



Assessment of a new surgical management of maxillary double lip

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Abstract: Background: Double lip may be congenital or acquired abnormality. Different surgical approaches were used for management. These approaches may be impacted by the possible edema of the surgical site. Fixed landmarks along the incision line should be determined to achieve ideal healing process. The objective of this experiment is to assess the success of a new surgical technique for the management of double lip from the point of view of patient satisfaction and healing. **Materials and Methods:** Twelve patients diagnosed as suffering from double lip seeking for treatment were included in this study. They were assigned into two groups (6 patients each). After anesthesia, a standard surgical excision via elliptical incision was used in the first group. A modified surgical protocol was used in the second group by passing a pre-incision suture needle perpendicular to the middle of every planned incision. The pre-incision suture is tied after excision of excess tissue as one of the regular sutures. The excised tissues were histologically examined. The healing changes were recorded. Patient satisfaction was evaluated. **Results:** Satisfactory healing was achieved in 11 cases. Histological examination revealed that the excised tissues are normal mucosa. Wound dehiscence occurred in one patient from the first group. Furthermore, patient satisfaction analysis revealed significant difference between both groups. **Conclusions:** Defining preoperative landmarks by pre-incision sutures in soft movable lip tissues with possible edema produces good healing with lesser complications in double lip patients. In addition, it facilitated more patient satisfaction compared to classical surgical excision.

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Keywords: Double lip; surgical excision, pre-incision suture, suturing, healing, congenital abnormality.

1. Introduction

Double lip is an uncommon benign annoying condition that may be congenital or acquired. This fold of soft tissue showed a variety of clinical presentations. It usually appears bilateral and rarely manifests unilateral. Different sizes of these tissues were reported. Patients mainly seek treatment for cosmetic purposes.^{1,2} Mostly, the excess tissue become apparent during smiling.³ The skillful surgical management is a very important factor in achieving good aesthetic demands.¹⁻⁴

Surgical excision is the recommended treatment for the excess tissue of the double lip. Many surgical approaches were considered. Elliptical incision and Z-plasty were used.⁵⁻¹⁰ Studies comparing surgical techniques are lacking.

Lip tissues have a high tendency to surgical edema. It may be evident immediately during the surgical intervention. The swollen soft tissue may exhibit dimensional changes in the flexible movable soft tissues. These changes may affect accurate localization of sutures after excision of the excess

tissues. Sensitive technique necessitates accurate placement of sutures for proper healing.⁷⁻¹⁰

From the above point of view, fixed landmarks along the incision line is better to be determined to achieve ideal healing process. The objective of this experiment is to assess the success of a new surgical technique for the management of double lip from the point of view of patient satisfaction and healing.

2. Materials and Methods:

The study was conducted in Oral and Maxillofacial Surgery Department, Faculty of Dentistry, Mansoura University. This study was conducted in accordance with national laws on patient care. The protocol was submitted to and approved by the Ethics Committee of Faculty of Dentistry, Mansoura University. Twelve patients diagnosed as suffering from double lip were selected from the Outpatient Clinic of Oral and Maxillofacial Surgery Department, Mansoura University. Clinical examination and laboratory investigations were performed. Patients were asked to sign an informed

consent prior to surgery. Patients were asked to maintain good oral hygiene preoperatively.

2.1.1. Surgical procedures:

Bilateral infraorbital nerve block with local infiltration anesthesia was used for all patients using 2% mepivacaine hydrochloride with 1:20000 Levonordefrin (Mepecaine-L, Alexandria Co. for pharmaceuticals, Alexandria, Egypt) except one patient. General anesthesia was used for an adult male patient from the first group.

The surgical approach used in this study was a transverse elliptical incision. The mucosa was incised with blade 15 held on a Bard-Parker handle via elliptical incision all the way down along the base of the fold. The fold is forced away from the inner side of the lip with forceps.

