

## Case Report

# Myofunctional Open Bite: A Chronology

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## *Myofunctional Open Bite: A Chronology*

Richard H. Barrett

One of my first published articles<sup>1</sup> dealing with "deviate swallowing" decried the spectacle of self-anointed experts taking up positions around the borders of this unknown field, throwing out opinions from every vantage point, but not venturing in to explore the terrain, to research and report its contours — even to discover if it were inhabited.

The intervening years have been somewhat disappointing to one glowing with the anticipation of forthcoming factual data that would obviate strife and unite all factions. Our literature is still cluttered with unvalidated opinion, supported by half-truths, distorted truths, and untruths. As evidence to prove a point, we have viewed a long procession of "before-and-after" intraoral slides, a large percentage of which proved nothing.

It would therefore seem redundant to offer yet another series of pictures. However, the case of Jennifer, presented herewith, provides illustration for several propositions that should be of interest to those engaged in the therapy process. The photographs were originally taken for personal enlightenment, were first introduced publicly with only a skeleton outline of the chronology they depict, but are proffered here draped with morals and implications. Accordingly, "time out" will be called occasionally as the time sequence unfolds, in order to spotlight desired points of emphasis.

Jennifer was referred at a very early age by a pedodontist who felt that she was one of the most forceful tongue thrusters in his practice, considering her tender years. At age 2½ years she had the appearance shown in Figure 1, taken in May, 1969. Her incisors had reportedly erupted into occlusion, then began to open with the arrival of deciduous molars.



Figure 1

Her case history provides the information that Jennifer had been breast fed briefly (1 or 2 months) but then went to a conventional bottle. She walked at 9 months, and first words were in use before 12 months. She was a first child, was somewhat nervous and sensitive, but was basically stable emotionally. While she had some severe early bouts of tonsillitis, she

has never had a tonsilectomy. She has had no oral injury, nor any marked respiratory allergy. She sucked her thumb avidly, and displayed a severe frontal lisp with all tongue-lift sounds produced interdently.

**Point 1.** It was highly unlikely that Jennifer would develop a normal mature swallowing pattern at any age, since so many of the prognostic indicators proposed by Hanson and Cohen<sup>2</sup> were present. In this case, these included: 1) no masseter contraction when swallowing; 2) excessive lip movement during swallowing; 3) marked mentalis contraction on swallowing; 4) dentalization of linguoalveolar sounds, specifically of /s/ sounds; 5) large tonsils; 6) few allergies; 7) digit sucking; and 8) mouth breathing. These indicators have been found in practice to be quite valid; the occurrence of any large percentage of the full list specified by Hanson, present during the stage of primary dentition, would certainly dim the prognosis for a smooth transition to normal function in later years.

Father was in the final stages of his doctoral program in geology and could contemplate no additional expense. He was assured that no type of correction should even be considered until Jennifer had permanent central incisors in place. However he was offered therapy without any fee, when the proper time arrived, provided that they would return annually for a sequence of pictures. Upon receiving his Ph.D., he took a job with a mining company, so that the trek to Tucson was made once from the eastern mountains of New Mexico; at that time Jennifer was 4½ years of age, and had developed to the point shown in Figure 2, taken in 1971. They missed coming the following spring, their only failure, when father was assigned out of the country.

