

LIP SYMMETRY EVALUATION OF THE GENTUR'S METHOD COMPARED TO FISHER TECHNIQUES FOR UNILATERAL CLEFT LIP REPAIR

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ABSTRACT

Background : Cleft lip and palate are the most common congenital anomalies that were found in plastic surgery. There are so many techniques for unilateral cleft lip repair. Rotation-advancement method by Gentur based on Millard technique has become the most widely used in unilateral cleft lip repair in RSCM. The Fisher technique repair is a modified technique based on approximation of anatomical subunit of the lip. The purpose of this study is to objectively compare and evaluate the lip symmetry of these two techniques.

Method : Two senior board-certified plastic surgeons will perform different surgical techniques for the unilateral cleft lip: rotation-advancement technique by Gentur and Fisher technique. This study prospectively analyzed preoperative and postoperative of randomized single blinded patients who underwent unilateral cleft lip repair performed by each surgeon in 2016. Using caliper, facial points on the cleft and non-cleft sides were measured, including height and symmetry of Cupid's bow, width and height of the nasal vestibule, height of the vermilion, and alar base position. Ratios of cleft side to non cleft side measurements were calculated to standardize comparisons between patients.

Result : From July-October 2016, 14 patients performed surgery as preliminary data, showed that there are statistically difference in length of design and surgery time. Preoperative, comparable of cupid's bow and vermilion showed statistically difference. Although, we found no statistically difference in postoperative ratio.

Conclusion : Lip symmetry outcomes after cheiloplasty procedure are same between Gentur method and Fisher technique.

Keywords: *cleft lip repair, Fisher technique, Gentur Method, Rotation-advancement technique*

Latar Belakang : Sumbing pada bibir dan langit-langit mulut merupakan kelainan kongenital yang paling umum ditemui pada kasus bedah plastik. Ada banyak teknik yang dapat digunakan untuk memperbaiki bibir sumbing sebelah, salah satunya adalah metode "Rotation-advancement" oleh Dr. Gentur yang berdasar pada teknik Millard menjadi metode yang paling banyak digunakan di RSCM. Teknik perbaikan Fisher adalah sebuah teknik modifikasi yang berdasarkan pada perkiraan anatomis dari bibir. Tujuan dari pembelajaran ini adalah untuk membandingkan dan mengevaluasi secara objektif bentuk simetri pada bibir terhadap kedua teknik tersebut.

Metodologi: Dua ahli bedah plastik berpengalaman akan melakukan operasi bibir sumbing sebelah dengan dua teknik yang berbeda (teknik "rotation-advancement" oleh Dr. Gentur dan teknik Fisher). Pembelajaran ini akan menganalisa secara acak kondisi sebelum dan sesudah operasi terhadap pasien yang mendapat perbaikan bibir sumbing oleh kedua ahli bedah plastik tersebut pada tahun 2016. Pengukuran menggunakan jangka sorong, titik wajah pada sisi sumbing dan non-sumbing, termasuk tinggi dan simetri dari Cupid's bow, lebar dan tinggi dari vestibulum hidung, tinggi dari vermilion, dan posisi dasar hidung. Rasio antara sisi bibir sumbing dengan sisi normal dihitung dan dijadikan acuan untuk pembandingan pada setiap pasien

Hasil: Terdapat 14 pasien yang menjalani operasi dari bulan Juli sampai Oktober tahun 2016. Secara statistik menunjukkan perbedaan dalam panjang rancangan dan waktu operasi. Terdapat perbedaan antara Cupid's bow dan Vermillion secara statistik. Tetapi kami tidak menjumpai perbedaan terhadap rasio pasca operasi.

Kesimpulan: Tidak ada perbedaan pada bentuk simetris pada bibir menggunakan metode Gentur maupun Teknik Fisher pada operasi bibir sumbing

Kata Kunci : *cleft lip repair, Fisher technique, Gentur Method, Rotation-advancement technique*

