THE ALEXANDER DISCIPLINE
UNUSUAL AND DIFFICULT CASES

R. G. “Wick” Alexander, DDS, MSD
The Alexander Discipline, Volume 3:

_Unusual and Difficult Cases_
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R. G. “Wick” Alexander, DDS, MSD
Clinical Professor of Orthodontics
Baylor College of Dentistry
Dallas, Texas
University of Texas Dental Branch
Houston, Texas
New York University Dental School
New York, New York
Private Practice Limited to Orthodontics
Arlington, Texas
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Dedication

Was it Shakespeare who said, “Nothing lasts forever”? As the specialty of orthodontics continues to evolve, my prayer is that it will focus on what is the proper and the best treatment for the patient's health and welfare. This book is therefore dedicated to future orthodontists. Always remember that your success will come in your ability to “leave it better than you found it.” I am talking about quality of treatment. As our specialty learns more and more about new possibilities in orthodontic mechanics, the focus of treatment must continue to be what is best for the patient. We must remain servants to our patients, whose treatment depends on our ability to address problems and produce high-quality results. It has been a wonderful journey for me, and now the baton is being passed onward to you, future orthodontists. Give it your best efforts so that one day you can smile and pass it on to the next generation.
If an orthodontist or general dentist has very limited education or experience, every case he or she treats can be described as “unusual and difficult.” Every young orthodontist or general dentist can easily select the wrong bracket, choose the wrong archwire, or select and place the wrong orthopedic force. These poor decisions can either have minor effects on the results or be devastating and require severe treatment-planning changes.

As mentioned in Case 9-3 of volume 2, when we are dealing with human beings, we have limitations. Although we can make tremendous improvements in the dentition and facial appearance, some factors for gaining permanent stability in selected patients are out of our control. The skeletal pattern of the patient in that case had deteriorated vertically over time, and her final overbite and overjet after 18 years were greater than they were at the beginning of her first treatment.

For those doctors who are new to the Alexander Discipline, it may seem that our treatment technique is so simple that the doctor can be successful even without learning the fundamentals of orthodontics. Many general practitioners are misled to believe that orthodontics is easy. The reality is that there is no such thing as an “easy” case. The Alexander Discipline is simple if you follow the rules and understand the limitations of each sequence.

The purpose of this book is to demonstrate how certain changes should be made from the “routine” system to adapt to the individual “unusual” case. These changes can include unusual extraction patterns, bracket angulations, treatment timing, and substitution of selected teeth. The most exciting thing about this book is that it demonstrates how “adaptable” the dentoalveolar hard and soft tissues can be under certain conditions. And in several cases we were able to obtain long-term records to demonstrate not only the stability of the occlusion but also the long-term health of the hard and soft tissues.

Hopefully this book can give the reader a new perspective in regard to the treatment of certain malocclusions and the potential stability possible for each.
Acknowledgments

In this third volume published by Quintessence, it has been a pleasure working with such a professional group of people. Although in some chapters the number of cases had to be reduced, the message remains clear: Just as in life, preparing for unusual and difficult challenges takes planning, courage, and faith.

My family has helped with their continued support and faith as I embarked on this third volume. My sons, Chuck and Moody, both orthodontists, provide inspiration to me. My daughter, Shanna, fills my heart with joy and determination. And my wife, Janna, continues to adapt with me in our life journey. Their support is invaluable.

Words cannot express my thanks to Dr Elisa Espinas San Juan—my lectures, publications, and research associate responsible for gathering and collating all the cases, images, and graphics presented in this volume. Elisa has a sixth sense that guides her to the patients’ charts, providing the collection of case histories needed for this volume.

Appreciation is also conveyed to Eliza Jade San Juan, who helped her mother and others as the details of this book unfolded. Jade’s willingness to accept any and all tasks kept our team in motion. It’s often the small things that count, and Jade is proficient with the details.

The entire staff provided support when needed, especially my administrative assistant, Becky Davis. Her tenaciousness proved helpful with completion of the manuscript. She continues to evolve in an ever-changing environment.

A final acknowledgment is extended to orthodontists around the world who are still eager to learn and be challenged by new information. Many of you have years of experience, some of you are recent graduates, and all of you are lifetime students. I hope you learn and apply the message behind this book.

Last, but certainly not least, nothing would be possible without the efforts and cooperation of our patients. Everything is theoretical without a compliant patient. Then, with time, the results are revealed. Theoretical concepts become evidence-based conclusions, as catalogued in the “Room of Truth.” Way to go, patients!
My definition of open bite is an occlusion in which the mandibular incisal edges do not touch the lingual edges of the maxillary incisors. Fortunately, only 4% of the US population has an anterior open bite. They are slightly more common among females than males, and they are four times more common among black people than white people.

