Sir:

Coady et al.\(^1\) reported that clefts in cases where limb constrictions coexist are largely restricted to the paramedian 2-12, 3-11, and 4-10 axes-and that the two conditions may, therefore, possess a common etiology. This confirms the view expressed earlier in this journal\(^2\)-\(^5\) and contradicts a previous statement made by Moore.\(^6\)

Their study, however, does not solve the continuing debate between two groups of protagonists. The first group defends the theory that focal fetal dysplasias are the cause of the bands (intrinsic theory). The second group claims that the bands cause the clefts (extrinsic theory).

Coady et al.\(^1\) clearly belong in the second category. According to them, there is a weight of evidence suggesting these deformities are the result of direct mechanical deformation occurring sometime after normal differentiation and mesodermal fusion. Bands have been observed in clefts with a preference for natural paramedian creases between the nose and globe. They can also encircle parts of the embryo. However, none of these arguments seem sufficient considering that bands have never been observed in natural creases below the nose or behind the ear, etc. In addition to this, bands cannot explain the stereotypic pattern of paramedian clefts, cannot produce perfectly symmetrical clefts, cannot form strangling loops unless opposite forces are active at each end of these loops, cannot contract, cannot establish a bridge between two different bodily parts unless they are the result of a healing process involving two raw adjacent areas of focal fetal dysplasias, and cannot be held responsible for the existence of related anomalies (such as aplasia, cutis congenita, choanal atresia, anophthalmia, and microphthalmia, colobomata of the iris, choroid and epibulbar dermoids, or clubfeet).\(^2\)-\(^5\)

If the bands cannot cause clefts, can be reverse be true? It depends on our concept of what a cleft is. Tessier \(^7\) confessed that his no. 11 cleft was not well defined, that the complete version of his no. 12 cleft was never observed, and that his no. 2 cleft was uncertain. Tessier also left his classification open for discussion, writing: "A cleft is not a magic word bringing a key to the problems of classifying craniofacial malformations."\(^6\) Indeed, his system contains an odd combination of primary and secondary clefts, malformations and deformations, soft tissue and skeletal defects, and early and late, major and minor, common and rare, well and less-defined anomalies.

Primary clefts (Tessier nos. 3 and 7) are formed when fusion between the nasal and maxillary processes or the maxillary and mandibulary processes is disturbed before the end of the transformation phase (17 mm CRL). Secondary clefts (Tessier nos. 1, 4, 5, 6, 8, 9, 10, 13, 14) originate when ossification of the facial skeleton is disturbed before the end of the differentiation phase (60 mm CRL).
The existence of these clefts is based on solid embryologic knowledge, permitting the following statements:

1. The earlier the developmental arrest, the more severe the cleft. Patients with limb constrictions, therefore, display a more complex involvement with clefts than those without limb constrictions.

2. Primary and secondary clefts have been observed in combination with limb constrictions, possibly as a result of an embryologic catastrophe, such as compression-related amniotic disruption syndrome. The bands are either produced by the natural healing of a raw surface, resulting in the formation of adhesions between the facial surface and amnion or by the secretion of fibrine in the amniotic sac.

If the limb anomalies can cause band formation, vulnerable facial structures at a critical stage of their development must possess the same potential.

In conclusion, clefts and constriction ring anomalies occur before the natural differentiation of the embryo has taken place, not after the 60 mm CRL stage, as suggested by Coady et al.

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REFERENCES


10. References not provided. [Context Link]