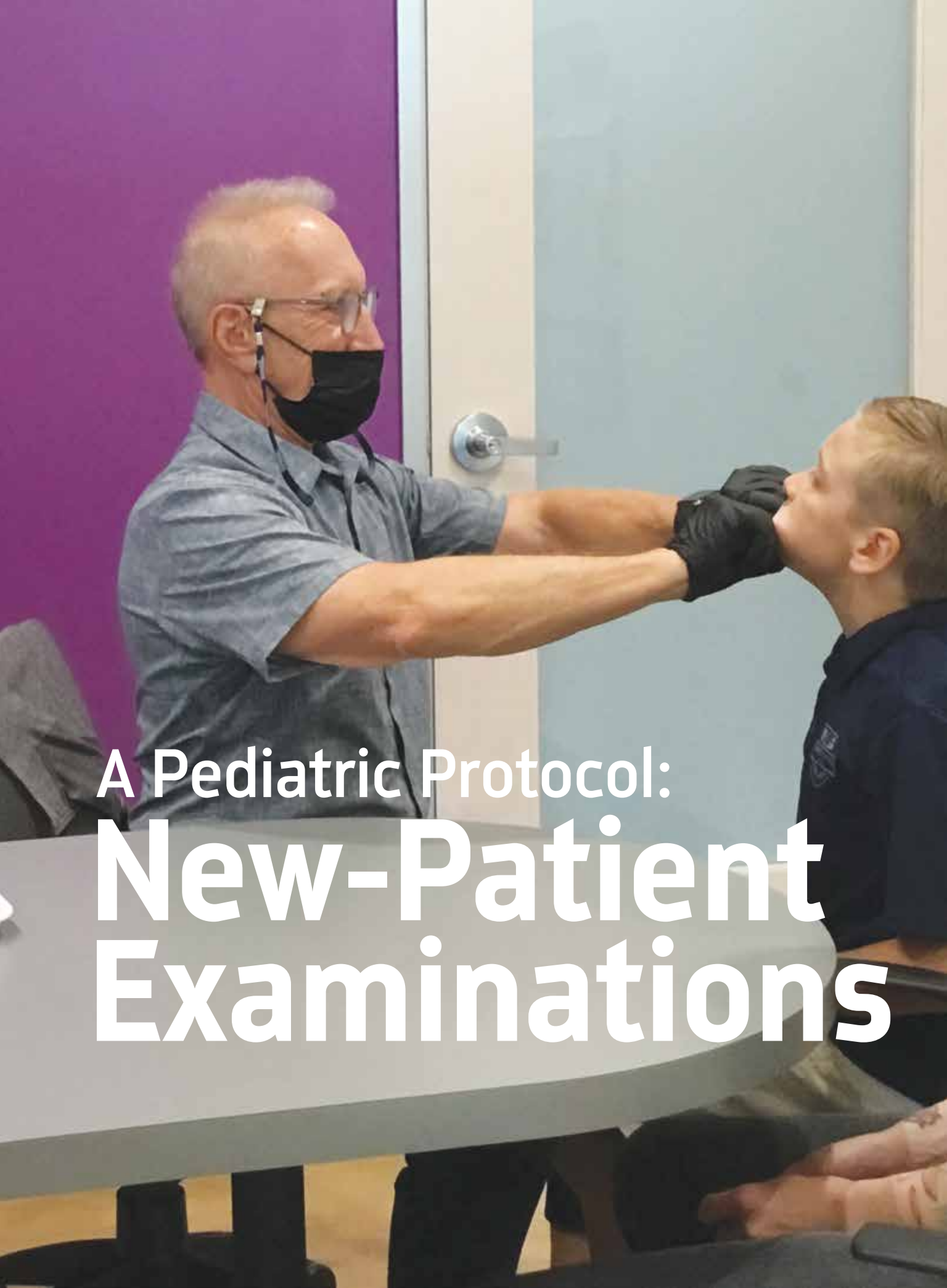




A Pediatric Protocol:

New-Patient Examinations

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For years, the American Association of Orthodontics and the American Dental Association have encouraged parents to bring children to the orthodontist for the first time at age 7. In return, orthodontists encourage patients to first visit the dentist at age 2, as recommended by the ADA.

This does not happen for many children, of course. Some family dentists are not aware of these guidelines, some parents don't want to feel pressured into treatment, and some orthodontists' training has not expanded into this field, which means many young patients with issues an orthodontist can identify, refer or treat are not evaluated at an early age.

