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ABNORMAL SWALLOWING HABITS

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NUMEROUS factors play a part in determining the form and relationship on the dental arches. It is difficult, if not impossible, to determine the order of importance of these factors, but the activity of the orofacial musculature must rank high if one considers the number of malocclusions which may be attributed to an imbalance of these muscles.

Perversion of the orofacial musculature may be the result of hypoactivity or hyperactivity of the muscles which act on the outer surfaces of the teeth and alveolar processes or their counterparts which exert their influence on the inner aspect of the dental arches and associated bone. An imbalance of these muscles is usually the result of altered activity of both groups.

Abnormal swallowing habits are always associated with a greater or lesser degree of muscular dysfunction. These habits are so frequently encountered that Strang (1958) states: "Without a doubt abnormal swallowing habits comprise one of the most common and influential muscular perversions that the orthodontist encounters."

Rix (1946) states that the nature of the first stage of deglutition varies with the amount and type of material to be swallowed. Fluid will evoke one type of swallowing pattern while the deglutition performed merely to aid drainage of the mouth and naso-pharynx and to moisten the oral and pharyngeal mucous membranes has other characteristics. The latter is termed the refreshing or basic swallow and is the more important because of its frequency throughout the day and night.

The basic swallow is performed with the teeth in occlusion and the tongue closely adapted to and pressing on the palate and lingual surfaces of the maxillary teeth. The lips and cheeks remain relatively inactive while deglutition is occurring.

A common type of perversion of the basic swallow is described by Rix (1946). The tongue is placed either between the upper and lower incisors or between all the maxillary and mandibular teeth and deglutition is accompanied by a marked activity of the lips and often the cheeks. According to the author the muscular activity is secondary to the abnormal position of the tongue and is an attempt to form a seal on its periphery. This swallowing pattern also often evokes a more widespread muscular activity which produces a movement of the head.

This aberrant form of deglutition may be the result of a retention of the infantile type of swallow or initiated by recurrent infections of the upper respiratory tract (Rix, 1946). Moyers (1958) believes that

enlarged painful lymphatic tissue in the pharynx will lead to an anterior positioning of the tongue and consequently to an abnormal form of swallowing. Straub (1960) states that of the 47 per cent abnormal swallowers he examined only two were breast-fed. He believes that abnormal swallowing habits may develop in bottle-fed babies who are given nursing bottles with the wrong kind of nipple. Whitman (1951) states that the gag reflex of the abnormal swallower is always reduced or may even be absent. Even though a reduced gag reflex is also found in people with a normal swallowing pattern an aberrant nervous response from the soft palate may predispose to abnormal swallowing.

A person with this form of deglutition is rarely aware of the abnormality since it does not predispose to any form of dysphagia nor is the habit noticeable to the untrained eye. Correction of the swallowing pattern is only necessary if its intensity, duration and frequency is such that it has a detrimental effect on the oral tissues. The dental arches show the most obvious effect of this habit. If the tongue is placed between upper and lower incisors during swallowing an anterior open bite may be seen while the loss of centrifugal pressure of the tongue against the palate and maxillary teeth may give rise to a constricted upper arch. The abnormal swallower who places the tongue between all the maxillary and mandibular teeth while thrusting against the maxillary incisors is characterised by a close bite. The periodontal tissues may suffer because the self-cleansing action in the mouth is impaired if the basic swallow is not performed by the tongue acting against the occluded teeth (Rix, 1946). The periodontal tissues may, however, also be adversely affected by the muscular imbalance on the incisors which tends to produce a to-and-fro movement of these teeth. The characteristic activity of the lower lip during this abnormal type of deglutition creates a lingual pressure on the lower incisors. At rest the pressure exerted by the tongue again tends to upright these teeth. Similarly the lower lip may fall behind the upper incisors during deglutition and thus exerts a buccal pressure on these teeth which is, again at rest, counteracted by the lingual pressure of the upper lip. Alternate lingual and buccal forces act on the incisors producing to-and-fro movements of these teeth. Clinical observation has shown that such movements whether due to muscular forces or orthodontic appliances are frequently associated with gingival disorders and root absorption. Some of the gingival disorders of obscure origin may thus arise in this way.

