A SYNOPSIS ON THE USE OF THE NITE-GUIDE® APPLIANCE

PATIENT SELECTION

Any child that is between the approximate ages of 5 to 7 years who has:

- A deciduous overbite that is 1.5 mm or more (regardless of its degree of severity).
- A deciduous overjet that is 3 mm or more (regardless of its severity).
- Potential incisor crowding where an arch-length analysis between the deciduous and permanent incisors (lower and/or upper four incisors) indicates up to 7 mm of arch shortage (about the average width of an upper permanent lateral incisor).
- In cases where the analysis shows there will be an excess of space (projected permanent incisal interproximal spaces).
- In children who have a gummy smile that exceeds 4.25 mm and an accompanying excessive overbite (with upper deciduous incisors present).
- In children with open bites caused by thumb or finger sucking. (In 20% of cases the child will successfully substitute the Nite-Guide® for the thumb, while in the remaining 80% they will usually need, in addition to the Nite-Guide®, an anti-thumb sucking device).

THE IDEAL TIME TO START

The ideal time to start a child with the Nite-Guide® appliance is when the first deciduous lower incisor exfoliates and the permanent central first begins to erupt through tissue. In this way, the maximum arch enlargement of about 3.5 mm can be encouraged to take place while the upper and lower centrals and laterals make their way into the mouth ideally without rotations or displacement. If the laterals are short of space at the

end of their eruption, 2 mm can be stripped from the lower deciduous canine on each side (and/or from the deciduous first molar in the upper arch). In this way, 7 mm can be obtained to alleviate the arch length shortage.

RECORDS

Standard records are taken, namely study casts, (if your trays are too large, simply cut them down to accommodate the younger mouth), a lateral cephalometric head film, a panorex or set of full-mouth radiographs, and a complete intra and extra-oral exam.

DIAGNOSTIC CONSIDERATIONS

- It is essential to do an arch-length analysis in the upper and lower incisal area by comparing the available space to the required space present from the mesial of the deciduous canine to the opposite canine in the lower and upper arches. If an arch shortage of 7 mm or less is apparent, the Nite-Guide® can usually be used. This translates into 4 mm or less of permanent incisal crowding.
- If the arch shortage between the deciduous and permanent arches is less than 3 mm, a wait and see approach can be used to determine if any of the permanent incisors start erupting rotated or displaced which then would have little or no chance of self-correcting, since it would be normal to expect about 3 to 3.5 mm of natural arch increase to take place provided the incisors erupt ideally.
- If a case has potentially crowded permanent incisors of 4 mm or less of adult crowding, or will require up to (and including) 7 mm of increase over the available space present in the deciduous incisal area, the use of a Nite-Guide® would be indicated. In order to gain the entire 7 mm of potential space increase and to

accommodate the erupting permanent incisors, one must start the procedure as soon as the lower adult central incisor begins to erupt into the mouth.

- If the procedure is started after the two lower central incisors are already fully erupted, the total lower arch increase would be about 5.5 mm or 1.5 mm less than if the case had been started as the lower centrals first appear in the mouth. If the upper permanent centrals are fully erupted, 2 mm must be subtracted from 7 mm leaving a total increase of 5.0 mm possible in the upper arch as stated previously. If all of the upper and lower incisors are fully erupted, no expansion is possible in the upper arch as stated previously. If all of the upper and lower incisors are fully erupted, no expansion is possible (that amounts to 3.5 mm) and only the amount obtainable (3.5 - 4.0 mm from stripping the deciduous canines or first deciduous molars) is available for crowding correction (leeway space) at this stage.
- It is important to make sure all the permanent tooth buds are present and erupting in their correct positions. Teeth that are severely rotated in tissue may pose a particular problem and might require orthodontics if not fully rotated by the Nite-Guide® appliance.
- Ideally the child should have a normal to excessive lower face height. The Nite-Guide® appliance, unlike other functional appliances, does not lengthen face heights when correcting a deep overbite unless it is desired. If the use of the "C" series is prolonged beyond the full eruption of the permanent first molars, the face height can be purposely increased as a result.
- The thickness of the mandibular body labio-lingually in the lateral head-plate should be checked particularly in crowded cases (5 - 7 mm). If the body is thick, there is less

tendency for gingival lowering with crowding prevention, while thin-bodied mandibles more frequently require stripping of canines, even before full eruption of the laterals.

