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Patterns of Secondary Deformities After Bilateral Cleft Lip Repair in A Cohort of Patients

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ABSTRACT

Objective: To analyze the secondary deformities and possible causes in bilateral cleft lip cases in a cohort of 69 consecutive cases. **Methodology:** It was a retrospective analytical study of 69 cases of secondary bilateral cleft lip deformities. Earlier all these cases had been recorded for their deformities along with pre and postoperative photographs. Per operative photographs, with markings for the incisions, were also part of record. All these cases were studied individually with the help of these photographs to record the presence of various deformities. **Results:** Study included 69 cases of secondary bilateral cleft lips with 47(68.11%) male and 22 (31.88%) female patients. Thirty six patients, were in second decade of their life at time of revision surgery, 20 cases in first decade of life and 13 in third decade. Wide alae and large nostrils seen in 55 (79.71%) cases were the commonest deformity, with central vermilion deficiency in 53 (76.81%) patients, wide prolabium in 49(71%) cases and depressed nasal tip in 48 (69.56%) cases. Irregular scar formation was noted in 43 (62.31%) cases. **Conclusions:** Bilateral cleft lip repair is a challenging job. Wide alae and large nostrils followed by central vermilion deficiency remain common secondary deformities. Careful selection of repair technique, and a knowledge of outcomes of different repair techniques may help to achieve good results. Variety of deformities in presentation of bilateral cleft lips necessitates to individualize the selection of repair technique for every case.

Keywords: Bilateral cleft lip, Bilateral cleft lip repair, Secondary cleft lip deformities.

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INTRODUCTION

Cleft of lip and palate are the most commonly seen congenital facial deformities.[1,2] Whereas they may lead to impairment of important functions like suckling, swallowing and speech depending upon the type and extent of the deformity, they may bring significant facial disfigurement as well.[3,4] Altogether, this may lead to a spectrum of psycho social problems not for the patient or the parents but whole of the family. Repair of these cleft deformities is carried out to restore the normal functions and minimize disfigurement and resultant psycho social problems. Whereas long list of options available for repair of these defects speaks of the evolution process in development of ideal procedure, it also reflects that none of the procedures was ideal and majority needed modifications for improvement of results.[5] It is also for the same reason that patients may present with secondary deformities and need revision surgeries.

As it has already been concluded that epidemiologic studies may help in establishing data which may help in diagnosis, treatment and counseling of the patients, it may further be added that such data compiled about secondary deformities may help surgeons to revise procedures and techniques.[6] A probe into the most common secondary deformities and their possible causes may help the surgeons to achieve better results at primary surgeries by avoiding these causes.[6] Although studies regarding unilateral cleft lip deformity are found more commonly, such data about secondary bilateral cleft lips has not been probed quite frequently in our setup. Present study discusses the secondary bilateral cleft lip deformities and their possible causes along with review of literature.

METHODOLOGY

Consecutive 69 cases of secondary bilateral cleft lip deformity operated during period from Sep 2008 to March 2014 were included in this study. Secondary unilateral cleft lip and cleft palate cases were excluded from this study. All the cases were evaluated and performed by the author. After initial assessment and evaluation these cases were registered. A purposely designed separate proforma

was utilized to record complete biodata, contact information and consent for surgical intervention of each patient. Front and worm eye views of all these cases were taken preoperatively and postoperatively as photographic record of these cases. Photographic record of operative markings was also maintained. Revision surgery was performed after a minimum lapse of six months after the initial surgery.

Initial assessment and evaluation was based on history, presenting complaints and examination of secondary deformity. Later on these proforma and photographic record were reviewed postoperatively. The validated variables which could be part of these bilateral cleft lip deformity, as indicated in previous studies, were studied and looked for in each case record. The variables selected for this study included depressed nasal tip, short collumela, wide alae and nostril, wide prolabium, vertically short prolabium, irregular scar and central vermilion deficiency. Each case was looked for, presence or otherwise of, individual variables and results were entered into excel sheet. The results were compiled and analyzed for frequency and percentages of various deformities present in these cases.

RESULTS

A total of 69 cases of secondary bilateral cleft lips were operated during a period of five and half years. It included 47 (68.11%) male and 22 (31.88%) female patients. Majority of these cases, i.e., 36 (52.17%) patients, were in second decade of their life at time of revision surgery. Other 20 cases were in the first decade of life and 13 were in third of life. Table 1.

Table 1: Time of surgery for secondary cleft lip deformities in bilateral cleft lip repair

Age of secondary surgery	Upto 10 years	11-20 years	21-30 years
Number of cases	20	36	13
Percentage	28.98%	52.18%	18.84%

The variable studied included depressed nasal tip, short collumela, wide alae and nostril, wide prolabium, vertically short prolabium, irregular scar and central vermilion deficiency.

The most common deformity in this series was wide alae and large nostrils seen in 55 (79.71%) cases. The second most common deformity was central vermilion deficiency found in 53 (76.81%) patients. Wide prolabium was recorded in 49 (71%) cases and depressed nasal tip, short columella was found in 48 (69.56%) cases. Irregular scar formation was noted in 43 (62.31%) cases. Table 2.