Abnormal swallowing habits can affect the oral structures in a number of ways, but because of its effect on the occlusion it has always been thought of as an orthodontic problem.

The treatment of a malocclusion caused and maintained by a habit must include the elimination of the habit as well as the correction of the malocclusion. The nature of the treatment is determined by the age, the physical and mental state of the child as well as the attitude of the parents. If full co-operation is expected and no other contra-indications exist, then the age of the patient will dictate the type of treatment to be instituted. Therapy in the younger age groups may consist of the elimination of the habit only; in the older groups correction of the malocclusion also becomes necessary.

1. The Elimination of the Habit

Habits, whether individualistic or perversions of the normal are not always easy to eliminate and added difficulties arise when, as in abnormal swallowing, the act is not readily noticed and no definite test exists to determine the progress which is made towards correction. To elicit an apparently normal type of deglutition with or without the aid of an appliance during one examination is no guarantee that the habit no longer exists and that further treatment is unnecessary.

Self-correction of certain forms of malocclusion caused by the habit is the best indication that the habit is no longer active. Hemley (1944) states that if the habit is broken by approximately the age of four years and no other disturbing factor is present then the occlusion will develop normally. He believes that such self-correction occurs primarily because the lips are still able to function normally. Self-correction of an anterior open bite,

caused by the habit, is still possible at an older age if the malocclusion is not complicated by mesial drifting of the buccal segments. The contracted upper arch has much less chance of self-correction if the habit is broken after the inclined planes of the molars are locked in an abnormal position.

In the young patient who has little contraction of the maxillary arch and minimal or no mesial migration of the buccal segments, the entire treatment consists of the elimination of the abnormal swallowing habit.

The correction of the habit may be attempted by teaching the patient the correct method of swallowing and then establishing this swallowing pattern by repetition. Removable appliances may aid the patient to achieve this goal. The most commonly used appliance consists of a palatal template with a depressed, elevated or roughened area on its surface in the region of the incisive papilla. This area acts as a reminder to the patient where the tip of the tongue should be placed during deglutition. The success of this type of treatment, therefore, depends entirely upon the conscious effort of the patient. The second type of removable appliance which may be used has a flange behind the upper incisors which prevents the tongue being placed between the upper and lower incisors even if the posterior teeth are not in occlusion. Despite the retention and speech problems which may be encountered due to the bulk of this appliance, it is nevertheless frequently employed because its influence on tongue position is largely independent of conscious effort by the patient.

2. CORRECTION OF THE MALOCCLUSION

In the older age groups, when the normal eruption of the teeth is reduced and facial growth may not be so favourable, or the malocclusion is adversely affected by mesial movement of the buccal segments and incorrect cuspal interlocking of the posterior teeth, self-correction is unusual. In this age group the treatment becomes prolonged if the malocclusion is treated only after successful correction of the habit.

The altered environment on the tongue brought about by the repositioning of the teeth may on its own act as a stimulus to correct the swallowing habit. More frequently a removable appliance has to be used in conjunction with the fixed appliance in an attempt to alter the swallowing pattern. Even if the correction of the dental arches and the occlusion is entirely satisfactory, then this result is still doomed to various degrees of relapse if the habit persists after all orthodontic appliances have been removed. A stable result of the corrected malocclusion is only possible if a new muscular balance is achieved with the teeth in their new positions.

The forementioned methods of treatment of individuals with malocclusions due to abnormal swallowing habits always produce a percentage of failures whatever the order of treatment or age group. A more effective method of correcting this aberrant form of swallowing must be sought to reduce and possibly eliminate these failures. Hypnotherapy, which has been used on some patients who have not responded to the usual forms of treatment, goes a long way towards achieving this aim.

