Analysis for speech and esthetics in sixty consecutive patients with cleft lip and palate

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ABSTRACT

Background: A double-blind retrospective study was carried out at our oral and maxillofacial surgery department to assess speech and esthetics of primary cheiloplasty in patients operated for unilateral complete cleft lip, alveolus and palate.

Materials and Methods: Total sample size was 60. All were operated for unilateral complete cleft lip, alveolus and palate. Age range was between 1 and 21 years. Results of surgeries performed by two surgeons were assessed. The speech of all these patients was judged by a single speech therapist who was unaware of the operating surgeon. All patients were assessed for articulatory errors, namely, omission, distortion, substitution, addition and intelligibility. Sixty-eight words in local language (Kannada) were selected by the speech pathologist. All patients were subdivided into three age groups: ≤ 5 years, 6–10 years and ≥ 11 years. The cheiloplasty was assessed using VLS (V: vermilion, L: lip, S: scar) scale for vermilion, lip and scar patterns.

Results and Conclusion: Patients undergoing palatoplasty in ≤ 1 year showed good articulation between the age of 5 and 10 years. Articulation and intelligibility was maximum in patients ≥ 11 years. Patients at this age try various compensatory mechanisms to overcome communication disabilities. Based on the VLS scale, scarring was the least in all patients. Vermilion and lip patterns showed satisfactory results in most of the patients.

Keywords: Esthetics, lip, scar, speech, vermilion.

INTRODUCTION

It is common for children who are born with a cleft palate to have speech problems at some time in their lives. Over half of them will require speech therapy at some point during childhood. Evaluation of the efficacy of palatal surgery in patients with cleft palate and a determination of the long-term speech outcome are of interest to surgeons who treat cleft palates. The success of cleft palate surgery is determined by the subsequent speech intelligibility. The speech of children with cleft palate is often characterized by resonance, articulation and phonatory disorders. These three aspects can adversely affect the overall speech.¹ Cleft lip deformities are often related to the residual muscular deficiency. The muscular deformity not only affects esthetics and the functional movements of the lip, but also affects skeletal, cartilaginous and dental-arch growth. Hence, the assessment of secondary lip deformity is necessary in a

number of patients for growth-related, functional and cosmetic purposes. In this double-blind retrospective study, 60 cases with unilateral complete cleft lip, alveolus and palate deformity were assessed for primary cheiloplasty, speech and secondary lip deformity using VLS (V: vermilion, L: lip and S: scar) classification.²

MATERIALS AND METHODS

Sixty cases with unilateral complete cleft lip, alveolus and palate deformity who underwent surgical repair were included in this study, in which the male to female ratio was 39:21 and the age range was 1–21 years. All these patients were assessed for primary cheiloplasty and speech.

Speech was assessed for articulatory errors, namely, omission, distortion, substitution, addition and intelligibility

using 68 local language Kannada words, which were printed and given to patients who could read, and others were made to tell the pictorial diagrams. Speech was recorded for assessment by a speech pathologist. Of 68 words, they marked how many were normal, distorted, omitted, substituted and added other words to produce that word. All patients were divided into three age groups: ≤ 5 years, 6–10 years and ≥ 11 years to assess the speech.

Phonetic inventory and relational analysis using consonant and vowel productions were compared with the target productions. They were analyzed for error types at a segmental level by a speech pathologist. Intelligibility, the ability to understand during speech,³ was assessed by giving audio tapes recorded from cleft cases to 10 people, who were not doctors, who were asked to write what they could listen from the audio and mark it as normal or altered.

The VLS classification was used to assess the secondary lip deformity that is vermillion, lip and scar patterns using various scores.² The evaluation of each case was undertaken by the author, and two other surgeons who had not carried out the primary surgery. A combination of direct personal observation of the lip and standard clinical photographs was used. Statistical analysis was applied to see the significance of results.

RESULTS

Twenty-three (38%) patients were ≤ 5 years, 15 (25%) patients were within 6–10 years and 22 (37%) patients were ≥ 11 years of age.

In ≤ 5 years age group, the mean articulatory errors for each patient showed 25.6 (37.6%) words distorted, 1.03 (1.51%) omission, 3.3 (4.8%) substitution, 0.93 (1.3%) addition and the rest 54.6% words normal. In 5–10 years age group, 19 words were distorted (27.9%), omission 0 (%), substitution 4.8 (7%), addition 2.02 (2.9%) and the rest 62.03% words were normal. In ≥ 11 years age group, 6.3 words were distorted (9.2%), omission 0.6 (0.97%), substitution 1.1 (1.6%), addition 2.55 (3.7%) and the rest 84.5% words were normal (Figure 1).

Speech intelligibility of patients up to 5 years of age showed that 46 (67%) words were correct and 17.5 (33%) were altered, in 6–10 years age group 53 (77%) words were correct and 15 (23%) were altered, and in ≥ 11 years age group 61.5 (90.4%) words were correct and 6.5 (9.5%) were altered (Figure 2).

