

SIMULTANEOUS REPAIR OF CLEFT LIP AND HARD PALATE BY VOMER FLAP IN UNILATERAL COMPLETE CLEFT LIP AND PALATE**Magdy A. Abdelmuktader, Ahmed Taha, Moustafa S.A. Meki and Ibrahim A. El-Abd***

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ABSTRACT

This study was done to evaluate the short-term effect of simultaneous repair of cleft lip and cleft hard palate with vomer flap in unilateral complete cleft lip and palate patients (UCLP). This prospective study was carried out in 30 patients with unilateral complete cleft lip and palate who under-went simultaneous repair of cleft lip and hard palate by vomer flap. After 6 months, cleft soft palate was repaired. During 1st and 2nd operations, the alveolar gap, the gap at the posterior border of the cleft hard palate and the gap at the base of the uvula were measured. Postoperative complications, requirement of blood transfusion, infection, fistula formation, wound dehiscence and duration of operations were also recorded. Simultaneous repairs of cleft lip and closure of cleft hard palate with vomer flaps are easy to perform, safe and effective procedure in UCLP patients. No blood transfusion was needed. Alveolar cleft gaps, gaps at the posterior border of hard palate and uvular gaps were reduced remarkably, which made the closure of the soft palate easier with decreased operation time, dissection and also decreased oronasal fistula formation.

1. INTRODUCTION

Cleft lip and palate is considered the most common congenital anomaly affecting craniofacial region in humans, having a baby born with cleft palate into any family is connected with massive emotional and psychological distress to the entire family.^[1] Cleft lip and palate affects appearance, speech, hearing, growth, psychosocial wellbeing and social integration.^[1] There are many procedures for the closure of the cleft lip and palate each procedure has its advantages and disadvantages.^[2] Pichler introduced the vomer flap in cleft palate repair in 1926, and currently the vomer flap is often used for hard palate closure.^[3] In the Eurocleft studies, the patients treated with a vomer flap were associated with the best long-term maxillary growth.^[4] In unilateral complete cleft lip-palate (UCLP), if only cleft lip repaired first, it needs extensive dissection during palatoplasty, taking more time for operation and more chances of oronasal fistula formation, and if cleft palate repair is done earlier, there may be midfacial growth disturbance.^[5,6] But, after simultaneously repair of cleft lip and cleft hard palate by vomer flap, it does not need extensive dissection, takes less time during subsequent palatoplasty, and later on less chance of oronasal fistula formation and it has less effects on mid facial growth, so, hard palate repair can be done earlier.^[7-12]

2. MATERIALS AND METHODS

This prospective observational study was carried out in Al-Azhar university hospitals and Kafr El-Sheikh General Hospital during a period of two years. The

patients with unilateral complete cleft lip and cleft palate from 1 month to 3 months of both sexes were included. Patients with previous cleft surgery, syndromic patients, patients with abnormal bleeding profile and patients with other facial deformities were excluded. Complete blood count including bleeding and clotting time, SGOT, SGPT, Urea, creatinine and pediatric consultation was done. 30 patients underwent simultaneous cleft hard palate repair with vomer flap and repair of cleft lip (Modified Millard's Procedure), and then after 6 months cleft soft palate was repaired. Cleft alveolar gap and gap at the posterior border of the hard palate and uvular gap were measured and recorded before each surgery. Total time required for operation was also recorded.

The steps of the Surgery

Under general anesthesia with oral endotracheal tube in the midline, patient is placed supine on the table. Patient neck is extended and his face is painted. Oral cavity is wide opened by "Dingmans retractor," and a pack is placed around the endotracheal tube. Oral cavity is washed with povidone-iodine saline. Cleft alveolar gap, gap of cleft palate (at the posterior border of the hard palate) and gap at the base of the uvula are to be measured with Caliper.

Oral and nasal mucosal junction line on both sides is marked with marker pen, on noncleft side anteriorly at the anterolateral border of the prolabium extending posterior to the end of the vomer attachment. On cleft side marks starting from the junction between the oral

and nasal layers of the mucoperiosteum up to end posterior end of the vomer (fig.1). Adrenalin 1: 200,000 is injected along the incision lines. Care is taken to avoid the superficial tooth buds in the alveolar region.

