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ORBICULARIS ORIS MUSCLE ADVANCEMENT WITH BILATERAL CHEEK MUCOSAL FLAPS FOR POST BURN MICROSTOMIA

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Oral commissures are complex structure when lost or injured, they present a complex reconsructive challenge. Between March 1998, and March 2001, thirty five patients were admitted to Plastic, Reconstructive and Burn unit, Mansoura University Hospitals. Patients had bilateral full thickness burn at the corners of the mouth leading to microstomia. Commissuroplsty was done . Procedures include release of contracture, dissection of orbicularis oris muscle. Muscle ends were sutured to form framework of oral opening. Defects at the commissures were covered with bilateral double rhomboid mucosal flaps from the cheek. Patients were followed up for one year. This technique gives goals of commissure reconstruction both functionally and aethetically. Also it creates mobile lip segment that moves dynamically and symmetrically with facial expressions.

Keywords: Gral commisutes, microstomia, commissutoplasty.

INTRODUCTION

Bakamjian in 1964, stated that molding the lip commissure with functional fidelity is an almost impossbile task [1]. The commissure is thin, delicate structure that is highly mobile and essential to normal facial appearance and expression [2].

Burn of oral commissures include broad spectrum of injuries ranging from relatively superficial ulceration of vermilion and mucosa to devastating full thickness destruction of lip and extensive keloid formation which contract mouth apperture, limit mobility of lips, and hinder patient comfort.

The most important principle in commissure reconstruction involves the maintainance of normal lip and mouth function including oral continence, eating, speech, and adequate oral access. Also aesthetically desirable in any plastic surgery, good colour match, a neglectable donor site, and thin pliable flaps are particularly important in the facial region [3].

The use of local tissue forms the cornerstone of commissure reconstruction [3]. Many flaps can be used for commissuroplasty [1,2,4-10]. These local flaps from adjacent tissue either from the tongue or cheek mucosa. Muscles were used as a part of these flaps to reconstruct orbicularis oris muscle [2,10].

In this study, we deal with patients with moderate bilateral old post- burn microstomia. In those patients, contracture is released. Orbicularis oris muscle is dissected from skin. Its cut ends are sutured. Defects obtained in the commissure are covered with bilateral double rhomboid mucosal flaps which are thin, pliable, have good colour match,and large enough to fill defects in the commissure after release of contracture.

This technique gives the goals of oral commissure reconstruction. There is improvement of commissure and mouth appearance at rest. Also mouth regain its function as regard to oral continence, eating, speech and adequate oral access.

PATIENTS AND METHODS

Between March 1998 and March 2001 thirty five

patients, four females and thirty one males, had bilateral burn at the corners of the mouth. The burn is full thickness leading to microstomia after healing. The two mouth angles were affected. Operation was done after burn by about 1 to 11/2 years. Their ages ranges between 12 and 43 years.Patients were followed up for 1 year.

Operative Technique:

The location of the new commissure is determined by measuring the distance from the midline of the upper and lower lip to the site of the new cmmissure. The site of the new commissure can be determined by vertical line drawn from the pupil.

Transeverse , full thickness commissurotomy incision is made to the selected new commissure point releasing commissure contracture. These bilateral incisions are always kept within the boundaries of the cutaneous scar. No cutaneous scar is excised. As the scar is released, both cheeks retracts to their normal location.

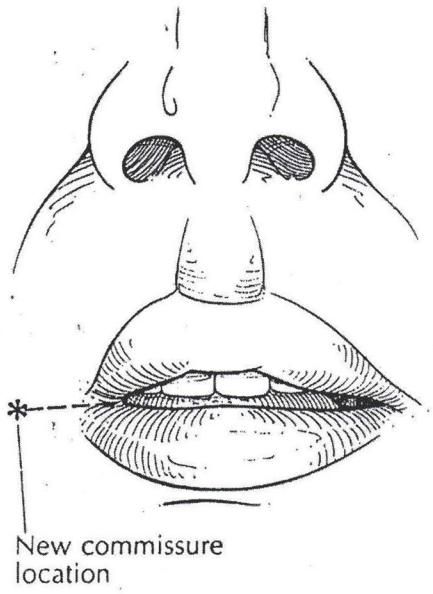
Assessment of orbicularis oris muscle is done. The muscle is dissected carefully from the skin. Both ends of orbicularis muscle are identified and the ends are trimmed to expose muscle fibres ends. Continuity of orbicularis ring at the vermilion and corner of the mouth is established by either end-to- end or end-to- side suture using Vicryl 5-0 suture. This form the framework of the new commissure.

