chosen over all others to be included in the synthesis of the available literature?

RESULT

Study showed the UCLP group exhibited a wide range of craniofacial morphology, as determined by cephalometric examination. In general, they exhibit substantial maxillary retrusion and diminished intermaxillary relationships compared to non-cleft children of the same age. In addition, the vertical relationship of the jaws was diminished, primarily due to a reduction in maxillary inclination. The maxillary and mandibular incisors were retroclined. The significance of these differences is likely to increase as the children age.[11]

Prospective, balanced, randomized, parallel-group, single-blinded, controlled trial. Thirty-one nonsyndromic unilateral complete cleft lip and palate newborns were randomly assigned to control or taping groups. All newborns in the taping group got horizontal tape between the labial segments to reduce the cleft gap. This group had no other interventions. At treatment (T1), surgical lip repair (T2), and 2 weeks after surgical lip repair (T3), the infants in both groups were photographed and filmed. Calibrated photos and video clips assessed outcomes. Blinded assessors used computer software to measure standardized pictures at T1, T2, and T3. The tape group had significant changes in all parameters at T2 before surgical lip restoration compared to the control group. T3 showed no changes across groups.[12]

Table 1. The litelature include in this study

Author	Origin	Method	Sample	Conclusion
Küseler, 2021[11]	Finland	Randomized Controlled Trial	429 eight-year-old unilateral cleft lip and palate (UCLP)	The findings of this study offer suggested norms for the young UCLP prior to the initiation of any orthodontic treatment and have the potential to be helpful to the clinician in the process of future treatment planning.
Abd El-Ghafour, 2022[12]	Egypt	Randomized Controlled Trial	Thirty-one infants with nonsyndromic unilateral complete cleft lip and palate	Taping is an effective int erve nti on for modifying the app eara n ce of the nose and lips prior to undergoing sur gical lip resto ration. Both groups achieved aesthe tic results comparable to one another following lip reco ns truction surgery.
Astrada, 2020[13]	Argentina	Randomized Controlled Trial	291 patient with CLP	According to the findings of this study, we are able to recommend the Cars tens' version, along with the adjustments that were provided by the authors,

				as a helpful surgical app roach that can be applied in primary full unilateral or bilateral cleft palate repair to reduce post-op frequent issues. This rec ommendation is based on the findings of our research.
Abd El-Ghafour, 2020[14]	Egypt	Randomized Controlled Trial	Thirty-one, nonsyndromic infants with UCLP	It would appear that altering the maxillary arch dimensions (MADs) prior to surgical lip repair in infants with UCLP can be accomplished effectively by the use of taping alone.
Sjamsudin, 2017[3]	Indonesia	Retrospective study	1596 cases	The most common anomaly was cleft lip and palate, which accounted for 50.53 percent of all cases, followed by cleft lip (24.42%) and cleft palate (25.05%). The cleft was discovered in male patients 55.95 percent of the time more commonly than it was in female patients (44.05%). Clefts on the right side were found 25.02 percent of the time, whereas left-sided clefts were recorded 44.29% of the time. 20.08% of patients were found to have a family history of the condition. The majority of the patients come from less privileged backgrounds.
Ruslin, 2019[15]	Indonesia	Prospective study	150 cases	No perioperative or postoperative deaths occurred in this trial. In 23 of 98 surgeries, anesthesia-related co mpl icati ons occurred. Intrao perati ve and early postoperative cleft lip/palate problems were evalu ated.
Michael, 2023[16]	Nigeria	retrospective cohort study	314 cleft surgeries	The two-flap palatoplasty de veloped by Bardachs has repla ced the Von Langenbeck pala toplasty that was previously in use. In subsequent years, the intra-velar veloplasty and the Fisher method of lip repair were both developed. Children who were born with a cleft lip on only one side had a greater chance of undergoing a late primary repair.

