

Comparison of outcome of Modified Millard's Incision and Delaire's Functional Method in Primary Repair of Unilateral Cleft Lip

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ABSTRACT

Objective: To compare the outcomes of two different designs of skin incision used for surgical correction of unilateral cleft lip.

Study Design: Randomized Control Trial study

Place and Duration of Study: This study was conducted at the Dental Section of Nishtar Hospital Multan from October 2016 to May 2017.

Materials and Methods: was conducted after ethical approval from institute ethical board. Data was collected than arranged over Microsoft Excel 2007. Variables then formed or for further statistical results data was entered in SPSS version 15.0. Variables were assessed by using. Mean and SD was calculated and presented for quantitative data like age and weight. Frequency (percentages) were calculated and presented for qualitative data such as gender and outcome variables. Post stratification statistical chi square test was used to see effect modification. P value ≤ 0.05 was considered as significant.

Results: Out of 100% (n=66) unilateral cleft lip patients, 50% (n=33) patients each were operated with Modified Millard's incision and Delaire's functional method respectively. Various parameters were analyzed—white roll match, cupid bow, lip length and alar dome demonstrated favorable measurements in Millard's group and the vermilion match, scar appearance, nostril symmetry and alar base was better in Delaire's methods. All the differences in these parameters were not statistically significant, except lip length (p=0.023).

Conclusion: Overall clinical outcomes like vermilion match, white roll, and cupid bow appearance was similarly effective in both techniques. Lip length outcome was better in modified Millard's incision technique. Similarly nasal symmetry was better in Delaire's functional method. So it was found that one technique was essentially as good as the other.

Key Words: Modified Millard's, Delaire's Functional Method, Primary Repair, Unilateral Cleft Lip.

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INTRODUCTION

In our society people has more focus over facial beauty. Any damage or change in facial beauty leads to stress for individuals, their families and also on their relationships. Any facial defacement leads to severe stress for sufferers. Cleft lip and Cleft Palate both are also considered as facial anomalies which occur by birth or it involves deformities of facial bones.¹ Now these birth defects arising as health problems in public. Incidence of Cleft lip and palate do not affect mortality or morbidity in a greater rate but incidence of Cleft lip and Cleft palate is 1 in 800 live births.²

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Incidence of these anomalies varies in different races. In Asians its incidence is 1 out of 500 live births, while in Caucasians its incidence is 1 out of 750 live births. In Africans Americans its incidence is 1 out of 2000 live births^{3,4}. This shows that incidence of these birth defects is common in Asians and least common in Africans and Americans. ^(3,4). Gender wise cleft lip or palate mainly occur in the males while isolated cleft palate rate is higher in females.

Incidence of cleft lip and cleft palate together is about 45 % while of single cleft palate is 35% and of single cleft lip is 20%. Incidence of one sided cleft lip is 9 times greater than the cleft lip of two sides^{3,5}. These anomalies are surgically been treated by Surgeons from 2000 years. First cleft lip surgery was performed in China by a Chinese physician^{6,7}. To gain more effective results, different procedures were used to perform. Different amendments were done by different physician in those procedures to get best quality results of cleft lip repair.

Individuals who took interest in cleft lip repair are Le Mesurier in 1949, Tennison in 1952, Randall in 1959, Pfeifer in 1970 or Millard in 1976.⁶⁻⁸ Mirault was the first person who introduced the increasing lip length

technique by using small flap. But this technique was not able to rebuilt the Cupid's bow. After this, Le Mesurier further explained many techniques to form artificial Cupid's bow with rectangular flap. This Technique is considered as an effective way to correct clefts, cupid bow, philtral dimple as well as nasal tip correction. Length of the lip was highly appreciated through this technique.^{9,10} After these advancements all attentions were diverted towards the correction of anatomical changes of cleft lip. Through repairing of orbicularis oris muscle the shape of the upper lip was improved which got more precision with the passage of age.¹¹

