

## SPEECH PROBLEM IN CEREBRAL PALSY—A CRITICAL ANALYSIS

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The Orthopaedic Centre of Andhra Mahila Sabha at Madras is treating children suffering from Cerebral Palsy. Being a Rehabilitation Unit it has a team of medical and para-medical staff. At this Centre, a Cerebral Palsy Research and Demonstration Project has been sponsored by the Department of Health, Education & Welfare, Social and Rehabilitation Service, Washington, U. S. A., to study the effect of stereotaxic surgery in this condition. A speech therapy section was established in 1970 as a part of the Research Project. This paper analyses the speech problems that were encountered in Cerebral Palsy.

### Material and Method

#### *Definition of Cerebral Palsy*

a) As defined in the Project report, and adopted by us,

"Cerebral Palsy will be defined as a non-progressive condition involving predominantly the motor systems due to Brain damage, sustained during prenatal, intranatal and early years of childhood. Cerebral with visual, auditory, speech and global involvement will also be included."

We have kept in mind the report of the Committee on verification and terminology of the world commission on Cerebral Palsy of the international society for rehabilitation of the disabled. It unanimously approved the following definition of Cerebral Palsy.

b) "Cerebral Palsy is a persistent but not unchangeable disorder of posture and movement due to dysfunction of the Brain (excluding dysfunction due to progressive diseases present before the growth or the development of the Brain is completed). Many other clinical features may also be present."

All Cerebral Palsy children registered in this Centre are referred to the Speech Therapy section after the neurological, neurosurgical, orthopaedic and psychological assessments are completed. So far, 114 cases have been assessed, and of these 50 are females. The youngest child is 18 months old. The oldest is 15 years.

(a) Speech Evaluation is carried out as follows:

1. According to speech and language development chart (children's Orthopaedic Hospital, Bombay)

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2. Examination of articulators for speech functions.
3. Examinations of Chewing, Sucking and Swallowing functions (C.S.S.)
4. Breathing pattern and Vital capacity

(b) Hearing Evaluation is carried out by :

1. Audiometric Examination  
*OR*
2. Screening test
3. Non-Audiometric Screenig Test (Using drums, pitch pipes etc.)

### Results and Discussions

Table I. *Table showing the distribution of patients with speech and hearing problems assessed from 1-7-70 to 30-10-71*

Age	Speech and hearing normal		Delayed with hearing loss		Delayed speech		Dysarthria		Stuttering		Voice problem		Others		Total	Grand Total	Percent- age	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F				
1-4 yrs	1	2	—	—	12	10	1	—	—	—	—	—	—	1	14	13	27	23.70
4.1-8 yrs	2	1	I	—	10	8	6	8	—	—	—	—	1	2	20	19	39	34.20
8.1-12 yrs	5	1	—	—	9	13	4	2	1	—	1	—	—	—	20	16	36	31.60
12.1 & above	2	1	—	—	4	—	4	1	—	—	—	—	—	—	10	2	12	10.50
<b>Total</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>—</b>	<b>35</b>	<b>31</b>	<b>15</b>	<b>11</b>	<b>1</b>	<b>—</b>	<b>1</b>	<b>—</b>	<b>1</b>	<b>3</b>	<b>64</b>	<b>50</b>	<b>114</b>	<b>100.00</b>
<b>Grand Total</b>	<b>15</b>		<b>1</b>		<b>66</b>		<b>26</b>		<b>1</b>		<b>1</b>		<b>4</b>		<b>114</b>			
<b>Percentage</b>	<b>13.16</b>		<b>0.88</b>		<b>57.89</b>		<b>22.80</b>		<b>0.88</b>		<b>0.88</b>		<b>3.51</b>		<b>100</b>			

(PI. Note: Predominant Speech Problems has been taken where a case has multiple speech problems)

The results are given in Table I. It is obvious from the Table that delayed speech with normal hearing forms a predominant part of the speech problems seen here. Stuttering, and delayed speech with hearing loss and voice Problem are the least in number. The term delayed speech is used here for those cases whose speech is monosyllabic, polysyllabic, retarded or those who have no speech in the absence of hearing loss.