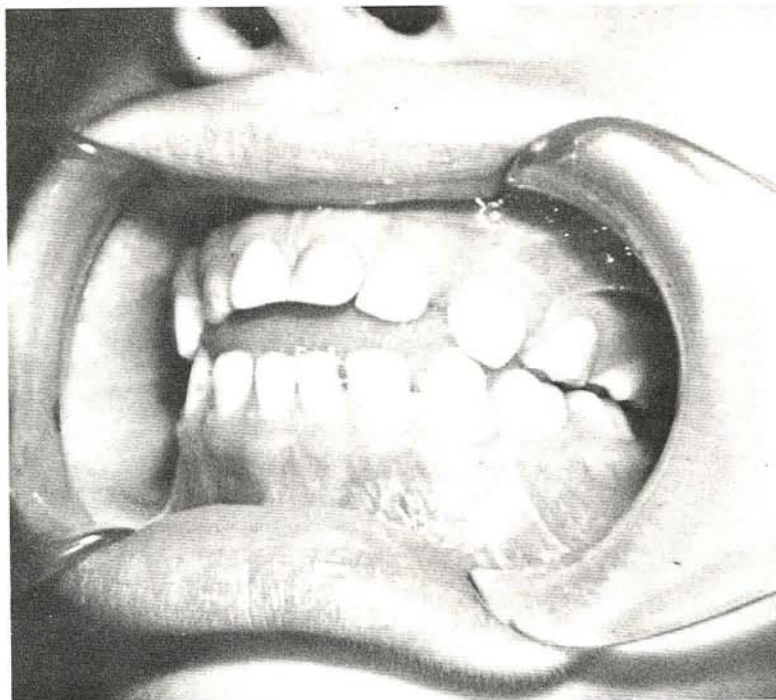


Figure 2

**Point 2.** Note that therapy was delayed for years, with complete confidence that a more desirable outcome would eventually result. Jennifer's best interests were served, less time and effort were required for successful therapy, and less expense imposed on the parents, by waiting for mental, physical, and dental maturation to elevate Jennifer to a more efficient stage of development. While parents may sometimes grow impatient, the clinician should feel no compulsion to plunge the child into a situation to which the child can bring little comprehension and therefore small hope of permanent change. On the other hand, it would seem nonsensical to abandon the precious years between age 10 and 15, as Proffit<sup>3</sup> counsels. Proffit also states that he can see no preventive role for oral myofunctional remediation; those of us who see daily the preventive manifestations of our work would be barred from perhaps our greatest contribution by waiting until the patient has developed beyond any potential for preventive measures.

In the fall of 1972, father took a teaching position at a university some 300 miles from Tucson. That November, Jennifer had passed her sixth birthday and reached the stage seen in Figure 3. She had also been trying to stop sucking her thumb, but with little success. While she was still too young to begin full and formal myofunctional therapy, it was felt that she would respond to the psychologically-based program for sucking habits employed by the writer. Accordingly, on this visit she and her mother were provided with the details of this regime. Jennifer slipped once on the first night after returning home, then never had her thumb in her mouth again.

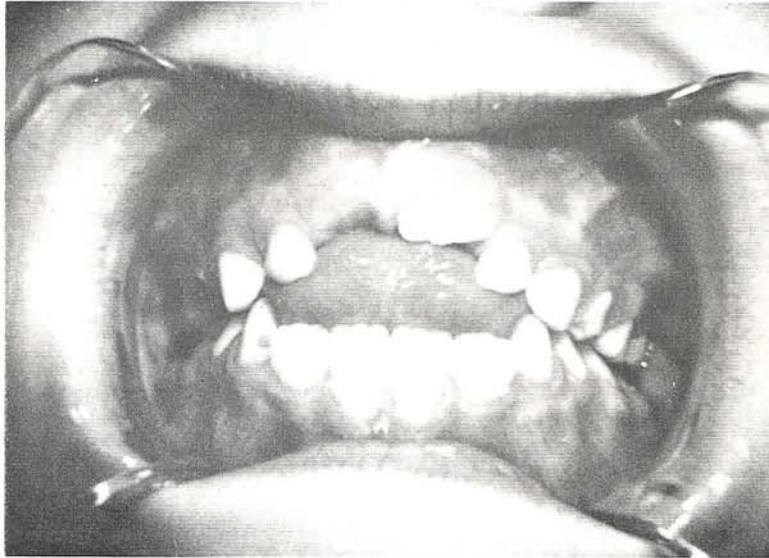


Figure 3

**Point 3.** Mechanical appliance therapy for sucking habits, "cribs" or "habit breakers," should never be condoned except in the absence of a qualified clinician capable of supplying alternative methods. Dentists should be so qualified. A list of objections to the mechanical approach has been explicated elsewhere.<sup>4</sup> Anything that an appliance can accomplish can be achieved much quicker, more pleasantly, more economically, and more permanently, by explanation, motivation, and emotional support. If verbal suasion fails, the crib would probably be equally futile.

One year later, in October, 1973, Figure 4 shows that all central incisors were fully erupted. However, with the thumb habit completely eliminated, neither the tongue thrust nor the lisp had improved — and there had certainly been no improvement in the oral resting posture as displayed in Figure 5. This one aspect almost provided a tragic ending for Jennifer, as it does for many patients.