The functional repair of cleft lip was explained by Delaire. Through Delaire technique, entire functional matrix was lifted by dissecting sub periosteal up to the nasal septum level. Firstly the skin got short due to inactivity of underlying muscle. On correct apposition of muscle the activity of muscle regained which results in lengthening of skin.^{12,13} It also has disadvantage of longer lip. Still there is no technique which give ideal functional result.⁶

MATERIALS AND METHODS

Prospective study was conducted from October 2016 to May, 2017 after ethical approval from institute ethical board. Informed consent was obtained from patients guardians after complete elaboration of study. Purpose of this study was to judge the results after surgery of upper lip and nose in unilateral cleft lip patients by using both Millard's and Delaire's Technique. Study was performed in Dental section of Nishtar hospital Multan. Patients of age 10 to 18 years and having unilateral cleft lip were selected for the study. Any patients with bilateral cleft lip and operated other than Millard's and Delaire's method were excluded from the study. Non probability consecutive sampling technique was used.

All patients of age 10 weeks to 20 years were selected for study. Patients with unilateral cleft lip were studied. Surgical procedure was performed by qualified or skilled surgeons under general Anesthesia. Half patients were operated with Modified Millard's incision technique^{9,10}, while other half were operated by Delaire's functional method^{12,13}. Following things were noticed in both operated individual results which includes, White roll match, Vermillion match, Scar appearance, Cupid bow, lip length, nostril symmetry, alar dome and alar base with respect of Steffensen's Criteria.^{6,14,15} These surgeries were performed by same surgeon.

Data was collected than arranged over Microsoft Excel 2007. Variables then formed or for further statistical results data was entered in SPSS version 15.0. Variables were assessed by using . Mean and SD was calculated and presented for quantitative data like age and weight. Frequency (percentages) were calculated

and presented for qualitative data such as gender and outcome variables. Post stratification statistical chi square test was used to see effect modification. P value ≤ 0.05 was considered as significant

RESULTS

Out of 100% (n=66) unilateral cleft lip patients, 50% (n=33) patients each were operated with Modified Millard's incision and Delaire's functional method respectively. The mean age and weight of the patients, in Millard's group, was 13.85 ± 1.88 months and 6.69 ± 1.23 kg respectively. There were 54.5% (n=18) males and 45.5% (n=15) females. The mean age and weight of the patients, in Delaire's group, was 13.96 ± 1.44 months and 6.81 ± 1.33 kg respectively. There were 66.7% (n=22) males and 33.3% (n=11) females. No significant difference was found between demographic variables in groups. (Table. 2).

Table No. 1: Grading criteria

Parameters	Good	Average	Poor
White roll match	Perfect	Diparity of <1 mm	Disparity of >1 mm
Vermilion match	Perfect	Diparity of <1 mm	Disparity of >1 mm
Scar appearance	No hypertrophy	Hypertrophy with no disturbance of cupid bow or columella	Hypertrophy with disturbance of cupid bow or columella
Cupid bow	Perfect	Distortion on cleft side is <2 mm	Distortion on cleft side is >2 mm
Lip length	Equal length on cleft and non-cleft side	Shorter of cleft side >1 mm <2 mm	Shorter of cleft side >2 mm
Nostril symmetry	Equal height and width to normal side	>1 mm <2 mm in either height or width to normal side	>2 mm in either height or width to normal side
Alar dome	Equal curvature to normal side	--	Any depression compared to normal side
Alar base	At the same level of normal side	Difference of <1 mm compared to normal side	Difference of >1 mm compared to normal side

Table No. 2: Demographic Variables

Variable	Millard's (n=33)	Delaire's (n=33)	Test of Sig.
Age	13.85 ± 1.88 months	13.96 ± 1.44 months	$\chi^2=0.992$, p=0.319
Weight	6.69 ± 1.23 kg	6.81 ± 1.33 kg	t=-0.386, p=0.703
Gender	M=54.5%, F=45.5%	66.7%, 33.3%	$\chi^2=1.01$, p=0.314

Various parameters were analyzed—white roll match, cupid bow, lip length and alar dome demonstrated favorable measurements in Millard's group and the vermilion match, scar appearance, nostril symmetry and

alar base was better in Delaire's methods. All the differences in these parameters were not statistically significant, except lip length ($p=0.023$). (Table. 3).