There are two types of open bite: skeletal and dental. Skeletal open bite has a high-angle vertical skeletal pattern with flared maxillary and mandibular anterior teeth, while dental open bite has a medium or horizontal skeletal pattern with flared maxillary and mandibular anterior teeth.

**Etiology**

Issues surrounding the etiology of open bites include whether they are inherited, acquired, or the result of the environment. In my experience, open bites are almost always acquired through muscular and occlusal imbalance. A mouth-breathing 6-year-old puts only small amounts of force on the permanent first molars, allowing them to overerupt, thus increasing the vertical pattern. The greater the vertical pattern, the greater the chances for an open bite to develop. In addition, every open bite patient I have treated has had a tongue thrust. Although control of this abnormal muscular function cannot correct the open bite, it can prevent the open bite from redeveloping after orthodontics.

**Initial Examination**

Certain muscular problems must be identified and resolved in order to successfully treat open bite malocclusions. During the initial examination, the orthodontist should evaluate for the following:

- Thumb sucking
- Mouth breathing
- Tongue thrust
- Weak occlusal forces
Thumb sucking

In the medical and dental history questionnaire, the parent should be asked if the patient has ever sucked his or her thumb. If the answer is “yes,” then the issue must be thoroughly discussed and a plan formulated. In my opinion, tongue rakes with pointed wires are barbaric. For years I have instead engaged patients in conversation and used reminder therapy to help them break the thumb-sucking habit. We “talk” the thumb out of the mouth instead of forcing it out with metal appliances.

In this conversation, the patient is asked five questions while sitting opposite the orthodontist:

1. “Why do you suck your thumb?” Of course the patient has no answer, so I usually pose a guess such as “because it gives you a warm fuzzy feeling?” This makes the patient feel better, knowing that the doctor understands why.

2. “Do you realize what the thumb is doing to your teeth?” After asking this question, I use a hand mirror to point out how the teeth are in abnormal positions. This is a good time to identify which thumb is the culprit. After asking the child to hold out his or her hands, I ask, “Which thumb is it?” I always make a point then to “separate the deed from the doer” by telling the patient that the thumb is the problem, not the patient: “The thumb is ruining your teeth.”

3. “When do you suck your thumb?” My experience has taught me that when the patient sucks his or her thumb at night only, the success rate for a conversational approach is excellent. However, if the patient has no shame and sucks the thumb around friends, this will be a difficult habit to resolve. It might actually require a thumb rake appliance after all.

4. “When are you going to stop?” Of course the patient cannot or will not answer, so I answer for them. “When you get married?” Of course not. Then I begin to work down the calendar: “In high school? Junior high? Now?” By this point the patient realizes what must be done—and hopefully agrees to stop! I get excited, and we high-five each other. The mother and father get into the celebration, too! After a commitment is made by the patient to stop, it is all about the positive reinforcement: “Don’t you feel better?”

After this conversation takes place, it is very important to follow through to make sure the patient does not reverse this thinking. In our practice, the patient is instructed to place a Band-Aid on the offending thumb as a “burglar alarm” reminder. A new Band-Aid should be placed every day, and the used Band-Aids should be kept in a ziplock bag. This bag is then brought to the office in 3 weeks. Also, the patient is asked to make and bring a 3-week calendar noting the successful days.

I always make it a point to tell the parents to be supportive and encouraging during these first 3 weeks. I tell them to praise the patient each night for completion of another successful day. The parents might choose to give a special reward or gift at the end of the 3 weeks.

An honest conversation can do wonders to stop a child from continuing a bad habit. And the parents are always grateful.

Mouth breathing

Mouth breathing is the result of a nasal or airway blockage and/or protruding anterior teeth. Volume 2 of this series outlines a test to administer to check for nasal or airway blockage (see page 171). Our goal as orthodontists is to allow the patient’s lips to touch when relaxed and while breathing through the nose.

Tongue thrust

Tongue thrust is a great example of muscular imbalance affecting tooth position. If the tongue functions properly during swallowing, the maxillary intermolar width as well as the anterior incisor overbite and overjet should be normal. If the tongue thrusts through the anterior teeth during swallowing, however, there may be incisor flaring, which could lead to an open bite. A simple tongue thrust diagnosis can be determined during the initial examination. This can be done by palpating the temporomandibular joints (TMJs) for any clicks and gently pulling the lower lip down and asking the patient to swallow. By observing the movement of the tongue, we can easily see if a tongue thrust is present.

