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The familial line, studied by a new line of reference

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Diagnosis is the most fascinating part of orthodontic science. The more the diagnostic scope is widened and deepened, the more we become aware of the really intricate mechanism of the production of facial anomalies and the deeper we may have an insight into the possibilities of treatment. The exact diagnosis is also the key to prognosis.

One of the principal conclusions of the teleradiographic studies of Dr Brodie and his students, is the demonstrated fact that there exists for each individual a facial pattern, followed by the growth during the period of development. That concept is of the utmost importance for the practical appraisal of the morphological events and for comprehension of the possible ways of correction. This idea may be understood as related to the existence of a hereditary plan of normal development for the individual, the mesological factors being normal.

Another idea was added last year: The immutability of the basicranial line. That line, visible on sagittal teleradiographs, was recognised as stable from seven years upwards. The philosophical side of that discovery lies in the fact that the base of the skull and particularly the hafting zone, presents an immutable part, influenced in its growth only by the development of the brain and absolutely free from interferences by other forces of development.

The most important points of that line are:

a. the anterior lip of the sella turcica in its midst
b. The sphenoid ethmoidal suture
c. The planum or upper surface of the sphenoid body.
d. The roof of the ethmoid masses
e. The endocranial side of the frontal bone.

That line represents the axis of the skull base. It is around that bony capsule of the brain that the lateral structures of the face and also the external table of the skull bone are to be constructed, allowing for dynamic exigencies. Logically we are entitled to believe that these fixed and stable parts of the skull must have an influence on the developmental line of the face and the facial bones. There exist a number of relationships which may be considered as relatively fixed.

The method of diagnosis described several years ago as the network method of diagnosis was essentially based on the fixed relations of some facial points with the cranial base. The same idea of relativity is reappearing today. So there seems to exist a fixed frame work: the basal line absolutely fixed from seven years upwards and a relatively fixed frame of the facial bones. The variations of this second framework are only metric in character.

But a second fact was discovered. All the children of the same family have the same basal line.

Up to now among more than 200 families only two cases show a difference. One of them is a case of microcephaly originating probably in a brain disease before birth. All the other children of that family have the same basal line with the exception of that microcephalic child.

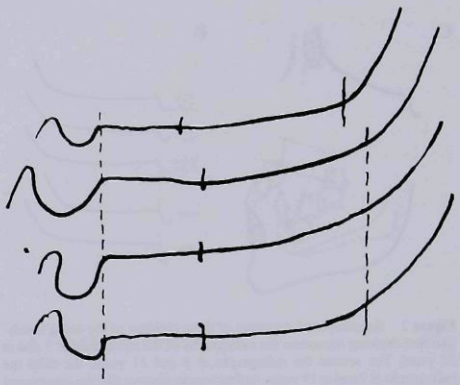

Figure 1 The drawings of the basal lines of a family of four children. The first one has a short basal line while the lines of the three other children are longer and are the same. The first girl was slightly retarded and had probably an encephalic disease in early childhood or before birth.

In another case the skull was terribly deformed by the birth manoeuvres. In both cases the basal line was shortened. There are also two cases of turricephaly (oxycephalia) but the radiographs of the other children of the family are not in my possession. Korkhaus showed, at the meeting of the International Club of Morphology, the facial morphology of two twins, one normal and another with turricephaly. The basal line was distorted in the turricephalic one. When now we compare the radiographs of the children with those of the parents we state that the basal line is not a combination of the parents' lines but the line of one of the parents either the father or the mother. Here we have a matter of genetic study.