We've all seen testimonials at meetings, or in journal articles and social media posts, about horrendous adolescent malocclusions that were fixed in a few short months using a "special technique" or the latest bracket. These patients were not seen early and because of that, there seems to be justification for not performing early treatment. However, my patients' parents usually don't want to wait for all of their children's teeth to appear before treatment begins—especially if that means their kids are harassed or made fun of because of their appearance, while the parents are stuck defending their decision to peers and relatives about holding off treatment.

What's the goal of Phase 1 treatment?

A recent column in *Orthotown*¹ addressed the justification of Phase 1 treatment, as well as how to measure its success or failure. The persistent question seems to be whether Phase 1 treatment is worth it—but are we all evaluating the same thing? The column's message seemed to be that Phase 1 treatment was unnecessary if being done only for cosmetic benefit at that time or financial gain of the practitioner or product manufacturer.

Is our method of evaluating, diagnosing and treating children and adolescents outdated, leaving many issues undetected? The more you treat early, the more you find horrendous malocclusions seem to disappear from your practice. If you do see a fair number of young patients:

- Do you encourage these visits?
- Do you have a standardized routine?
- Do you relegate the young patients' examination time to a shorter appointment so you can quickly scan the panoramic X-rays, check for crossbites, and refer for removal of primary teeth and later permanent teeth, or perhaps start an expander period of treatment if there is a crossbite?

Many orthodontists who treat only a small percentage of pediatric patients fail to appreciate that special concerns need to and should be addressed when examining youngsters. Let's review the history of this train of thought by summarizing some of the statements made and published through the years and introducing some concepts I believe are applicable to the examination and treatment of the pediatric population.

Previously published recommendations

Treatment as early as the primary dentition has been discussed for years.

- In 1995, Drs. Peter Ngan and Henry Fields emphasized the need to maintain space in early dentition and evaluate and limit treatment to specifically diagnosed issues, including some severe crossbites or Class III problems.² In their journal article, Ngan and Fields cautioned against much more treatment for Class II, crowding or nonnutritive sucking habits during this early period.
- A 1997 workshop on space analysis in pediatric dentistry confirmed the need for knowledge of growth and the variabilities of predicting the same,³ emphasizing the importance on the face, its changing during time and the validity of maintaining leeway space.
- In 1998, Dr. Steven Dugoni supported early treatment and extended the reach of such treatment to include most modalities offered to adolescents and adults, including Class I, II and III treatment for crowding and crossbites.⁴ Dugoni noted that Phase 2 treatment may not be necessary, except for occlusal perfecting sometimes accomplished with a tooth positioner. His apparent goal was to treat earlier in the transitional dentition, eliminating or severely lessening later care—in other words, treat early for a problem identified as needing treatment later.
- In a 2000 AJO/DO article, Drs. Mathew Brennan and Anthony Gianelly took a simplified approach to incisor crowding in the lower arch,

proposing a simple lingual arch to preserve leeway space.⁵ The authors stated that up to 68% of patients could be treated nonextraction this way, a figure confirmed by Dugoni.⁶

- A 2007 review by Dr. David Turpin⁷ concluded that true skeletal malocclusions are rarely completely intercepted, and coupled with two-phase treatment often result in more appointments and cost.
- During a 2002 AAO-sponsored symposium on early treatment, Drs. William Proffit⁸, James McNamara⁹ and others discussed methods and rationales for care. The goal of these modalities seems to be limited to eliminating and preventing crowding and creating a Class I occlusion. Many papers by Proffit¹⁰ et al. shun this treatment as adding cost and time in treatment and conclude the effort is not warranted; however, most of these papers are concerned with crowding and Class I, II and III correction only, and viewed in the sagittal plane.
- Speaking at the 2018 AAO/AAPD Early Treatment Midwinter Conference, Dr. Stella Chaushu advocated for early prevention of impacted cuspids by involving limited appliances and removal of primary canines and first molars to avoid the lengthy and often times serious complications of impacted canines.¹¹ Chaushu did mention this interceptive treatment would often become more time-consuming.

