

5 YEARS EXPERIENCE OF 102 PALATOPLASTIES WITH SPEECH ASSESSMENT

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SUMMARY

In a study carried over a five year period, 102 patients of cleft palate were studied for assessment of surgical results including speech development. 48 patients had group II (post alveolar) clefts and 54 patients belonged to group III (alveolar) clefts. Middle ear problems were seen in 11.65 percent of patients. In group II patients cleft was repaired by V-Y push-back palatoplasty and in group III patients with four flap technique. There was no operative mortality. Post operative complications occurred in 6.86 percent of patients. 81 patients could be evaluated for surgical results out of which 60 patients above the age of four years were assessed for speech development. 70 percent of patients had adequate length and mobility and 10 percent had short immobile palates. 60 percent of patients achieved acceptable and 40 percent unacceptable speech. Speech results were better in group II clefts than in group III clefts.

Key Words : Cleft Palate, Surgical results, Speech assesment

The proper approach for the management of a child with cleft palate is multidisciplinary which involves not only the plastic surgeon but also orthodontist, prosthodontist, otorhinolaryngologist, speech therapist and social worker.

Material & Methods

The study includes 102 patients of cleft palate operated in the department of Plastic Surgery, Sher-i-Kashmir Institute of Medical Sciences, Srinagar over a period of five years i.e. from Dec. 1983 to Nov. 1988. All the patients were evaluated in detail before surgery. Routine investigations were done in all cases and dental impressions of the jaws were taken as required. Tympanometric studies were carried out before and after palatal surgery. 48 patients with group II clefts underwent V-Y pushback palatoplasty and 54 patients with group III clefts were repaired by four flap technique. In all alveolar or group III clefts the hard palate was closed with a vomer flap in conjunction with four flap technique. In bilateral clefts vomer flaps were used simultaneously on both sides. The objective of pushback in all cases was to lengthen the soft palate so as to put the

velum closer to posterior pharyngeal wall and at the same time stitch the abnormally placed muscles in the middle of the soft palate and close the defect in the palate. Packs were not employed for open wounds on the sides resulting from the relaxing incisions and these wounds epithelialised quickly without any problem. There was no need of blood transfusion in any of our patients. Antibiotics were routinely used in all cases during post operative period.

One month after surgery after the palate had healed parents were urged to talk to their children and to begin speech stimulation with the help of picture books etc. Various suction and blowing games were advised including the use of whistles, mouth organs, soap bubble pipes, drinking straws and patients were advised to carry out these exercises several times a day. Speech lessons were started at the same time. Patients were summoned in follow up clinic after every three months and following parameters were recorded :—

- I. Clinical evaluation of soft palate — its length and mobility, and possible contact with posterior pharyngeal wall. The possible presence of any palatal fistulae

was also recorded.

- II. Patients were subjected to thorough E.N.T. examination including audiometry with special emphasis on the possible presence of fluid in the middle ear. If found the condition was treated at once.
- III. Dental check up — Impressions of the jaws taken where ever indicated for subsequent production of study models of the dental arches.
- IV. Assessment of speech :— Of the 81 patients attending follow up clinic 60 patients who were above four years of age were evaluated for speech development by subjective clinical methods by noting the nasopharyngeal competence, articulation and nasality. Results of all the three components were combined for grading the speech on a four point Scale (Morley, 1970) :—
- Grade-0 (Perfect speech) : Speech with all consonants pronounced, indistinguishable from normal speech.
- Grade-1 (Acceptable speech): Speech with minor defects of articulation or nasality or both.
- Grade-2 (Unacceptable speech): Speech with appreciable nasality and major defects of articulation but understandable if the topic is known.
- Grade-3 (Unintelligible speech): Speech grossly defective with multiple articulatory defects and gross nasality typical of cleft palate.

The attitude and behaviour of parents in general was also noticed. None of the children in the series was suffering from any gross deafness or mental deficiency.

Observation

Anatomical groups and sex distribution

As indicated in table 1, there were 48 patients (47.05 per cent) with group II and 54 patients (52.94 percent) with group III clefts. There was a preponderance of boys in group III and girls in group II clefts. We noticed submucous cleft palate in two patients, both males.

