

Vol. 43 • No. 4 December 2010

ISSN 1978-3728

Dental Journal

Published quarterly per year

Majalah Kedokteran Gigi



- Minor modification of Millard's surgical technique for correction of complete unilateral cleft lip
- Multidisciplinary management of a mandibular buccal plate perforation
- A combination of endodontic therapy and root resection in furcation involvement case

Accredited No. 83/DIKTI/Kep./2009

Dental Journal

Majalah Kedokteran Gigi

CONTENTS

	<i>Page</i>
1. Clinical consideration of thrombocytopenia in children S. Ratna Laksmiastuti	163–167
2. The increasing of odontoblast-like cell number on direct pulp capping of <i>Rattus norvegicus</i> using chitosan Widyasri Prananingrum	168–171
3. Minor modification of Millard's surgical technique for correction of complete unilateral cleft lip Coen Pramono D	172–175
4. Biocompatibility and osteoconductivity of injectable bone xenograft, hydroxyapatite and hydroxyapatite-chitosan on osteoblast culture Bachtiar EW, Bachtiar BM, Abas B, Harsas NA, Sadaqah NF, and Aprilia R	176–180
5. Augmentation and vestibuloplasty on atrophic mandibular ridge Mefina Kuntjoro, Rostiny, and Wahjuni Widajati	181–185
6. Pulp nerve fibers distribution of human carious teeth: An immunohistochemical study Tetiana Haniastuti	186–189
7. The management of dental fracture on tooth 61 in a child with attention deficit hyperactivity disorders Veranica and Mochamad Fahlevi Rizal	190–194
8. Multidisciplinary management of a mandibular buccal plate perforation Yuli Nugraeni and Chiquita Prahasanti	195–200
9. <i>Candida albicans</i> adherence on acrylic resin plates immersed in black tea steeping Soebagio	201–204
10. A combination of endodontic therapy and root resection in furcation involvement case Ernie Maduratna Setiawati	205–209
11. Interleukin-1 β expression on periodontitis patients in Surabaya Chiquita Prahasanti	210–214

Case Report

Minor modification of Millard's surgical technique for correction of complete unilateral cleft lip

Coen Pramono D

Department of Oral and Maxillofacial Surgery

Faculty of Dentistry, Airlangga University/Dr. Soetomo Public and Teaching Hospital

Surabaya - Indonesia

ABSTRACT

Background: A surgical technique for correction of complete unilateral cleft lip was done using a minor modification of Millard's surgical technique. The purpose of this modification is to achieve a good anatomical form of columella, nostril cill and the position of nasal tip. **Purpose:** This article presents the correction of the complete cleft lip which was done initially by correction of the slanted columella followed by correction of the nostril sill which was done before the sequence of closing the lip crevice. **Case:** Correction of a case with complete unilateral cleft lip on a fifteen year old girl using modification of Millard's surgical technique is presented. **Case Management:** Rotation incision in the philtrum region was made as introduced by Millard to make a triangular flap. The triangular flap was contralaterally rotated and pulled into the direction of cleft to achieve a normal position of the columella and nasal tip. The lateral side of the ala was incised in circular form down to the alar base and straight through to the direction of cleft formed an alar flap which consisted of ala, clefted and slanted nasal base tissue. The tip of the triangular flap was trimmed and approximated to the alar flap to form a new the nostril sill. Adjustment of the size of the nostrill sill size was achieved during the approximation of those two flaps. The nasal base was built during approximation of the lateral and the medial segment flap or philtrum region and the base of new nostril sill. Surgical correction of the complete unilateral cleft lip including correction of the nostrill sill using approximation of triangular flap and the alar flap was achieved. **Conclusion:** This surgical technique with minor modification of Millard's surgical technique can be used for correction of the complete unilateral cleft lip with extremely slanted columella and nasal tip to form the nostril sill.

