Evaluation of Modified Millard's Technique with Premaxilla Shortening in Bilateral Labioplasty at Malahayati Hospital Banda Aceh 2016- 2019

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ABSTRACT

Introduction: Cleft Lip and Palate (CLP) is a congenital abnormality in the form of gaps in the lips, gums and palate. This disorder occurs due to a disruption in the first trimester of pregnancy that causes disruption of the process of fetal growth and development. Surgical techniques for reconstructive surgery vary greatly, but labioplasty using a modified millard technique with premaxillary shortening is a technique that we used in this study with the aim of premaxilla shortening to reduce the tension of the suture wound and will reduce the scar formed in Bilateral labioplasty after surgery.

Method: This research is a cohort with a retrospective approach conducted on labioplasty patients at Malahayati Hospital in Banda Aceh, which was handled in the period of 2016 - 2019. The sample amounted to 23 respondents who will be analyzed using the frequency distribution table.

Results: From the results of the study found male sex as much as 60.9%, the age of patients in the age group 2 years and over as much as 69.6%, 6-9 months evaluation time as much as 87.0%, the diagnosis of complete bilateral labioplasty as much as 65.2% and good outcome in bilateral labioplasty using modified millard technique with premaxilla shortening as much as 73.9%

Conclusion: From the overall it can be concluded that the majority of male sex is the most, the highest in the age group 2 years and above, the most evaluation time is 6-9 months, the most common diagnosis is complete bilateral labioplasty and the most results on bilateral labioplasty using modified millard techniques with premaxillary shortening is good outcome.

Labioschizis or Cleft Lip is the most common case of craniofacial anomaly defects. Cleft lip with or without the palate (CL / P) and palate (CP) is a congenital abnormality that occurs on the lips that can be accompanied by abnormalities on the palate.¹ In classification, the cleft lip can hit both sides called bilateral labioschizis or one

side called unilateral. Or it can also be followed by accompanying defects such as cleft palate and other accompanying defects.²

This research focused on the cleft lip on both sides and commonly known as bilateral labioschizis. Efforts to improve through surgery have been attempted with various techniques. One of them is a surgery

technique initiated by Millard (Rotation Advancement Flap). This technique is considered easier and can restore the lip points to an anatomical point. Muscles in the cleft lip can be rotated to near normal lip muscles.³ Repositioning the maxillary and alveolar segments into a more anatomic position allows the surgeon to repair the lip and associated nasal deformity under more optimal conditions.⁴

But often prominent conditions are found in bilateral labioplasty premaxilla, this causes difficulty for the surgeon because the lip muscles cannot be directly met or when it is forced there will be tension and result in loose stitches a few days later. Millard modification technique with premaxillary shortening is a technique used in this study in order to shorten or reduce premaxilla, so the suture wound tension and scar formed in bilateral labioplasty after surgery would be reduced.⁵

Material and Method

Retrospective reviews from all cases of bilateral cleft lip were performed between September 2016 and September 2019 at Malahayati Hospital. All cases were done under general anaesthesia with orotracheal intubation. Data retrieved from the hospital record which then included into the analysis were sex of patients, month of birth; type cleft deformity, Bermudez Score, and evaluation outcome. A total of 1258 patients were managed for cleft lip and palate deformity during the period. 23 (2%) of these were bilateral cleft lip. There were 9 females and 14 males. Age of patients at time of surgery ranged between 8 and 490 months. Surgical technique employed was Modified Millard's with premaxillary shortening. Surgical outcome was considered satisfactory if there were: Adequate length of the upper lip, symmetrical nostrils, reconstituted philtrum and adequate columella length. There were 17 surgical interventions (73%) which were found to be satisfaction out of 23 cases.

Data collected was subjected to simple statistical analysis using the Statistical Package for Social Sciences (SPSS), SPSS ® for

Windows, version 25.0 (SPSS Inc., Chicago, IL) statistical software package. Frequencies and means of the variables were estimated. Some pre-operative, intra operative and post-operative clinical photographs were also retrieved and were presented.

After having installed the mouth-gag on the vomer bone in front of the center of growth, septumnasal bone, reduction process performed about 1 cm.