Middle Ear Disease

Middle ear problems were found in 12 patients (11.96 percent) in our series in the form of serious otitis media in 7 patients, perforation of drum in 4 patients and retracted drum in one patient. Out of 12 patients with middle ear problem 10 patients had a hearing loss in the range of 20 to 30 decibels in one or the both ears as detected by Audiometry.

Surgical Results

50 percent of our patients were less than 2 years of age at the time of operation. There was no operative mortality in our series of 102 patients. Post operative complications occurred in 7 patients (6.86 percent) including 2 patients of wound disruption, 4 patients of palatal fistulae and one patient of post operative seizures. Both the cases of wound disruption occurred within the first week of surgery and secondary repair was performed on both of them after six months. Out of 4 patients with palatal fistulae 2 got closed spontaneously within a period of 3 months, one was repaired surgically and one is on follow up using an obturator. Of 102 patients operated 81 reported for follow up and were assessed for surgical results. 70 percent of patients had palates of adequate length and mobility, 20 percent had marginal length and mobility while 10 percent had short, scarred and immobile palates.

Speech Assessment

6 patients who were above the age of 4 years were assessed for speech development and record of nasopharyngeal competence, articulation and nasality was made. Out of these 60 patients 30 belonged to group II and 30 to group III clefts.

Nasopharyngeal competence :— The results of nasopharyngeal competence in 60 patients are indicated in (Tab. 2) from which it is evident that 75 per cent of patients were able to achieve competent nasopharyngeal sphincter. There was no nasal escape of air in these patients during blowing tests and spontaneous speech.

Articulation :— Results of articulation in 60 patients are indicated in (Tab. 3). 58 percent of

patients were able to achieve good articulation and only 16.67 percent of patients had poor articulation with multiple articulatory defects including substitutions, omissions and glottal stops.

Nasality (Vocal Resonance) :— Results of nasality in 60 patients are shown in (Tab. 4) from which it is evident that 35 percent of patients were able to achieve non nasal speech and in total 60 percent of patients achieved speech with acceptable nasality.

Grading of speech :— Overall grading of speech after combining the results of nasopharyngeal competence, articulation and nasality in 60 patients are indicated in (Tab. 5). 35 per cent of patients achieved normal speech and 25 percent had acceptable speech. In total 60 percent of patients achieved acceptable speech (Grade O + Grade 1) and 40 percent had unacceptable speech (Grade 2 + Grade 3).

Grading of speech according to the type of cleft :— Results of speech in 60 patients according to the type of cleft are indicated in (Tab. 6). As is evident from the table in group II clefts 83 percent of patients had acceptable speech and in group III only 35 percent of patients were able to get acceptable speech. Soft palate clefts had better speech results in group II clefts and bilateral group III clefts had the worst speech results.

Speech results according to the age of operation :— Speech results according to the age of operation in 60 patients are tabulated in (Tab. 7), from which it is evident that best speech results were obtained in patients operated before the age of two years (80.64 & Grade O + Grade 1) and poor results were seen in patients operated above the age of five years.

Discussion

Cleft palate has remained a challenge for the surgeons since the time of Roux, who performed first successful palatoplasty in 1891 (Morely 1970). It is not the mere closure of the anatomical defect that is required in these patients but to make them socially acceptable through the acqui-

sition of normal speech. Management also includes the treatment of associated problems, thorough knowledge of their psychosocial background, education of parents regarding the nature and prognosis of this problem and the value of their cooperation in the treatment of their child, which demands a great deal of exercise and patience not only on the part of treatment personnel but also patients and their parents as well.

It is well recognised that children with cleft palate have a high incidence of seromucinous otitis media (Paradise, 1976). The hearing loss induced by seromucinous otitis media ranges from 20 to 30 decibels (Holm and Kunze 1969). However, the degree of hearing loss caused by middle ear effusion in early years is insufficient to interfere significantly with early speech hearing, while other factors such as quality and timing of palate repair and intelligence play a more important role (Freeland and Evans 1981). In our series of 102 patients hearing loss of 20 to 30 decibels was detected in 10 (9.8 percent) patients. However, no correlation was found between the hearing loss and speech development in these patients.

