

Speech Therapy with Selected Patients with Congenital Velopharyngeal Inadequacy

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The condition of cleft palate has been known to exist for at least 2,000 years, and operative procedures have been recorded from the early part of the 19th Century (8, p. 29). In recent years, speech pathologists and physicians have noted speech disturbances apparently related to velopharyngeal incompetence in the absence of clefts (1, 3). If the velopharyngeal incompetence has a functional etiology, normal speech might be realized through speech therapy. However, if a structural basis accounts for the speech deficiency, normal speech cannot be achieved with speech therapy unless the palatal limitation can first be corrected or modified substantially through surgery or a prosthetic device.

While some speech pathologists and physicians consider a palatal deficiency to be the principal cause for severe hypernasality alone or in combination with an articulation disorder, others consider the etiology to be functional in the absence of a cleft palate. Van Riper and Irwin ascribe to 'functional rhinolalia', 'soft palates too short to permit adequate closure. . . . If the muscles that form the velum are intact and functional, it is difficult to conceive of any shortness that could produce nasality' (16, p. 247).

Apparently, there has been little reporting about the clinical handling of youngsters with speech problems associated with velopharyngeal incompetence in the absence of cleft palate. Such reporting, in detail, could assist in delineating crucial issues and could indicate problems encountered in providing speech therapy for such patients. Discussed in this paper will be the speech problems and subsequent handling of three selected patients without a cleft palate, each with a voice quality and articulation suggestive of a cleft palate condition. Pharyngeal flap surgery was performed on each youngster following unsuccessful trials of speech therapy with therapy resuming after surgery.

The Children

CHILD #1

Before pharyngeal flap surgery. EG, the oldest of the three patients to be presented, was 14 and had the best speech of the three. Previously she had

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received speech therapy for two years but the therapy was very sporadic with many entire months passing without any sessions. She was cooperative and motivated during the six months of speech therapy prior to surgery. Her speech was usually intelligible. Fricatives were distorted but the errors were inconsistent and she was able to produce all error sounds acceptably in words following stimulation (8). Her spontaneous speech was markedly hypernasal. The degree of nasality during speech therapy sessions varied, however, with the kind of materials used. For example, she was able to sustain isolated vowels with acceptable quality. She could produce nonsense syllables containing vowels and voiceless consonants as well as many one-syllable words without nasality. Eventually, she was able to read sentences of four or five words with acceptable quality with great attention directed to articulation, rate, tongue placement, tongue height, and size of mouth opening (7, 12). However, the nasality became severe as the sentences increased in length.

Psychological testing revealed the girl to be mildly retarded (IQ 82). However this degree of retardation is not likely to account for a marked speech defect. Goda and Griffith (5) found relatively few speech errors in their population of mildly retarded adolescents, and these were of a minor nature.

Cineradiography revealed the palate to be adequate in length but movement to be very slight. There was apparently occasional approximation of the velum with the pharyngeal wall but great physical effort was required. A neurological evaluation suggested paresis.

The lack of results from speech therapy together with the variability and kind of speech quality indicated an organic basis.

After flap surgery. After surgery, she spoke with reduced nasality but with no apparent articulatory improvement. Her motivation was somewhat less than previously because of her disappointment that surgery had not eliminated the need for continued speech therapy. On several occasions, the need for continuation of therapy after the surgery was explained but EG apparently had not accepted the idea. Even so, conventional speech therapy techniques¹ were used as she seemed to want better speech and she had no apparent negative reactions to speech.

As before, voiceless consonants could be produced correctly. However, there seemed to be faulty valving in the nasopharyngeal area, since hypernasality was still present, along with distortion of voiced consonants. Therapy for voice and articulation was handled with the same materials since, presumably, a common factor was responsible for both disorders. Ear training was emphasized in which the quality of front and back vowels was contrasted in isolation and then they were combined with voiced and voiceless consonants (6). Word drills were constructed from the selected vowels and consonants. Sentences and paragraphs were constructed from the words. Carry-over was evaluated through direct conversation and parent reporting. Additional therapy for articulation included emphasis on production of final sounds in words.

EG was dismissed from speech therapy after 32 sessions following flap surgery. There were still articulation errors and a mild hypernasal quality in her habitual speech, but her speech was relatively free of errors during careful oral reading. However, her speech was acceptable to her and she was apparently not motivated to improve further. Furthermore, she was finding therapy dull and tedious. Continued improvement would be impossible without patient cooperation.

¹ As used in this paper, conventional speech therapy will refer to sessions devoted almost entirely to speech improvement through the use of appropriate drill materials.

CHILD #2

Before flap surgery. MLB, aged 9, had been receiving therapy for three years before the writer began seeing her. She was essentially unintelligible, despite the years of therapy. When it was possible to see the material to which the child was reacting, 50% or more of her speech could be understood. Where the material could not be seen, careful listening and many repetitions were required before the speech could be understood. The majority of consonant and vowel sounds were distorted, with frequent omission of final consonants in words. Hypernasality was severe. The possibility of a structural basis for the defective speech had been dismissed several times, twice by ENT specialists and once by a general practitioner.

