Cleft lip and its management
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Introduction
Cleft lips with or without cleft palates is a major social problem and more so in our part of the world. With a mean incidence of 2.1 in 1000 live births among the oriental population the impact of the problem is significant. Caucasians have an incidence of 1 in 1000 live births.

Embryology
The adult facial features develop from the frontonasal prominence and the paired maxillary and mandibular prominences predominantly between the 4th and 8th weeks. The migration of ectomesenchyme along the natural cleavage planes between the mesoderm, ectoderm and endoderm around the head is essential for the development of these facial processes. A failure of fusion among these prominences result in facial clefts.

Commonly failure in fusion of the medial nasal prominence and maxillary prominence on one side results in unilateral cleft lip. A bilateral cleft lip results from failure of fusion of the merged maxillary prominences with the maxillary prominences on either side. The unrestrained growth of the merged medial nasal prominences leads to the anterior overprojection of the premaxilla and prolabium commonly observed in bilateral cleft lips.

Aetiology
Oral clefting is generally considered to be multifactoria. Some factors that have been implicated as contributing factors are
1. Reduced facial mesenchyme
2. Increased facial width
3. Oligohydramnios
4. Persistent high position of the tongue
5. Failure or delayed occurrence of neck extension
6. Medications during the formative stages e.g. steroids, anticonvulsants, diazepam, aminopterin
7. Infections in early pregnancy e.g. Rubella, Toxoplasmosis and other virus
8. Growth hormone deficiency
9. Hypothalamo-pituitary hormone deficiency
10. Genetic factors

They may be syndromic or non-syndromic. About 3% of all cleft lips with or without cleft palate are syndromic. Syndromes are more common in isolated cleft palates than in cleft lips with cleft palates. Among these the Pierre-Robin syndrome and the Van der Woude syndrome are common.

The genetic predisposition
The risks of an unborn child having a cleft lip with or without cleft palate has been well summarized by Fraser as
A. If both parents are unaffected but have an affected child the probabilities of the next child being born with a cleft lip (with or without cleft palate) is
1. If there are no relatives affected.................. 4%  
2. If there is an affected relative................... 4%
3. If the affected child has another malformation (Syndromic).................. 2%
4. If the parents are related...................... 4%
5. If two previous children are affected........ 9%
B. If one of the parents are affected the probabilities of the next child being born with a cleft lip (with or without cleft palate) is
1. If no previous child is affected.............. 4%  
2. If a previous child is affected............... 17%

Classification

<table>
<thead>
<tr>
<th>Cleft lip</th>
<th>Unilateral</th>
<th>Bilateral</th>
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</thead>
<tbody>
<tr>
<td>Complete</td>
<td>Incomplete</td>
<td>Complete</td>
</tr>
<tr>
<td>Microform</td>
<td></td>
<td>Incomplete</td>
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<tr>
<td>Microform</td>
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Cleft lips may be found alone or in any combination with alveolar and palatal clefts. The deformities that occur in a cleft lip may be outlined as:

1. The premaxilla is rotated outwards and upwards and the lateral maxillary elements are often retropositioned.
2. The inferior edge of the septum is dislocated out of the vomer groove and presents with the nasal spine in the floor of the normal nostril.
3. The collumela is shortened on the cleft side.
4. The lower lateral cartilage is attenuated and malpositioned.
5. The alar base of the cleft side is rotated outwardly in a flare.
6. The alar rim is distorted by a skin curtain that droops over the alar rim like a web.
7. The vestibular lining is deficient on the cleft side.
8. The orbicularis oris muscle is usually hypoplastic and malinserted into the alar wing on the cleft side and base of the collumela on the non cleft side.
9. The philtral height is shortened.
10. The bilateral cleft deformities are essentially the same as that of the unilateral cleft except the collumela is typically more shortened and there is absence of philtral remnants and muscle elements in the grossly hypoplastic prolabium.

Feeding and Timing of Surgery

Infants with only clefts of the lip (Complete and Incomplete) can be breast fed with some difficulty and that is to be encouraged. Patients with associated clefts of the palate have difficulties with sucking and consequently breast feeding. Nasogastric feeding, spoon feeding and use of the cleft palate bottle are the options available. Prolonged use of nasogastric feeding invites URTI and is advocated to be avoided. Foetal surgery is being practiced in certain specialized centers with promising results but the associated complications has prevented its widespread acclaim and the options are yet to be available in this part of the world. Presurgical orthodontic treatment of collapsed alveolus is initiated in the first or second week following birth. The initial procedure of lip repair is deferred till 10-12 weeks of age. Indications for a prior lip adhesion in the first few weeks of infancy are debated but has been found to be helpful in wide complete cleft lips with poorly aligned maxillary segments.

Surgical maneuvers

The repair of the unilateral cleft lip may be categorized on the application of the Z-plasty principle. A mention of the different procedures is made here without going into the details of the procedures.

1. Straight line closure:
   a. Rose-Thompson
   b. Mirault-Blair-Brown-McDowe

2. Lower Lip Z-plasty:
   a. Randall-Tennison
   b. LeMesurier
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c. Wang modification of Le Mesurier

3. Upper Lip Z-plasty:
   a. Millard
   b. Wynn

4. Upper and lower Lip Z-plasty: Upper and lower Lip Z-plasties
   a. Trauner
   b. Skoog

The bilateral cleft lip repair may be similarly outlined as
1. Straight line repair
   a. Veau
   b. Barsky-Veau

2. Lower Lip Z-plasty:
   a. Tennison adaptation (Cronin, Berkeley, Marcks)
   b. Bauer-Trusler-Tondra

3. Upper Lip Z-plasties:
   a. Millard
   b. Wynn
   c. Modified Manchester

4. Upper and Lower lip Z-plasties Upper and Lower lip Z-plasties
   a. Skoog

Figure II: A postoperative unilateraicleft lip

Figure III: A postoperative bilateral cleft lip
Conclusion
In conclusion it is to be understood that the care of the cleft patient is not a sporadic surgery and requires a systematic program with a team approach. That each case is to be treated on its own merit and the devastating psycho-trauma of the family in general and parents in particular requires due consideration in the planning of a total treatment program for each individual.

References