Accelerated Healing of The Wider Lateral Defects in Adult Cleft Palate Repairs

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Background: Adult primary palatoplasty is more challenging than in infants because the gaps are wider. The risk of intraoperative bleeding and palatal fistula are higher. Most adults with un-operated palatal cleft have good maxillary growth but poor speech. The aim of this study is to introduce our technique in repairing wide cleft palate in adult patients.
Patients and Methods: We report four patients with cleft palate who underwent palatoplasty at adulthood. The age ranges from 17 to 20 years. Interspina distance were between 2 to 3.5 cm. All of them were nonsyndromic and had normal maxillary growth. The surgical technique used on these patients was two-flap palatoplasty with an additional 3 mm gingival bulk on the lateral side of the flap. Honey was given as oral drops postoperatively.
Result: Lateral palatal defect healed well and epithelialized completely between 7 -14 days postoperative and only one small palatal fistula was found with this modified technique. All subjects had good maxillary growth, and speech outcome was poor to begin with.
Summary: Two-flap palatoplasty can adequately provide palatal closure, especially with an additional lateral flap extension to include gingival components. This extension widens the flaps and aid palatal closure by not leaving lateral defects too wide.
Keywords: *Adult palatoplasty, mucoperiosteal defect, honey*

Latar Belakang: Palatoplasti primer pada usia dewasa merupakan suatu tantangan yang lebih sulit dibandingkan pada anak-anak karena jaraknya yang lebih lebar, resiko perdarahan intraoperatif, dan fistel palatum lebih sering terjadi. Sebagian besar pasien celah palatum memiliki pertumbuhan maksila yang baik namun terdapat gangguan bicara. Tujuan dari studi ini untuk memperkenalkan teknik kami dalam menangani pasien yang menjalani palatoplasti primer di usia dewasa.
Pasien dan Metode: Makalah ini membahas 4 kasus sumbing langi-langit yang menjalani operasi palatoplasti saat usia dewasa. Usia pasien berkisar antara 17-20 tahun dengan jarak interspina antara 2 hingga 3.5 cm. Seluruhnya tidak mengalami gangguan pertumbuhan maksila. Madu juga diberikan per oral pascaoperasi.
Hasil: Defek palatum lateral sembuh dengan baik dan epitelisasi spontan tercapai dalam waktu 7-14 hari pascaoperasi. Teknik operasi yang digunakan adalah palatoplasti *two flap* dengan tambahan gingiva 3 mm pada tiap sisi lateral. Ditemukan satu fistel palatum sebesar 0.3 mm diantara 4 pasien. Sejak awal, semua pasien memiliki pertumbuhan maksila yang baik namun fungsi wicara tidak memuaskan, dan operasi yang dilakukan tidak mengubah hasil tersebut.
Ringkasan: Palatoplasti *two flap* dapat menghasilkan penutupan palatum secara adekuat, terutama dengan tambahan pelebaran flap di sisi lateral dengan gingiva 3 mm. Tambahan tersebut melebarkan flap dan membantu penutupan palatum dengan tidak meninggalkan defek yang terlalu lebar.
Keywords: *Adult palatoplasty, mucoperiosteal defect, honey*

Adults with untreated cleft palate are commonly encountered in our clinic. Unfortunate circumstances hindered them from receiving primary cleft palate repair at the appropriate time during childhood.[1] Reasons for this late repair include the low education-level of patients, the lack of access to hospital, and insufficient funding. Especially in cases of isolated cleft palate, parents were typically unaware that their child had a cleft palate, and noticed the problem only later when the child developed speech phonation problems. Adult primary palate repair is challenging and more difficult than in

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infants because the gaps in adults are wider, the risk of intraoperative bleeding is higher, and an increasing rate of palatal fistulas are found following repair.[2] Most of the un-operated cleft palate patients found in our clinic had good maxillary growth, but speech outcome was poor.[1] This case series introduce a technique modification in palate repair for patients undergoing primary palatoplasty in adulthood.

PATIENTS AND METHODS

We report 4 adults with untreated cleft palate aged between 17 to 20 years. All of them are non-syndromic, and had normal maxillary growth. These patients underwent palatoplasty using the modified two-flap palatoplasty with an additional 3-mm gingival component added to the flaps on the lateral side. This extension to include the gingiva will widen the two flaps surface. Honey-soaked absorbable hemostatic cellulose sponge were used as tampon on the lateral defects. This method was chosen from our prior experiences that honey had demonstrated an effect of hastening the rate of epithelialization.[3]

Case 1

Woman aged 22 year-old presented with an isolated cleft palate (Figure 1). Maxillary growth was normal, and patient underwent palate repair using the modified technique as described above. The interspina distance of the cleft was 3.5 cm, while the width of each flap was 1.5 cm. To overcome the lack of soft tissue, the gingival component from each lateral side is included into the two-flap design to cover for the entire width of the defect (Figure 2). Three days postoperative, oral hygiene was found to be poor, and nasogastric tube was inserted as route for dietary intake. Two weeks after surgery, no palatal fistula was found and the epithelialization of lateral palatal defects was complete. At six-month follow-up visit, the flap healed well (Figure 3).