In cleft palate patients good functional results can be achieved only when good anatomical results are obtained after surgery. For acquiring perfect speech, these unfortunate children need to have competent palatopharyngeal sphincter which is only possible after having a fairly long and mobile surgically repaired soft palate. Conversely a short scarred immobile soft palate obtained after bad repair would lead to nasal escape of air due to incompetent sphincter, hence bad speech. This fact has been realised long back by the surgeons performing palatoplasty and continues to be the main aims of surgery in the present era as well.

In our series 60 percent of patients were able to achieve acceptable speech (35 percent non nasal and 25 percent with minimal nasality) and 40 percent of patients had unacceptable speech with gross nasality and major articulatory defects. In

some earlier studies as reported by (Braithwaite, 1962 and Calnan, 1976) the number of patients acquiring acceptable speech after palatoplasty varies from 70.7 to 86.3 percent. Although 70 percent of our patients achieved palates of adequate length and mobility but our speech results are lower as compared to the results published by other authors. The cause of this can be elucidated from the fact that in cleft palate patients age at the time of operation forms the major factor responsible for achieving normal speech after surgery. In earlier studies in which higher speech results have been achieved after palatoplasty more than 80 percent of the patients were operated before the age of 2 years while in our series 50 percent of patients were operated before the age of 2 years and only 30 percent before the age of 18 months. This could be one of the factors responsible for not achieving very high speech results in our patients.

Physical restoration of palate alone may not result in immediate speech improvement. Infact it is only the beginning of long tedious rehabilitative process. In addition to operating plastic surgeon & speech therapists, parents of these children are equally involved in the post operative management of such patients. Hence their cooperation is of immense value in achieving successful results. Bringing their children for regular follow up and spending time with them in performing various speech exercises and speech stimulation demands a great deal of patience on their part as well. Majority of our population being illiterate and ignorant of the value of their cooperation in the management of their children, their poor compliance may be a contributory factor for not achieving better results in these patients.

Table 1. Anatomical Groups and Sex Distribution.

Classification of cleft.	No. of Children	Sex distribution	
		Male	Female
Group II	48	21	27
Group III	54	42	12
Total	102	63	39

Table 2. Nasopharyngeal Competence

Nasal escape of air	No of patients	Percentage
No escape	45	75.02
Minimal escape	07	11.66
Moderate escape	04	06.66
Severe escape	04	06.66
Total	60	100.00

Table 3. Articulation

Grading of Articulation	No of patients	Percentage
Good	35	58.33
Satisfactory	15	25.00
Poor	10	16.67
Total	60	100.00

Table 4. Nasality

Degree of Nasality	No of patients	Percentage
Non nasal speech	21	35.00
Minimal nasality	15	25.00
Moderate nasality	15	25.00
Severe nasality	09	15.00
Total	60	100.00

Table 5. Grading of Speech

Grade of speech	No of patients	Percentage
Grade-0 (perfect)	21	35.00
Grade 1 (Acceptable)	15	25.00
Grade-2 (Unacceptable)	15	25.00
Grade-3 (Unintelligible)	09	15.00
Total	60	100.00

Table 6. Grading of Speech According to the Type of Cleft

Type of cleft	Gradings of speech			
	Grade-0	Grade-1	Grade-2	Grade-3
Group II clefts				
Submucous clefts	2	0	0	0
Soft palate clefts	16	1	0	0
Soft and hard palate	2	4	3	2
Group III clefts				
Unilateral	1	10	12	3
Bilateral	0	0	0	4
Total	21	15	15	9

Table 7 : Speech Results According to the Age of Operation

Age range	Speech grading									
	Grade-0 (Perfect)		Grade-1 (Acceptable)		Grade-2 (Unacceptable)		Grade-3 (Unintelligible)		Total	
	No.	%age	No.	%age	No.	%age	No.	%age	No.	%age
1-2 Years	17	54.84	8	25.80	6	19.36	0	0	31	100
2-5 Years	4	19.05	6	28.56	8	38.09	3	15.16	21	100
Above 2 Years	0	0	1	16.67	1	16.67	6	66.66	9	100

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