2.1.2. Grouping of patients:

Patients were randomly assigned into two groups (6 patients each). After anesthesia, a standard surgical excision via elliptical incision was used in the first group. The elliptical incision was planned to include the excised fold in one side of the midline. Interrupted 3/0 silk sutures were used for approximation of the wound edges.

A modified surgical protocol was used in the second group by passing a pre-incision suture needle perpendicular to the middle of every planned incision. The needle is passed deep in the tissues with at least 3 mm away from the incision line (fig. 1). The pre-incision suture is tied after excision of excess tissue as one of the regular interrupted sutures.

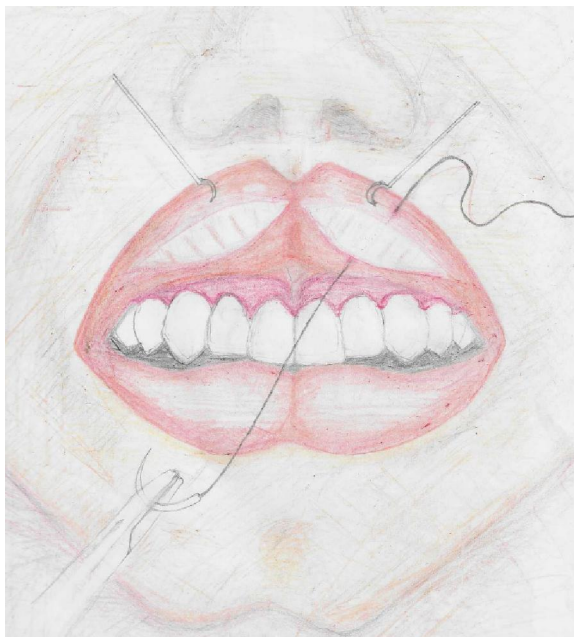


Figure 1: A diagram representing the pre-incision suture before excision of the bilateral double lip.

2.2. Healing:

All patients received antibiotics (Augmentin, 1 gm tablet, Medical Union Pharmaceuticals, Egypt) every twelve hours starting from the day of surgery for five days. Also, non-steroidal analgesic anti-inflammatory (Declophen, 50 mg Diclofenac sodium tablet, Pharco Pharmaceutical Co., Alexandria, Egypt) was prescribed for the patients. Patients were recalled for sutures removal after one week. Patients were followed up every week for any complications and for assessment of healing.

2.3. Histological Examination:

The excised tissues were processed for histological examination as follow:

2.3.1. The paraffin technique: (Glauert AM.1987)¹¹

The specimens should be put immediately in a fixative, formal saline. After adequate fixation in 10% formal saline solution, the specimens were washed under running tap water overnight to remove the excess of the fixative. Water is removed from the tissue gradually by putting it in ascending grades of alcohol (i.e. 50%, 70%, and 90% then in absolute alcohol). Since paraffin and alcohol are not miscible, the tissue was put in 2 changes of xylene (clearing agent), which is miscible with both alcohol, and paraffin. It also makes the tissue translucent. When xylene completely replaced the alcohol in the tissue, and the specimens become clear, they were ready to be infiltrated with paraffin. They were removed from the xylene and placed in a dish of melted, embedding paraffin, and the dish is put into a constant temperature oven, regulated about 60° C for 2-3hours. As the specimens were completely infiltrated, they were removed from the dish of melted paraffin, with warm forceps, and placed in the center of a box of melted hard paraffin, the bottom of which was the surface of cutting. By the use of a microtome, serial sections were done from the paraffin blocks containing the specimens. The cutting was done at the desired thickness, which was 4-6 micron. Sections were cut coronally. A short length of paraffin ribbon was floated in a pan of warm water (about 42°C). The prepared slide was slipped under the ribbon and then lifted from the water with the ribbon, which contains the tissue sections arranged on its upper surface. The slide is placed on a constant temperature-drying table, which is regulated to about 37-42°C, so the sections will adhere to the slide. The slide is then allowed to dry on this table.