Figure 1. Modified Millard's Technique¹

1. Cheiloraphy Bilateral Design
2. Incision in Bilateral Cheiloraphy
3. Philtrum correction
4. Muscles correction
5. Mucosal Suturing
6. Wedge Excision
7. The Result of Cheiloraphy Bilateral

Figure 2. Premaxillary Shortening Surgery Process¹

Modified Millard Operation Techniques with Premaxillary Shortening

1. Mucosal incision is made more or less 2 centimeters to the bone.
2. Using a small rasparatorium, through mucosal incision wounds in the right and left elevation enough,
3. Premaxillary bone will appear clear and enough space to do the reduction with the knife No. 11. The bones along 1 cm are removed until the premaxilla can be pushed posteriorly.
4. Premaxilla should be fixed by using vicryl yarn 3-0 with suture technique, figure of 8 to the right and left Alveolar.¹

Figure 3. A 7 months male with labioplasty using modified millard's technique with premaxilla shortening.¹

1. Preoperative anterior view.
2. Occlusal intra-oral view, incision process at the edge of the premaxilla bone
3. Occlusal intra-oral view, showing vomero-premaxillary suture and the site of the wedge osteotomy of the vomer with a bone cutter.
4. Occlusal intra-oral view, showing the gap after the withdrawal of the wedge osteotomized vomer

Figure 4. Repaired Bilateral Cleft Lip¹³

Table 1. Variable of Evaluation Post Labioplasty¹³

Variable of Evaluation	0 Poor	1 Fair	2 Good
Lips Form Distance from commisura dextra to sinistra and vilmetrion thickness shows symmetrical. Perfome cupid bows looks good	Completely asymmetrical between vilmetrion thickness, Huge discrepancy of more than 2 mm (about).	Less symmetrical, distance columella to cupid bows seems different, There is some discrepancy between about 1-2 mm.	There is not discrepancy or it is less than about 1 mm.
Tension Flap The result after surgery makes filtrum look extracted, cupid bows not performed.	Flap looks tense and so extracted and the vilmetrion looks thin	A little tense but does not interfere with smile when smiling.	No tension, vilmetrion form not thin and not interested
Hipertrofi Swelling in the filtrum so that the protrusion piles over the skin	Swelling was seen above the filtrum, protrusion was evident	Protrusion appears but does not interfere with vilmetrion	No visible protrusion of the collum filtrum, formed properly.
Discoloration Color discrepancy changes the former stitches	Color discrepancy of the former stitches due to the process of healing the wound	Discoloration is seen but does not occur in all former stitches	There is no discoloration on the stitches, the results are good

Spreading Widening of the stitches appears	<p>widening of the actual stitches due to the process of healing wounds</p>	<p>Widening is seen but does not occur in all stitches</p>	<p>No widening of the stitches, better results</p>
Suture Marks Suture marks appear in the area of the filtrum and vilmetrion	<p>There are visible stitches in the area of the filtrum and vilmetrion</p>	<p>Suture marks appear but not all stitches</p>	<p>No visible form of collum filtrum, suture is formed properly.</p>

Figure 5. Patient with Repaired Bilateral Cleft Lip after evaluation within 6-12 month

6-Month Evaluation		
INDICATOR		Score
Lips Form		2
Tension Flap		2
Scar Quality	Hypertrofi	2
	Discoloration	2
	Spreading	2
	Suture Marks	2
Total Score		12

9-Month Evaluation		
INDICATOR		Score
Lips Form		2
Tension Flap		2
Scar Quality	Hypertrofi	1
	Discoloration	1
	Spreading	2
	Suture Marks	2
Total Score		10

Outcome Post Labioplasty

The frequency distribution of post labioplasty outcomes with the modified millard technique with premaxillary shortening of bilateral labioschizis patients who have been operated. The result obtained through poor, moderate and good outcome.

Table 1. Post labioplasty outcome with modified millard technique with premaxillary shortening of bilateral complete labiopalatoschizis patients at Malahayati Hospital Banda Aceh

<i>Outcome Post Labioplasty</i>	Frequency (n)	Percentage (%)
Poor	0	0,0
Fair	6	26,1
Good	17	73,9
Total	23	100

Graph 1. Post labioplasty outcome with modified millard technique with premaxillary shortening of bilateral complete labiopalatoschizis patients at Malahayati Hospital Banda Aceh

Based on table 1 and graph 1 it was found that the post labioplasty outcome with the modified millard technique with premaxillary shortening of bilateral complete patients was moderate as many as 6 respondents (26.1%), Good as many as 17 respondents (73.9%).

Age

The frequency distribution of post labioplasty patients based on age, obtained in this study can be seen in table 2 and graph 2

Table 2.1 Frequency Distribution of Post Labioplasty Patients by Age at Malahayati Hospital Banda Aceh

Age	Frequency (n)	Percentage (%)
6-12 Month	4	17,4
1-2 Year	3	13,0
>2 Year	16	69,6
Total	23	100

Graph 2. Frequency Distribution of Post Labioplasty Patients by Age at Malahayati Hospital Banda Aceh

Based on table 2.1 and graph 2 it was found that the most post labioplasty patients were found at age > 2 years as many as 16 respondents (69.6%), 6-12 months as many as 4 respondents (17.4%), 1-2 years as many as 3 respondents (13.0%).