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INTRODUCTION

Cleft lip repair is one of the standard surgery that must be achieved by plastic surgeon. The goal of this surgery is a normal form and function of lip and nose. To achieve this goal, we need good technical skill, knowledge of the abnormal anatomy, and appreciation of three-dimensional facial aesthetics. The evolution of cleft lip repair technique began in the fourth century in the Chin Dyansty in China.¹ Numerous techniques and modifications have been introduced and popularized since that time until now. The Indonesian Ministry of Health published a national report in 2007 that showed the prevalence of cleft lip and palate in Indonesia was 0,2%. In Indonesia, the limited number of plastic surgeons compared to the whole population, moreover the unbalanced distribution gives problems to reach cleft lip and palate patients in remote areas scattered throughout the Indonesian Archipelago.²

Cleft lip repair over the last 100 years has evolved to modern form.³ Nowadays, 84% of surgeons form major craniofacial centers around the world use some forms of the modified rotation-advancement technique.¹

In our center, teaching centre of plastic surgery in Indonesia especially in Craniofacial centre in Jakarta, the standard teaching methods for cheiloplasty unilateral cleft lip are modified rotation-advancement flap by Gentur and Fisher technique. Dr. Gentur developed his technique based on rotation-advancement and small triangular flap. The characteristic of his technique are in the measurements of vermillion thickness, size of triangular flap, apex of flap B, and how to make nasal base. This technique is developed based on the experience of dr. Gentur on the Onizuka's& Millard's technique. He put the markings on anatomical position and using sterile wooden tooth pick instead of caliper or thread as tools for design. (Fig1).⁴ In 2004 at the American Cleft Palate–Craniofacial Association meeting, dr David Fisher presented an anatomical subunit approximation technique to repair unilateral cleft lip (fig 2).⁵ The result of both technique gives satisfactory for the patients, but no study has been published which compares the outcome of both techniques.

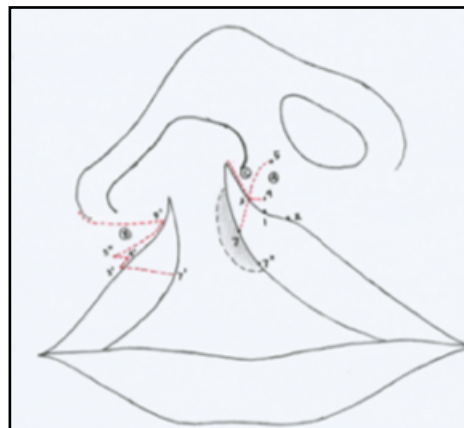


Figure 1. Modified rotation advancement technique by Gentur

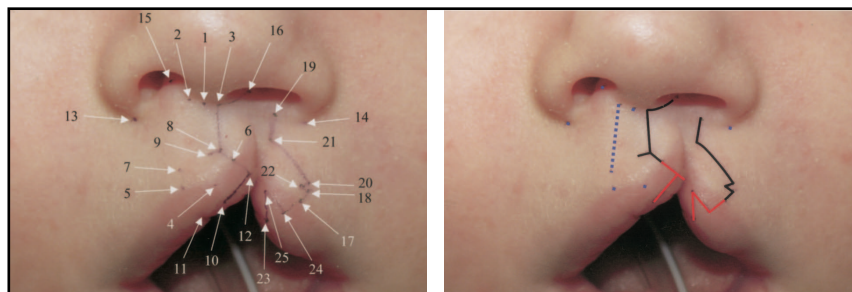


Figure 2. Facial point in cleft side and non cleft side (left). Design of incision (right)

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One of the simple measurement to provide important anthropometric point is using caliper. This device is accurate and inexpensive. Measurements are made at the time of surgery, after patient anesthezed and will be recorded. ⁶ Lip symmetry is one of anthropometric parameters were used to assess the outcome of Cheiloplasty. Lip symmetry measurement can be performed directly preoperative and postoperative while the patient on sedation.

METHOD

The research design was randomized single blinded experimental study. All patients with unilateral cleft lip who fullfill the inclusion criteria will be explained and informed about these two surgical techniques. They sign informed consent without knowing which surgical techniques will be used. The study is conducted at Cipto Mangunkusumo Hospital from 1 July to 31 October 2016. Patients with unilateral cleft lip undergo Gentur’s complete cheiloplasty method and Fisher technique performed by two operators (Melati and Prasetyanugraheni). This study will collect all samples with the size 304 samples. All patient with unilateral cleft lip who come to Cleft and Craniofacial Centre for cleft lip repair from July – September 2016 and meet the inclusion criteria will be recruited using simple random sampling technique.