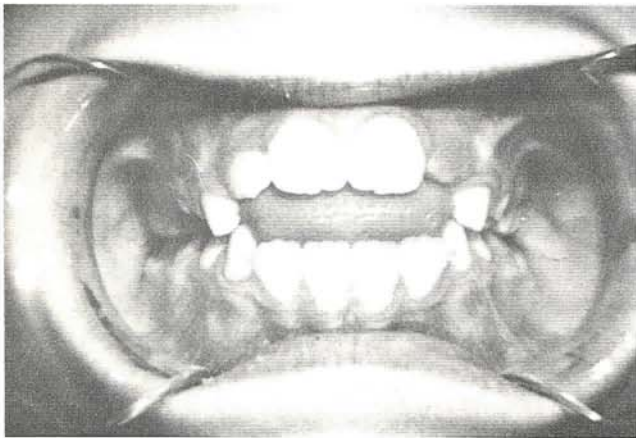


Figure 4

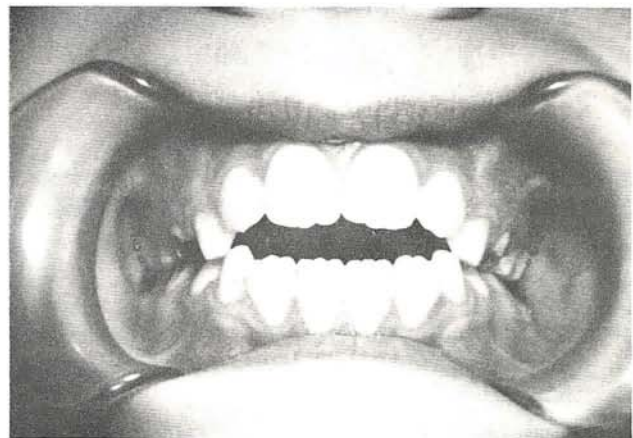


Figure 5

**Point 4.** In some cases, elimination of a sucking habit can result in dramatic closure of an open bite. This is not to be expected, however, in the more common instance where the tongue remains interposed dentally in rest and deglutition. In the rare example where a digit has truly been a causative factor in open bite, some imbalance is usually noted, with the malocclusion somewhat more pronounced on the side of the preferred thumb or finger. More commonly, the sucking habit is only one of several myofunctional disorders requiring attention. Adult open bite patients are seen routinely who have not been influenced by abnormal sucking pressures for many years.

Jennifer was now seven years of age, still one year younger than is generally considered the optimum age to initiate therapy. However, a number of other factors had to be weighed. Her speech was proving a definite handicap; she was very bright, and the birth of a brother may have contributed to a spurt in maturity; the time was propitious for the family; and Jennifer was eager to begin. Optimistically, a thorough-going myofunctional program was initiated at this time, involving labial, facial and oral musculature. Jennifer made an excellent response to the modification of swallowing behavior — and seemed to work just as diligently to avoid changes in her rest posture. Four months after therapy should have been completed, in April, 1974, the bite was still open as seen in Figure 6. She was then 7½ years old.



Figure 6

The 600-mile round trip proved onerous for the family, of course, so that sufficient intensity could not be brought to the oral equilibrium to render the usual and expected changes. That is, rather than seeing her every few weeks, as would be the case with local patients who were making inadequate progress, it was possible to see her only at intervals of several months. Various measures were tried sporadically, yielding little progress. Pictures were taken in October, 1975, to provide a reference point for the resumption of full efforts to achieve a more normal rest posture. Those slides were lost without a trace while Kodak and the U.S. Postal Service pointed and hissed at each other. Records at that time show that the lisp had spontaneously corrected, that all speech sounds were normal, that incisors had closed somewhat vertically but not horizontally — and that the mouth continued to hang open most of the time.

**Point 5.** Several published statements would have one believe that articulation therapy alone brings about improvement in swallowing behavior and even in oral resting posture. This is an illogical expectation and simply not true. Articulation is influenced by the position of the musculature from which speech is initiated and to which it constantly returns

(resting posture) and by the pattern of development of the musculature, relative strengths and weaknesses determined by forceful biologic function (deglutition). Innumerable tongue thrust cases are seen where years of routine speech therapy have failed to produce normal conversational articulation, much less normal resting posture, despite the patient's ability to generate each sound correctly in isolation. On the other hand, it is not uncommon to find that faulty articulation has become normal, or nearly so, once the oral musculature is responding normally in basic sucking, chewing, swallowing and resting function, although this is not invariably true. In any event, if resting posture is to be modified, it must be done through attention to resting posture, not by articulation drill.