Table 2.2 Age Frequency for Outcome Distribution of Post Labioplasty Patients by Malahayati Hospital in Banda Aceh

Age	Outcome				Total	
	Fair		Good		n	%
	n	%	n	%		
6-12 Month	3	13,0	1	4,3	4	17,4
1-2 Month	1	4,3	2	8,7	3	13,0
>2 Month	2	8,7	14	60,9	16	69,6
Total	6	26,1	17	73,9	23	100

Based on table 2.2, it was found that the most post labioplasty patients were found at age > 2 years as many as 16 respondents (69.6%). The results obtained were moderate respondents (8.7%) and good as many as 14 respondents (60.9%) aged 6-12 years as many as 4 respondents (17.4%) the results obtained are moderate outcomes of 3 respondents (13.0%) and good as many as 1 (4.3%) and at the age of 1-2 years as many as 3 respondents (13, 0%) the result of moderate outcome is 1 respondent (4.3%) and good is 2 (8.7).

Table 3.1 Frequency Distribution of Post Labioplasty Patients by Gender at Malahayati Hospital, Banda Aceh

Gender	Frequency (n)	Percentage (%)
Male	14	60,9
Female	9	39,1
Total	23	100

Graph 3 Frequency Distribution of Post Labioplasty Patients by Gender at Malahayati Hospital, Banda Aceh**Gender**

The frequency of gender distribution patient with labioplasty, obtained in this study can be seen in table 3 and graph 3

Based on table 3.1 and graph 3 it was found that most post labioplasty patients were male as many as 14 respondents (60.9%) and females as many as 9 respondents (39.1%).

Table 3.2 Distribution of Outcome Frequency of Patients with Labioplasty by Gender at Malahayati Hospital, Banda Aceh

Gender	Outcome				Total	
	Moderate		Good		n	%
	n	%	n	%		
Male	6	26,1	8	34,8	14	60,9
Female	0	0,0	9	39,1	9	39,1
Total	6	26,1	17	73,9	23	100

Based on table 3.2 it was found that post labioplasty patients were found most in the male gender as many as 6 respondents (26.1%) obtained moderate and good outcome as many as 8 respondents (34.8%) and women as many as 9 respondents (39.1 %) good outcome is obtained.

Lips Form

The frequency distribution of the lip shape of post labioplasty patients obtained in this study can be seen in table 4 and graph 4.

Table 4.1 Distribusi Frequency Pasien Post Labioplasty berdasarkan Bentuk Bibir di Rumah Sakit Malahayati Banda Aceh

Bentuk Bibir	Frequency (n)	Persentase (%)
Simetris	18	78,3
Tidak Simetris	5	21,7
Total	23	100

Grafik 4 Frequency Distribution of Post Labioplasty Patients based on Lip Shape in Malahayati Hospital Banda Aceh

Based on table 4.1 and graph 4 it was found that the lip shape of labioplasty was found most symmetrically as many as 18 respondents (78.3%), and asymmetrical as many as 5 respondents (21.7%).

Table 4.2 Distribution of Outcome Frequency of Patients with Labioplasty by Lips Form at Malahayati Hospital, Banda Aceh

Lips Form	Outcome		Total	
	Fair	Good		
	n	%	n	%
Symmetrical	1	4,3	4	17,4
Asymmetrical	5	21,8	13	56,5
Total	6	26,1	17	73,9

Based on table 4.2 it was found that the lips form in post labioplasty patients was found to be most symmetrical as many as 18 respondents (78.3%). symmetrical as many as 5 respondents (21.7%) with moderate outcome as much as 1 respondent (4.3%) and good as many as 4 respondents (17.4%)

Table 5.1 Frequency Distribution of Post Labioplasty Patients based on Tension Flap at Malahayati Hospital Banda Aceh

Tension Flap	Frequency (n)	Persentase (%)
Tension	6	26,1
Normal	17	73,9
Total	23	100

Table 5.2 Distribution of Outcome Frequency for Labioplasty Patients based on Tension Flap at Malahayati Hospital, Banda Aceh

Tension Flap	Outcome		Total	
	Fair	Good		
	n	%	n	%
Tension	2	8,7	4	17,4
Normal	4	17,4	13	56,5
Total	6	26,1	17	73,9

Graph 5 Frequency Distribution of Post Labioplasty Patients based on Tension Flap at Malahayati Hospital Banda Aceh **Tension Flap**

The frequency distribution of tension flaps in post labioplasty patients obtained in this study can be seen in table 5 and graph 5 as follows.

Based on table 5.1 and graph 5 it was found that the most frequent tension flap in labioplasty was not tense as many as 17 respondents (73.9%), and tense as many as 6 respondents (26.1%).