TREATMENT OF THE PATIENT WITH AN ABNORMAL SWALLOWING HABIT BY MEANS OF HYPNOSIS

Examination of a patient with an abnormal swallowing habit will reveal whether it is necessary or not to institute appliance therapy for the regulation of the teeth or whether it will only be necessary to correct the swallowing habit. The treatment of this habit entails its substitution by a normal swallowing pattern. This substitution involves learning of the correct method of swallowing, followed by repetition of this newly acquired form of deglutition until it, in turn, is established as a habit. Both the learning and the repetition may be achieved by hypnosis.

Scott and Mishchenko as quoted by Wolberg (1956) claim a facilitation of the learning process in hypnosis. The use and value of post-hypnotic suggestions have been described by Frost (1959), Moss (1955) and Wolberg (1956). Wolberg states that any phenomenon induced during hypnosis may also, upon suggestion, be executed post-hypnotically. In some cases, post-hypnotic suggestions will be carried out even if the trance has been

relatively light, and in spite of the fact that the patient remembers the suggestions. Hypnosis, when used to treat a patient with an abnormal swallowing habit, therefore has a dual advantage. Firstly, the patient will more readily learn how to swallow correctly; secondly, repetition of the act can be carried out subconsciously. This method of treatment dispenses with the conscious effort of the patient which invariably tends to lag as the treatment progresses.

The susceptibility of the patient to hypnosis is, of course, a critical factor in this type of treatment, but according to Moss (1955) children are nearly all susceptible to hypnosis. This author believes that all children between the ages of twelve and fourteen years may be successfully hypnotised. As this treatment is carried out on minors, it is essential to obtain the consent and co-operation of the parents.

METHOD

The first appointment is devoted to a preliminary talk or "mind set" as described by Moss (1955) and Shaw (1958). The nature of hypnosis and the reasons for its use are discussed. This preliminary talk is considered to be the most important in removing resistance and obtaining full co-operation from the patient. Some of the susceptibility tests as described by Moss (1955) may be carried out at this visit.

A week later hypnosis is induced by any of the usual methods (Moss, 1955) and the hypnotic state deepened. This process of deepening the hypnotic state may take one or more appointments. The maximum depth will vary from individual to individual for, as Moss states, not everybody is capable of reaching the same trance depth. It is advisable to attain as deep a trance as possible since post-hypnotic suggestions and the learning process are facilitated in the deeper hypnotic states.

When the desired depth of hypnosis has been achieved the learning process commences. The patient is instructed to place the anterior part of the tongue against the palate, behind the upper incisors; to keep the lips together without force; to keep the teeth in occlusion; and to keep the head still while deglutition is taking place. Deglutition is then repeated by the patient until all the instructions have been mastered. The state of hypnosis is terminated (Moss, 1955) and on waking the patient is asked to perform the basic swallow. Any alteration in the abnormal swallowing pattern is noted.

The above procedure is adopted at the next appointment but with the addition of post-hypnotic suggestions that the correct method of swallowing should be carried out three times before each meal. The time between appointments may now be increased according to individual progress and needs. At these visits, correct deglutition is repeated and post-hypnotic suggestions are made to practise the correct method of swallowing whenever the basic swallow is to be performed. The length of treatment depends on the rapidity and completeness with which correct deglutition replaces the abnormal swallowing pattern. Hypnotherapy has been employed to treat a selected group of patients with abnormal swallowing habits during the past three years. The treatment of four patients with pernicious swallowing habits who were resistant to all other forms of therapy, are presented to illustrate some of the results which have been achieved by hypnosis.

Case A

One of the first patients with an abnormal swallowing habit to be treated by means of hypnosis was a girl aged twelve years, who, in spite of ten months of orthodontic treatment for the correction of a malocclusion and habit, showed no improvement of the abnormal swallowing habit.

A light trance was obtained, and the correct swallowing pattern taught. At four further appointments extending over a period of six weeks, the correct swallowing pattern was taught and practised. At the end of this period, little or no improvement in the existing swallowing habit was noted, and hypnosis was discontinued.