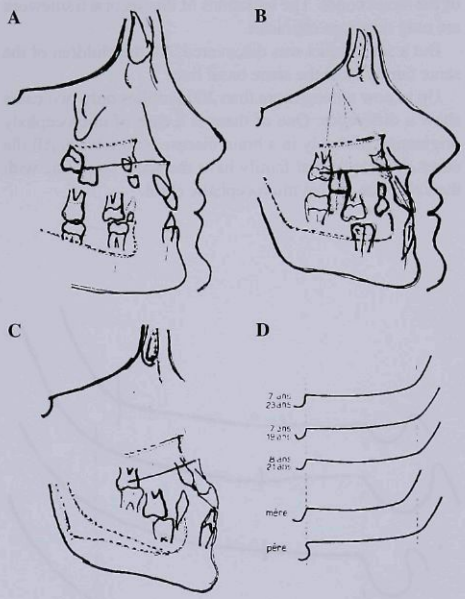

Figure 2 Superimposed drawings of three children of the same family. The first drawing represents the radiographs of the same child at 7 and at 23 years. The second the radiographs at 8 and 21 years, the third the radiographs at 7 and at 19 years. At first we can observe that the craniobasal line is absolutely the same in the younger age and later. But we may observe also that the basal lines are identical in all the children. From the table showing the three basal lines and also the lines of the father and of the mother we may state that the line of the father is the same as that of the children. The mother's, line is shorter. It is also easy to see the modifications brought about in the facial features by development.

Here we show a family of three children and parents. The basal line is the father's.

Another family of three children and parents. We state that when the basal line is the father's the facial features are in that boy the same as the father's, while the two other children have the facial features of their mother.

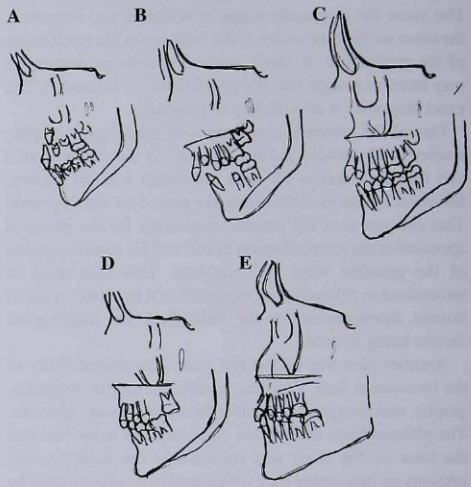

Figure 3 Drawings of three children of the same family and also the drawings of father and mother. The basal line of the children is the same as father's the mother's one being shorter. In this family we can observe that the facial features of two children are the same as the mother's, while one child has the same facial features as the father.

We have now to study if the concordance of the basal line has a direct bearing upon the features of the facial parts. Of course there must be a great probability that in cases with the same basal line the facial lines have the same appearance. In monovular twins we meet with an absolute concordance of the skull base and also of the facial lines. But the similarity may be broken as in the case shown by Korkhaus. In binovular twins the similarity is absolute for the skull base, but not so close for the facial features.

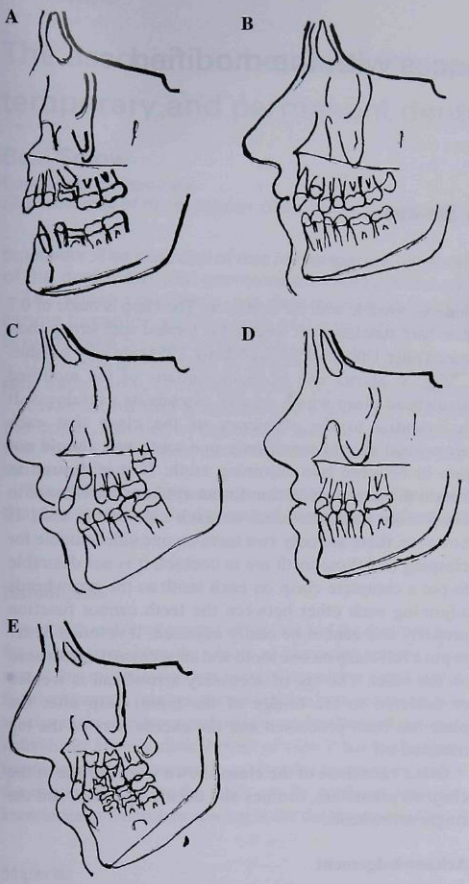

Figure 4 Drawings of five children of the same family, with the same basal line. The dental situation of the children is very different. The facial features are different also although the naso-frontal angle and the basal line are identical. In these cases the familial line seems to be concentrated in the baso-frontal angle.

If we study the face of the three children shown in Figure 4, we state that the basal line is the same for the three children, but the facial lines are different. Two of them have the mother's face while one of them has the father's. All the children have the father's basal line. In another family of six children we may state the similarity of the facial features, the basal line being the same while the teeth are very different.

Conclusion

The study of the family line is very important for the exact diagnosis of a malocclusion case.

The study of the possible family pattern may, in some cases, be of a great importance and give valuable indications both in treatment and in prognosis.