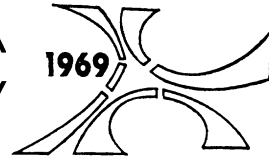


The Significance of the Pre-Alveolar Cleft in Assessing A Prognosis in Future Maxillary Development



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In isolation, the prealveolar cleft carries little significance with regard to maxillary development and the maxilla can be expected to reach normal proportions. Where a postalveolar cleft is present and associated with a prealveolar cleft on one or both sides, it is unusual to see a lag in development either of the maxilla or of the mandible. Micrognathia has, for instance, never been reported in the presence of such a cleft.

Where complete unilateral clefts of the lip and palate are present, a large number of jaw deformities are to be found: a) collapse of the upper alveolar arch medially; b) disturbance of downward growth of the maxilla with resultant raising of the occlusal plane on the cleft side; and c) maxillary retrognathism.

These deformities will occur even when surgical closure is not attempted as Innis (5) showed in his studies of unrepaired clefts. His findings revealed that the smaller maxillary element was underdeveloped and displaced medially and upward.

Collapse of the upper arch may occur very early and is probably due to a combination of factors: the presence of the defect in the bony plate, the pressure of the buccal muscles and early forward growth of the nasal septum.

Later collapse following surgery may be caused by tightness of the lip closure, scarring in the alveolar area and possibly tension in the palate following palate closure.

The fact that collapse does not occur in all cases may be attributable to a variety of causes such as the width of the cleft, rate of growth, the action of the tongue within the mouth and the "built-in" development part of the maxilla itself.

The failure of downward growth of the maxilla is probably a manifestation of the same failure of development giving rise to the cleft. As such, the prealveolar cleft is an expression of this same process.

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TABLE 1. Extent of maxillary development of 101 subjects.

good maxillary development.	37
good maxillary development but with collapse of the short segment.	38
maxilla underdeveloped	
bite edge to edge	12
definite relative prognathism	14

Maxillary retrognathism can be a source of misunderstanding, and it has been shown by Burston (2, 3) that the apparent development of collapse and retrognathism follows differential growth rates of the maxilla and mandible. However, Foster's (4) figures show a highly significant incidence of retrognathism in complete clefts.

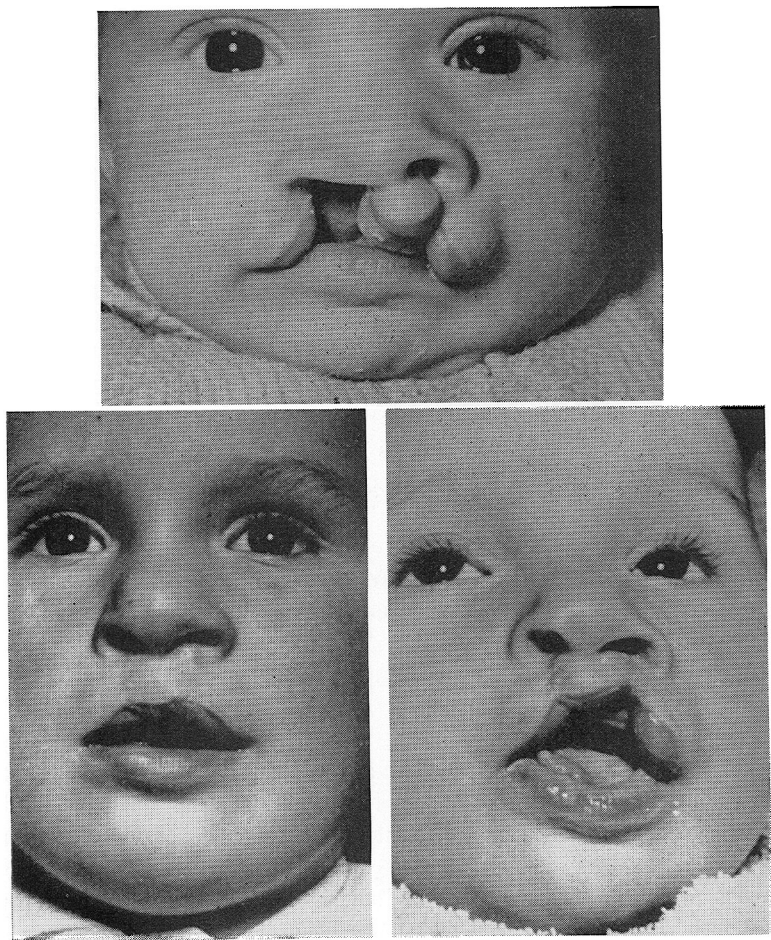


FIGURE 1.

FIGURES 1, 2, and 3. These photographs illustrate the satisfactory development of the complete cleft lip in association with an incomplete contralateral cleft and good jaw development.

It is important, therefore, that these deformities be forestalled as far as possible when considering surgery to the prealveolar cleft.