It was very difficult to achieve rapport, as she showed both poor motivation and lack of interest. She was very passive, thus masking her emotional feelings. She cooperated best on tasks requiring slight intellectual or emotional effort. She could discriminate and even include final sounds in words since only the relatively simple auditory discrimination of presence or absence of a phoneme is required. When more complex auditory discrimination was required, she claimed to hear no difference between distorted and correctly produced consonant or vowel sounds whether spoken by the examiner or herself. She claimed this lack of discrimination with live as well as with recorded speech. After three months of therapy on a twice weekly basis, some improvement was noted in intelligibility of oral reading because of the inclusion of more final consonants. At that time, she was beginning to express overtly her hostility to speech therapy through such activities as making large faces from the letters corresponding to her error sounds and mutilating these faces with a dart, bean bag, or scissors. She would sometimes hideously distort these faces with crayon or scissors.

Cineradiography revealed a palate too short to obtain contact with the pharyngeal wall. The oral breath pressure ratio was 77%.

After flap surgery. Considerable improvement was noted in MLB's speech following flap surgery. She was now able to produce correctly in isolation and in a few words many sounds which were formerly defective. Hypernasality was less severe, but a quality disorder of hyponasality or denasality was noted.² Observations such as this have been noted in several other reports on the speech of patients following flap surgery (2).

When therapy was resumed, the child was more motivated. She spoke with considerable pleasure about the improvement in her speech and about the ease people had in understanding her. Now she reported hearing differences between correctly and incorrectly produced sounds. Noting the attitude changes, conventional speech therapy was used initially with emphasis placed on development of oral pressure (11, 13). The stopping, impounding, and release of the oral breath stream for plosives was considered and then attention was directed to the continuation and force of the breath stream against the tongue or teeth, as required for fricatives. Extreme attention was placed on the continuation of the breath stream through the nasal cavity for nasal consonants in order to reduce the hyponasal quality. She was encouraged to hum tunes she knew during which time she sustained the nasal consonants /m/ or /n/. The tape recorder was used and she seemed to be developing some auto-criticality in regard to the quality of her speech.

Interest waned after six weeks of therapy. Improvement was noted in drill

² Some speech pathologists prefer to regard hyponasality or denasality as a disorder of articulation and not one of voice quality (4, p. 170).

materials with some slight carry-over. However, there was no apparent change in her habitual speech. Apparently, results were not being realized quickly enough for the youngster. Her motivation diminished and she was becoming passive and seemingly uninterested in speech therapy. As before, she began to deny hearing any differences in sounds. She was encouraged to verbalize her feelings in regard to speech therapy. She expressed the desire not to use the tape recorder since she did not wish to hear her voice. Now she began to express her hostility by directing her feelings against the recorder referring to the recorder, by such labels as 'monster', 'idiot', and 'stupid'. Her feelings were reflected in a manner similar to that described by Rogers (10). 'You hate the tape recorder because you are not satisfied with the quality of your speech. You have been working a long time on your speech and there are still sounds you have trouble in saying correctly. You want to stop working on your speech because you don't think you can improve any further.' Then support and encouragement were provided. 'I know how hard you have worked. And you *can* improve further. You have to give yourself a chance. You know how much improved your speech was after surgery. If you continue to work as you have these last six weeks, you can have speech which is very good and acceptable.' She was encouraged to talk of several children who made fun of her speech by occluding their nostrils when they spoke.

The frequency of therapy sessions was reduced from twice to once per week. The therapy sessions allowed time for expression of feelings and anecdotes about school, television, family, or friends, in addition to short periods of five minutes or less devoted to speech improvement. Results were minimal. She was doing more and more poorly in her school work and conferences between mother and teacher were necessary. Because of the large class size of 45 children and consequent lack of opportunity for individual attention, the youngster was transferred from the school she attended to a school where the average class size is 25.

The child has realized failure in school and certainly was seeking to prevent failure in other important endeavors. Her passivity in speech therapy could conceivably serve as the mechanism to avoid failure in speech therapy. Rather than add to these problems of failure and the difficult problem of adjusting to a new school, it was decided to defer therapy until she began to feel more adequate as a person. She was therefore dismissed from speech therapy with a moderate articulation disorder and moderate degree of hyponasality, following the transfer to the new school. The mother was advised to avail herself of the psychiatric facilities in the school system. Plans will be made to see the child again after the current academic year.

CHILD #3

Before flap surgery. MG, aged 5, had not received speech therapy previously. Her voice quality, articulation, and degree of intelligibility were like that of the youngster previously described. However, unlike the protective passivity of MLB, MG reacted openly to speech therapy and was generally cooperative during the therapy sessions held two times each week. Six sounds which a child of five years might be expected to master (14) were selected for therapy in the manner described by Van Riper (15): four plosives and two fricatives. Essentially no progress was realized with any of the sounds during four months of therapy on a bi-weekly basis. The nasal consonants /m/ and /n/ continued to be substituted for the voiced plosives /b/ and /d/, respectively, and the voiceless plosives continued to be weakly produced,

with considerable nasal emission, and usually omitted in the final position in words. The fricatives showed some slight improvement when included in one-syllable words. However, great care had to be exerted in the positioning of lip and teeth and in the building up of breath pressure. Cineradiography revealed a palate too short for contact with the pharyngeal wall. The oral breath pressure ratio was 60%.