Jennifer and the therapist had a serious motivational talk at this time, when she was 9 years of age. The advantages and disadvantages of completing the task were elucidated, stopping just short of threats of bodily harm. This was followed by the assignment of a broad repetition of lip exercises and specific techniques to accomplish mouth closure and routine elevation of the tongue. The judicious use of cross-bite elastics on the tongue during the preceding year had surprisingly maintained a reasonably normal swallowing pattern.

Six months later, in April, 1976, now 9½ years of age, Jennifer presented herself with the occlusion seen in Figure 7. Her parents advise that the resting position shown in Figure 8 is now routine. At an age when it would be orthodontically feasible to begin closing the bite, she has every tooth in contact. The question of whether this brief report was worth the alertness of the pedodontist and the seven-year persistent struggles of parents, therapist, and Jennifer, remains unanswered. Two further points remain to be made.



Figure 7

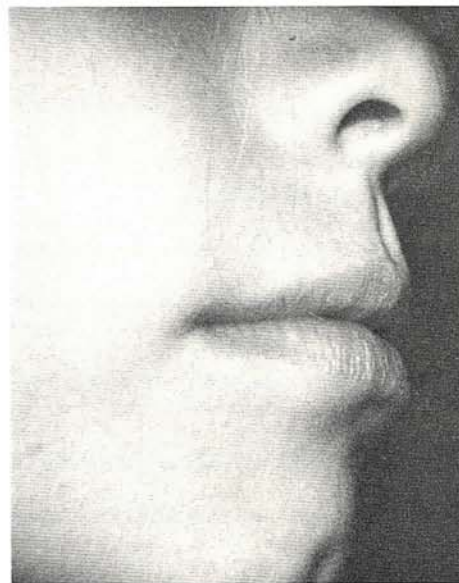


Figure 8

**Point 6.** It seems impossible to overemphasize the significance of oral resting posture. Correcting "tongue thrust" is in most cases incidental, a means to an end, a necessary preliminary to gain access to the critical task of habituating the mouth closure. Whereas some types of tongue thrust, primarily bilateral cases, may require only minor attention to rest posture, other patients have so little impairment specifically in the mechanics of deglutition that the entire program may consist of lip exercises and postural techniques. Some differential diagnosis is obviously required. It is inconceivable that the untreated, thorough-going tongue thruster would ever achieve normal posture: unable to form a bolus, and thus required to drop the tongue for each swallow, it would be unrealistic to expect the tongue to remain poised in the palatal vault, giving necessary assistance to mandibular elevation and lip closure. It appears that it is the light, constant pressure of the resting tongue, leaning against dental surfaces, that enhances some malocclusions, rather than the intermittent force of tongue thrust. And it is the light, constant pressure of closed lips, focused on the free end of the tooth, that can assist in correcting some malocclusions.

**Point 7.** At no time were Jennifer's parents led to believe that the therapy provided her would eliminate the need for orthodontic treatment. Certainly one goal of oral myofunctional therapy is to prevent some of the more unpleasant sequelae of tongue thrust, and thus obviate the need for some of the more drastic corrective measures. It should be intended to assist the orthodontic program, not to replace it. Jennifer may still require orthodontic treatment — but it will not be to close an open bite.

#### NOTES

<sup>1</sup>Barrett, R. H., One Approach to Deviate Swallowing, *Am. J. Orth.*, 47:10, 1961.

<sup>2</sup>Hanson, M. L., and Cohen, M. S., Effects of Form and Function on Swallowing and the Developing Dentition, *Am. J. Orth.*, 64:63, 1973.

<sup>3</sup>Proffit, W. R., The Proper Role of Myofunctional Therapy, *J. Clin. Orth.*, 11:2, 1977.

<sup>4</sup>Barrett, R. H., and Hanson, M. L., *Oral Myofunctional Disorders*, St. Louis, 1974, The C. V. Mosby Co.