Division of contracture forms two raw areas at each commissure that are approximately two rhomboids. Two rhomboid flaps from cheek mucosa are elevated and dissected as shown in figure(1). The flaps are constructed on 120 degrees angle. The flaps are rotated laterally to reconstruct the angles of the mouth. The donor sites are easily closed primarily by direct sutures.

RESULTS

The results are satisfactory in most patients. The mouth opening appears wide and nearly normal. The two angles are at their normal location. Patients feel more comfort. In the follow up period some contracture may take place due to multiple suture lines. This become insignificant within one year. Also notch from the scar is present where the flap meets the medial lip segment. Z plasties at the linear scar can *elimenate this problem.*

Results can be shown in (Fig. 2&3).



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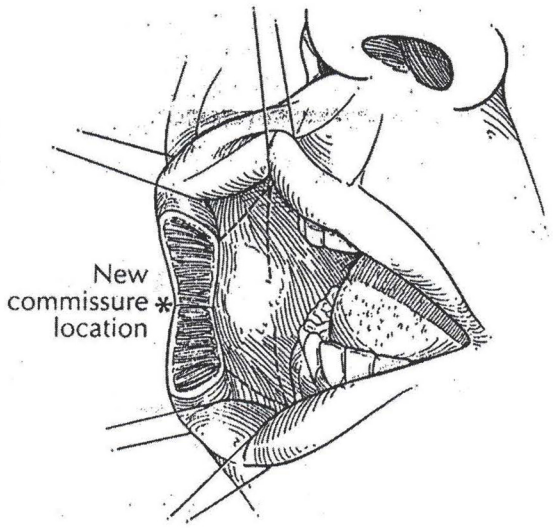

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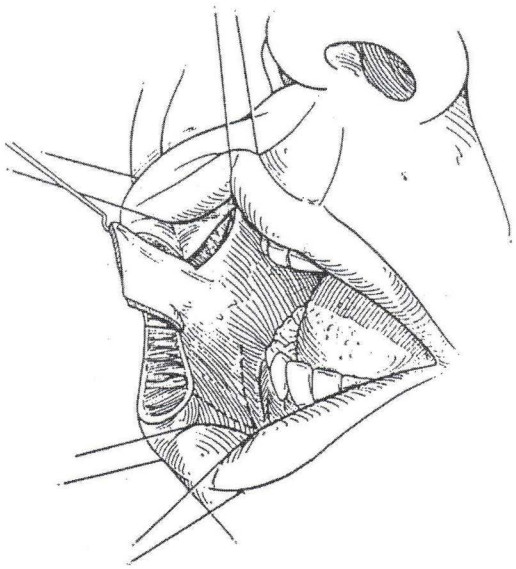

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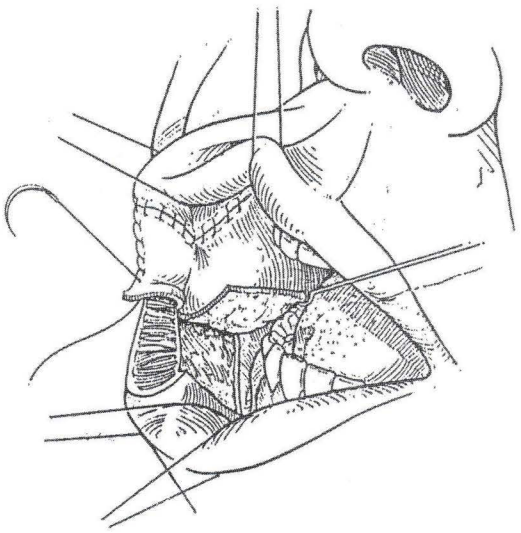

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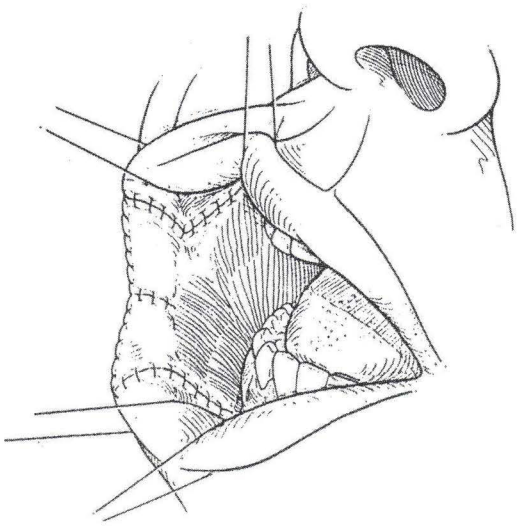