Incisions are made on both sides with a number 15 blade through the periosteum to the bone. Injury to the alveolar soft bone and penetrating the developing deciduous tooth buds should be avoided. The flaps are made by using a periosteal elevators or palatal elevator and flipped across the cleft (fig.2).

With 4 or 5 Point Mattress sutures of 4-0 vicryl the vomer flap is sandwiched between the oral and nasal mucoperiosteal layers and simple sutures of 6-0 vicryl

are taken between the oral layer and the periosteum of the vomer flap. Good haemostasis is ensured and “Dingmans retractor” removed (fig.3).

Cleft lip repair is done by “Modified Millard Rotation Advancement technique.” In some cases, anterior part of the inferior turbinate is resected to mobilize the cleft alar base. A superiorly pedicled vertical lip flap (C-flap), derived from the minor cleft lip segment, is positioned superiorly in the anterior part of the nasal floor. This flap overlaps the septalvomer flap of the hard palate. A mucosal flap from each side of the alveolar ridge is dissected inferiorly. Lateral margins of the anterior nasal floor flap sutured with 4-0 or 5-0 vicryl. Primary alar deformity is also corrected (fig.4).

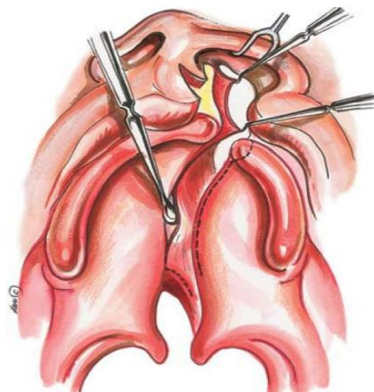


Fig. 1: Marking of the flap.

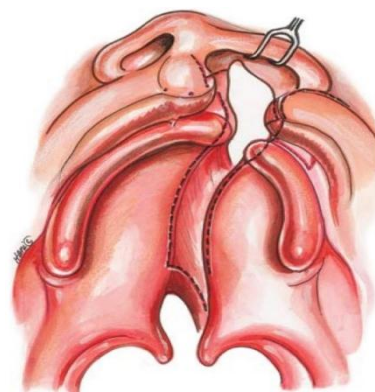


Fig. 2: Vomer flap elevation.

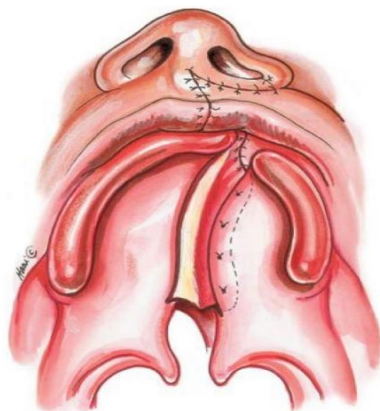


Fig. 3: Flap flipped across the cleft.

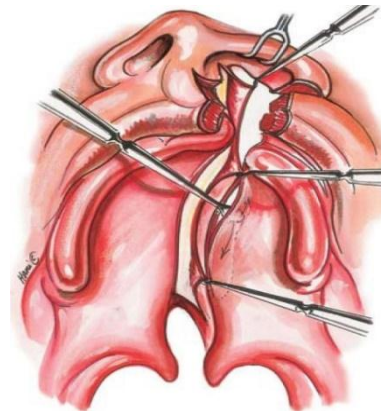


Fig. 4: Complete flap suturing.

Postoperative follow up

Postoperative follow up starts immediately after operation for any bleeding, respiratory distress, wound dehiscence, infection, flap necrosis, or any other complications. Plain water and milk are to be given after 3 to 4 hours of operation. Patients were discharged on the 2nd postoperative day, with the advice of antibiotics and analgesia for 2 weeks. Patients were also advised to come for lip stitch off from 5 to 7 postoperative days and follow up every month until the second operation after 6 months.