Key words: Complete unilateral cleft lip, Millard's surgical technique, nostril sill

ABSTRAK

Latar belakang: Koreksi celah bibir komplis satu sisi telah dilakukan menggunakan metode operasi Millard yang dimodifikasi. Modifikasi dimaksudkan untuk memperoleh bentuk anatomis yang baik dari columella, nostril dan letak ujung hidung yang baik. **Tujuan:** Melaporkan koreksi suatu celah bibir komplis satu sisi menggunakan metode operasi Millard yang dimodifikasi yang dimulai dengan melakukan perbaikan pada columella yang miring pada bentuk nostril sebelum tahapan penutupan celah bibir dilakukan. **Kasus:** Dilaporkan satu kasus koreksi celah bibir komplis satu sisi pada pasien wanita usia 15 tahun menggunakan metode operasi Millard yang dimodifikasi. **Tatalaksana kasus:** Dilakukan insisi berbentuk rotasi di regio seperti pada metode Millard untuk membuat flap berbentuk trianguler. Flap trianguler dirotasikan ke arah kontra lateral dan ditarik menuju arah celah bibir untuk memperoleh posisi columella yang normal, bentuk nostril yang simetris dan letak ujung hidung yang baik. Dilakukan insisi sirkuler ke bawah ke arah dasar ala pada regio lateral ala menuju ke bagian celah bibir, selanjutnya akan diperoleh bentuk flap yang disebut alar flap yang terdiri atas bagian ala nasi, bagian dari jaringan yang berada pada sisi celah dan bagian dari dasar hidung di sisi celah bibir. Bagian ujung dari trianguler flap dipotong dan selanjutnya ditautkan pada flap alar untuk membentuk bentuk nostril baru. Penyesuaian ukuran nostril dilakukan pada tahap penautan kedua flap tersebut. Bagian dari dasar hidung dibentuk pada saat tahapan penautan antara flap segmen lateral dan medial atau bagian dari philtrum dan bagian dasar dari nostril atau cuping hidung. Koreksi bedah suatu celah bibir komplis satu sisi termasuk koreksi pada bentuk nostril diperoleh dengan menautkan antara flap trianguler dan flap alar.

Kesimpulan: Teknik bedah Millard dengan modifikasi kecil dapat dipakai untuk melakukan koreksi pada kasus celah bibir komplit satu sisi yang disertai kemiringan columella dan ujung hidung yang ekstrim.

Kata kunci: Celah bibir sebagian komplit, teknik bedah Millard, nostril sill

Correspondence: Coen Pramono D, c/o: Departemen Bedah Mulut dan Maksilofasial, Fakultas Kedokteran Gigi Universitas Airlangga. Jl. Mayjend. Prof. Dr. Moestopo No. 47 Surabaya 60132, Indonesia. E-mail: coen_pram@yahoo.com

INTRODUCTION

Complete unilateral cleft lip is occasionally found with depressed nasal tip, displaced ala, widening of the nostril floor, slanted columella and dropping of the alar and lower lateral cartilage. Complete surgical corrections of the orbicularis oris muscle continuity including straighten of the columella and the alar position, correction of the nostril sill and alar base regions are necessary to be made. The nasal floor is cleft not only in the skin and muscle but the bone can be also involved, and the position of the maxillary elements can be found varies from overlap to abutment to

gaps of millimeters or centimeters. No exact size can be defined in complete clefts. In unilateral cleft, the alar base usually found rotated outwardly in a flare and the middle nasal base rotated in the direction of healthy lip side. The base of the ala in the cleft side usually connected with part of clefted nostril sill.