Other considerations warrant examination

Advances in 3D digital imaging and evidence of its value^{12,13} have led us to view patients' facial skeletons in terms of volumes rather than planes in space. Especially important is the finding and confirmation that maxillary deficiency need not exhibit a crossbite to be present. The term *superior and inferior convergence of the maxilla to the mandible* allows for visualization of maxillary deficiency without overt crossbite findings. MacNamara¹⁴ suggested this in his lecture at the 2015 AAO winter conference, where he described the desired distance between

the lingual of the upper molars as being 36–39 millimeters. Crossbites were not required for treatment nor viewed as the only finding requiring maxillary arch expansion.

In discussing the ramifications and treatments for sleep apnea, Dr. Lou Chmura¹⁵ lists numerous symptoms often observed in patients with this pervasive disorder, including mouth breathing and aberrant frenum attachments and tongue role. CBCT imaging has a value in identifying airway space, but is limited to patient positioning, growth and other variables.

Angle, of course, paid much attention to the influence of mouth breathing and habits in malocclusions; quoting from his textbook: "Of all the various causes of malocclusion, mouth breathing is the most potent, constant and varied in its results."¹⁶ It is most prevalent between the ages of 3 and 14, according to Drs. J.L. Paul and R.S. Nanda.¹⁷ Authors such as Dr. Lawrence Kotlow¹⁸ and speech-language pathologist Dawn Moore¹⁹ are well known for describing tongue tie and other anomalies but do not directly link them to malocclusion, a link that should be further explored.

The debate regarding temporomandibular disorder (TMD) in children and adolescents persists, and numerous articles have been written to identify issues that may arise on young patients. A position paper by the American Academy of Pediatric Dentistry²⁰ stresses the need for evaluating TMD history and signs and symptoms in the young population and states the prevalence can be around 10%, with an increase with age to upwards of 30%, especially in adolescent girls.

Thus, it would appear that there can be a benefit to examining, diagnosing and treating many patients before all the permanent teeth have erupted.

An orderly process for Phase I examinations

How can we overcome objections from parents, dentists, parents and patients that are obstacles to building a successful practice that focuses first on young children, and eventually stress-free adolescent treatment with some adults along the way? How can we combine the best of both early and late treatment into a smooth, predictable method to deliver the most time- and cost-effective

approach to early and adolescent care, and in the end deliver a superior result with lasting benefits?

The first step is to have an orderly way to examine, educate and treat pediatric patients. (The second step is treatment; the third is Phase 2.) Some of the objections raised—and rightly so—are that treating early leads to long treatment times, extra cost and patient burnout. Managing these objections can be solved by involving protocols based on the Treatment by Twelves philosophy of care I described in a continuing education course that was published in *Orthotown* in 2015.²¹ [Editor's note: To view this course, click the link inside the digital edition of this article at orthotown.com/magazine.] The takeaway from the Treatment by Twelves philosophy is that in addition to managing patients during three key time points in a patient's life, there are four elements of orthodontic diagnosis, treatment and retention that need to be constantly addressed during the primary, transitional and adult dentition:

- Jaws and face.
- Teeth eruption.
- Influence of soft tissue and habits.
- Joint function.

Introduction to practice

The examination of pediatric patients begins with the parent and child introduction to the practice; the gathering and review of pertinent medical and dental history; review of the findings; and a diagnosis and treatment proposal.

In our combination pediatric and orthodontic practice, the pediatric dentist and team are well versed in screening patients to come to the orthodontist. They use a protocol for basic screening of potential patients as described by McNamara,²² measuring palatal and incisor width (Figs. 1a and 1b), and using marketing collateral designed by the orthodontic practice to describe how the two offices coordinate care.

Educating parents and patients in this way allows for the pediatric dentist to maintain communication and control of the patients and eliminates the extra time involved in referring patients to the office, only to be told to return in six months.

The office visit: Digital and laminated presentation slides are used to describe the key elements of the visit and to add a visual



Fig. 2



Fig. 3



component to the discussion to make sure nothing is missed. These visuals help to stay on point because of the tendency to get distracted with other siblings or family members or questions that take the discussion to other topics. The new-patient coordinator (NPC) informs the parent that the doctor will evaluate the four previously mentioned elements of orthodontics and arrive at a diagnosis and treatment or recall plan. After the introduction, the NPC asks if there are any questions before taking the child.

Gathering records: The NPC allows the parent to finish the patient's health history, if not already completed online, and watch a short video about orthodontics. The doctor often will briefly peek in the room

to introduce himself and explain how the exam will be conducted, emphasizing that everyone will be able to view the results on the TV monitor mounted on the wall.