Case 2

An 18 year-old girl with isolated cleft palate without maxillary hypoplasia(Figure 4). The interspinal distance was 2.5 cm. She underwent palatoplasty with gingival component included into the flap (Figure 5). Two months post-operation, lateral defect was completely epithelialized, the palate healed well with no fistula found (Figure 6).

Case 3

A 17-year-old male with unilateral cleft lip and palate . He underwent lip surgery at the age of 6-month. Maxillary growth was normal, and the palatal interspinal distance was 2 cm. Palate repair was performed to include gingival component to widen the two-flaps. Upon follow-up lateral palatal defect healed well and epithelialized completely one week after surgery. Three weeks postoperative no palatal fistula was found (Figure 7).

Case 4

A 20 year-old male with unilateral cleft lip and palate presented to us requesting closure of palatal cleft. He underwent cheiloplasty at the age of 9-month. Palatal interspinal distance was 2 cm. Similar procedure of palate repair was done in this patient as in the previously described cases. Lateral defect completely epithelialized seven days postoperatively and 3 mm fistula was found in the junction of hard and soft palate (Figure 10).

RESULT

Lateral palatal defect healed well and epithelialized completely between 7-14 days after surgery. One palatal fistula was found with this modified technique. All of patients had no complication in the early postoperative period and was discharge during the first 48 hours after surgery.

DISCUSSION

In Indonesia, data from prior study detected a fairly large number of adults with un-operated clefts of the lip and/or palate, especially in the urban area.[1] Clinically they have normal maxillary growth and acceptable maxillary appearance. This study was done using the lateral cephalometric and the sagital dimension of facial development between the cleft and normal population.[1]

Figure 1. Lateral view of case 1. Patient shows normal

Figure 2. Intra-operative picture of case 1.

Figure 3. 6 month post-operative of case 1 shows well-healed flap

Figure 4. Lateral view of case 2 shows no maxillary hypoplasia

Figure 5. Intra-operative picture of case 2.

Figure 6. Two months post-operative picture of case 2 shows well-healed palate without fistula found.

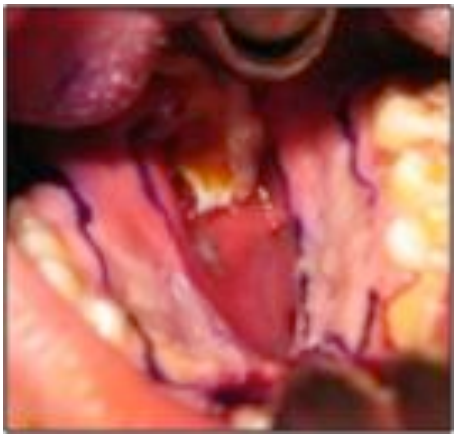

Figure 7. Picture of case 3. (Left) AP view of case 3 with normal maxillary growth. (Middle) Intra-operative picture. Noted the wider flap with additional gingival tissue.(Right) One week postoperative picture.