Inclusion criteria for this study is patients with complete unilateral cleft lip or incomplete unilateral cleft lip who will have complete unilateral cheiloplasty method. Exclusion criteria consist of patient with unilateral cleft lip undergone lip adhesion procedure, bilateral cleft lip, microform cleft lip.

Measurement of the outcome for all cheiloplasty techniques use universal point of measurement using standard caliper. Measurements were taken twice by the surgery team, before surgery and immediate after surgery Points of measurement are as describe below (Fig 3, Fig 4)

Subject’s characteristic will be shown descriptively in table with mean and standard deviation. Before we apply a hypothesis test, we do Saphiro-Wilk test for checking normality distribution. If we find $p > 0.05$ it will be considered as normal distribution.

If we find the data is normally distributed then we do independent T-test for the hypothesis. If data distribution is not normal, Mann Whitney test will be used for the hypothesis. Statistical significance was defined as p value < 0.05 . Analysis will be performed using the statistical software SPSS 20. The research is on approval by ethics committee of Medical Faculty University of Indonesia.

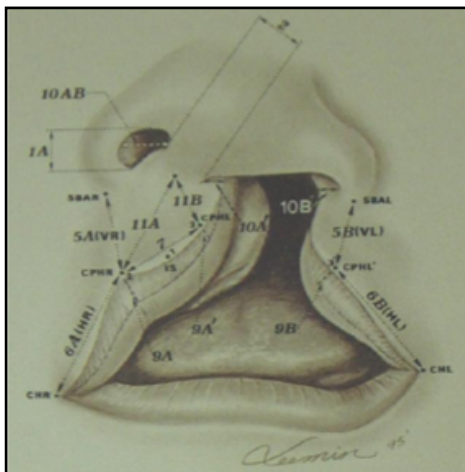


Figure 3. Points of measurement before procedure

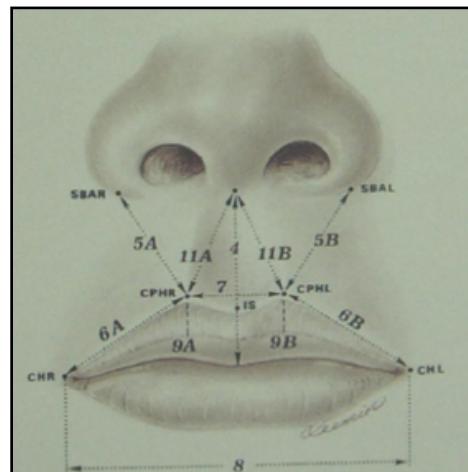


Figure 4. Points of measurement after procedure

RESULT

This experimental study aims to compare the symmetry of outcomes post operative using two techniques, Gentur and Fisher technique in Plastic Surgery Division, Cipto Mangunkusumo Hospital. The data for preliminary study taken from July to October 2016 by direct measurement. We found 14 patients that performed cheiloplasty procedure, consist of 8 patients for Fisher technique and 6 patients for Gentur Method (Table 1).

Table 1 . Patient Characteristics of the Gentur's Method and Fisher Technique

Characteristics	Gentur Method	Fisher Technique
Male to female ratio	3:3	4:4
Age at repair (months)	29.00	30.00
Complete to incomplete ratio	4:2	7:1
Right to left ratio	2:4	2:6
Nasoalveolar molding	0/6	1/8

Comparison of the Procedure

To compare two surgical procedures, we measure mean of surgery and design time. We tested normality of data using Saphiro-wilk test, and measured surgery and design time using independent samples test and Mann-Whitney U test with confidence of interval 95% and p value <0.005. The results for both time are significant (Table 2, Table 3)

Table 2 . Independent samples test of surgery time

Technique	Mean (minute)	Confidence interval	P value	Result
Gentur	90.5	95%	< 0.05	0.000
Fisher	154.12	95%		

Table 3 . Independent samples Mann-Whitney U test for design time

Technique	Mean (minute)	Confidence interval	P value	Result
Gentur	6.33	95%	< 0.05	0.001
Fisher	20.5	95%		

We divided point of measurements in six categories; collumelar height, vertical height lip, horizontal lip length, cupid bow vermillion width, nostril width, midline columella crease to cupid bow. Each mean ratio compared using independent sample test and independent Mann-Whitney U test with confidence interval 95% and p value <0.005. The result shows all mean ratio are not significant except for mean ratio Cupid Bow vermillion width. (Table 4, Table 5)