The elements of the record gathering are quite familiar to all and include:

Standard ABO photos: (Fig. 2) Because of the small nature of pediatric patients, parents often help team members obtain photos by holding cheek retractors.

CBCT imaging: (Fig. 3) Natural head posture, with instructions to touch teeth together, close lips, relax and sit still.

The new-patient coordinator uploads the photos and imports the CBCT images into the office software program for viewing during the exam.



Review with doctor: Typically, the doctor will view the records in his office between other patients before entering the room, to assess their diagnostic value and begin crafting a treatment plan on the run.

Chairside exam diagnosis and treatment proposal: The doctor introduces himself, reviews once again the four elements of the exam with the patient and parent, and confirms their expectations.

When parents ask why their child is in an orthodontist's office so early, often the response is that the teeth are too big for the jaws. Without getting technical, we explain that research has shown that most crowding issues are because of a lack of size inside the mouth or "smile bones"; therefore, our goal is to "make the smile bones match the jaw bones."

We often hear: "We don't know, but we think it's too early for braces." After adhering to the following protocol and procedures, this is hardly ever an issue at the completion of the evaluation.

Exam protocols and procedures

- A brief clinical exam is performed with the patient and parent seated at the conference table (Fig. 4), including spreading the cheeks apart to view mucosa, frena attachments and the "pull" of the musculature.
- The occlusion is categorized and the opening and closing range of motion is evaluated. Loose, missing and problem teeth are noted for confirmation on the X-rays.



Fig. 8

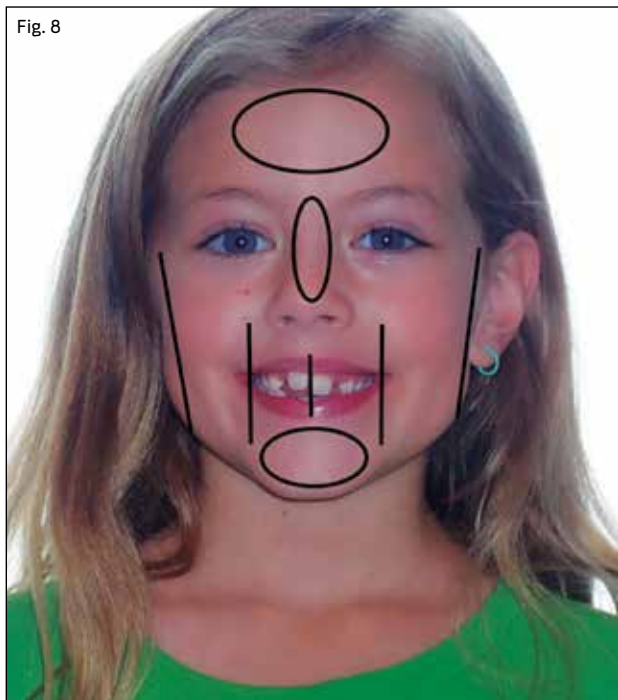


Fig. 9



Fig. 10



Fig. 11



- Face appearance is examined for dark circles, symmetry and the like.
- Assessment of habits is made, looking at fingernails and asking the patient to swallow while very gently holding the lower lip, looking for tongue position and thrusting. Although tongue ties (Fig. 5) are not routinely categorized, their appearance is noted. It is amazing how many mothers confirm difficulty in nursing and speech issues or therapy once this finding is brought up to them.)
- Attention is then directed to all the digital material gathered. Parents and patients are directed to view the exam on the wall-mounted digital monitor (Figs. 6 and 7).

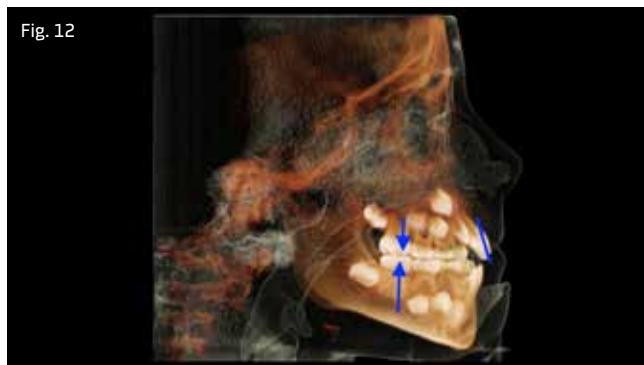
The entire composite record screen from the patient chart is visible for review with the patient, including the ABO composite with the two-dimensional panoramic and cephalometric view. We begin by enlarging the smile photo (Fig. 8) and describing the jaw bones of the face and smile bones supporting the teeth. The corners of the mouth are identified, and it is explained that the smile should reach those landmarks. The anterior view of teeth in occlusion is enlarged (Fig. 9) and a delineation between the smile and jaw bones is made at the mucogingival junction. Center lines are mentioned, as is the condition of the gingiva.