Numerous methods have been described to repair the cleft lip deformity. In 1960 Millard described the concept of advancing a lateral flap into the upper portion of the lip combined with downward rotation of the medial segment. This technique preserves both Cupid's bow and the philtral dimple, and it has the additional advantage of placing the tension of closure under the alar base, thereby reducing flair and promoting better moulding of the underlying alveolar process.¹

The fundamental actions of Millard's surgical technique are rotation and advancement. The lip on the noncleft side has two thirds to three quarters of Cupid's bow, median tubercle in the vermillion, and one column of philtrum and its associated dimple and this all is rotated down into normal position. The gap is closed using the advancement flap and corrects the alar flare and the wide nostril.² Millard also performed wide radical undermining the soft tissue supra periosteally of the lateral ala bellows the infraorbital foramen to avoid tension of lateral flap to achieve a good harmony during gap closure.

The typical nasal deformity associated with congenital unilateral cleft lip presents both discrepancy and a displacement of parts persists without great improvement during growth. The distortion, being confined to the cleft side only, is emphasized by the constant comparison with the normal opposite.

Minor modification of Millard's technique was done based on the idea that correction of the nostril sill and nasal base should be simultaneously taken as an important step besides closing the gap using two flaps, ie. the lateral flap and medial segment flap.

CASE

A fifteen year old girl with complete unilateral cleft lip seek for treatment for her cleft lip and presented with complete unilateral cleft lip and extreme protruded of tooth 11. My primary concerns were the nostril sill defect, slanted columella and nasal tip and widening the right nostril. Millard's rotation-advancement surgical technique of lip closure with minor modification was used.

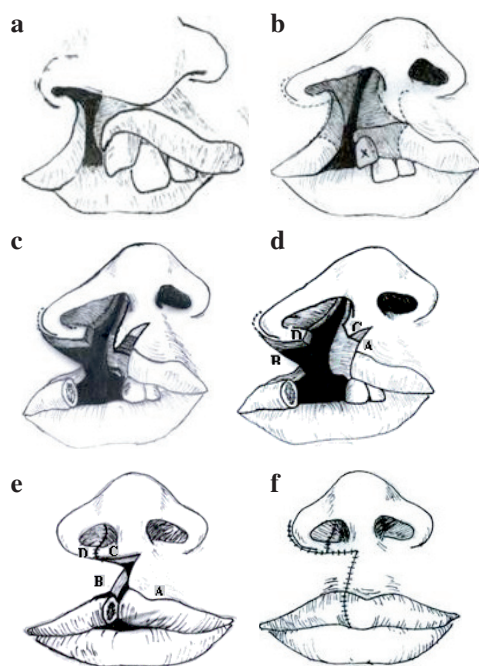


Figure 1. Minor modification of Millard's surgical technique in schematic drawing: a) Complete unilateral cleft lip, b) Rotation incision as proposed by Millard created a triangular flap (C) and flap A, c) The tip of the triangular flap incised followed by incision on the left perialar region to the direction of the inferior border straight forward through the crevice created an alar flap (D) and flap B, d) Approximation of flap C and D built a new nostril sill, e) Wide radical undermining to release tension of flap B facilitated an ease approximation of flap A and flap B during closing the crevice. The nasal base is closing by approximation of flap A and B to flap C and D, f) The crevice is closed by four flaps.

Case of complete unilateral cleft lip was operated using a minor modification of Millard's surgical technique. The triangular flap was used to build a new nostril sill in approximation with the alar flap. The alar flap was made by a perialar incision down into the nasal base and was resulted a flap which consisted of alar rim and alar base and clefted nostril sill and nasal base tissues. Correction of the slanted columella and nasal tip was done by rotating and pulling the triangular flap to achieve a straight columella and a good nasal tip position followed by a lock suture to maintain its new position. The tip of the triangular flap was trimmed and approximated into the alar flap to build a new nostril sill (Figure 1a-f).