After flap surgery. Considerable improvement was obvious in this child's speech following flap surgery but, as with child #2, articulation errors were present and a peculiar voice quality combination of both hypernasality and hyponasality. Again, as with child #2, therapy consisted of materials aimed at developing and directing oral breath pressure for production of voiceless consonants. Voiced and nasal consonants were also considered, and appropriate materials were selected.

Initially, results were very promising. After several months of therapy on a twice weekly basis, however, the youngster became passive and seemed apparently uninterested in further improvement. She became reticent, either avoiding speech entirely or using meager responses of one or two words. She said she could not produce many words. The examples she gave were either words of two or more syllables or those containing the /s/ or /f/ phoneme. The mother reported that the child was also receiving therapy twice weekly in school with a group of five other children.

Apparently, speech therapy was having an adverse effect by making the youngster unhealthily aware of her speech. She was dropped from therapy in the school system and the aim of individual therapy was to make speech pleasurable and rewarding to her.

The child was very vulnerable and was easily disturbed by any kind of criticism or negative comment. Care was taken to avoid criticism and to avoid finding fault with anything she did. Instead, lavish praise was used. Free conversation was encouraged, without regard, initially, for quality of speech. Pictures from reading readiness books were freely discussed, with games developing spontaneously from the materials. Stories were read and enacted, and she began to laugh and enjoy speech. Error sounds and words of two or three syllables were isolated now and figured naturally and easily into the play activities. She learned that she was able to produce correctly and easily any word she chose to use. Two and a half years after surgery, her speech is acceptable for her age.

Conclusions

Few cases are described in this paper, but certain tentative conclusions seem warranted. Where severe hypernasality, either alone or in combination with an articulation disorder, shows limited improvement after speech therapy has been tried systematically, a structural basis for the speech disorder needs to be considered. Pharyngeal flap surgery can be of immediate benefit where palatal incompetence proves to be the source for the speech disturbance. Since speech improvement is the sole purpose for surgery, the speech pathologist needs to be the primary referral source.

Speech therapy will generally be indicated following the surgery, and it is important that parent and child know and accept this possibility. The child is likely to be disappointed by the need for continuation of

speech therapy if he or she has decided that the purpose of the surgery is to correct the condition.

Some children will realize normal speech following both surgery and speech therapy. Other children, however, may not achieve normal speech, and the reason for their not achieving better speech needs to be explored further. The behavior of the child during speech therapy is certainly a contributing factor. Motivation appears to be the most important ingredient for successful speech therapy. When a child is not motivated, results will be limited regardless of the degree of palatal competence. The degree of motivation is apparently affected by the period of time spent in speech therapy, the kind of therapy which was provided prior to the surgery, and the length of time and kind of results obtained from speech therapy after the surgery. Age certainly seems to be a factor in the degree of motivation. In general, a child of kindergarten or first-grade age is not as likely to experience the numerous anxieties and embarrassments in speaking situations as may have an older child. Therefore, the younger child may be less hostile and antagonistic to speech therapy, and can be expected to cooperate more fully with the therapist.

Particular sensitivity needs to be shown to the youngster during speech therapy after the surgery. When the child has no specific fears or negative reactions to speaking, speech therapy can consist almost entirely of speech and voice drills. But when speech has been associated with failure, punishment, and now surgery (which may appear to the child to be unsuccessful), one must allow time for the child to express feelings associated with speech and surgery. He cannot be expected to realize the value of speech if he lacks the opportunity of talking about the things which are of the most personal importance. Despite its unquestioned value, the tape recorder can serve no constructive purpose if it is perceived as a punishing device. The speech pathologist needs to be competent to handle the emotional involvement which stems from the speech difficulty. When the speech pathologist does not feel comfortable or competent in handling the speech problems because the underlying pathology involves more dimensions than those related to speech, referral for psychological handling needs to be considered.

The impact of the sessions devoted to speech therapy needs to be assessed carefully. Overemphasis on quality and articulation improvement can lead to fears and insecurities concerning speech which might lead to other kinds of speech problems and emotional problems as well. The scheduled therapy sessions, particularly the frequency, need to be planned so that the emotional health of the child is aided and enhanced. The child needs to feel that the therapist is not interested in only the speech alone but in him as a total person. Thus the adjustment of the child in school and his academic progress will need to be considered in speech habilitation. When the child is having emotional problems in

school of such a nature that they interfere with speech therapy, therapy is best deferred until the school problems can be resolved.

Summary

This paper has described the clinical speech problems of three patients without cleft palates but with velopharyngeal inadequacy. Pharyngeal flap surgery was performed on each patient after speech therapy was found to be ineffective following systematic trial. Therapy continued following the surgery. The youngest child, a first grader, realized normal speech following the surgery and therapy. The two other children continue to have aberrant but improved speech.

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