Table 4 . Mean Ratio of the Noncleft side to Cleft Side of Spesific Preoperative point of interest for each group

Preoperative measurement	Points	Gentur Method	Fisher technique	P value
Columellar height: base nostril to top	1A:1B	1.65	2.27	0.345
Vertical height lip: alar base to Cupid's bow	5A:5B	1.33	1.42	0.596
Horizontal lip lenght: commisure to Cupid's bow	6A:6B	1.11	1.17	0.474
Cupid's bow vermilion width	9A':9B	1.02	0.50	0.000*
Nostril width	10AB:10A'B'	0.46	0.48	0.733
Midline columella crease to Cupid's bow	11A:11B	1.45	1.44	0.979

Table 5 . Mean Ratio of the Noncleft side to Cleft Side of Spesific Postoperative point of interest for each group

Preoperative measurement	Points	Gentur Method	Fisher technique	P value
Columellar height: nostril to top	1A:1B	1.18	1.66	0.491
Vertical height lip: alar base to Cupid's bow	5A:5B	1.06	1.15	0.97
Horizontal lip lenght: commisure to Cupid's bow	6A:6B	1.05	1.15	0.191
Cupid's bow vermilion width	9A':9B	1.05	1.02	0.491
Nostril width	10AB:10A'B'	1.11	1.08	0.776
Midline columella crease to Cupid's bow	11A:11B	0.99	0.93	0.142

DISCUSSION

Based on this study, most of patients have complete cleft lip and palate (57.1%) and on the left side cleft (71.4%). These are suitable with International Perinatal Database.⁷ Although comparison between male to female patient is same in this preeliminary study. Most of the patients were performed cheiloplasty after 10 week of birth (35.7%), it is appropriate to treatment protocol in Cleft Craniofacial Centre Cipto Mangunkusumo Hospital.

For the length of surgery, Gentur method gave shorter operating time with average surgery time 90.5 minutes compared to Fisher techniques with average surgery time 154.12 minutes or 1.7 times longer. Similar with surgery time, the duration to

make design was shorter in Gentur Method with average time 6.33 minutes compared to Fisher techniques with average time 20.5 minutes. However, it can be understood because in design Fisher techniques there are more anatomical landmarks point which have to be marked. Furthermore, additional time to make nasal base using medial and lateral flap make Fisher technique took longer time than Gentur method. According to this data, Gentur method is suitable for procedure that requires a short period of time for example in patients with comorbidities or charity surgery program. Although, both of surgery techniques are merely done by a single operator, so that the timing of surgery can not be generalized to describe the average time of both technique.

The mean ratio for the measurement to the descriptive point before surgery were similar in most of the points between these two groups. This indicates a comparable degree of severity between each groups. There were six comparable measurements that were taken from preoperative descriptive point. One of the comparable measurement, cupid's bow vermillion width, showed a significant difference between two groups. It can indicate that the width of cupid bow vermillion in patients undergone surgery with Gentur method was two times thicker than patients with Fisher technique. However, the remaining five mean ratios were not significantly different, made the possibility of a true difference in cleft deformity was less likely.

The evaluation of postoperative ratio showed no statistically difference between each groups, indicating very similar objective outcomes for each repair technique. Furthermore, most of the comparison postoperative ratio measurements such as vertical height lip, horizontal lip length, cupid bow vermillion width, nostril width, and midline collumella crease to cupid bow were almost identical. It means both groups giving excellent facial symmetry between noncleft side and cleft side.

The objective comparison of the Gentur method and Fisher technique showed no significant difference in clinical points of interest between two groups. This further supports the concept that the best outcome may born by experience in specific technique and perfecting that for many years. Limitation in the preelimentary study is the small and unequal sample size of each group. The large number of samples will give us complete data and strong significancy result.

CONCLUSION

Lip symmetry outcomes after cheiloplasty procedure is same between Gentur method and Fisher technique. This study was able to gain the anthropometric data of unilateral cleft lip cheiloplasty procedure with Gentur and Fisher technique.

SUGGESTION

Data retrieval can be performed after the wound healing process is complete, approximately 1 year post surgery. Otherwise it can simultaneously assess the quality of post-operative scar.

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