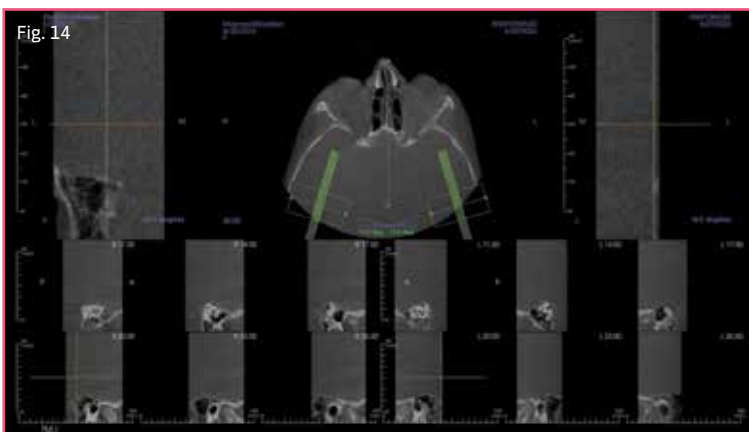
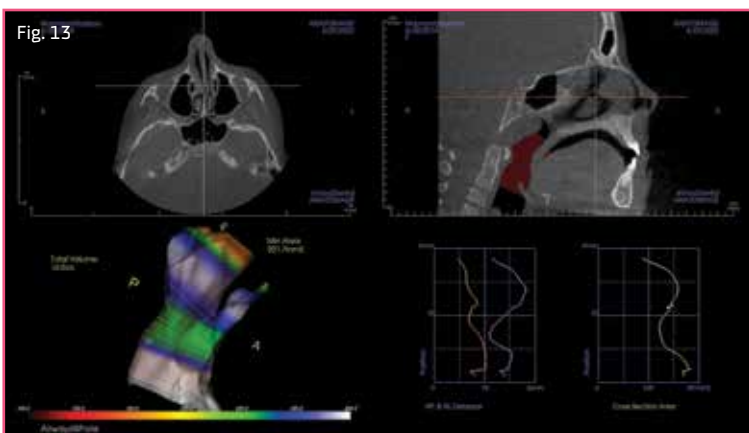
If the patient has a shift of the mandible, the parent is asked to stand behind the seated doctor and in front of the patient as the shift is demonstrated from first contact into occlusion. Seating the condyle and positioning the mandible often demonstrates the shift in the bite, as seen in Fig. 10. The right and left buccal views are shown to confirm the Class I, II or III molar relationships. Occlusal views are visualized to confirm crowding and frenum attachments or tongue abnormalities such as tongue ties.

Attention is then drawn to the panoramic film (Fig. 11), where teeth are counted and relative space is evaluated. I start in the 12-year molar area, explaining that growth occurs here and that space or upright molars in that area is a good sign. Most of the time in this two-dimensional view, the upper and lower cuspids look crowded. Symmetry of eruption is noted and age-appropriate patterns are discussed and highlighted in a take-home form for the patients. Roots that do not appear to be dissolving in a timely manner are noted; suggestions about removal would be made at the conclusion of the exam or at a recall or recheck appointment.

Next, the two-dimensional cephalometric creation (Fig. 12) from the CBCT is enlarged and the first thing noted is the torque or lack thereof on the upper incisors. Our goal is explained as upright

Fig. 12





incisors without entrapment of the lower lip. If necessary, an on-the-fly Wits evaluation is performed easily, drawing a line through the occlusal plane and dropping and raising lines from A and B point to this creation. Once again, the Angle classification of the molars is highlighted.