CASE MANAGEMENT

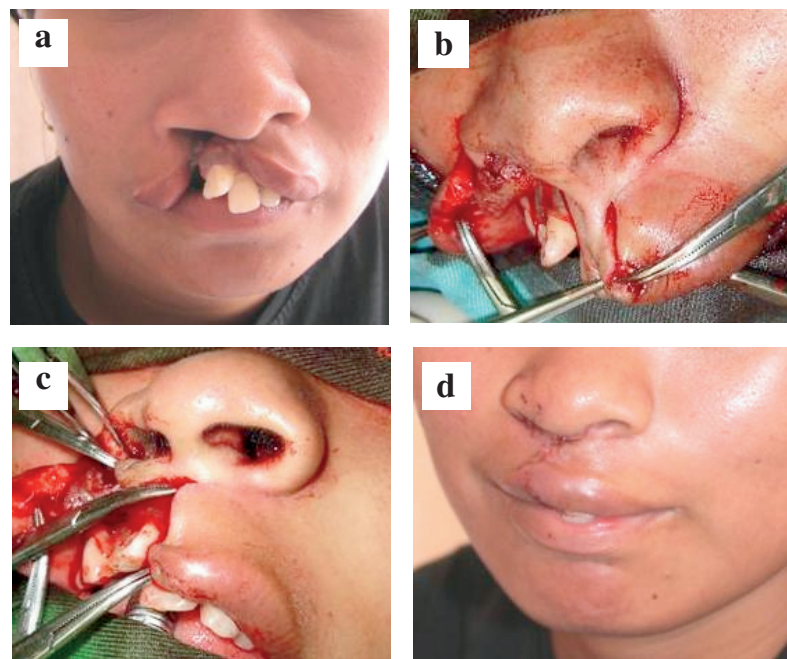
As described by Millard, the curved incision in the medial cleft element, in the lower part a mirror image of the contra lateral normal philtrum column, crossed the midline under the columella to allow the downward rotation of the Cupid's bow by 2 to 10 mm and to allow the philtrum dimple components to come into normal position. At the same time the incision lengthtens the short side of the columella by freeing it from the lip.¹

The tooth 11 was first extracted followed by circular incision to make a triangular flap. Alar flap was made by a circular incision in the perialar region down to the alar base to the direction of the crevice followed by releasing of the slanted nostril sill and the alar base region in the cleft region which attached to the lateral ala. The triangular flap

was rotated into a cleft side and brought the philtrum dimple component into normal position followed by maintaining the flap with a lock suture to maintain in its new position. The tip of the triangular flap was than trimmed and approximated and then sutured into the alar flap to build a new nostril. The approximation of those two flaps built a new nostril sill and simultaneously corrected the position of the alar base and widening nostril. After the nostril sill, the surgical step was continued to close the cleft which initially by advancing the medial segment and lateral flaps to avoid of tension during approximation (Figure 2a-d).

As noted by Nicolau that the orbicularis muscle consisted of two muscles layers, one layer is inserted into the philtral ridges and skin, the other layer is located in a deep layer that has little or no attachment to the skin,³ therefore in cleft cases that layers should be sutured by layers according to those layers. The skin and mucosa along each site were undermined several millimeters to facilitate separate and individual suturing of the muscle, mucosa, and skin during approximation. Wide undermining at the medial side is contraindicated as it may destroy the philtral dimple and column. According to Fara⁴ and Pennisi *et al.*⁵ in complete cleft, the superficial fibers of the orbicularis oris muscle may insert into columella and septum medially and into alar base laterally.

Minor correction of the nose was done by a marginal incision to free the cartilage and followed by correction of the alar cartilage position and then joining the medial crura through vertical mattress sutures that catch the cranial edges together to form one unit. The anterior suture is placed at the height of the transition between the medial and middle crus,



Figures 2. a) Complete unilateral cleft lip shows the slanted columella and nasal tip; b) Rotation incision as introduced by Millard; c) The triangular flap rotated into the cleft side and approximated into the alar flap built a new nostril sill; d) Seven days postoperative situation: the columella and nasal tip region corrected into a proper position toward midline. The right nostril sill is well corrected.

which known as medial crural fixation. The insufficient tip projection due to the great divergence between crura intermedia was corrected by inserting mattress suture close to the dome known as dome spanning suture.