- If a child has an excessive overbite with more than 4.25 mm of maxillary gingival tissue showing while smiling, one must figure how much of the clinical crowns of the upper incisors will show during a high smile. The incisal edges of the adult incisor should be level with the posterior occlusal plane on both sides when finished with the Nite-Guide®, and be about 1 mm above or even with the lower lip. The height of the clinical crown can be estimated from the intra-oral or panorex film or simply use the average clinical crown height of the upper permanent central of 11.7 mm. If the gum tissue will show above this position, then a decision must be made to wait and treat the case orthodontically or with surgery at a later age.
- A determination should be made to see if the occlusal planes on the left and right sides are at the same vertical position and level with the lower lip or preferable 1 to 2 mm superior in position. If this is the case, the position of the incisal edges of the upper incisors will be properly positioned to the lower lip for an aesthetically ideal smile. If there is a horizontal cant to the occlusal plane from one side to the other, the case should probably be treated orthodontically.
- The presence of an anterior open bite should be determined to be dental rather than skeletal (excessive lower face height).
- Many other diagnostic principles such as proper breathing, relative prognathism of the jaws, narrowness of arch, etc., are fully discussed in a Nite-Guide® video (Video III).

CONTRAINDICATIONS FOR NITE-GUIDE® USE

- skeletal Class III;
- multiple missing permanent teeth;
- extremely rotated permanent buds which would complicate the procedure;
- potential crowding of more than 7 mm (deciduous to permanent) or 4 mm in the permanent incisal area;
- excessive palatal line (or ANS) to upper incisal edge distance with no overbite;
- anterior open-bite accompanied by an excessively large ANS-Me distance; excessively large free-way space (over 7 mm); excessively short ANS-Me distance, however, if accompanied with a deep over-bite, the lower face height can be lengthened simply by extending the use of the "C" appliance after the eruption of the first permanent molars;
- closed-lock TMJ problems, although the Nite-Guide® can correct most disc displacements that can be reduced or recaptured when the patient moves the mandible into an artificial Class I ideal overbite/overjet position and then opens and closes to this position without symptoms;
- in cases where there are crowded deciduous incisors (usually indicates that there will be too much potential permanent crowding to be accommodated as natural arch enlargement takes place with erupting permanent incisors).

HOW TO MEASURE - there are various ways to determine the correct size of Nite-Guide®.

- The easiest way is to use the pink ruler to measure either the upper or lower incisal area. There are two measuring scales on the front of the guide; one for the upper incisal arch where the measurements are larger due to the larger upper incisal area, and the other for the lower arch with smaller increments. What is actually being measured is the available space along the curvature of the ideal arch-form between the two deciduous canines. Place the pointer at the mesial of the left deciduous canine and run the ruler along the incisal edges or along the curvature of the ideal arch-form to the mesial of the other canine. The size is read directly off of the ruler on the right side.
- Another way is to measure the available space in millimeters between the deciduous canines and find the appropriate size from the chart on page 23 of the Nite-Guide® information booklet.
- A third way is to measure the straight-line distance from one canine cusp to the other, and again find the correct size by referring to the chart on page 23 of the Nite-Guide® booklet.

HOW TO USE THE NITE-GUIDE®

- As permanent incisors erupt, even though they may be lingual (especially lower laterals) or rotated, they become straight as they are guided into the ever-narrowing (labio-lingual direction) slots in the Nite-Guide® appliance as a result of their own forces of eruption. As they are erupting straight, they exert lateral forces against adjacent teeth to laterally expand the jaws.