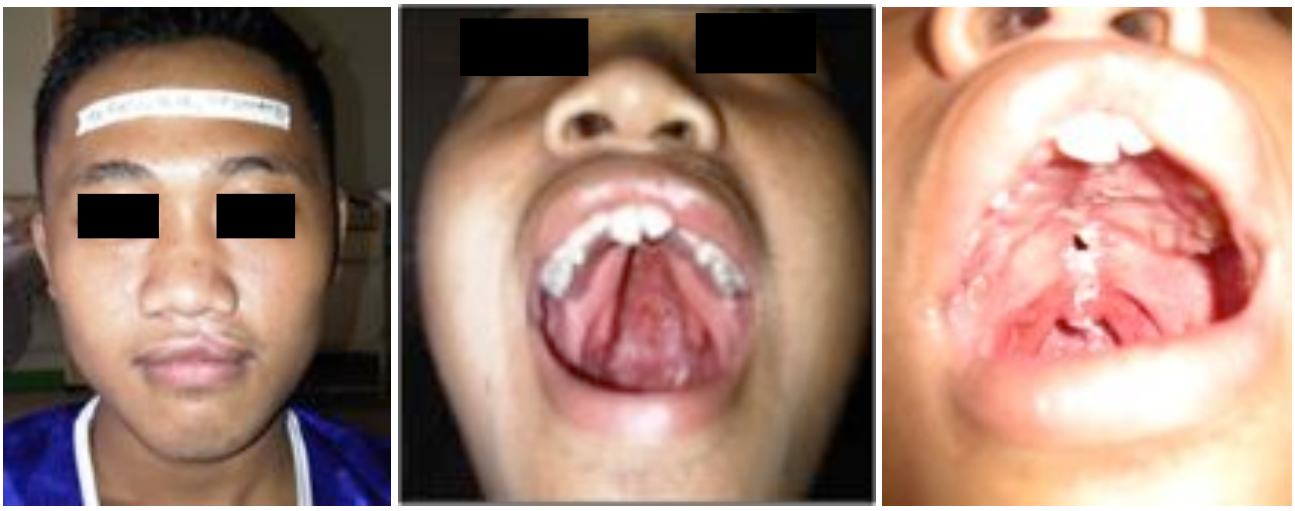

Figure 10. Picture of case 4 (Left) Preoperative Antero-posterior view (Middle) Intra-oral view. (Right) One-week postoperative with 3 mm palatal fistula.

The aim of cleft palate repair was to restore the anatomical structure of the palate, correct feeding function, improve speech development, and promote consequent maxillary growth. There are many opinions from the experts about the recommended timing of palatoplasty either by one stage procedure and two stage procedures. One-stage procedures are performed at approximately 1 year of age. It has been shown to exert a positive influence on speech development and early maxillary growth compared to the two-stage procedure.[4] After surgery, patients usually discharged within 1 or 2 days, and almost all surgeons apply feeding restrictions. e bleeding to occur intraoperative, and palatal muscle dissection is more difficult.[7] Postoperatively, incidence of palatal fistula is higher.[5,8] According to the literature, the rate of fistula after a late primary palate repair varies between 3 to 45 percent of cases. Fistula recurrence rate in some center is as high as 37 to 50 percent.[8,9.]

Most of adult with un-operated cleft palate have good maxillary growth but poor speech outcome. According to the literature, primary pharyngeal flap with a two-flap palatoplasty is often required to close the un-repaired cleft palates in adults, as it is frequently associated with palatal tissue hypoplasia and a wide cleft.[5] Nevertheless, the effects of the pharyngeal flap in the treatment of velopharyngeal insufficiency remain uncertain[5].

Our modification based on the two-flap palatoplasty, by leaving periosteum at the lateral sides of the flap. We also include a 3-mm gingival extension to widen the flap and aid cleft closure in adults. This technique is emphasized on the preservation of the root of teeth, which must not be exposed. Honey tampon, by using absorbable hemostatic sponge as media, was used at the lateral palatal defects. This had previously been shown to hasten the epithelialization of lateral defect post palatoplasty.[3]

From histologic studies in healthy gingiva, the depth of gingival sulcus is between 0 to 6 mm. The gingival structures include basal layer, spinous layer, granulous layer, and corneal layer; similar to that of the skin. The main frameworks of the gingival epithelium is keratinocytes, with its migration process similar to that of the skin. The oral epithelium undertakes continuous renewal. The turnover rate for different areas of the oral epithelium in the experimental animals are 5 to 6 days on the palate, tongue, and cheek; and 10 to 12 days on the gingiva.[10] Based on these, the effect of honey on the gingiva is assumed to be similar with the effect honey on the skin.

In our center, postoperative diet are in liquid form in the first 24-hours after surgery. The use

of straw should be avoided. Beginning from 48-hours post surgery, soft-textured food containing high protein were allowed for two weeks. Normal diet may resume on week three after surgery.

SUMMARY

Rehabilitation of maxilla or palatal defect has been well defined for prosthodontists and surgeons. The prosthodontist prosthesis enables the patient to speak more effectively by reproducing normal palatal contours and by covering the defect. The obturator lessens the psychological impact of surgery by making the post-operative course easier to tolerate. The patient is reassured that rehabilitation has been implemented. The obturator may reduce the period of hospitalization. Artificial anterior teeth may be added for aesthetics, so that when the patient recovers from the operation, the teeth and facial appearance are psychologically comfortable. The mental well-being of the patient is boosted considerably.[5] In this case, prosthodontist and dentition prosthesis used as modalities that offer simple solution to close the palatal defect compared to a more complicated surgical intervention.

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