

Nostril Asymmetry Not a Microform of Cleft Lip

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Fukuhara and Saito (1, 2) and Fukuhara (3) have suggested that asymmetry of the nostrils in parents and other close relatives of individuals with congenital cleft lip, with or without cleft palate, was evidence that the individual in question carried the genetic predisposition to the malformation. Twelve of the thirteen probands had at least one parent with asymmetrical nostrils or a deformed nasal septum seen on X-ray laminography. They pointed out the implication that cleft lip shows dominant rather than recessive inheritance.

In a study of the relation of face shape to susceptibility to congenital cleft lip (5, 6) photographs were taken, under standard conditions. The experimental subjects were 50 parents (25 male, 25 female) of children with cleft lip, with or without cleft palate, and 50 subjects (20 male, 30 female) drawn from the hospital staff and parents of children referred to the hospital's department of medical genetics for reasons other than congenital malformations. Among the views taken was one of the nostrils (Figure 1).

Methodology

The subject was seated 54 inches away from the rim of the camera lens (distance measured from tip of chin to rim of camera lens) and was asked to extend the head to expose both nostrils. A headrest was used for comfort and to reduce movement and keep the head in a fixed position while the photographs were being taken.

A single lens reflex 35 mm. camera with a 100 mm. lens and Kodak Tri X Pan Black and White fast film was used to take the photographs. A marker with a 2 cms black line was taped on the forehead of each subject. This appeared on the full face views taken for the study of the relation of face shape to susceptibility to congenital cleft lip (5, 6) and insured a constant enlargement of the prints.

Measurements of nostril length and width were taken on the photograph

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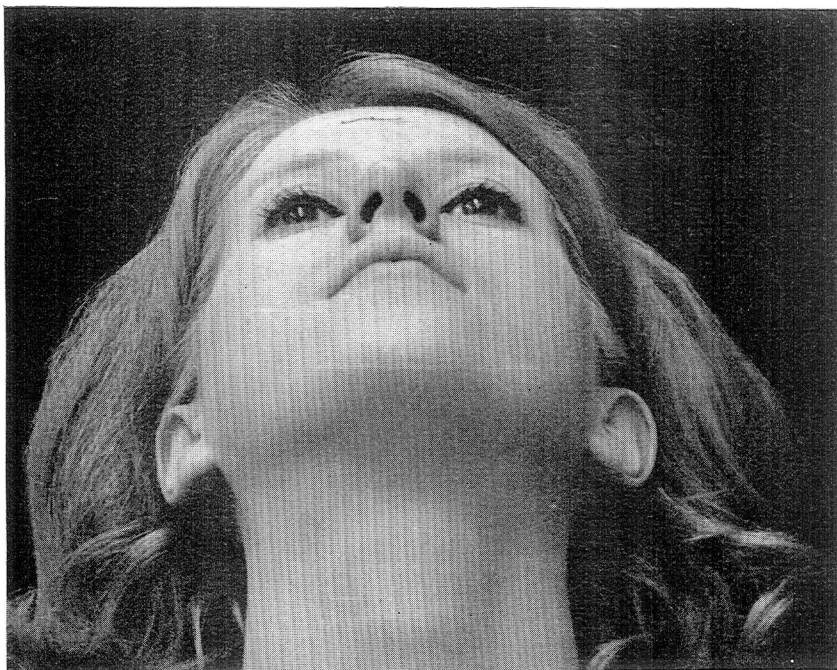


FIGURE 1. Sample photograph used for evaluation of nostril asymmetry.

to the nearest 0.5 mm. The measurements were done three times at intervals of several weeks, by the same individual. In cases where two measurements were not identical a fourth measurement was taken. All the samples were randomized and measured blind.

Photographs for the face shape project (5, 6) were repeated but the nostril views were not repeated for an estimate of error.

Results

The mean length and mean width values are presented in Table 1. It is concluded that the control group has longer and narrower nostrils than the experimental group but the difference was not statistically significant.

The nostril index* differed significantly between the two groups. Since the two groups were not closely matched for age we do not consider that this necessarily has any relation to cleft lip susceptibility.

The proportion of symmetrical nostrils compared to asymmetrical nos-

* The Nostril Index was calculated for the two groups as follows:

$$\frac{\text{left nostril length} + \text{right nostril length}}{\text{left nostril width} + \text{right nostril width}}$$

for case 1 + case 2 + case 3... The sum was then divided by the total number of cases, i.e., fifty. The same calculation was done for the control group.

TABLE 1. Mean lengths and widths of nostrils in 50 parents of children with cleft lip, with or without cleft palate and 50 control individuals.

	<i>Control</i>	<i>Experimental</i>	<i>p</i>
Length L.	0.574 ± 0.01	0.563 ± 0.01	0.7 > p > 0.6
R.	0.571 ± 0.01	0.560 ± 0.01	0.7 > p > 0.6
Mean Length.	0.572 ± 0.01	0.561 ± 0.01	0.7 > p > 0.6
Width L.	0.250 ± 0.01	0.275 ± 0.009	0.2 > p > 0.1
R.	0.256 ± 0.01	0.283 ± 0.009	0.02 > p > 0.01
Mean Width.	0.254 ± 0.01	0.278 ± 0.009	0.10
Nostril Index.	0.306 ± 0.01	0.250 ± 0.01	0.02 > p > 0.01

TABLE 2. Percentage frequency of symmetrical and asymmetrical nostrils in 50 parents of children with cleft lip, with or without cleft palate, and 50 control individuals.

	<i>Symmetrical</i>	<i>Asymmetrical</i>
Experimental	44.0	56.0
Control	28.0	72.0

trils was tabulated. The nostril was considered asymmetrical if the measurement of length and/or width was different on the two sides (Table 2).

The proportion of individuals with asymmetrical nostrils was higher in the control population though not significantly so ($0.20 > p > 0.01$). Mills et al (4) also found no appreciable difference between the frequency of asymmetrical nostrils in a control population compared to the relatives of patients with cleft lip and/or cleft palate. There is no evidence therefore that nostril asymmetry represents a carrier state of cleft lip and palate. Perhaps Fukuhara's findings resulted from a selection of cases in which a near relative had a visible microform of cleft lip.

Summary

Nostril length, width and symmetry were measured in 50 parents of children with cleft lip, with or without cleft palate, and 50 individuals from the general population.

The controls had a higher frequency of asymmetrical nostrils than the parents of children with cleft lip, but the difference was not statistically significant. Nostril asymmetry does not appear to be an indication of the genetic predisposition to cleft lip.

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