DISCUSSION

The Millard unilateral cleft lip repair has become the most popular single procedure in cleft treatment. The flexibility of the technique is reflected in the additive to “cut-as-you-go” and the adaptability to the individual pathomorphology of the affected area. The fundamental of the surgical technique are two folds: rotation and advancement. The scar is maneuvered into hidden crevice, under columella, and the lower part stimulates a natural landmark, the philtrum column.²

In complete cleft, the superficial fibers of the orbicularis oris muscle may insert into columella and septum medially and into alar base laterally therefore releasing of these segments are necessary to repair the muscle continuity.

The Millard's incision technique designed to create three flaps. The medial segment flap (flap A) is made to allow the downward rotation of Cupid's bow and to allow the philtrum dimple component to come into normal position. The lateral flap (flap B) is the lateral cleft lip element that provides advancement. The third is the triangular flap (flap C) that was made to absorb a part of the pull at the thigh test point in closure and pulls the deviated columella and the anterior septum into straight position. The additionally flap of alar flap (flap D) was made with primary destination to form the nostril sill after approximated of flap D to flap C (Figure 1).

The role of flap C was important in this case report as this flaps was used not only to pull the deviated columella, but also to build a new nostril sill by approximation it with the alar flap which consisted of cleft nostril sill and nasal base tissue. The size of the nostril was adjusted during this step.

The crevice was closed by the approximation of advancement of the flap B and flap A and followed by

sutured it into the base of the new nostril sill. To reduce tension of the flap B during flaps A and B approximation, the “cut-as-you-go” tissue desection technique as presented by Millard's was used. Wide radical supraperiosteal undermining as far as the infraorbital foramen was also used as proposed by Millard.^{1, 6-9}

In conclusion, surgery has successfully brought the columella and nasal tip region into a proper position toward midline as well as to build a new right side nostril sill which was corrected in the first surgical step during the crevice closure sequence. Minor modification of Millard's technique was presented. This technique was applied in over 50's patients presented with a good result therefore this technique can be use as an alternative surgical technique to treat a complete unilateral cleft lip.

ACKNOWLEDGEMENT

I would like to thank Drg. Herdi Eko Pranjoto, MS., Sp.BM for drawing the schematic pictures.

REFERENCES

1. Millard DR Jr. Complete unilateral clefts of the lip. *Plast Reconstr Surg* 1960; 25: 595–605.
2. Mommaerts MY. The Millard philosophy of cleft lip and palate repair. In: Booth PW, Schendel SA, Hausamen JE, editors. *Maxillofacial surgery*. 2nd ed. Vol 2. Churchill Livingstone, Elsevier; 2007; p. 1048–61.
3. Nicolau PJ. The orbicularis oris muscle: a functional approach to its repair in the cleft lip. *Br J Plast Surg* 1983; 36: 141–53.
4. Fara M. The important of folding down muscle stumps in the operation of unilateral cleft lip. *Acta Chir Plast* 1971; 13: 162–9.
5. Pennisi VR, Shadish WR, Klabunde EH. Orbicularis oris muscle in the cleft lip repair. *Am Cleft Palate J* 1969; 6: 141–53.
6. Millard DR Jr. Rotation-advancement in the repair of unilateral cleft lip. In: Grabb WC, editor. *Cleft lip and palate*. Boston: Little Brown; 1971. p. 195–202.
7. Millard DR Jr. A radical rotation in single harelip. *Am J Surg* 1958; 95: 318–22.
8. Millard DR Jr. How to rotate and advance in a complete cleft. In: *Cleft craft*. Vol 1. Boston: Little Brown; 1976. p. 449–85.
9. Millard DR Jr. Example of complete unilateral cleft cases. In: *Cleft craft*. Vol 1. Boston: Little Brown; 1976. 487–524.