Historically, tongue thrusts have been attacked with tongue cribs. These appliances are barbaric in my estimation, and I have always preferred “tongue therapy” to retrain the tongue, as taught to me by a speech therapist.
Volume 2 of this series outlines this five-step procedure (push, click, slurp, squeeze, and swallow; see page 172).

Weak occlusal forces

Although excessive occlusal forces can cause attrition and/or TMJ problems, inadequate occlusal forces can allow the teeth to drift into undesirable positions, usually into an anterior open bite and a vertical skeletal pattern. In order to overcome this problem, patients should be taught how to train their muscles of mastication. Squeezing exercises can increase maximum bite force and increase resistance to fatigue (Thompson D, unpublished study, 1995).

Dr Laurie Parks studied the records of 50 patients with medium- to high-angle open bite malocclusions. She discovered that the performance of masticatory muscle exercises during treatment of skeletal open bite produced greater increases in overbite than treatment alone. She concluded that squeezing exercises in conjunction with tongue swallowing exercises significantly improve overbite and provide a much better chance for long-term stability.

Therefore, although open bites will not close by tongue control and squeezing exercises alone, these changes to the environment will ensure long-term stability once the open bite is closed orthodontically.

Traditional Orthopedic Approaches to Open Bite Treatment

High-pull facebow

If worn with extreme compliance, the high-pull facebow can intrude the maxillary molars (Fig 1-1). However, it is unrealistic to expect the patient to wear it full-time, so a better goal is to keep SN-MP at its initial position by wearing it 12 hours per day.

Transpalatal arch

Clinical experience has taught me that this appliance can help to maintain the vertical skeletal angle but cannot reduce it.

Chin cup

Again, this appliance can help to maintain the vertical skeletal angle but certainly cannot reduce it. Clinically, wearing the chin cup will keep the teeth in occlusion, which prevents overeruption of the posterior teeth.

Temporary anchorage devices

The most exciting possibility for controlling and reducing the vertical skeletal angle involves intrusion of the maxillary and mandibular molars with temporary anchorage devices.
**Alexander Discipline on Open Bite Mechanics**

I can remember early in my career observing an open bite mandibular arch study model and how the arch was nicely leveled (Fig 1-2). It looked like a finished arch in a pretreatment deep bite occlusion. It made sense that I should treat this arch with mechanics opposite to those for a deep bite malocclusion.

**Diagnosis**

- Observe the resting position of the upper lip. It should be 4 to 5 mm from the incisal edge of the central incisors.
- Observe the smiling position of the upper lip. It should be within 1 to 2 mm of the gingival line. See volume 2 of this series (page 112) for the “Gucci Gucci” technique on getting the patient to smile naturally.

In open bite cases, it is common for the upper lip to cover much of the maxillary anterior teeth during a smile. Part of the treatment includes extrusion of the incisors to create more incisor exposure. This is accomplished by placing a reverse curve in the 0.016 SS and 17 × 25 SS maxillary archwires (Fig 1-3) and later, if needed, up-and-down anterior box elastics (Fig 1-4).

**Dental open bite versus skeletal open bite**

When the skeletal pattern is normal (low vertical skeletal angle) but the bite is open, this can be treated as a dental open bite. With proper biomechanics and exercises, this patient should have excellent results. When the open bite is skeletal, the problems are magnified. Surgery may be the only solution.

**Open bite mechanics**

- Bracket placement: The goal is to intrude the posterior teeth and extrude the anterior teeth. This is accomplished by changing the bracket height placement. For all of the teeth out of occlusion, the brackets are placed 0.5 mm more gingivally. For those teeth in occlusion, the brackets are placed 0.5 mm more occlusally.
• Angulation: An important deviation from the regular Alexander Discipline prescription is the angulation of 0 degrees on the mandibular first molars (Fig 1-5) instead of the usual –6 degrees. This will give the mandibular first molars a forward tip that will enhance the curve of Spee and help close the bite.
• Archwires: A reverse curve of Spee is placed in both archwires.
• Elastics: Anterior and buccal box elastics should be used.
• Squeezing exercises: The patient should be taught squeezing exercises to improve occlusal forces. The patient should also be advised to chew gum to encourage such occlusal forces.
• Extractions: Extractions may be necessary, depending on the specific conditions of the case.