- A Nite-Guide® ("C" series) (provided there is expected potential adult incisal crowding) 1.5 mm larger (2 half sizes) than the lower available space is selected while the adult centrals are erupting.
- A second Nite-Guide® appliance ("G" series) which is 2.4 mm larger (3 half sizes) than the first appliance is used during the lower lateral incisor eruption.
- Each appliance must be checked in the mouth (and on the models, if desired) to make sure there is at least 1 mm of extra canine tooth slot (in the appliance) beyond the distal surface of each deciduous canine. This is to encourage arch increase as the permanent incisors are forced to erupt straight and not to restrict these increases by placing an appliance of the same size as the arch prior to its natural expansion, provided that arch expansion will be necessary to prevent crowding.
- The first appliance ("C" series - 2 half sizes larger than the measurement) will be in the mouth about 2 to 4 months and will allow 1.6 mm of expansion as the lower adult central incisors erupt.
- The second appliance ("G" series - 3 half sizes larger than the first "C" appliance used) is usually used until all the permanent incisors have erupted.
- This appliance, together with the first appliance used for about 4 to 6 months (3C) will allow the arch to potentially expand a total of 4.0 mm (5 x 0.8 mm). If crowding beyond 4 mm is present and stripping of the deciduous canines or deciduous first molar is required, then an further increase in size may be needed to fully accommodate the total potential crowding.
- If a full 7.0 mm is necessary to obtain complete straightness, then a total jump of 9 half-sizes with about 3 appliances will be necessary (e.g. 2C up to 6½G for a total of

7.2 mm). Usually most patients cannot tolerate more than about a 3 half-size jump at once, particularly at the beginning, without the larger appliance feeling bulky in the mouth.

- The overbite and overjet will usually be corrected within six months. The overjet, ideally, should be corrected before all of the permanent incisors have fully erupted.
- Open bite will correct in 20% of cases without a fixed anti-thumb sucking device.
- If the thumb sucking does not correct with the Nite-Guide® alone within two months, a thumb-sucking appliance should be cemented to be worn at the same time as the Nite-Guide®.
- In all cases, however, a larger size must be used in potentially crowded patients and a smaller size for those individuals with potentially spaced permanent dentitions.
- The "C" appliance generally should not be used after the first permanent molars are in occlusion. However, if it is desirable to open up the lower face height in such cases with an excessively short ANS-Me distance or in cases with severe bruxism and wearing of the deciduous dentition with an accompanying reduction of the ANS-Me distance beyond "normal", then the "C" series would be used to encourage supereruption of the first permanent molars.

HOW TO WEAR

- All patients are asked to wear the "C" appliance (worn while the lower adult centrals are erupting and until full eruption of the first permanent molars) and/or the "G" appliance (used in most cases after the full eruption of the first permanent molars regardless of which incisors are erupting at the time) *only* while sleeping.

- Even if the child only keeps the appliance in the mouth while sleeping for one hour per night, the same progress is usually seen.
- Only with overjets that exceed 4 mm is there any necessity for a full night's wear. In severe overjets (over 5 mm) it might be necessary for the child to wear it actively for one hour per day to get an acceptable result.
- Wearing actively at this age implies that the child clenches the teeth into the appliance for one minute or more, relaxing the jaws for one-half minute, then repeating. Usually only one hour of active wear together with passive wear while sleeping is all that is necessary at this age for severe overjet corrections.
- About 72% of children keep the appliance in all night while sleeping after a three week period, while 21% will keep it in the mouth only for about one hour at night before having it fall out. Both groups had the same degree of success regardless of the time of wear (93%).
- There are several things that can be done to encourage the child to adapt to the appliance wear while sleeping;
    - the mother can put the appliance in the mouth after the child falls asleep;
    - the child can wear the appliance for an hour or two during the day for a few days in order to get used to it and then it usually will stay in all night;
    - the mother can place two pieces of scotch tape (not friction or carpet tape) criss-crossed over the child's mouth for a few nights, or
    - simply let the appliance fall out after one or two hours of sleep each night and unless the child has a severe overjet (exceeding 4 to 5 mm) the correction will usually be the same as a full night's wear.