Data Collection and Analysis

In each case, information about the patient was obtained in the form of a pretested questionnaire, included age, sex, address, mobile phone number, any family history of cleft, side of the cleft lip-palate, other associated congenital anomalies, other illness, physical findings, preoperative investigations, operative procedure, postoperative complications, and follow up for 6 months. All the information about each patient was obtained in separate data sheet and arranged in systemic manner.

Ethical Consideration

All the patients' parents were given an explanation of the study and operative procedures in details with advantages and disadvantages, and they were included in the study only after giving informed written consent.

Ethical Committee of Al-Azhar Faculty of Medicine had also approved the study. The study decreased operation time, dissection and also decreased oronasal fistula formation, did not involve any significant risk, and did not cause an economic burden to the parents.



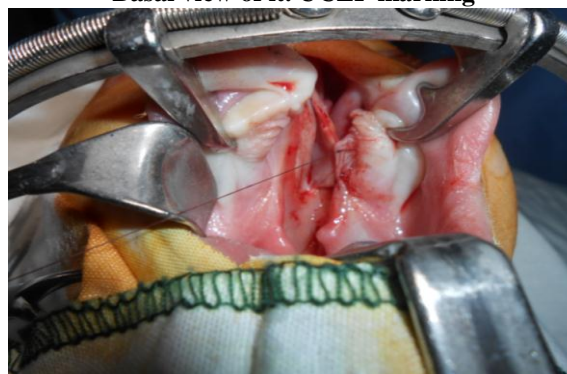
Anterior view of lt. UCLP marking



Basal view of lt. UCLP marking



Vomer flap elevation



Flap suturing



Complete flap suturing



Intraoperative basal view

3. RESULTS

Mean age of the patients was 2.2 months; the majority of patients ($n = 23$) were within 2 months to 3 months. A total of 17 patients were males (56.66%) and 13 were females (43.33%). Male: female ratio was 1.3: 1. Right-sided UCLP was involved in 10 patients and left side was involved in 20 patients.

Mean cleft alveolar gap, gap in the posterior border of hard palate and uvular gap before 1st operation was 7.5 mm, 11.5 mm and 6.7 mm, respectively. After 1st operation, mean cleft alveolar gap was reduced 4.9 mm in the study group. Cleft alveolar gap was reduced by 5.5 mm or more in 12 patients. Mean cleft palatal gap was

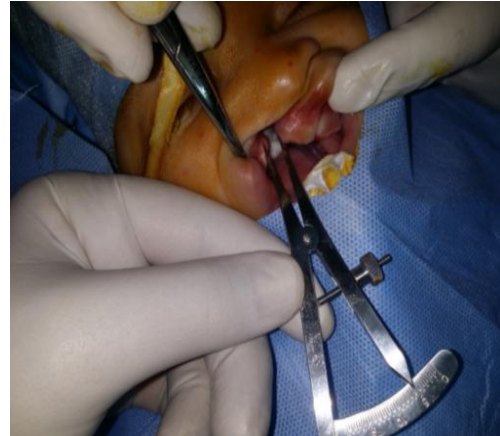
reduced by 4.6 mm in the study group. Cleft palatal gap was reduced by 4 mm or more in 25 patients. Mean Cleft uvular gap after 1st operation was reduced 2.34 mm in the study group.

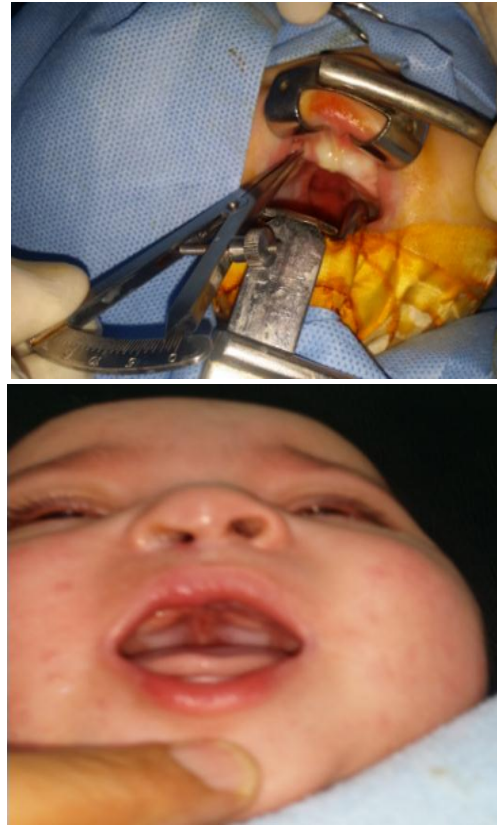
In our study, the 1st operation took mean time of 75 minutes, but in 2nd operation, mean time taken was 60 minutes. Mean total (1st + 2nd) operation time was 135 minutes. Mild postoperative bleeding (after 1st operation) was seen in 2 patients from exposed vomer bone. One patient developed partial vomer flap disruption. No patient developed oronasal fistula, also none of our patients had postoperative infection. All the patients came for regular follow up for 6 months.