2.3.2. (H & E) staining: (Baker and Silverton's 1998)¹²

Dissolve paraffin by immersing the section in xylol (2-3min). Replace the xylol by putting the section in absolute alcohol (2-3) minutes. Bring sections down to water in descending grades of alcohol, absolute alcohol, 90%, 70%, 50%, then

distilled water (2min each). Stain in hematoxylin, basic stain which bears +ve charges and stains basophilic. Wash the section in tap water (10-20 min). Counter stain with eosin, an acidic stain that bears -ve charges and stain acidophilic structures red, (1-5 min). Wash in water. Dehydrate in ascending grades of alcohol. Clear in xylol. Mount sections in Canada balsam.

2.4. Patient and surgeon satisfaction:

Data for patient and surgeon satisfaction was recorded and evaluated. Overall level of satisfaction for each patient about the surgery results was recorded, using a three-point scale of poor, good, and excellent. Surgeon satisfaction was recorded using a

three-point scale of dissatisfied, neither satisfied nor dissatisfied, and satisfied.

3. Results

3.1. Demographic data:

The age range was from 17 to 62 years. The mean age of the patients was 27.67 in first group and 26.33 years in the second group. Both groups were formed from 5 males and one female patient. There was no statistical difference between the two groups regarding age and gender (Table 1).

Different sizes of double lip lesions were seen either unilateral or bilateral (fig. 2A and fig. 2B). Double lip became apparent on smiling (fig 3).

Table 1: Test statistics^b of the differences in age and gender between the two groups:

	Age	Gender
Mann-Whitney U	15.000	18.000
Wilcoxon W	36.000	39.000
Z	-.482	.000
Asymp. Sig. (2-tailed)	.630	1.000
Exact Sig. [2*(1-tailed Sig.)]	.699^a	1.000^a
a. Not corrected for ties.		
b. Grouping Variable: Group		



Figure 2: A photograph showing a prominent bilateral double lip in a male (A) and a small unilateral double lip in a female patient (B).

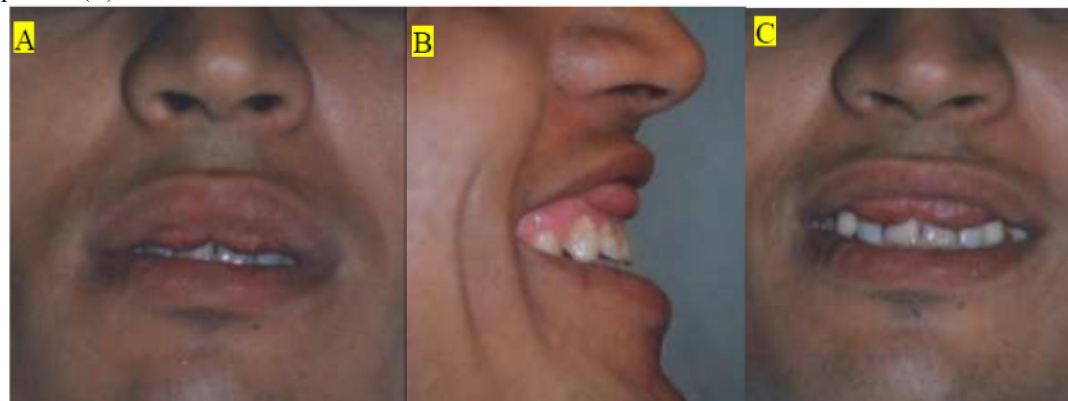


Figure 3: A photograph showing a bilateral double lip in a male during rest (A) which appears larger during smiling from the side view (B) and from the front view (C).

3.2. Healing evaluation:

Satisfactory healing was achieved in 11 cases (fig.4). Mild edema was recorded in 2 cases in group I (fig. 5A) and one case in group II, while wound dehiscence occurred in only one patient from the first

group (Fig. 5B). Edema disappeared completely within one week except one case from group I that lasted more than 1 week. None of the patients reported oozing of blood through the sutures or severe facial infection.