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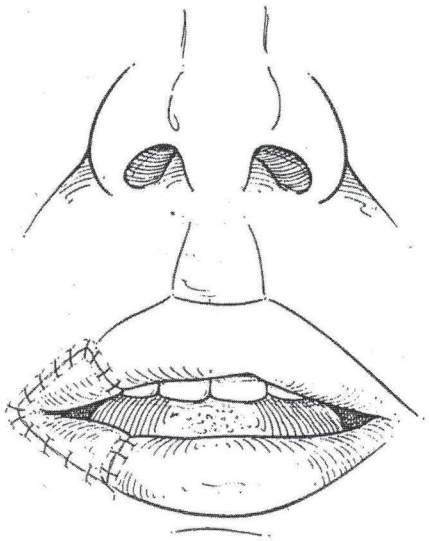

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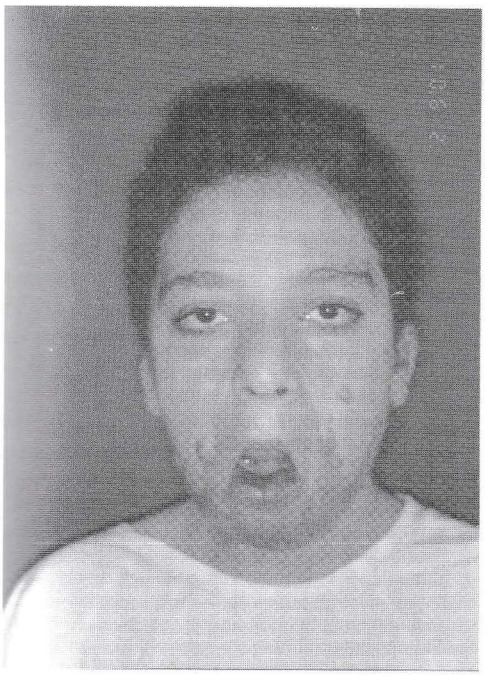
Fig. (1): Operative techniques

- *a- Location of new commissure site*
- *b- b- Commissurotomy incision to the site of new commissure. Orbicularis oris muscle is dissected. Marking of double rhomboid mucosal flaps.*
- *c- Elevation of mucosal flaps to cover defects at the angles of the month and sutured orbicularis muscle*
- *d- Elevation of mucosal flaps to cover defects at the angles of the month and sutured orbicularis muscle*
- *e- Suturing of the flap and month is opened*
- *f- Mouth is closed*



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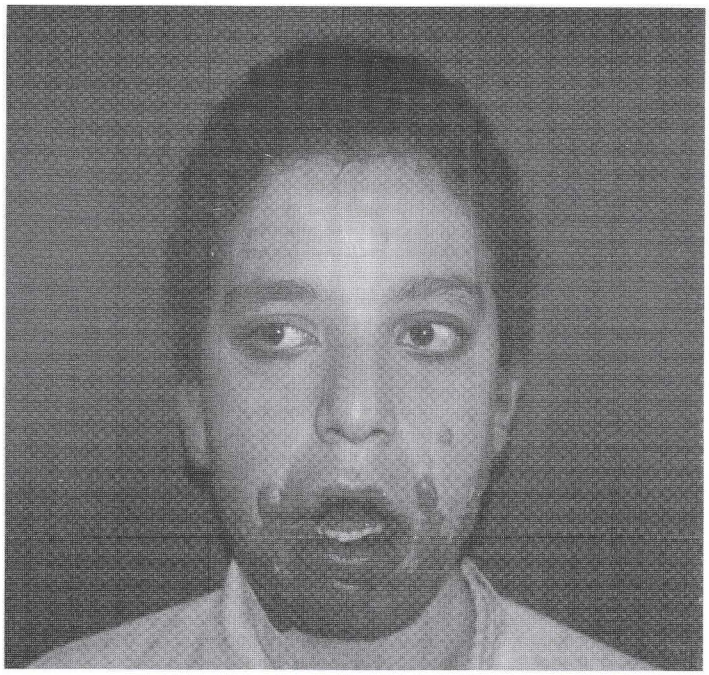