- Rarely are any adjustments to the appliance required as the teeth are erupting. The adjustments that are sometimes necessary are as follows:
    - if the incisors are fully erupted and rotations are still present, prefabricated cleats can be placed to aid in these rotations shortly before the development of adult collagenous fiber formation is complete. (Usually within 6 months after full eruption.)
    - these cleats are held with a serrated instrument (Howe plier), while the ends of the cleat are heated in a sharp blue flame to red-hot and immediately imbedded into the plastic of the appliance. They are placed parallel to the long axis of the tooth while the bridge of wire between two legs is allowed to stick out of the plastic the full width of the wire. This places pressure against the tooth to rotate it in the proper direction. The cleat is left in the appliance permanently.

FREQUENCY OF APPOINTMENTS, LENGTH OF TREATMENT, RETENTION AND FURTHER ORTHODONTICS.

- The frequency of appointments while the lower permanent centrals erupt until the lower laterals begin their eruption is typically about every two months.
- Once the size change is made to a "G" appliance as the lower lateral incisors erupt, the appointments can be spread out to every 3 or 4 month intervals. These are usually continued until all the 8 permanent incisors are fully erupted.
- At this point, about 12 appointments of about 10 to 15 minutes each have been made or approximately 3 hours of chair time. Including the time for records, it is estimated

that about 3½ hours of chair time is spent on each case to completion at about 7 or 8 years of age.

- It is usually recommended that 6 month observations of the child be made until about 12 years of age with an extra expenditure of one to two hours.
- If orthodontic treatment is necessary for incisal leveling, rotations, torque, or palate expansion, these corrections should ideally be made before collagenous fiber formation is complete or within 6 months to 1 year after complete incisor eruption.
- If further work is necessary, it will usually be for bicuspid or canine rotations or insuring that space is present for late-erupting upper canines at around 11 years of age. In any case, the orthodontics is usually of minor complexity and would consist usually of what would be considered as "easy" corrections, perhaps taking 6 months until the second permanent molars are in place (12 years of age).
- If at any time the overbite, overjet or crowding increases during the observation of a child during this exchange period of the mixed dentition, then it should be recommended that the same "G" appliance be worn at night passively , which usually corrects the problem.
- If sleeping passive wear is insufficient for its correction, then the appliance can be worn actively by biting for one minute at a time for one to two hours per day.

WHAT TO CHARGE AND INSURANCE COVERAGE

- The average case will take about 3½ hours of chair time until all the permanent incisors are fully erupted.

- If observations are scheduled every 6 months until full eruption of the second permanent molars (12 years of age) this will usually add an additional 1½ to 2 hours to the case. If orthodontics is done for any minor rotations, torque or palate expansion, another to 4 years can be added.
- In total, the chair time should be about 8 to 9½ hours for the most involved case and 3½ to 5 hours for the least complicated one.
- Since an average orthodontic case will take 11 h ours only for the active phase, less time is spent per case.
- Regarding the fee for an average case, it would be suggested that a total charge could be made that would be equal to anywhere from a half to a full fixed orthodontic case fee.
- The advantage of charging an all-inclusive fee for a case is that the degree of perfection can be determined by the orthodontist and not at the discretion of the parent or patient.
- Insurance coverage is usually based on the categories of 8010 or 8070 (first phase or removable appliance) or on a combination including partially fixed appliances.
- It is recommended that the usual collection based on a substantial initial fee and a monthly or quarterly payment be made so that the total is paid by the time all permanent incisors are in place.
- Whether retention charges are made until 12 years of age are at the discretion of the orthodontist.
- Insurance forms are filled out with the occlusion characteristics based on the permanent incisors in place with the forecasted dimensions expected to be present in

the mixed dentition (e.g. a 2 mm deciduous overbite will be 4 mm in the mixed dentition), while the overjet will be the same. Crowding is stated as the expected permanent incisor relation after doing an arch-length analysis between the deciduous incisal area and the permanent incisal required space considering an ideal enlargement of 3.5 mm (e.g. an arch shortage between the deciduous available space and the permanent incisal required space of -6 mm, with an ideal enlargement of 3.5 mm subtracted from 6 mm would give an estimated amount of crowding of 2.5 mm).