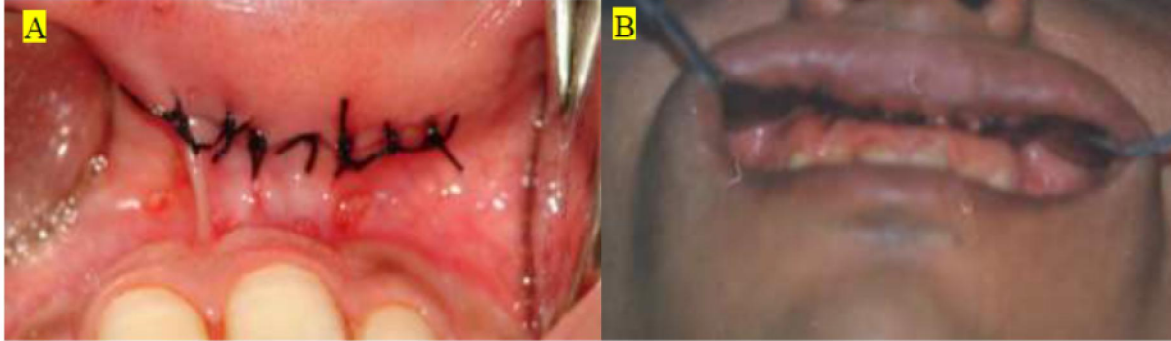


Figure 4: Immediate postoperative photograph of a unilateral case from group I (A) and a bilateral case from group II (B).

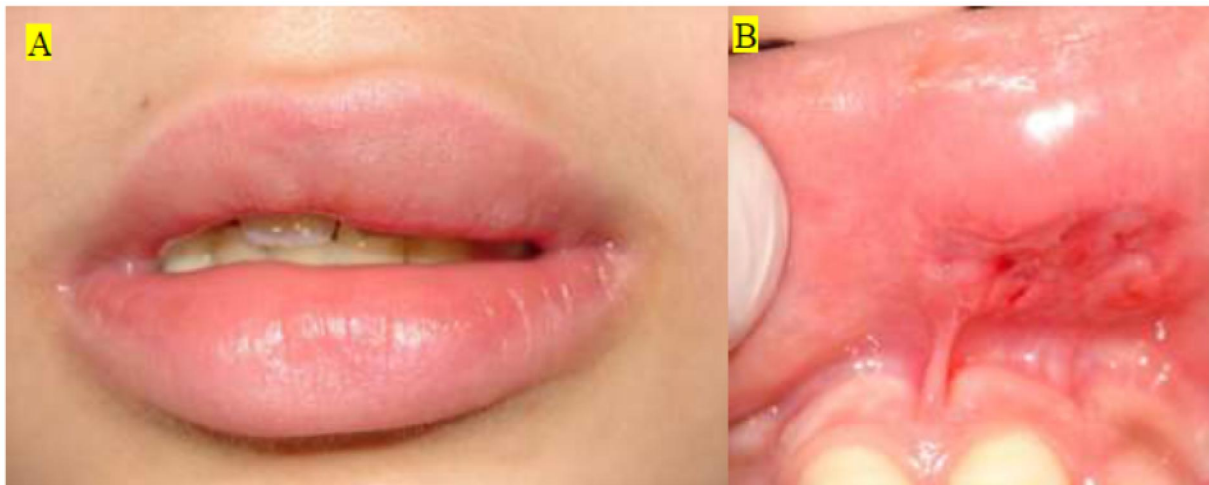


Figure 5: A photograph showing edema after surgical excision of unilateral maxillary double lip (A) and wound dehiscence after surgical excision of a double lip (B).

