

A BRIEF SUMMARY OF ORTHODONTIC TREATMENT**Dr. Earl O. Bergersen****EXAMINATION AND ETHICS:**

1. Give the parent a total fee figure before starting records -- at first appointment, at exam appointment.
2. At exam appointment be sure to be completely honest to parents and write everything down that you tell them.
3. If case is minor one and does not necessarily need treatment -- be sure and tell parent. Don't talk them into Rx.
4. If case needs Rx due to future health of teeth -- be sure and tell parent they should have Rx.
5. Tell parents if case will probably be extraction or non-extraction. It is better not to have any surprises after you have taken your records. If parents don't like extractions, they will leave you then. If it could go either way (with extractions or non-extractions) try non first but set a definite time limit on yourself, e.g. 3 to 6 months, and then a definite decision must be made. Do not decide to extract after patient has been in Rx 1½ to 2 years.
6. Be frank about relapses and don't promise the moon. Tell them you will try and do your best but there are limitations to the case. If certain tendencies might relapse - be sure to tell them at the beginning, NOT after the case starts relapsing. If they don't like what you say they are free to leave at that point, whereas, after you start treatment -- it is too late to tell them of these things. It is good to have a booklet that can be given to them at the first exam or an audio-visual sequence, or a letter. It is extremely important to tell them of rotation relapses and of lower incisal crowding tendencies in non-extraction cases so that they understand you are accepting this tendency for the privilege of not extracting teeth. If the child has a TMJ problem at the beginning of Rx, be sure to tell them it may also exist at the end of Rx (50% of them do not improve). Injured teeth may be further damaged by treatment, and thyroid disturbances may cause root resorption -- be very specific when you have a hypersensitive girl entering puberty regarding root resorption.
7. Many of the above things can be very briefly explained during the consultation without seeming too pessimistic during your first exam with the child. It is

- better to explain some of these things after the parents are on your side toward the middle of your consultation than before, since they might think you are hedging and are unsure of your own abilities.
8. The parents are all for you usually by the time they have even set up the first exam and you should be very successful if they have records taken with you. If you lose more than about 10% of your consultations, you should reappraise what you are doing or how you are treating the people.
 9. Be extremely willing at all times to overextend yourself for their benefit. You are really serving people and if you do this in a professional and generous way you can't help but be successful in your area. If you become short with people and are willing to take advantage of their time or are insensitive to their comments or complaints, you will lose in the end. Unfortunately, it is generally the orthodontist who presents himself to the parent and patient most successfully that becomes successful himself. Some personality orthodontists can be extremely successful with marginal clinical ability or interest, however, if you can combine your best clinical efforts with a sincere willingness to help people with their problems at all times, you will maintain a high degree of respect in your community.
 10. Always be alert for pitfalls in treatment before you start, e.g. ankylosed teeth, extra teeth, cysts, pre-treatment root resorption or gingival recession, decayed or damaged teeth, ectopically erupting teeth, abscesses, or unusually shaped teeth (tooth discrepancies, etc.). Always go the conservative route if you are unsure of the outcome due to anything similar to the above. Parents appreciate the conservative approach if it is done intelligently.
 11. Respect the child. Don't take advantage -- do what you can do without causing discomfort. Don't overdo your work such as banding a whole case in a 2 or 3 hour appointment because it saves you a little time. Children resent such a procedure and they also resent having all their teeth separated at once for your convenience.
 12. Always accomplish your objective in the easiest and simplest way that will get the same or better result in a healthy manner.
 13. Get to the tooth moving part as quickly as possible so that you are always making headway toward your end result at each appointment.
 14. Never postpone doing something that is required to speed treatment. If a case is in need of a new archwire -- make it; or if more bands are required at that time -- get the child in as quickly as possible to get the job accomplished. If you find that you cannot get the child in when necessary during treatment -- you either have too

that large a load of patients, are spending too little time in the office, or are wasting time on unnecessary methods. Never do anything in your office management is going to cut into your end result or treatment objectives. Cutting corners with more efficient methods is extremely important if your objectives aren't sacrificed.

15. Make a pact with yourself never to cut your treatment objectives short by taking the lazy way. For example -- if a child has a loose band or a bracket slightly pulled away from the tooth surface, repair it immediately. Never postpone regardless of how late you are running, etc.
16. A good orthodontist is a result more of his ethical attitude than from his technical background.