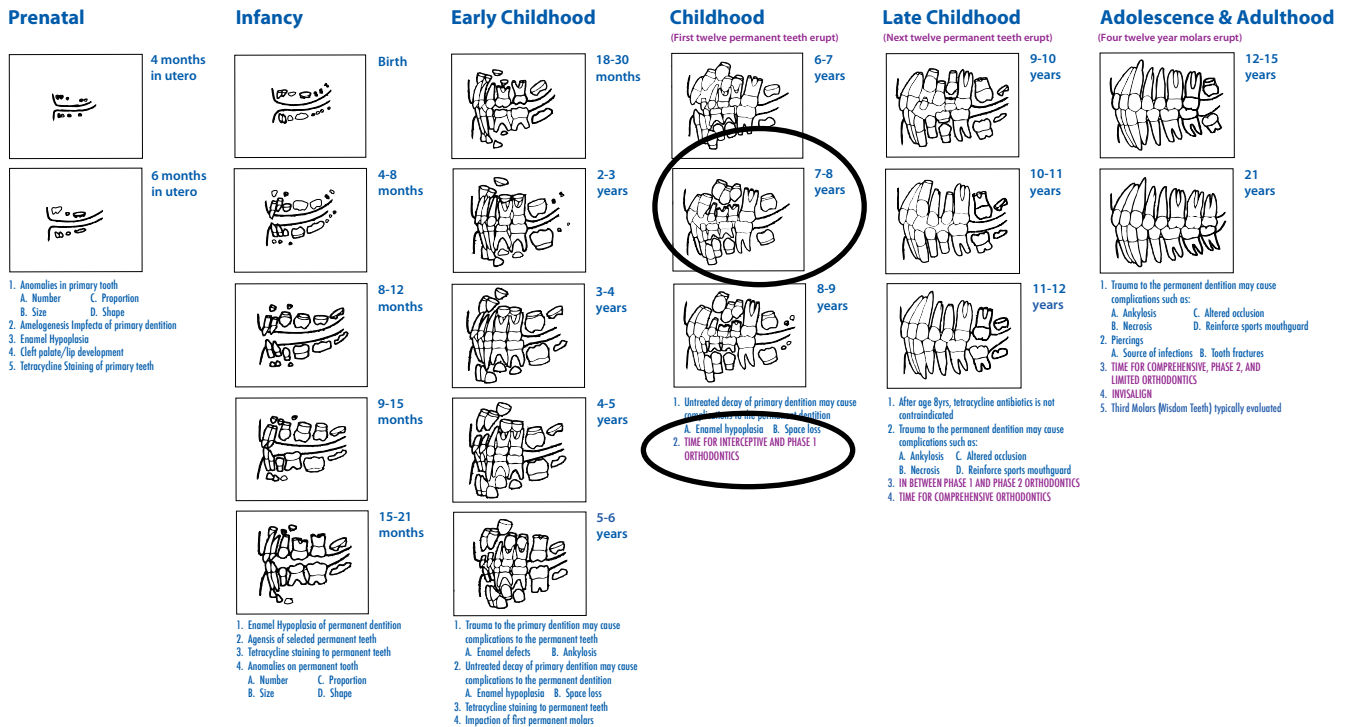
The CBCT software is opened for evaluation and it is explained that this low-dose new technology is replacing the impressions and casts of years ago.

The first section screen (Fig. 13) is utilized to view the airway, noting tongue position and evaluating lip to upper incisors. If the cross-section airway is found to be smaller than 50 square millimeters, more questions regarding sleep, snoring and behavior are made, along with a referral to medical specialists if necessary. Many times, patients that have been identified as having a degree of tongue tie are found to have the dorsal surface of the tongue not in contact with the palate, a finding I believe contributes to a narrow palate.

The TMJ tab in the software (Fig. 14) is used to identify gross abnormalities and assess the symmetrical positioning of the condyles in the fossa, while the Volume tab (Fig. 15) used to assess crowding, impaction and relative jaw relationships gets the most reaction from the parents and children.

Lastly, the section screen (Fig. 16) is again used to measure the distance between palatal surfaces of the first upper molars. It is also in this tab that cross-sections of the nasal cavity are viewed to ascertain the size and shape of the turbinates, nasal septum, etc. This last finding and measurement is the key to proceeding with early treatment or medical referrals involving expansion, lingual arches and alignment of the upper incisors with fixed appliances or aligners.

Fig. 17



Conclusion

Our practice makes these appointments in 45-minute blocks, which gives adequate time to perform all the tasks listed above and give the parent and patient ample time to ask questions and begin treatment if appropriate (Fig. 17). At the end of the appointment, a written graphic summary is sent home with patient and parent. Doctor time can be 10 to 15 minutes, depending upon how “on track” the doctor stays without becoming distracted with stories joking around with the kids and such. ■

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