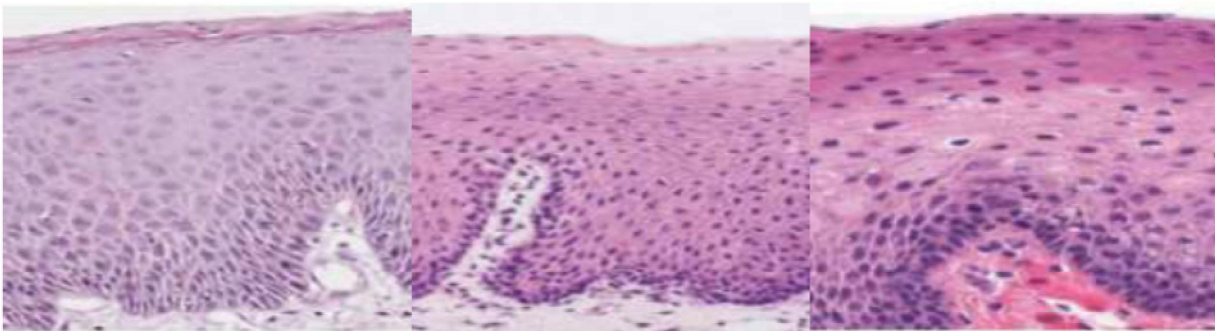


Figure 6: A Photomicrograph of human double lip mucosa sections (H & E 400X) showing increased thickness of the epithelial cell layers and increased length of connective tissue papillae and epithelial rete pegs, also connective tissue layer showed increased infiltration of inflammatory cells.

The use of the pre-incision suture aided also in the control of labial soft tissues during surgical manipulation with rapid suturing after excision of the lesion.

3.3. Histological examination results:

After photographing of the slides, we found that the excised labial mucosa of double lip showed histological appearance of normal mucosa with increased thickness of the epithelial cell layers and increased length of connective tissue papillae and epithelial rete pegs, also connective tissue layer showed increased infiltration of inflammatory cells (Figure 6). Histopathological examination of submucosal structures showed loose areolar tissue, hyperplastic mucous glands, blood-filled capillaries, and plasma

cells and lymphocytes perivascular infiltration.

3.4. Results for patient and surgeon satisfaction:

Data for patient and surgeon satisfaction after 4 weeks of follow-up showed that all the patients were satisfied with the results. Ten patients gave scores 3 (excellent), while two patients from the first group gave scores of 2 (good). Surgeon satisfaction showed that they were satisfied with the results in 11 patients. A record of neither satisfied nor dissatisfied was found in only one case from the first group. Patient and surgeon satisfaction analysis revealed non-significant difference between both groups (Table 2). All treated patients were highly satisfied with their final appearance.

Table 2: Test statistics^b of the differences in patient and surgeon satisfaction between the two groups:

	Patient Satisfaction	Surgeon Satisfaction
Mann-Whitney U	12.000	15.000
Wilcoxon W	33.000	36.000
Z	-1.483	-1.000
Asymp. Sig. (2-tailed)	.138	.317
Exact Sig. [2*(1-tailed Sig.)]	.394^a	.699^a
a. Not corrected for ties.		
b. Grouping Variable: Group		

4. Discussion:

Demographic data of the study showed similarity between groups. There was a higher incidence of double lip among males than females. In contrast with the present study, many studies concluded that there is no race or gender predilection.^{1, 2, 8} However, the study of Palma and Taub parallels the current study. They suggested, in a report in 2009, a male predilection of 7:1.¹³

The treatment of congenital double lip is indicated for esthetic concern or when excess tissue interferes with mastication or speech or leads to habits as sucking or biting the redundant tissue.¹⁴⁻²¹ Our results showed that all cases were seeking treatment for aesthetic reasons and only one patient was complaining that the double lip is the cause of improper retention of his upper complete denture. Many studies concluded that the majority of cases ask for treatment for cosmetic reasons. The unaesthetic appearance may lead to psychological and social problems in young patients.²²⁻²⁴

Maxillary double lip surgeries were performed under general and local anaesthesia.^{3, 22, 23, 25} However, local anesthesia is mostly preferred. In our study, infraorbital nerve block was used with minimal local infiltration to decrease bleeding. Local infiltration was not used alone to avoid labial tissue distortion that may affect the surgical outcome.