Case B

This patient, a girl aged thirteen years, was referred to the Orthodontic Department by the University Speech, Voice and Hearing Clinic, because she had difficulty in affecting the "S" sound. The speech

therapist related this speech defect to the malocclusion which consisted of a marked anterior open bite and crowding of the teeth. Examination revealed, amongst other things, an abnormal swallowing pattern and a pronounced lisp. Orthodontic treatment was instituted and after twelve months of treatment the malocclusion was in the final stages of correction, but the swallowing pattern and the lisp remained unaltered. At this stage it was decided to treat the abnormal swallowing habit by means of hypnosis.

A medium trance was obtained at the second visit and the correct swallowing pattern taught. Following the method of treatment outlined, hypnosis was used at each of the successive twelve visits which were spread out over four months. At the end of this period it appeared that a complete replacement of the incorrect swallowing habit had occurred, and the patient seemed to swallow correctly at all times. The anterior open bite had been corrected by the orthodontic treatment and, on removal of appliances, showed no recurrence. The lisp showed marked improvement, even though no hypnotic therapy was directed towards curing this abnormality. Eight months after completion of hypnotherapy an abnormal swallowing pattern could not be elicited. No relapse of the malocclusion could be noted.

Case C

A very nervous girl aged twelve years was referred to the Orthodontic Department for treatment of a malocclusion caused by a finger sucking habit and an abnormal swallowing habit. Her main complaint was that she had difficulty in masticating her food. During the first two months of mechanotherapy no alteration of the habits was noted so the orthodontic treatment was augmented by hypnosis.

At the third appointment for hypnotherapy a medium trance was obtained and the correct swallowing pattern taught. Using the method outlined, the treatment consisted of eighteen visits which extended over eight months. During the early stages of treatment, the mother reported an improvement in the patient's eating habits, but no change in the swallowing pattern was evident. In view of the lack of progress a type of substitution was incorporated with the usual post-hypnotic suggestions. Post-hypnotic suggestions were made to the patient that each time she had the urge to suck her fingers she would remember to swallow correctly and would immediately do so. It must be emphasised that no suggestions were made that the patient would stop sucking her fingers. Correction of the abnormal swallowing pattern and the finger sucking habit was evident soon after the commencement of substitution therapy. Progressive improvement occurred until the correct swallowing pattern appeared to be used at all times and the finger sucking habit ceased. Seven months after completion of hypnotic treatment, there appeared to be no reversion to her former habits.

Case D

A girl aged twelve years retained an abnormal swallowing habit even though the malocclusion had been corrected and various removable appliances had been used to combat first, a finger sucking habit and later, lip sucking and an abnormal swallowing habit which had replaced the former habit. After four years of intermittent treatment, the abnormal swallowing habit was still present and manifested itself in the recurrence of an anterior open bite. The habits of lisping and nail-biting were also present. After all other treatment had failed, hypnotherapy was started.

The patient proved to be an excellent subject and at the second visit a medium trance was obtained. Following the method outlined. hypnosis was used at sixteen appointments, extending over a period of eight months. As in the previous case described, very little improvement occurred until post-hypnotic suggestions were made that she would remember to swallow correctly every time she wanted to bite her nails. This treatment was followed by an improvement of both the abnormal swallowing habit and the nail-biting, but the latter was apparently not completely replaced by a normal swallowing pattern. It was still uncertain whether the correct swallowing pattern was being used at all times when hypnotherapy was

discontinued. Although no suggestions had been directed to it, the lisp showed marked improvement. After eight months of hypnotherapy an improvement, if not a cure, of the abnormal swallowing habit occurred, but the nail-biting habit persisted, though to a lesser degree.

DISCUSSION

The effects of abnormal swallowing are mainly the concern of the dental profession and its treatment had, in the past, been included in the realms of orthodontics. Even though the most obvious intra-oral signs of an abnormal swallowing habit may be the malocclusion, its other effects which are often overlooked, may be of equal importance to the other branches of dentistry. Treatment of patients with this habit should therefore not be confined only to those in whom it has caused a malocclusion, but also to those showing an adverse effect on the teeth and periodontal structures.