Reference

Overview
Although a conscientious practitioner can learn from every case treated, certain cases stand out as especially educational when the patients display unique conditions and then respond to treatment in unexpected ways. Such a patient was a 16-year-old girl who presented with an extremely high-angle, Class III skeletal pattern (Figs 1-6a to 1-6c). Dentally, she had a Class III molar relationship, a right posterior crossbite, and an anterior open bite of 4 mm (Figs 1-6d to 1-6h). She had a mandibular arch length discrepancy of 5 mm. Figures 1-6i and 1-6j show the pretreatment cephalometric tracing and panoramic radiograph. Because she was near adulthood, maxillofacial surgery was considered, but because it was a borderline case, the treatment objectives would have a chance to be successful without surgery.

Examination and diagnosis
This 16-year-old girl had an extremely vertical skeletal pattern (SN-MP of 49 degrees), a transversely constricted maxilla, a dental open bite (4 mm), and a tongue thrust. Skeletal surgery (three-piece maxillary osteotomy) was discussed, but we agreed to attempt nonsurgical and nonextraction treatment first.

Treatment plan
Initially, a fixed palatal expander was used. The patient was instructed to turn the appliance every other day because of potential discomfort. She was also asked to squeeze her teeth together as often as possible. Rather than wear a face mask, she would wear Class III vectored elastics.

Evaluation
Unexpectedly, the rapid palatal expander (RPE) created a 3-mm diastema between the central incisors and increased the open bite by another 5 mm (Figs 1-6k to 1-6m). The buccal tipping of the molars caused premature cusp contacts, thus creating a larger open bite. The good news was that this situation was temporary.

Discussion
After transverse expansion, the next goal was to create a normal occlusion. This was accomplished with Class III vectored box elastics (Figs 1-6n to 1-6r), squeezing exercises, and tongue control. Significant interproximal enamel reduction was performed on the mandibular anterior teeth. The combination of these factors controlled IMPA. Finishing wires (17 × 25 SS) were then placed on both arches (Figs 1-6s to 1-6w), followed by finishing elastics 7 months later (Figs 1-6x to 1-6bb). Figures 1-6cc to 1-6ll show the posttreatment results.

Long-term stability
Open bite malocclusions are difficult enough to maintain in the long term, but when a Class III nongrowing skeletal pattern is added to the mix, the challenge is even greater. The patient continues with her tongue exercises and sleeps in a wraparound retainer (which has a small hole in the anterior part of the acrylic for her tongue). Interestingly, the occlusion improved with time (Figs 1-6mm to 1-6ww). My assumption as to why is that the final occlusion is in a stable position and the oral and intraoral muscular tissues are functioning normally.
Case 1-1

Figs 1-6a to 1-6c Pretreatment facial views showing a Class III tendency profile.

Figs 1-6d to 1-6f Pretreatment intraoral views. The patient has a 4-mm open bite and Class III molar relationships.

Figs 1-6g and 1-6h Pretreatment occlusal views.

Fig 1-6i Pretreatment cephalometric tracing.

Fig 1-6j Pretreatment panoramic radiograph.
Case 1-1 (cont)

**Fig 1-6k** Frontal intraoral view after expansion with an RPE.

**Figs 1-6l and 1-6m** Occlusal views after expansion.

**Figs 1-6n to 1-6p** Intraoral views 14 months into treatment: maxillary and mandibular 17 × 25 TMA archwires; lateral box Class III elastics are begun.

**Figs 1-6q and 1-6r** Occlusal views 14 months into treatment.

**Figs 1-6s to 1-6u** Intraoral views 19 months into treatment: maxillary and mandibular 17 × 25 SS archwires.
Figs 1-6v and 1-6w Occlusal views 19 months into treatment.

Figs 1-6x to 1-6z Intraoral views 26 months into treatment. The mandibular archwire is sectioned, and finishing elastics are placed.

Figs 1-6aa and 1-6bb Occlusal views 26 months into treatment.
Case 1-1 (cont)

Figs 1-6cc to 1-6ee Final facial views after 28 months of treatment.

Figs 1-6ff to 1-6hh Final intraoral views.

Figs 1-6ii and 1-6jj Final occlusal views.

Fig 1-6kk Posttreatment cephalometric tracing.

Fig 1-6ll Posttreatment panoramic radiograph.
Case 1-1

Figs 1-6mm to 1-6oo  Facial views 16 years posttreatment.

Figs 1-6pp to 1-6rr  Intraoral views 16 years posttreatment.

Figs 1-6ss and 1-6tt  Occlusal views 16 years posttreatment.