Research Article

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Long-term Effectiveness of Oral Myotherapy

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Treatment programs for the correction of tongue thrust are varied and their effectiveness is in general not adequately supported by research. Many persons who treat tongue thrust advocate a particular method and personally claim good results in altering abnormal swallows. These claims, however, are based on the subjective judgments of the person treating the thrust. There are few objective follow-up studies to determine the long-term retention of a corrected swallow as a result of tongue thrust therapy. Are we in fact being effective in permanently changing patterns of deglutition? This is a vital question for those of us claiming to eliminate tongue thrust. This study presents an objective, long-term follow-up evaluation of the permanency of corrected swallowing patterns as taught by R. H. Barrett (Barrett and Hanson, 1974). In addition, it assesses some factors which may influence the relapse of tongue thrust after treatment.

Method

Fifty persons who had completed tongue thrust therapy with R. H. Barrett were examined in great detail to determine the permanency of the learned swallowing pattern and to examine factors associated with relapse of tongue thrust. Each subject met the following criteria:

1. At least five years had passed since therapy had been terminated.
2. Each subject had successfully completed the tongue thrust program.
3. All subjects were between the ages of fourteen and twenty.
4. Each subject had been referred by an orthodontist who had diagnosed the presence of tongue thrust.
5. Each subject was initially confirmed to have tongue thrust by Barrett.

The clinical method of evaluating tongue thrust was used. This entails parting the lips of the subject as he swallows in order to observe the action of the tongue. This has been shown to be a valid method of assessment when compared to cinefluorographic film analysis (Wood, 1966). When a thrust was present, the tongue could be seen pushing against or through the teeth at some point. Other possible signs of tongue thrust that were as-

sessed were contraction of the mentalis muscle, pursing of the lips and relaxed masseter muscles during deglutition. Though these signs sometimes occur in persons without tongue thrust, they are specifically eliminated in the therapy prescribed by Barrett and would indicate some degree of relapse.

The presence of tongue thrust was assessed while the subjects swallowed solid food, liquid and saliva. The swallows were measured as being 1) normal if the tongue did not push against the teeth at any point, 2) mild thrust if the tongue could be seen pushing against the anterior incisors at any point, and 3) severe thrust if the tongue protruded out beyond the teeth. Twenty-six of the subjects were checked by two experienced clinicians in order to assess the reliability of the judgment. The two judges were in total agreement 92 per cent of the time.

Many subjects can perform a correct swallow when being assessed but have not stabilized the swallowing pattern habitually. In order to evaluate habitual swallows, the subjects were observed carefully for signs of thrusting during initial conversation and were given a squirt-gun test. The purpose of the squirt-gun test is to take the subject's mind off of swallowing. The subjects were asked to count backwards from one hundred with the mouth wide open while the clinician would squirt water into the mouth sporadically. The subject was to swallow each time water was administered and then continue counting backwards from where he left off. Gathering and swallowing during this test were each marked pass or fail.

Case histories concerning possible factors in relapse of tongue thrust were obtained. Most of the questions were derived from the many theories of the etiology of abnormal deglutition. Questions were asked about history of thumbsucking, mouthbreathing, respiratory allergies, speech problems, dental trauma, tonsilitis during childhood, and history of orthodontic treatment. Information was gathered from Barrett's records pertaining to the type of thrust the child had before therapy, type of malocclusion, and the date therapy was terminated.

An oral examination was completed for each subject, which included assessing the relative size of the tongue to the palate, shape of the palate, size of the tonsils and malocclusion. Other obvious abnormalities were noted, if present, along with any misarticulated speech sounds.

Results

It was found that thirty-six of the fifty subjects had completely retained the correct swallow as taught by Barrett. Twelve of the subjects were judged as having mild thrusts and two as having severe thrusts. The two subjects with complete relapse of tongue thrust also had anterior open bite malocclusions which recurred after orthodontic work had been completed. One of the subjects in the group that displayed mild thrust manifested some orthodontic relapse.

Not all of the subjects in this study had returned to the referring orthodontist for treatment. Twenty-two subjects in the entire sample had not had orthodontic work done. Out of the thirty-six subjects in the group with permanent change, only twenty had worn braces, eighteen faithfully and two not faithfully. Of these twenty subjects, none had experienced a relapse of malocclusion. Out of eight subjects who had worn appliances and thrust mildly, only one had signs of orthodontic relapse. The parents of the subjects not returning for orthodontic treatment decided that braces were not necessary at some time after the completion of tongue thrust therapy.

Seven mothers reported that at the beginning of therapy, their children needed braces

according to their orthodontists, but that after therapy the teeth had moved by themselves into a normal occlusion, and orthodontic treatment was not necessary. All of these seven complete recovery cases were in the group which had permanently retained a correct swallowing pattern. Twelve mothers reported that they had definitely noticed movement of the teeth toward normal position, but not enough to forego orthodontic treatment. Three subjects in the entire sample, although referred by orthodontists, never had need for orthodontic procedures and were reportedly seen for preventive treatment.

In order to assess possible factors responsible for the relapse of tongue thrust, subjects were divided into a "permanent change group" containing thirty-six subjects and a "relapse group" containing fourteen subjects.

A chi-square (χ^2) test revealed that only mouthbreathing and upper respiratory allergies created statistically significant differences between the groups. A χ^2 of 6.18 was obtained for mouthbreathing, which was significant at the .05 level of confidence, and indicates that mouthbreathing was a significant factor in the relapse of tongue thrust. A χ^2 of 6.49 was obtained for upper respiratory allergies and was also significant at the .05 level of confidence. This finding, however, is in the opposite direction of what was expected. The permanent change group contained the overwhelming majority of children with upper respiratory allergic reactions. This produces a paradoxical finding, because one would reason that upper respiratory allergies promote mouthbreathing. This finding indicates that relapse of tongue thrust is not due to the indirect influence of respiratory allergies but to habituated mouthbreathing independent of these allergies.