Various surgical techniques have been documented in the literature to be used for treatment of double lip.^{5, 15} Simple elliptical incision was the most commonly-used technique to remove the redundant labial tissue in many reports.^{4, 9, 13, 16, 17, 26-31} In the present study, the standard elliptical incision technique was compared with its modification by adding a pre-incision suturing. Both techniques were compared regarding complications, healing and patient satisfaction.

Bleeding scores showed detectable decrease in bleeding severity in the second group. This could be explained on the bases of rapid approximation of the wound edges by the already present pre-incision suture. Also, the accurate localization of this suture with good placement of successive interrupted sutures facilitated proper approximation of wound edges. No available studies compared the use of such modification in any surgical intervention. However, it was reported that proper suturing and less operating time decreased intra-operative bleeding. The nature of the excess tissues forming the double lip are not highly vascular and so have less ability for excessive bleeding. Our histopathological examination of the excised tissues showed normal oral mucosa with numerous mucosal glands. Reported histological findings in the literature include prominent or hypertrophied salivary glands, capillaries, and mixed

inflammatory cell infiltration.^{25, 32-34}

As tissue necrosis is the final result of traumatic surgeries with infection or decreased blood supply. The proper healing for both groups could be explained by the absence of abnormal tissues or any infections preoperatively. The good vascularity of the labial mucosa also promotes good healing. Our findings showed agreements with many researchers reporting fast healing in the oral soft tissues.¹⁷ Also, the use of this simple surgical technique produced no thermal injury to the labial mucosa as with electrosurgery.

Many studies investigated the influence of the surgical intervention methods on pain during and after surgery.^{18,19} Only one patient in the first group showed unusual transient moderate pain post-operatively that received within two weeks. Wound dehiscence was considered the possible cause.

The decreased swelling response among both groups could be attributed to the atraumatic nature of the surgical technique used. Improvement of swelling in the successive visits could be also attributed to the rapid resolution of postoperative edema as a result of good tissue vascularity.

Our explanation of good healing and patient satisfaction is the immediate removal of the cause of patient complaint in a single treatment visit. In coordination to our findings, other studies concluded improvement of patient mode after many single surgical interventions. On the other hand, our results of classically treated group showed a case of wound dehiscence after one week of follow up. Other studies disagree with our results as they reported no dehiscence following surgical excision of many double lip lesions.⁸

Several surgical techniques have been described to repair double lip: W-plasty, electrosurgical excision and triangular excision, elliptical excision and laser.²¹ The surgery resulted in good cosmetic results and no relapse was observed.

Vicryl or polyglactin was used for suturing tissues after double lip surgery in many previous studies.²² In the current study 3-0 black silk sutures were used to withstand enough mechanical load produced by orbicularis oris. This also may be useful in dense hyperplastic tissues. The same suture material was previously used by many surgeons.²³

Primary closure by sutures after W-plasty or elliptical excision of hypertrophic double lip mucosa is the recommended treatment. Good results are usually obtained.³⁵ Due to the lack of clear guidelines and comparative studies in the literature, the choice of the incision depends on the experience and preferences of the surgeon. In the present work, two elliptical incisions on both sides of the labial frenum were performed in both groups. Satisfactory aesthetic outcome was reported in many studies performing the

same incision.²²

No recurrence of double lip deformity was recorded in the literature after successful surgical correction.^{4, 9, 13, 16, 17, 26-31} However, only one study reported a recurrent case of double lip.¹³ In our study, none of the patients was complaining from recurrent double lip tissue.

Double lip has been classically treated over the past years by simple surgical excision. In principle, for better healing and lesser complications, a simple pre-precision suture would be helpful. Because this suture will facilitate the proper approximation of the cut surface after initial surgical excision, the concepts described here may benefit most other long soft tissue surgical incisions.

Conclusion:

On the basis of the current study, it is possible to conclude that defining preoperative landmarks by pre-precision sutures in soft movable double lip tissues showed to be a reliable and simple modification with satisfactory outcome. It is proved to be safer and easier with less complications. In addition, it facilitated more patient and surgeon satisfaction compared to classical surgical excision.

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Conflict of Interest

The authors have no conflict of interest to declare.

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