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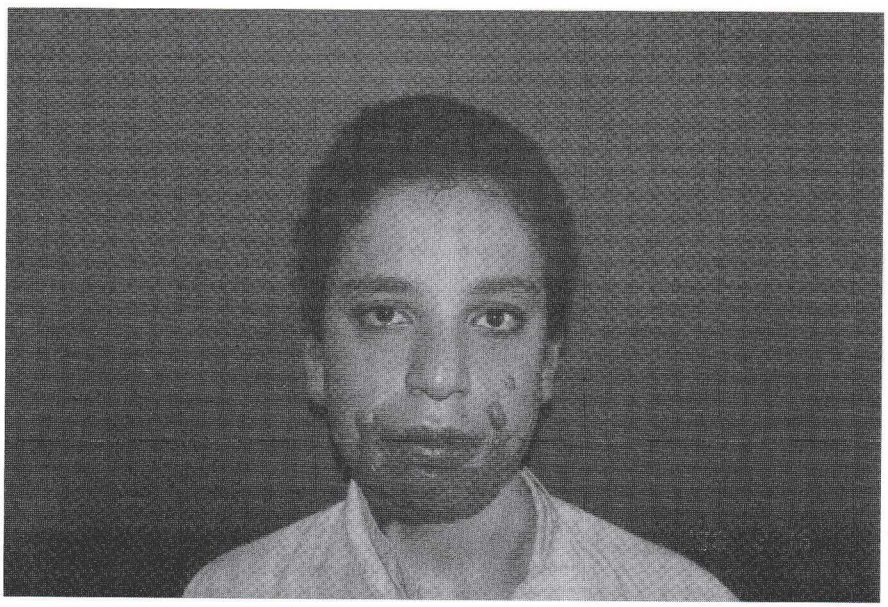
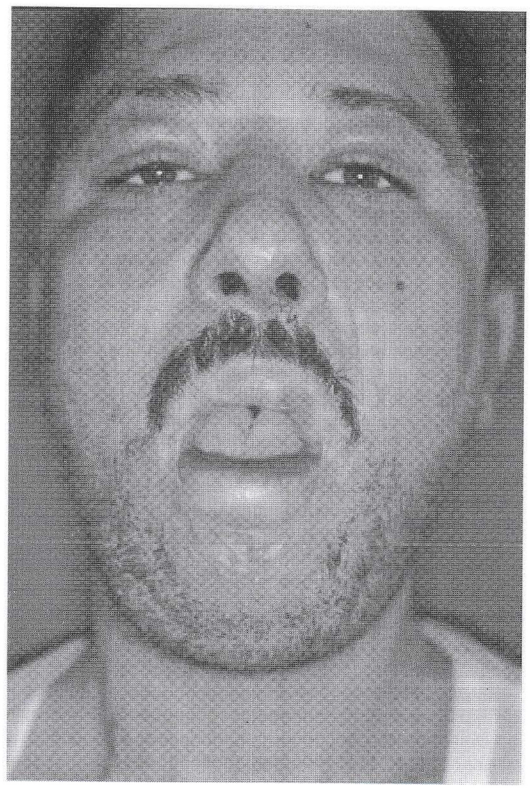


(c)

Fig. (2):

a- Male child 14 years old with bilateral post burn microstomia, preoperative
b- Post operative view. Mouth opening appears normal , 6 months after operation
c- c- Post operative view mouh is closed , angles of the mouth is at their normal location



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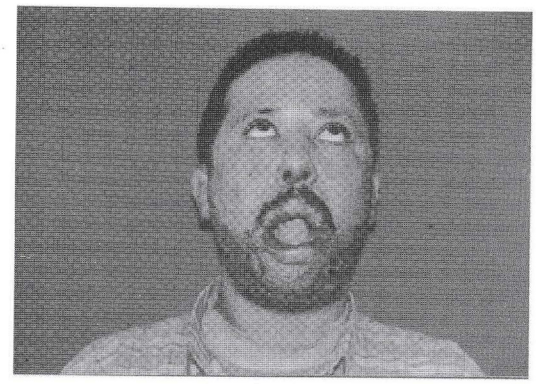