A descriptive analysis was completed for each subject in order to determine if a combination of the above factors may have been responsible for relapse. The most common combination of factors in the relapse group was mouthbreathing and incorrect resting position of the tongue. Five of the relapse group and only one of the permanent change group fell into this category.

Discussion

It may be concluded that the type of oral myotherapy administered by R. H. Barrett is largely successful in permanently changing swallowing habits. This study indicates that about 70 per cent of the persons who complete this type of tongue thrust treatment successfully retain the swallow as learned in therapy. The additional 30 per cent relapsed to a point where the tongue pushed against the anterior incisors. [Approximately one out of twenty-five cases will probably result in total failure.]

It must be realized that these figures apply only when the strict criteria for tongue thrust in this study have been used. Many persons with normal swallowing patterns place their tongue against the anterior incisors during deglutition (Barrett and Hanson, 1974). A mild relapse of tongue thrust as defined in this study does not necessarily indicate failure. The objective of tongue thrust theory is to reduce the pressure on the teeth enough to prevent a relapse of malocclusion. Out of eight subjects who wore appliances and had mild tongue thrust relapse, only one experienced any degree of orthodontic relapse. This suggests that the therapy fulfilled its purpose for the orthodontist in spite of a mild relapse of tongue thrust. If these criteria were used instead of the stringent criteria in this study, the success rate of Barrett's oral myotherapy could be placed between approximately 80 to 90 per cent.

Several factors must be taken into consideration in stating percentages of success in this study. Whether or not all of the cases on whom Barrett worked were contributing to malocclusion by deviant swallowing patterns is debatable and gets caught up in highly

Table 1. The following table presents the factors which were assessed and the percentages of occurrence within each of the groups.

<i>Factors</i>	<i>Relapse Group % Occurrence</i>	<i>Permanent Change Group % Occurrence</i>
Mouthbreathing:		
some	42.8	22.2
much	21.5	00.0
total	64.3	22.2
Upper Respiratory Allergies:		
some	7.1	38.9
many	00.0	16.6
total	7.1	55.5
Tonsils:		
absent	14.3	36.1
normal	78.6	61.1
large	7.1	2.8
Palate:		
normal	100.0	97.3
narrow	00.0	2.8
Childhood Tonsilitis:		
some	21.4	11.1
much	00.0	22.2
total	21.4	33.3
Thumbsucking:		
till 3 to 6 years	14.3	30.5
till therapy	28.5	25.0
total	42.8	55.5
Retainers Faithfully Worn:		
yes	100.0	90.0
no	00.0	10.0
no braces	42.8	44.4
Rest Position of Tongue:		
correct	64.3	86.1
incorrect	35.7	13.9

theoretical issues which are beyond the scope of this paper. Three of the cases were not in need of orthodontic treatment and were enrolled in tongue thrust therapy with prevention in mind. This procedure is questionable in light of current knowledge on the effects of muscle function on dental form. In addition, some people may have refused to come in for a long-term evaluation because of the embarrassment of relapse. This would bias the sample and create unrealistically good results. Of all the persons contacted, however, only one refused to come in for assessment, and of all the people who made appointments, only two failed to appear. This greatly reduced the possibility that embarrassment kept people from coming in for a checkup.

On the positive side, dental realignment was definitely occurring as a possible result of myotherapy. Seven of the cases with malocclusion experienced complete orthodontic recovery only as a result of changing swallowing habits. Twelve additional mothers noticed movement of the teeth during tongue thrust therapy. The question remains, however, as to how much change would have occurred anyway without myotherapy. In order to accurately answer this question, one would have to complete a similar study with a control group of tongue thrusters who did not receive treatment and assess their swallowing pat-

terns and occlusions after five years. This would be difficult in light of the probable benefits derived from a majority of cases undergoing oral myotherapy, but still needs to be completed in order to more accurately assess the efficacy of the procedure.

It is felt that the subjects used in this study provided an adequate sampling of the tongue thrust population because each case was diagnosed to have deviant deglutition by orthodontists and the thrust was confirmed by Barrett, whose experience and expertise in identifying these problems is well known (Barrett and Hanson, 1974). It is, therefore, assumed that the results of this study are valid with the above limitations in mind and that the findings present approximate percentages of permanent change by which one can predict success in tongue thrust therapy.

The permanency of a correct swallowing pattern learned in myotherapy depends greatly on the success of the therapist in eliminating mouthbreathing and probably in habituating a concomitant tongue-up resting posture. Mouthbreathing encourages a low, forward tongue posture and discourages the learning of permanent placement of the tongue around the alveolar ridge for swallowing. Other factors studied in this assessment were not shown to be important to relapse of tongue thrust.

Success in changing swallowing habits depends mainly on the ability of the therapist in motivating the child to carry out assignments and not on the particular method used. This study, therefore, is not so much an assessment of the method used by Barrett as it is an evaluation of his skill as a clinician. In the present writer's practice of treating tongue thrust and in the practice of other clinicians, similar rates of success are claimed as those found in this study. The success ratios presented in this paper are probably the best that can be expected from the most conscientious and skilled clinicians. Success rates will undoubtedly be lower for clinicians who have been hastily trained and who use a rigid method of treatment.

References

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