It is not surprising that so many forms of treatment have been suggested for this habit since all the aetiological factors have not been determined. Until the treatment can be directed towards the elimination of the cause, no single method of treatment is likely to succeed in every case. Hypnotic therapy is, therefore, not suggested as a panacea for all treatment of this habit but nevertheless has so many advantages which weigh in its favour that it could be used in preference to the other methods or in cases where they have failed.

In the available literature hypnosis has not been suggested as a form of treatment for abnormal swallowing habits. This type of treatment has been carried out on a selected number of patients for the past three years. The basis for using hypnotherapy is that the learning process is facilitated under hypnosis and that post-hypnotic suggestions may be used to supplant the conscious effort normally needed for repetition of the newly acquired method of swallowing.

In the first case described, hypnotherapy failed to correct the abnormal swallowing habit. This may have been, in part, the result of an inadequate course of treatment. The failure in this and in some of our other earlier cases prompted an extension of the duration of treatment. In subsequent cases hypnosis has been continued for four to eight months as indicated in the last three cases reported.

The effect of the depth of hypnosis during the learning process is not fully established. It appears, however, that a deep trance is not required since no more than a medium trance was reached by any of the patients under treatment.

In two of the cases reported, no improvement was evident in the early stages of hypnotherapy until the home practice was linked with another often practised habit, and then progress occurred rapidly. Although no suggestions were made that the second habit should cease it was, in the one case, discontinued at the same time as the correct swallowing pattern was mastered.

The number of patients treated by means of hypnosis is too limited to determine whether it should be used in conjunction with mechanotherapy in the hope that the two forms of treatment would have a synergistic effect or whether hypnotherapy is just as effective before or after other forms of orthodontic treatment.

The percentage of successful results achieved, where all other forms of treatment have failed, indicates a need for further investigation of this form of therapy.

SUMMARY

(1) Abnormal swallowing habits may adversely influence the dental arch form and the health of the periodontal tissues.

(2) The standard methods of treatment are discussed and evaluated. A certain percentage of failures is always to be expected when using these methods of treatment.

(3) A method of treating an abnormal swallowing habit by means of hypnosis is presented and the results achieved by this form of therapy are discussed.

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TRANSPLANTATION OF TEETH IN MAN

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ALTHOUGH transplantation of tissues, especially skin, has been practised for many years, it was only recently reported that a kidney had been transplanted from one fraternal twin to the other — the first successful attempt to transplant living tissue between non-identical individuals. A *homograft* thus having been performed, the major obstacles to tissue transplantation of this nature have been overcome.

As successful autografting of fully-developed teeth, partly-developed teeth and tooth germs already has been performed by several investigators, it is conceivable that, provided the underlying physiological and pathological reactions are properly understood, these procedures can be followed in dental practice.

A few terms that are currently used may require explanation. A *heterograft* denotes the transplantation of tissues from one individual to another of a different species; and *homograft* means the transplantation of tissues from one individual to another of the same species. The "Chimera", as described in classical myths in ancient English literature, was said to have consisted of an "individual" made up of different parts of different species and was probably the first recorded *heterograft*. Less spectacular is the *homograft* transplantation of a dog's head to the body of another by modern scientists. *Autograft* indicates the transplantation of tissues from within the confines of the same individual — for example, skin grafting from leg or arm to face, mouth, etc. Transplantation of teeth falls mainly into this category; and although several successful attempts at homografting of teeth and tooth germs have been made, they must be regarded as purely experimental. Pafford[1] claims 85 per cent success in homografting fully-developed teeth but states: "Some factors in homografting that remain to be demonstrated or investigated satisfactorily are the antigenantibody phenomena, matching of blood types of donor and host, and the antigenicity of proteins in homografts."

Often the term *isograft* is come across; this applies to the transplantation of tissue from one individual to another, they being so highly inbred that they may be regarded as antigenetically similar; as an example the grafting of tissues between monozygotic twins can be cited. Finally the terms *homostatic* and *homovital* must be understood. As an example of the former we have bone grafting, where the transplanted tissue is "static" and does not become part of the body but is merely utilised as a framework to bridge a gap; and of the latter, a skin graft, where the transplanted skin acquires a blood supply