CASE 1



CASE 2





4. DISCUSSION

Cleft surgery depends on the types of cleft, age of the patients, and the surgeon's choice.^[7] After repair of cleft lip alone in unilateral complete cleft lip-palate during palatoplasty extensive, wide dissection is needed and there are more chances of oronasal fistula formation which is very difficult to repair and there may be mid facial growth disturbance.^[5,6] But, after simultaneous repair of cleft lip and cleft hard palate by vomer flap, subsequent palatoplasty does not need extensive dissection, has less chance of oronasal fistula formation, takes less time for surgery, and as it has less effects on mid facial growth, can be done earlier.^[7-12]

This study was done to observe the effects of cleft hard palate repair with vomer flap done with cleft lip repair on UCLP.

The age range of the patients of the study was 1-3 months. In some other studies,^[6,13,14] the age of the patients was 3-7.5 months. Parents' educational, socioeconomic, and cultural influences whether the children with cleft would be brought to the hospital early or not.

In our study, cleft alveolar gap was reduced by 5.5 mm or more in 12 (40%) patients, and cleft palatal gap was reduced by 5 mm or more in 25 (83.3%) patients. In the study of Li *et al.*^[9] the mean cleft palatal gap reduction was 4.8 mm. In this study, younger patients had more alveolar, palatal and uvular gap reduction, so early

intervention in cleft lip and cleft hard palate causes more reduction of cleft alveolar, palatal and uvular gaps.

In our study, second operation took mean time of 15 minutes less than the 1st operation. In the same type of study,^[6] 1st operation took mean time of 77 minutes in lip and simultaneous hard palate repair by vomer flap procedure, which took mean time of 13 minutes more than only lip repaired procedure. Initially in our study 1st operation took more time, and day by day it reduced as surgeons became experienced.

Immediate postoperative complication after 1st operation was mild bleeding occurred from the exposed vomer in 2 patients. But no patients needed blood transfusion and the bleeding stopped spontaneously. In the study 1 patient developed vermilion notching which managed during the second operation by Z plasty. After second operation (cleft soft palate repair), mild respiratory difficulty was also observed in 1 patient and improved with time, probably due to reduction of oral cavity space, less space for tongue. Postoperative 2 patients developed partial vomer flap disruption near posterior border of the hard palate, which had wide palatal gap, 16 mm. None of the study patients had infection.

On postoperative follow up after the 2nd operation, no patient developed oronasal fistula. In the same type of study,^[6,10] no oronasal fistula developed in lip and simultaneous hard palate was repaired by vomer flap procedure. In another study,^[3] where the sample size was 678, on vomer flap palatoplasty, no oronasal fistula was

found in anterior palate, but they found 2.95% of fistula in the junction of hard and soft palates. In a third study one patient developed fistula from 91 patients.^[18] In other studies,^[14-17] fistula rate was more higher in other than vomer flap procedure.

5. CONCLUSION

Simultaneous repair of cleft lip and cleft hard palate by vomer flap in unilateral complete cleft lip and palate patients UCLP, is easy, safe and very effective procedure with significant reduction in alveolar gap, palatal gap and uvular gap which make the soft palate repair an easy operation with less time, less extensive dissection which reduce the chance of maxillary hypoplasia and less fistula formation.

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