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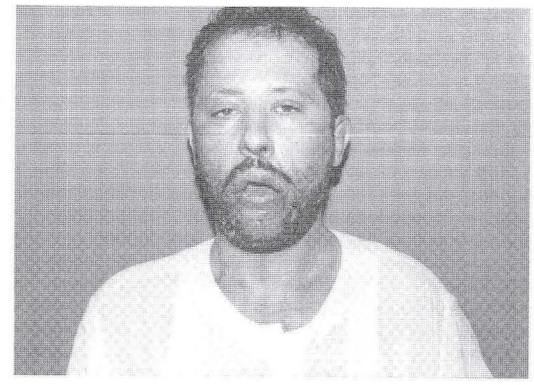

(c)

Fig. (3): a- Adult male 40 years old with narrowing oral opening, preoperative.
b- Postoperative view, 2 weeks after operation.
c- Postoperative view, 2 months after operation

DISCUSSION

Oral commissure is a unique structure aethetically defined by delicate tapering and convergence of vermilion substance of the upper and lower lip. It functions as a pathway for orbicularis oris muscle and also serves as the site of insertion for several muscles of facial expression. These properties should be incorporated into the reconstructive effort to the greatest exent possible within the confines of the tissue deficit [10].

Partial or full thickness perioral facial burns may lead to a contracture of the tissues surrounding the oral commissures that results in microstomia. The resulting deformity is directly related to the extent of tissue necrosis that occurs at the time of injury[11].

There is consistent pattern of deformity following significant tissue loss at the commissure. There is lateral displacement of the fuller , central lip segments including the philtrum of the upper lip and the midline of the lower lip. There is anteromedial translocation of the entire commissure as the lateral cheek is pulled medial and forward. The scarred commissure becomes rounded, thick, and immobile [2]. As a result of scar deposition and contracture, the oral circumference is reduced. The resulting post burn microstomia is disfiguring and in severe cases causes feeding difficulities.

Splinting of burned oral commissures had been used by several authors [11-15]. Splinting can decrease the extent of contracture in mild and moderate cases. The objective of splitting is to maintain original mouth size against contracting wound. However the device should be used for several months and therapy requires good parental and patient co-operation [12]. But if there is full tissue necrosis and loss of tissues, splinting can not be used. The only way to solve this is late reconstruction of commissure or

commissuroplasty.

Late reconstruction using local flaps were described widely in the litterature. Various interpositional and tunnel flaps can be used to elimenate this problem. Tongue flap done in two steps were used by many authors [1,2,7,16-18]. Mucosal flaps from adjacent cheek mucosa were used either advancement [8], or rotation flaps [20,21].

Recognition of the importance of muscle reconstruction led to the development of a technique for separate mucosal and muscle flaps [8]. Orbicularis oris muscle advancement flap [21,22]. Vermilion myomucosal flap from upper and lower lip was used with inclusion of strip of orbicularis oris muscle [10]. Tongue flap with strip of tongue muscles was used to replace the burned part of orbicularis oris muscle[2].

In this study we dissect orbicularis oris muscle after release of the contracture at the corner of the mouth. Successful reconstruction requires release of all contractures and replacement of deficient muscle and mucosa. Both ends of orbicularis muscle are sutured. This lead to establishment of continuity of orbicularis muscle providing framework of the new commissure. Functional reconstruction that combines lateral advancement of orbicularis oris muscle, recreation of the modiolus labii, and reestablishment of the vermilion continuity has been developed. Functional restoration of the labial musculature to the preinjury position appears to significantly decrease the amount of post operative wound contracture. The created defects at both commissures are covered by bilateral double rhomboid mucosal flaps. The flaps have good colour match with no ability to contract. The double rhomboid mucosal flaps fits nicely into the defect obtained after release of contracture. Also this technique creates mobile lip segment that moves dynamically and symmetrically with facial expression. These flaps both muscle and mucosal flaps are done in one stage. The patient feels more comfort after operation. Our reconstructive objectives are gained by this technique as regard to both functional outcome and aethetic look of the patient.

In conclusion, this technique achieves the goals of oral commissure reconstruction. Functionally there is maintenance of normal lip and mouth function including oral continence, eating, speech and adequate oral access. Furthermore, use of double rhomboid mucosal flaps restore the essential three dimensional lip anatomy. Also mucosal flaps are thin and pliable. It fits nicely into the defect, present at mouth angles, have good colour match, and neglectable donor site. No long term morbidity is present.

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