Table 2: Variable in secondary cleft lip deformities, frequency and percentage

Variables	Number	Percentage
Wide alae / large nostrils	55	79.71%
Central Vermilion deficency	53	76.81%
Wide prolabium	49	71%
Depressed nasal tip/ short columella	48	69.56%
Irregular scar	43	62.31%

DISCUSSION

Whereas secondary deformities are common in unilateral as well as bilateral cleft repairs, it is also documented that outcome of bilateral cleft lip repair is less acceptable. It is for the same reason that secondary revision is more frequently necessary in bilateral cleft lip repairs.[7] Finding may be attributed to the fact that as compared to unilateral clefts, bilateral cleft lips have double the amount of soft tissue defect. Similarly suture lines are not only double, as compared to the unilateral cases, but may have more complex repair as well, which makes the symmetry and uniform distribution of vector forces on repaired segments more difficult. Principles of successful repair of bilateral cleft lip include: maintenance of symmetry, primary muscular continuity, proper configuration and size of philtrum, formation of the median tubercle and vermilion cutaneous ridge from lateral labial tissue and finally construction of nasal tip and columella. More importantly all of these outcomes have to culminate in a single successful repair. Maintenance of symmetry may be challenged by the fact that two cleft sides of lip may not be symmetrical as one may be complete while the other side may be presentation of microform cleft to anywhere in the spectrum of a complete cleft or any other combination. Similarly primary muscle continuity may be an uphill task in very wide bilateral clefts or in presence of protruding premaxilla. Both these factors combined also effect final size and proper configuration of the philtrum. Wider clefts also adversely interfere with the goal of achieving a median tubercle and vermilion cutaneous ridge.

As concluded in previous study, epidemiology of the secondary deformities in cleft cases may help to reduce these deformities.[8] Present study was carried

out to look into the possible list of common secondary deformities in a cohort of cases presenting for correction and to look into the possible causes as indicated in literature. It was noted that most of the cases, 36 (52%), presented for secondary surgeries in second decade of their life. Most common secondary deformity in this series was wide alae and large nostrils seen in 55 (80%) cases.

Whereas, wide alae and large nostrils may be direct outcome of very wide bilateral cleft lips, these may also be possible outcome of bilateral straight line repair.[9] Bilateral straight line repair also leads to a wide prolabium and a very short or even absent columella.[9] It usually requires a second stage procedure and extra width of prolabium may be utilized to create columella at second stage.[10-12] Carefully planned incision lines at primary repair, technique of repair and pre surgical naso alveolar molding all may play vital role in overcoming this secondary deformity. Millard secondary forked flap procedure,[9] Bardach's central V to Y procedures to elongate columella and narrow the philtrum to correct this deformity need consideration on individual case basis.[13]

Whereas vermilion notching is common secondary deformity in unilateral cleft cases,[8] bilateral clefts tend to have central vermilion deficiency. In bilateral cleft lip repair, one of the methods utilized for constructing central lip vermilion involves use of buccal mucosa attached to inferior aspect of prolabial skin. However, one of the disadvantages of this technique is that central portion of lip remains deficient of the required bulk, leading to whistle deformity or central vermilion deficiency.[14,15]

However, it has long been concluded that techniques utilizing lateral vermilion tissue for reconstruction of central vermilion do not come across this secondary deformity.[16-18] In the later techniques, these are lateral lip elements which are rotated downwards to form two limbs of cupid bow and bring full thickness vermilion flaps along with orbicularis muscle and thus problem of central vermilion deficiency is solved at primary repair. In all cases requiring secondary repair in this study, technique utilizing lateral vermilion flap for cupid bow reconstruction was used to overcome the deformity.

As bilateral cleft lip results in posterior and lateral displacement of the foot plates of lower lateral nasal cartilages, nasal dome which accommodates the junction of the medial and lateral crura gets flattened. The columella is usually either very short or even absent and may cause prolabium to hang down directly from broad nasal tip. It is obvious that repair techniques which address skin paradigm of the defect only, result in a depressed nasal tip to be corrected at secondary surgery. Recent techniques which are placing primary emphasis on cleft nasal tip cartilage deformity, rather than skin deformities, are coming up with more satisfying results for nasal tip correction. McComb's V to Y gull wing incision technique[19] or Mulliken's vertical incision technique[20,21] both address nasal tip deformities at primary surgeries to avoid secondary nasal tip deformity. Wei Y et al described a new modified forked flap with a reverse V shaped flap which will serve columellar lengthening, nasal correction and philtral construction simultaneously. [22]

Irregular scars may also be of such a magnitude to warrant a secondary surgery.[8] In present series 43 cases had irregular scars. Care for good scar may start preoperatively by judicious utilization of nasoalveolar molding, then per operatively with proper placing of incision, judicious handling of tissues, proper suturing technique with minimum tension at suture line, and post operatively by timely removal of sutures and good care of suture lines which includes regular massage, and sunlight protection of suture lines.

Study shows that repair of bilateral cleft lip is a challenging job and requires knowledge of different techniques utilizing skin paradigm of lip and nose repair as well as nasal tip cartilage paradigm. As every single case may have any combination of deformities, repair has to be individualized for a particular case.

CONCLUSION

Bilateral cleft lip repair is a challenging job. Wide alae and large nostrils followed by central vermilion deficiency remain common secondary deformities. Careful selection of repair technique, and a knowledge of outcomes of different repair techniques may help to achieve good results. Variety of deformities in presentation of bilateral cleft lips necessitates to individualize the selection of repair technique for every case.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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