Correlation of vermilion symmetry to alveolar cleft defect in unilateral cleft lip repair $\stackrel{\text{\tiny}}{\approx}$

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Abstract. Asymmetry is a major problem in repaired unilateral cleft lip (UCL). One of the important manifestations of this is the asymmetry of the vermilion. The aim of this study was to correlate the severity of the asymmetry in the vermilion to the size of the alveolar defect. Twenty patients aged between 6 and 18 months with complete unilateral cleft lip, alveolus, and palate were included. An impression of each patient's alveolus at the time of cheiloplasty was taken using silicon rubber base material, and a study cast was prepared. The width of the cleft alveolus was measured on these casts using a transparent grid. Frontal photographs were taken at 6 months postoperative and vermilion symmetry was measured as the ratio between the cleft and non-cleft sides. The results obtained in this study showed a direct correlation between the size of the alveolar defect and the vermilion symmetry in repaired UCL. The wider the cleft alveolus and greater the antero-posterior discrepancy, the greater is the vermilion asymmetry. The asymmetry of the vermilion in UCL after repair is directly dependent on the size of the alveolar defect. The alveolar discrepancy causes 'in-rolling' of the vermilion on the cleft side and affects the vermilion symmetry.

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Clinical Paper Cleft Lip and Palate

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Cleft lip repair has been the subject of much controversy since it was first described. A number of modifications to the technique and protocols have been made in the pursuit of the most acceptable outcome.^{1,2} Different parameters have been studied and compared using anthropometric measures to determine the effects of cleft lip surgery on the nose and face.³ The problem of asymmetry in unilateral cleft lip (UCL) repair postoperatively has been discussed.⁴ One of the features of this asymmetry is vermilion thinning or 'in-rolling' at the lateral aspect of the lip on the cleft side (Fig. 1). This abrupt ending of the lateral vermilion on the cleft side appeared to be associated with wider alveolar defect in our cases. A literature search with regards to the correlation of the size of the cleft alveolus with

^{*} This study was presented at the 12th International Congress on Cleft Lip/Palate and Related Craniofacial Anomalies, 2013.



Fig. 1. Abrupt thinning of the vermilion on the cleft side: patient number 13, with poor lateral vermilion show. This patient did not undergo nasoalveolar moulding and had a large antero-posterior discrepancy (10 mm).

vermilion symmetry did not yield any conclusive results. Hence this study was performed to investigate the hypothesis that the greater the severity of the alveolar cleft defect, the greater the asymmetry of the vermilion in a repaired UCL, leading to a poorer outcome.

Methods

Twenty consecutive unilateral complete cleft lip, alveolus, and palate (UCLAP) patients aged between 6 and 18 months were included in this pilot study. Patients with Simonart bands or with incomplete cleft palate were excluded from the study. Two of the 20 patients included in this study underwent preoperative nasoalveolar moulding. An impression of the alveolus was taken preoperatively under general anaesthesia, just before the cheiloplasty procedure, using silicon rubber base material. The casts were then studied to evaluate the antero-posterior and transverse discrepancies between the greater and lesser segments, i.e. the size of the alveolar defect. For this, a transparent grid was placed on the casts and measurements were taken between the tangent lines of the most prominent point on both of the segments for the antero-posterior discrepancy. The transverse discrepancy was measured between the tangents of the medial-most point on both segments (Fig. 2).

Frontal photographs were taken at 6 months postoperatively, and a transparent grid was used to measure the ratio of the vermilion on the non-cleft side to that on the cleft side at three different positions.



Fig. 2. Measurement of the alveolar cleft discrepancy in two dimensions: antero-posterior and transverse.

While placing the grid, it was ensured that the imaginary interpupillary line coincided with a line on the grid so as to align the photograph to the grid.

The deepest point of Cupid's bow was taken as the midpoint of the lip. Three points on the non-cleft side (A, B, and C) and on the cleft side (A', B', and C') that were equidistant from the midpoint were marked on the vermilion. At these points, the height of the vermilion was measured from the white roll to the muco-vermilion junction (junction of dry and wet mucosa)



Fig. 3. Measurement of vermilion symmetry using grid lines.

(Fig. 3). The ratio of these measurements was recorded as AA', BB', and CC' (e.g., the ratio of cleft side A' to non-cleft side A is AA').

The readings obtained (Table 1) were subjected to a Pearson's correlation

Table 1.	Correlation	of the	alveolar	defect v	with	vermilion	symmetry	ÿ.
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Patient No.	AA'	BB'	CC'	A-P	Т
1	1.14	0.41	0	7	8
2	0.7	0	0	9	15
3	1	0.6	0	10	5
4	1.2	0.4	0	8	12
5	0.9	0.74	0.4	5	8
6	0.75	0.5	0	8	9
7	1	1.2	0.8	5	3
8	0.46	0.28	0.2	6	6
9	1	1	0.8	3	14
10	0.8	0.8	0.77	5	5
11	0.66	0.5	0	7	9
12	1	0.91	0.86	3	3
13	1.11	0.55	0	10	10
14	1.1	0.8	0.8	5	14
15	1.2	0.53	0	10	12
16	1.2	0.57	0	7	3
17	0.9	0.4	0	10	11
18	0.9	0.77	0.34	7	4
19	1.3	0.92	0.86	4	2
20	0.7	0.65	0.4	5	5

^a AA': ratio of length A and A'. Measurement A: height of the vermilion at half the distance from the deepest point of Cupid's bow to the corner of the mouth on the non-cleft side. Measurement A': height of the vermilion at half the distance from the deepest point of Cupid's bow to the corner of the mouth on the cleft side. BB': ratio of length B and B'. Measurement B: height of the vermilion at half the distance from the corner of the mouth to A on the non-cleft side. Measurement B': height of the vermilion at half the distance from the corner of the mouth to A on the cleft side. CC': ratio of length C and C'. Measurement C: height of the vermilion at half the distance from the corner of the mouth to B on the non-cleft side. Measurement C': height of the vermilion at half the distance from the corner of the mouth to A on the cleft side. CC': ratio of length C and C'. Measurement C: height of the vermilion at half the distance from the corner of the mouth to B on the cleft side. A-P: anteroposterior discrepancy between the greater and the lesser alveolar segments, measured between the tangents to the most prominent point on both segments. T: transverse discrepancy between the medial-most point on both segments. Download English Version:

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