A total of 26 cases are grouped under dysarthria. The differential diagnosis is mentioned in Table II. The incidence of spastic dysarthria is highest and dystonic dysarthria, the lowest. Spastic dysarthria is characterised by imprecise consonants and monoloudness appearing with reduced stress. Phonotary changes include harsh and spastic voices. Slow rate with short phrases reflect the sluggish activity of the speech mechanisms. Both hypernasality and spastic voice are present, but the former to a lesser degree. Considering the articulators, the tongue and lips move slowly with limited range, and rapid alternative movements are markedly slow. Soft palate moves little and slowly on phonation, but responds well to gag reflex. Dystonic dysarthria is also characterised by most of the factors mentioned in spastic dysarthria but to a lesser degree. In addition, irregular articulatory breakdown is present and the face, tongue or lips show sustained spasm with closure of the eyes. Pursing of the lips and facial grimaces are also noticed. Locked jaw or open jaw can be seen intermittently due to the spasms.

Table II. *Table Showing Distribution Of Dysarthria*

Sl. No.	Type	No.	Percentage
1.	Spastic Dysarthria	16	61.54
2.	Ataxic Dysarthria	5	19.23
3.	Dystonic Dysarthria	1	3.85
4.	Unclassified	4	15.38
Total		26	100.00

Table III *Table Showing Distribution Of Voice Problems Associated With Any Of The Other Speech-Problems Mentioned in Table-1.*

Sl. No.	Type	No.	Percentage
1.	Spastic Voice	5	20.83
2.	Hypernasality	8	33.33
3.	Breathy Voice	2	8.34
4.	Soft Voice	8	33.33
5.	Others	1	4.17
Total		24	100.00

Ataxic dysarthria is characterised by predominantly imprecise consonants associated with irregular articulatory breakdown. The rate of speech is markedly slow. Voice

Table IV *Table Showing The Distribution Of Intellectual Development in The C. P. Children With Speech-Problems.*

I.Q. Range	Speech and Hearing		Delayed Speech lose	Delayed Speech with Hearing	Dysarthria	Stuttering	Voice Problems			Total	Percentage
	Normal	Delayed Speech					Other	1	2		
Average 90 and above	7 (46.67%)	5 (7.58%)	-	-	9 (34.62%)	-	1	2	2	19.30	
Moderately retarded	8 (53.24%)	16 (24.24%)	1 (100%)	1	11 (42.31%)	1 (100%)	—	1	38 (25%)	33.33	
Severely retarded		45 (68.18%)	-	6 (23.07%)				3 (75%)	54	47.37	
Below 50		66	1	26	1	1	4	114	100.00		

is breathy and soft. The tongue and lips may show very slow alternative repetitive movements. Palatal movement is normal for phonation and gag reflex.

One case of delayed speech with hearing loss in Table I is of special interest. This is an athetoid case which was treated with streptomycin, as a case of Tuberculous meningitis. We are not yet sure whether this hearing loss is a side effect of streptomycin therapy or a central deafness as is usually seen in the athetoid group of patients.

In Table IV, is shown the distribution of intellectual development in Cerebral Palsy children with speech problems. In this project intellectual development is graded, into the following categories. In doing so, we have taken into account the Motor disability, Brain damage, Environmental conditions and Socio-cultural status.

#### *Gradation*

1. Average (90 and above)
2. Moderately retarded (50 to 90)
3. Severely retarded (Below 50)

It is clear from the Table that all the cases with normal speech and hearing, come under the average and moderate group, where as 68.18 per cent of the cases with delayed speech show a severe degree of mental retardation. This degree of mental retardation is an important factor to be considered in the rehabilitation programme. A total of 20 cases of dysarthria fall under the average or moderate category, thus indicating a good prognosis in speech therapy. Another associated factor in speech problems in most of our cases is the shallow clavicular breathing with poor vital capacity and also poor C.S.S. function. This causes additional work on the part of the therapist in the rehabilitation of speech problems.

Dystonia and spasticity of the tongue are the two major neurological problems that could be seen in most of the delayed speech and dysarthria patients. It is our experience that little could be done to improve the function of the tongue by rehabilitative measures. (Though stereotaxic surgery has improved these children in other respects, speech function has not been significantly improved. Speech function has deteriorated immediately after surgery but subsequently improved to pre-operative levels within a few weeks.)

#### Summary and Conclusions

A total number of 114 cases have been assessed in the speech therapy section of this Centre and analysed for various speech problems. It has been found that Delayed Speech with a severe degree of mental retardation is an important problem. Males predominate in this series, Stereotaxic surgery has not brought about any improvement in so far as dystonia or spasticity of the tongue is concerned. Further research is required to elucidate the means of improving and defining speech problems in Cerebral Palsy.

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