SUGGESTIONS ON HOW TO OBTAIN NITE-GUIDE® PATIENTS

- You must market yourself as an orthodontist who also does early treatment. We are not referring to the mixed dentition but to the 5 to 7 year old child. The easiest source is within your own practice. Send a letter to *all* of your patients (parents) - even to those families you have already finished years earlier. You may not realize it, but everyone is interested in early prevention - interception treatment - even if they are grandparents, relatives or friends. A sample letter follows:

  Dear (parent):

  I thought it might interest you to know that a new breakthrough in orthodontics has developed where many problems that in the past could only be treated at 12 years of age can now be prevented and intercepted in the 5 to 7 year old child. In always keeping abreast of the newest developments, I have now incorporated this procedure into my office. I have enclosed an informative booklet that you or your children might find interesting. If you desire additional

information or a free consultation for your 5 to 7 year old, please feel free to call at any time.

It has always been a pleasure working with your family.

Sincerely,

- Send similar letters to *all* dentists, pedodontists, oral surgeons, periodontists, endodontists, family physicians, pediatricians, obstetricians, psychiatrists, pharmacists, and any other health professionals who are in a position to influence and advise families. A booklet should be included. You should also offer to supply them with additional booklets for their waiting room with your name imprinted on them. Having lunch with each individual professional will also be an added benefit.
- Having a professional presentation for the dentists in your home to familiarize them with your expertise in this area is one of the best ways to market yourself. We can even loan you a slide presentation with a written script for this purpose.
- The easiest and most conservative way to market yourself is within your own practice. State and federal laws are very lenient towards this type of advertising.
- A video can be placed in your waiting room. This professionally produced film describes the benefits of early interception followed by several before and after results designed to spark a parent's interest and to stimulate them to ask you about it. The 20 minute film is repeated several times (and is programmed to automatically rewind itself and shut off with certain video machines). This video film is available from Ortho-Tain. A shortened version of this professional film is also available for a parent to take home on loan to allow the husband to view after the mother and child have been in for an exam.

- Always have the booklets available in your waiting room. Disbursing information about yourself and what you have available to as many people as possible is what is important.
- Outside your practice, such as PTA groups, child care centers, newcomers' clubs, and women's clubs are frequently available for speakers. The educational Nite-Guide® video can be used or slide presentations can be given.
- Advertising to the public is easily done in a fairly economical way on cable TV programs. Be sure to study your individual state laws regarding the rules that you are required to follow before embarking on this form of marketing. Young parents watch television more now at the expense of newspapers. A person has to hear or see your name three times within a year to remember who you are. Be sure and link your name with this early-treatment technique each time so that they will associate you with this form of procedure. You will then not only be known as the standard orthodontist for the 11 and 12 year old, but also as an early treatment specialist, thereby adding to your appeal not only to the public but also to the dentists in your area.
- Advertisements can be placed in your local newspaper. We have available ad slicks that you can purchase in all the most commonly used formats. Again, your state laws should be reviewed for their applicability in your area.
- Billing inserts can also be used, not only in your own billing envelopes but also at times to cover postage for other professionals' billing such as a pharmacy or even in other businesses. They are also included in the camera-ready ad slicks mentioned above.

- Every patient you treat successfully with the Nite-Guide® technique will usually refer about four other families to you.
- The yellow pages in the telephone book can be a source for your total marketing mentioning that the Nite-Guide® technique can prevent and intercept problems while sleeping. Again, check with your local laws.
- Put a sign up on your office such as "Early Treatment Center".
- Make sure when a parent brings a child in for an exam your assistant should be instructed to tell the patient that frequently a great deal can be done for younger children and the parent should be encouraged to bring in *all* of their children. If there is no charge for exams, this can be mentioned as well.

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