Lip Adhesion and its Effect on the Maxillofacial Complex in Complete Unilateral Clefts of the Lip and Palate

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The use of a *lip adhesion* as part of the treatment program for *wide complete clefts* of the *lip* and palate is gradually being accepted. Heretofore, little mention has been made as to its actual beneficial effects. Since the introduction of this procedure by our Group in 1966, it has been used routinely by us. Its effects on the *maxillofacial complex* is discussed in detail.

History

A lip adhesion is a preliminary step in the repair of wide clefts of the lip. It was introduced as such by Randall in 1965 and by our Group in 1966. Prior to that, mention was made of this procedure by Millard (1960) and Spina (1964) for bilateral clefts.

The principle behind the lip adhesion operation is to create a narrower cleft, thus facilitating the definitive repair in that it can be accomplished under more favorable conditions, i.e. primarily under less tension and with a minimum of undermining.

There are, however, differences between the lip adhesion as proposed by Randall and the one followed by us. Randall introduced the lip adhesion as a means of placing the lip and underlying bone segments in a more normal relationship but did not exclude the use of intraoral orthodontic appliances for presurgical orthodontic management. On the other hand, in the technique proposed by Walker et al. (1966) (the so-called C.W. Technique), the lip adhesion is the orthodontic management and was developed as just that. At no time is a mechanical orthodontic device used in the early care of the complete cleft. This philosophical difference has not been understood by many and is the reason for its emphasis here.

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Surgical Technique

There also is a difference in the surgical technique. Randall's lip adhesion is placed



FIGURE 1: Schematic drawing of lip adhesion technique.



FIGURE 2: Technique of definitive repair for a cleft with a lip adhesion. A.Outline triangular flap technique. B. Excision of scar of lip adhesion. Most of mucous membrane is left intact. C. Attachment of lip elements to underlying bone *is not* disturbed. D. Repair of muscle layer. E. Finished repair.

higher on the cleft and is of the "book-flap" type, while the technique followed by us places the adhesion further distal in the cleft (Figure 1). This facilitates closure over a wider span, which is important. According to the C-W philosophy, it is essential that no undermining of tissues be done so as to insure its success as a physiological way of repair. In contrast, in very wide clefts, the Randall method necessitates some undermining to accomplish closure and avoid dehiscence.

The lip adhesion is done at the earliest possible time, preferably within the first or second week of life. No difficulties have been

case no.	at the time of temporary lip adhesion		at the time of definitive lip repair	
	age yrs. mon's. days	width of alveolar cleft in mm.	age yrs. mon's. days	width of alveolar cleft in mm.
2	0-1-18	7.0	0-5-2	0
3	0-1-0	9.0	0-2-5	0
4	0-2-2	5.0	0-8-19	0
5	08	13.5	0-2-9	0
6	005	15.5	0-3-24	8.5
7	0-0-22	8.9	0-6-16	3.0
8	0-0-5	14.5	0-7-14	7.8
9	0	11.8	088	0
10	0-0-12	9.0	0-4-24	7
11	02	9.0	0-4-0	0
12	0—0—8	5.9	0-2-10	0
13	0-0-15	7.0	0-4-2	0
14	0-3-25	13.0	1-1-13	3
15	0—0—5	12.0		—
16	0-0-19	10.0	0-11-30	0
17	0-0-21	9.5	0-8-31	0
18	0	11.0	0-3-7	1.6
19	08	12.0	0-3-14	8.5
20	06	9.5	0-2-27	0

TABLE 1. Data on 20 unselected consecutive complete unilateral clefts

encountered in performing this, and there have been few problems in the postoperative management of these infants (Meijer, 1968). At \pm four months a definitive lip closure is then performed using a triangular flap technique without detachment of the lip elements from the underlying bone (Figure 2).

Influences on the Maxillary Arch Form

In over 50 cases of complete unilateral wide clefts of the lip and palate, the effect of the lip adhesion has been *without fail* a narrowing of the alveolar cleft with a resultant arch form determined by forces applied by the functionally intact lip (Figure 3).

In analyzing the ultimate arch form of the first 20 unselected consecutively treated cases up to the time of definitive lip closure, Collito (1974) showed that 65 per cent demonstrated approximation of the maxillary arch segments with alveolar contact, with the remainder showing approximation without alveolar contact (Table 1). At the time of palate closure, which is accomplished at the age of 18–24 months, all but one maxillary arch forms fell into the category of approximation with contact.

Influences on the Soft Tissues and Nasal Structures

1. Soft tissues

Observations based on photographs and facial casts reveal unquestionably the tremendous growth of the lip elements in all dimensions (Figure 4). The cardinal landmarks (high points, etc.) are not only more pronounced but in better relationship with one another, thus facilitating the definitive repair. Presently, a project is under way to attempt to record and compare actual three-dimensional measurements of the soft tissues prior to and following the lip adhesion. Although difficult to prove, the clinical impression is that a better alignment of the muscular segments also occurs since at the time of definitive lip closure the muscle repair seems to be facilitated.

2. Nasal structures

In *all* cases a straightening process of the columella is observed indicating that surgical efforts to do so are unnecessary and may be contraindicated (Figure 4). This is the reason for the personal preference of a triangular flap procedure for the definitive repair rather than cutting across the columella base which may change its anatomical relationship with the bony nasal spine and anterior part of the nasal septum. Similarly, curving-in of the nostril



FIGURE 3: Effect of lip adhesion on maxillary arch form. A. Prior to lip adhesion. B. At the time of definitive lip closure. C. At the time of palate closure.



FIGURE 4: Effect of the lip adhesion on: Lip dimensions, lateral deviation of columella and nostril shape. A. Prior to lip adhesion. B. At the time of definitive lip closure. C. Two weeks post-op.

always occurs, although in varying degrees. It is our feeling that the ultimate nostril shape achieved by us without primary surgical intervention has yielded in the long-run at least as good a nostril shape as was heretofore the case with dissecting over the alar cartilage. The added distinct advantage is the presence of unscarred tissue at the time of possible future nasal tip reconstruction (Figure 4).

Discussion

Since 1963, unilateral complete clefts of the lip and palate have been treated following the atraumatic technique described by Walker et al. (1966). In our opinion, the lip adhesion as the first step of repair has proven to be of great value.

Van Limborgh (1964) and Verwoerd-Verhoef (1974) suggested that some of the cleft sequelae of the face and maxilla that are seen do not necessarily belong to the cleft "syndrome" *per se* but appear secondary to the clefting. These sequelae, therefore, can be reduced if early closure of the cleft is done. Animal experiments of Urbanus (1974) seemed to support this theory.

We believe that our results of the early creation of a functionally intact lip does indeed reduce the cleft sequelae in the maxillofacial complex.

Summary

The philosophy and technique of the *lip* adhesion is described. Its effect on the maxillary arch form and *lip* and nose segments in complete, wide, unilateral clefts of the lip and palate are discussed in an attempt to demonstrate the beneficial effects of this approach.

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