Based on table 5.2, it was found that the tension flap in post labioplasty patients was found to be the least tense of 17 respondents (73.9%). The moderate outcome was 4 respondents (17.4%) and good was 13 respondents (56.5%) and tense as many as 6 respondents (26.1%)

with moderate outcome as much as 2 respondents (8.7%) and good as many as 4 respondents (17.4%)

6. Scar Quality

The quality of the scar using the bermudes score in post labioplasty patients can be seen in table 6.1 and graph 6

Table 6.1 Frequency Distribution of Scar Quality of Post Labioplasty Patients in Malahayati Hospital Banda Aceh

Scar Quality	Frequency (n)	Percentage (%)
Poor	0	0
Fair	6	26,1
Good	17	73,9
Total	23	100

Graph 6 Frequency Distribution of Scar Quality in Post Labioplasty Patients at Malahayati Hospital Banda Aceh

Based on table 6.1 and graph 6, it was found that the quality of scars in post labioplasty patients was found to be at good 17 respondents (73.9%), and 6 respondents (26.1%) fair.

Table 6.2 Distribution of Frequency Outcome of Labioplasty Patients based on Scar Quality at Malahayati Hospital, Banda Aceh

Scar Quality	Outcome				Total	
	Fair		Good			
	n	%	n	%	n	%
Fair	3	13,1	3	13,0	6	26,1
Good	3	13,1	14	60,9	17	73,9
Total	6	26,1	17	73,9	23	100

Based on table 6.2, it was found that the quality of scar in post labioplasty patients was found to be at most good as many as

17 respondents (73.9%) obtained fair outcome results as many as 3 respondents (13.1%) and good as many as 14 respondents (60.9%) and fair as many as 6 respondents (26.1%) with fair outcomes as many as 3 respondents (13.1%) and good as many as 3 respondents (13.1%).

Result

The follow-up period ranged between 6 and 12 months. We examined the shape of the lips, tension flaps along with an assessment of the quality of the scar using Bermudez Score. None of the patients had any major complication, such as loss of the premaxilla for any ischemic episode or vascular compromise of the premaxilla or skin dehiscence of the lip. During followup, it was noted that the premaxilla was minimally mobile in all patients. 17 of 23 patients achieved good lip repair and 6 of them had fair results, in all cases with adequate muscle repair, with excellent lip symmetry, prolabium and Cupid bows and good scars. No fistula was found. Evaluation such as speech is recommended for the next research to assess the possibility of hypernasal or articulation disorders. However, as expected, it has not been recommended because there are should need any improvements to the palate and also the effects of postoperative treatment itself.

Discussion

Treatment as early as possible is the best course of surgery because surgical scars are less visible after surgery in infants.⁷ In addition, bone tissue and soft cartilage can be formed in infants make correction easier with surgery, and normal oral

function can be formed after the lip structure has been repaired anatomically.

Premaxilla protrusion in complete bilateral labioschizis can be seen at 10 weeks gestational age.⁸ Growth of the anterior septum and anterior vomero-premaxillary is uncontrolled, combined with a lack of continuity of bone and soft tissue, and impaired balance between oral muscles and tongue is thought to result in deformity in bilateral premaxilla.⁹ Uncontrolled growth in the premaxilla can result in significant functional problems such as the absence of proper anterior occlusion, lateral mobility of the premaxillary segment and labial oronasal orisnasal fistula or palate causing a problem that results in disruption of speech and cleanliness mouth.¹ Repair of bilateral cleft lip with prominent premaxilla remains one of the most challenging problems for surgeons. To our knowledge, there are reports of one-stage surgery with premaxillary shortening or vomerine ostectomy to repair complete bilateral labioschizis with protruding premaxilla.¹⁰

Followed by premaxilla shortening or vomerine ostectomy, followed by gingivoperiosteoplasty become a technique to achieve adequate stability of the premaxilla in its new position, so that it can close the alveolar gap bilaterally, followed by sewing the orbiculus muscle then using modified Millard technique to repair the lips. Primary nasal correction is not performed because it increases the risk of damaging the philtrum and premaxilla vascularization that has been performed surgery.¹¹

The possibility of displaced premaxilla is very possible. treatment alone is not possible. On the other hand, surgical repositioning is technically

recommended to prevent disruption of the premaxilla blood supply. A two-stage procedure is recommended in subsequent studies.¹² Premaxilla shortening, in combination with correction of lip slits, has also been reported to be successful in certain cases, especially in older patients. This procedure allows closure of large fistulas (increasing the likelihood of successful lip reconstruction without tension on the skin of the lips), facilitating overjet and overbite correction.¹²

Evaluation by assessing the shape of the lips, tension flaps and scar quality becomes an important correction for the surgeon to be a reference in conducting further operations. Researchers use a modified scoring system in cases of bilateral labioschizis complete with premaxillary shortening. The need for standardization in assessing the results of labioplasty is very important to improve health services by an organization, hospital or medical expert so that it gives better recommendations and actions for labioplasty in the future.¹³

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