Sjamsudin, et al (2017)[3] showed the most common anomaly was cleft lip and palate, which accounted for 50.53 percent of all cases, followed by cleft lip (24.42%) and cleft palate (25.05%). The cleft was discovered in male patients 55.95 percent of the time more commonly than it was in female patients (44.05%). Clefts on the right side were found 25.02 percent of the time, whereas left-sided clefts were recorded 44.29% of the time. 20.08% of patients were found to have a family history of the condition. The majority of the patients come from less privileged backgrounds. Ruslin, et al (2019) study showed there were no deaths that occurred during or after the surgical procedure. Anesthesia-related problems occurred in 23 of a total of 98 surgical procedures. The intraoperative and early postoperative complications associated with cleft lip and palate were assessed.[15]

Michael, et al (2023)[16] conduected a study with 314 cleft surgery. The mean age of the patients was 58.08 ± 99.65 months. The median age and weight of the patients were 11 (IQR:5–65) months and 8 (IQR: 5.5–16) kg respectively. Over half (n = 184, 58.6%) of the cleft surgeries were for primary repairs of the lip and a third (n = 94, 29.9%) were surgeries for primary repairs of the palate. Millard's rotation advancement flap was the commonest lip repair technique with Fishers repair introduced within two years into the end of the study.

Bardachs two flap palatoplasty has replaced Von Langenbeck palatoplasty as the commonest method of palatal repair. The prevalence of late primary cleft lip repair was about a third of the patients having primary cleft lip surgery while the prevalence of late palatal repair was more than two thirds of those who received primary palatoplasty. Compared with children who had bilateral cleft lip, children with unilateral cleft lip had a significantly increased risk of late primary repair (Adj HR: 22.4, 955 CI: 2.59–193.70, P-value = 0.005).[16]

DISCUSSION

Oral-facial clefting, which accounts for over half of craniofacial abnormalities, affects one in seven hundred live neonates. National Center for Health Statistics. The WHO estimates that OFC at birth ranges from 3.4 to 22.9 per 10,000 CL/P births and 1.3 to 25.3 per 10,000 CPO births. Both figures are for affected births. CL/P and CPO prevalence can vary greatly between studies.[17,18] Case definition, inclusion criteria, data sources, and selection bias may explain the disease's prevalence discrepancies.[17,18]

Despite a variety of criteria that could affect inclusion or exclusion, most research show that CL/P is more common than CPO.[17,18] Cleft lip and palate is a major impairment since it prevents people from reaching their potential and contributing to society. Multidisciplinary care of children with orofacial clefts has reduced many of the obstacles associated with this condition in industrialized nations.[6,19] CLP is frequent in men, according to research. Another study found that boys were more likely to have cleft lip and cleft palate, whereas girls were more likely to have cleft palate alone.[20]

Modern cleft lip and cleft palate patient care has evolved as a result of intensive efforts to enhance patients' cognitive, linguistic, dental, dietary, nutritional, and hearing functions. As a result of advances in surgical techniques over the years, patients can now anticipate a high level of cosmetic restoration as opposed to it being the exception.[6,19] Patients generally undergo surgery at the age of less than five years.[3,21] Prior to undergoing surgical lip repair, changing the appearance of the nose and lips with tape is an effective intervention that can be performed. Following lip restoration surgery, both groups were able to attain aesthetically pleasing results that were on par with one another.[12]

Palate healing should take 3–6 months. Some studies recommend cleft correction at 12–18 months, while others claim 1 year may improve speech.[22,23] The treatment and care of individuals with orofacial clefts can vary significantly based on the type of cleft, its severity, the presence of concomitant syndromes, the presence of other birth abnormalities, and the child's age. The recommended age for correcting a cleft lip is three months after the child's birth. For the objectives of our study, the median age at consultation was three months, with an interquartile range of three weeks to thirteen months.[2,17,24]

The surgical procedure is the same regardless of tissue involvement. The surgeon will normalize the patient's anatomy and physiology and try to improve their psychological state.[25] The amount of surgeries and their timing have been hotly debated. Lip repair requires a child to be at least 10 weeks old, 10 pounds, and 10 mg/dl hemoglobin. Most cleft lip and palate centers do surgery at 10–12 weeks. This follows the 10-rule. Rule of 10 requires a youngster to be 10 weeks old.[26] Postoperative complications are rare.[15] Cleft lips, palates, or labiopalatoschisis can increase the risk of death or morbidity. Cleft palate syndromes increase mortality and morbidity. Complications increase morbidity.[27]

CONCLUSION

No matter what kind of tissue is involved, the technique for surgical removal is the same. The surgeon will work to restore the patient's normal anatomy and physiology and will also make an effort to rehabilitate their mental health. There is an increased likelihood of death or morbidity in those who have cleft lips, palates, or labiopalatoschisis. Syndromes associated with cleft palate are associated with an increased risk of death and morbidity. Morbidity is increased when there are complications.

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