Preoperative maxillary orthopedics should be undertaken as early as possible. By placing the arches in optimum position if there is deformity,

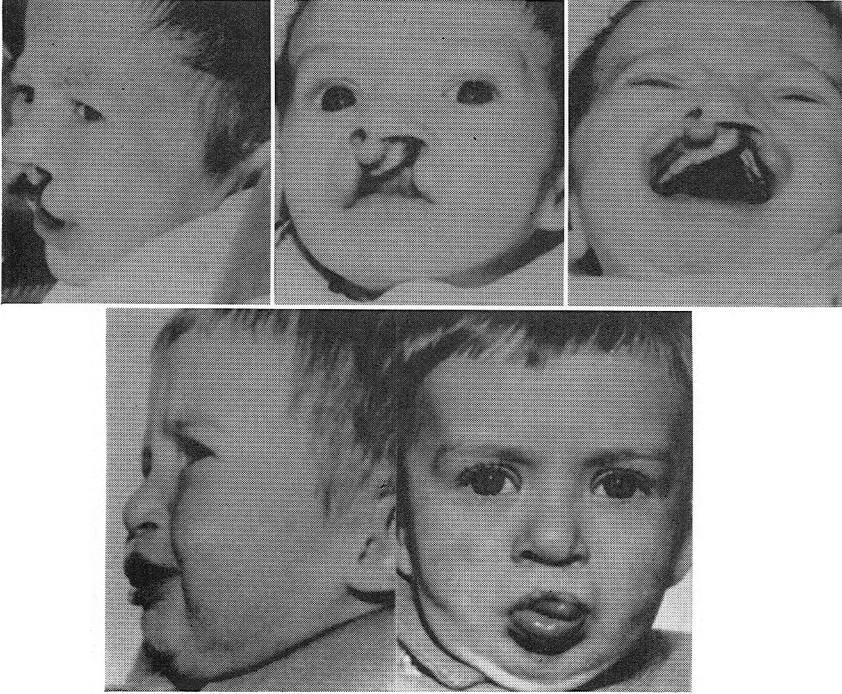


FIGURE 2.

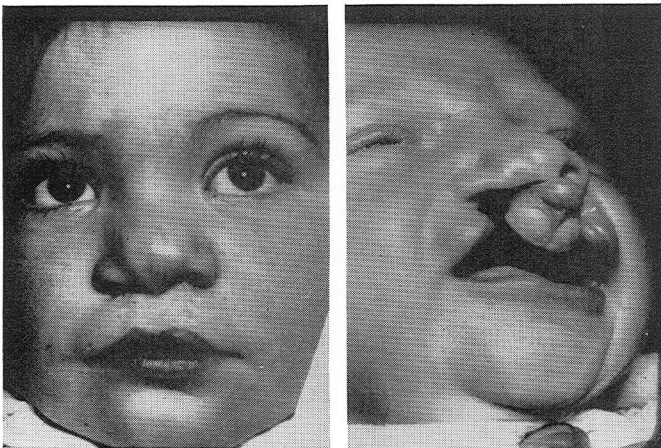


FIGURE 3.

TABLE 2. Twelve complete unilateral clefts with contralateral incomplete clefts.

good maxillary development.	6
good maxillary development but with collapse of the short segment. . . .	5
maxilla underdeveloped	
bite edge to edge to edge.	1
definite relative prognathism.	0

or by maintaining good position if they are already in satisfactory position, the best results are obtained. It has been stated that up to 30% of such cases will not require such treatment, as they will maintain good position anyway. However, clinical detectability at birth of these cases may be extremely difficult and the experienced eye will select these within a few weeks of birth.

The closure of the prealveolar cleft in reconstituting the normal muscular lip is usually undertaken with closure of the anterior palate. That this is done without tightness and a minimum of scarring is mandatory if collapse is to be avoided in the short segment. The one-layer closure should be eschewed as this is liable to lead to healing by a second intention, scarring, contracture and collapse. A lining should always be added where possible whether it be a Burian (1) flap, Muir's (6) elegant refinement, or the Stellmach flap. With the two-layer closure, scarring is reduced and so is resulting contracture.

Operation is undertaken at three to six months when the parts are large enough to allow precision of repair and the child is sufficiently fit to undergo surgery.

The jaw deformities of Mr. Battle's series of 101 patients in which these records were obtainable are reproduced in Table 1 and are extracted from 144 cases.

It has been observed that where ever a contralateral incomplete cleft is present, there appears to be an associated excellence of final jaw development (Figures 1, 2, and 3).

Among this group were a number of such double clefts and the jaws of 12 of these were followed up (Table 2).

The two tables are not comparable but they might well be significant.

If exactly the same operation is performed on the complete side in all cases, the presence of this incomplete cleft might mean that the potential for growth of the maxilla is "built in" and not necessarily in any way associated with the surgery performed.

However, it is still difficult to assess how much deformity is due to surgical closure of cleft lip and palate and how much growth failure is due to cleft development.

Summary

The significance of the prealveolar cleft in assessing future prognosis in maxillary development lies mainly in that it is an expression of the

severity of the malformation. Ultimate prognosis can only result with time, good surgery, and the application of a good team approach.

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