Table No. 3: Qualitative analysis according to Steffensen's criteria

Characteristics	Group	Good n,%	Average n,%	Poor n,%	P-value
White roll match	Millard's	16,48.5	12, 36.3	5, 15.2	0.964
	Delaire's	17, 51.5	11, 33.3	5, 15.2	
Vermilion match	Millard's	17,51.5	15, 45.5	1, 3.0	0.969
	Delaire's	18,54.6	14, 42.4	1,3.0	
Scar appearance	Millard's	12,36.3	16,48.5	5,15.2	0.445
	Delaire's	15,45.5	16,48.5	2,6.0	
Cupid bow	Millard's	14,42.4	16,48.5	3,9.1	0.188
	Delaire's	9,27.3	23,69.7	1,3.0	
Lip length	Millard's	21, 63.7	11,33.3	1,3.0	0.023
	Delaire's	10,30.3	22,66.7	1,3.0	
Nostril symmetry	Millard's	5,15.2	15,45.5	13,39.3	0.759
	Delaire's	4,12.1	18,54.6	11,33.3	
Alar dome	Millard's	4,12.1	2,6.1	27,81.8	0.824
	Delaire's	5,15.2	3,9.1	25,75.7	
Alar base	Millard's	16,48.5	16,48.5	1,3.0	0.449
	Delaire's	21,63.7	11,33.3	1,3.0	

DISCUSSION

Cleft lip is considered as one of the more occurring birth defects out of all congenital anomalies. This problem has low incidence among all live births so it is considered as less fatal health problem. But this problem affects cosmetic beauty of individuals. These type of anomalies disturb different normal functioning of patients like sucking, speaking and breathing. Treatment of cleft lip is very difficult.

In our study mean age of patients and weight of the patients, in Millard's group, was 13.85 ± 1.88 months and 6.69 ± 1.23 kg respectively. In a study conducted by Atri S et al mean age was 14.67 ± 45.33 months. Results of this study are comparable with our findings⁽¹⁶⁾. There were more male than female in our study.

In our study various parameters were analyzed—white roll match, cupid bow, lip length and alar dome demonstrated favorable measurements in Millard's group. In a study conducted by Holtmann and Wray et al and reported excellent results in twelve surgeries and poor results were not found in any case in triangular technique (Rendall tension) group. They reported that triangular technique is better than Millard's technique. Results of this were against our findings⁽¹⁷⁾.

In a previous study Williams et al compared Millard and LeMesurier's technique, it was reported that Millard technique have many advancement and better outcomes than LeMesurier's technique. Conclusion of his study was similar to our findings. He compared many nose and lip measurements and assess their scoring system by 10 points scoring criteria¹⁸.

In a study Amaratunga et al compared LeMesurier's and Millard technique and found that some outcome are better in Millard technique like nostril height and some measurements are better in LeMesurier's technique like vermilion symmetry. These findings are similar to our findings, we also concluded same results as some outcomes are better in Millard technique and some in LeMesurier's method⁽¹⁸⁾.

In a study conducted in 1990 by Chowdri et al Millard and triangular technique was compared and reported that Millard technique patients have short lips and triangular technique have long lips after surgery. Overall findings of this study shows no significant difference in both groups when outcomes were compared. This study is also comparable with our findings¹⁹.

A similar study was conducted by Reddy et al and compared Millard and Pfeifer wavy line incision and reported that both techniques are equally effective as some outcomes are better in Millard's group and some in Pfeifer technique. We also concluded same results from our study²⁰.

CONCLUSION

Overall clinical outcomes like vermilion match, white roll, and cupid bow appearance was similarly effective in both techniques. Lip length outcome was better in modified Millard's incision technique. Similarly nasal symmetry was better in Delaire's functional method. So it was found that one technique was essentially as good as the other.

Author's Contribution:

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 Revisiting Critically: Muhammad Kashif & Asma Tahir
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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