Assessment of V was carried for 8 distinct vermillion patterns, L for 7 lip patterns and S for 6 distinguishable scar patterns as mentioned in the methodology (Table 1).²

Figure 1 Articulatory errors like distortion, omission, substitution and addition of words.

Figure 2 Intelligibility of the three age groups.

P value for this study was -0.63 (≤ 0.05) and showed significant result.

DISCUSSION

Cleft lip, alveolus and palate and isolated cleft palate are complex anatomical disorders. The open, nonfunctional soft palate plays the dominant role, hence its closure is of the utmost importance for velo-pharyngeal competence.⁴ For centuries, this closure was performed simply by suturing the cleft edges together without paying any attention to

Table 1 The vermillion, lip and scar classification

Vermilion code	Vermilion patterns	
V0	No deformity	18.6
V1	Thicker vermillion at suture line	11.6
V2	Notch at suture line	11
V3	Whistle lip deformity	7.33
V4	Thin lateral lip	5.6
V5	Thick lateral lip	3
V6	Whole slim upper lip	2.3
V7	Untidy vermillion border	1
Lip code	Lip patterns	
L0	No difference in height	22
L1	Short lip	8
L2	Long lip	17
L3	Orbicularisoris bulge/diastasis	6
L4	Philtral damage	6
L5	Cupids bow invasion	1
L6	Short lateral lip	0
Scar code	Scar patterns	
S0	Normal scar	36
S1	Wide scar	16
S2	Wide scar only at vermillion border	3
S3	Hypertrophic scar	0
S4	Depressed scar	4
S5	Irregular scar	1

the velo-pharyngeal muscles. The aim of primary reconstruction of the cleft lip and palate deformities is to restore the anatomy, and therefore the function of facial muscles, to achieve normal development of the facial skeleton during growth.^{5,6}

Braithwaite et al (1968)⁷ compared the normal muscular anatomy of the velo-pharyngeal complex with that in a cleft. It became obvious that the abnormal insertion had to be dissected free from the dorsal border of the hard palate and repositioned into the dorsal third of the soft palate. Kriens (1969) established a clear-cut surgical procedure to restore the intravelar muscle complex and since then the 'intravelar veloplasty' has been in widespread use as a standard method.⁸

Speech evaluation in our patients showed articulatory errors. Distortion was highest in ≤ 5 years age group, 25.6 (37.6%) and least in ≥ 11 years age group, 6.3 (9.2%). Omission was highest in ≤ 5 years age group, 1.03 (1.51%) and least in ≥ 11 years age group, 0.6 (0.97%). Substitution was highest in 5–10 years age group, 4.8 (7%) and least in ≥ 11 years, 1.1 (1.6%). Addition was highest in ≥ 11 years age group, 2.55 (3.7%) and least in ≤ 5 years age group,

Figure 3 Vermilion patterns.

0.93 (1.53%). Normal words were highest in ≥ 11 years age (84.5%) and least in ≤ 5 years (54.6%). It was observed that as age advanced, patients tried to compensate consciously to avoid distortion, and add a word to produce the target word.

Speech intelligibility (Figure 2) in cases ≤ 5 years of age showed 46 (67%) words were correct and 17.5 (33%) altered; in cases of 6–10 years of age, 53 (77%) words were correct and 15 (23%) altered; In cases ≥ 11 years of age, 61.5 (90.4%) words were correct and 6.5 (9.5%) altered. Speech intelligibility was highest in ≥ 11 years of age, and least in ≤ 5 years of age.

Patients undergoing palatoplasty in ≤ 1 year showed good articulation in 5–10 years age group. Articulation and intelligibility were maximum in cases ≥ 11 years of age because at this age they try various compensatory mechanisms to overcome communication disabilities.

The assessment of secondary unilateral cleft lip deformities gives a precise idea of the type of defects in the lip after primary closure to the surgeon.⁹

Vermilion assessment revealed (Figure 3) that the most common vermillion pattern was V0—no deformity and least was V7—untidy vermillion border. Lip patterns showed (Figure 4) no difference in the height in 22 cases. Scar patterns showed a normal scar in 36 cases (Figure 5). In our series, the most common pattern in VLS was no deformity, no difference in height and a normal scar.

CONCLUSION

Patients undergoing palatoplasty in ≤ 1 year showed good articulation between the age of 5 and 10 years. Articulation and intelligibility was maximum in patients ≥ 11 years as

Figure 4 Lip patterns.

Figure 5 Scar patterns.

patients at this age try various compensatory mechanisms to overcome communication disabilities.

The VLS classification was found to be a simple and reproducible method for assessing the results of primary

cheiloplasty, and also helped in the valid assessment of the secondary cleft lip deformity without taking into consideration of cleft nose. Scarring was the least in all patients. Vermilion and lip patterns showed satisfactory results in most of the patients.

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