TREATMENT:

17. Start your tooth movement as quickly as possible. Get into Class II mechanics or extraction site closure quickly since these are time consuming items. It is easier to keep control of tooth inclinations as you go, however, than to lose control of them by starting Class II mechanics and space-closure before you have properly engaged all of the brackets into a heavy enough wire.
18. Get into the overbite correction as fast as possible if a deep overbite exists. Severe overbite and overjet are two of the most limiting factors in length of treatment. If a reverse curve of Spee in the lower arch or an excess curve of Spee in the upper arch is required -- do it immediately; or if a heavier wire is required for it -- make it immediately. Generally, .0195 twist-flex type wire at the beginning does not have to be curved for the overbite but the first smooth wire should compensate for overbite correction.
19. There is a tendency to overcorrect at each appointment when you start your practice. Give each adjustment time to work itself on the teeth. There is such a thing as overworking your appliance -- you should learn to respect force as it doesn't take much to move teeth (2 to 4 oz. is adequate to make most corrections). Early in an orthodontist's career it is customary to constantly be adjusting and changing archwires and to be "tying things up" such as overactivating pull-coil springs, etc. Over the years you will be impressed by how much progress is often made during your accidental absence, such as when a patient misses several appointments and then shows up with his case showing more progress than if you had been "fiddling" with it at each appointment.
20. Average times for tooth movement (approximate):
 - (a) alignment of brackets via a .0195 twist-flex arch wire = 1 - 3 months.
 - (b) closure of bicuspid extraction site via pull-coil springs on the lower arch = 3 - 6 months.
 - (c) closure of bicuspid extraction site via intra-maxillary elastics and the use of a cervical head cap = 6 - 12 months.

- (d) closure of bicuspid extraction site via pull-coil springs on the upper arch = 3 - 6 months. (Watch for rotating molars -- always accentuate bayonet bends and tip backs.)
- (e) rotation of a tooth of 20° rotation = 4 - 6 months.
- (f) rotation of a tooth of 45° rotation = 9 - 16 months.
- (g) rotation of a tooth of 90° rotation = 12 - 24 months.
- (h) rotation of a tooth of 180° rotation = questionable whether you should do it. I have successfully done I in 24 months, others I have given up on and left them in their rotated state (bicuspids).
- (i) poorly positioned canine (upper) where root end is well positioned and crown is 1/4" from occlusion = 4 - 6 months. (99% success)
- (j) canine where root is 1/4" from proper position regardless of crown = 12 - 18 months. (90% success)
- (k) canine where whole tooth is in wrong position such as mesial to lateral incisor between lateral and central = 24 months - ?. (50% success) These cases are extremely difficult and frustrating. If it is an obvious extraction case it probably is better to extract the canine and replace it with a first bicuspid than to take a chance. Never pre-extract bicuspids in a cuspid impaction case

always wait until the canine is almost successfully in place. In fact, in cases like (j) and (k), I never even extract the deciduous canine until I can see success ahead of me. The upper canine in (k) is easier than in the lower arch due to the heavy cortical plate in the mandible.

- (l) uprighting of heavily tipped molars, especially in poorly controlled space closure in second bicuspid extraction cases = 6 - 15 months.
- (m) closure of second bicuspid extraction sites = about the same as first bicuspid extraction sites except in the lower arch they are usually more time consuming due to the prevention of tipping molars. Be sure to provide tip-back bends. Closure of areas where there are missing teeth such as congenitally missing lower second bicuspids take about 6 - 18 months.
- (n) closure of first molar extraction sites = 4 - 9 months.
- (o) elimination of 3 mm. overbite = 9 - 12 months.
- (p) elimination of 6 mm. overbite = 12 - 24 months.
- (q) elimination of 3 mm. overjet without spacing = 6 - 10 months.
- (r) elimination of 6 mm. overjet without spacing = 6 - 15 months.
- (s) treatment of good Class I case with no overbite with crowding or not (ext. or non-ext.) = 18 - 24 months.
- (t) treatment of Class II case with no overbite with or without extraction = 18 - 24 months.
- (u) treatment of Class II case with deep overbite with or without extraction = 24 - 30 months.
- (v) treatment of severe Class II case, deep overbite, severe overjet - a morphology problem - 24 - 36 months.
- (w) treatment of complicated cases with tooth impactions, slowing erupting teeth, odd extractions, etc., usually lengthen treatment time and are difficult to estimate.

TREATMENT PROCEDURE:

- I. Non-extraction cases:
 - A. Preliminary bracketing: 1 - 2 one hour appointments.
 1. Bracket 1st molars first. 60 minutes. (if no head-gear or bumper is used they can have bonded tubes).
 2. Bracket 1st bicuspids and cuspids and upper and lower incisors next, 60 minutes, and place arch wires (.0175 twist-flex arch wires - a general arch curve but no offsets).
 3. Bracket the 2nd bicuspids if you can at this time.
 4. Adapt the cervical head-cap and bumper and insert at this time also.
 5. I do not generally band or bracket second molars -- when I do, it is done within 2 - 3 months from end of treatment.
 - B. Usually 1 to 2 appointments later (1 to 2 months) .020 Elgiloy heat treated wires with a reverse curve of Spee (lower) and excess curve of Spee (upper) are placed and tied in and the bumper is advanced. Soldered hooks of .030 soft stainless steel are placed between canine and lateral incisor. One can substitute these hooks with vertical spurs on the brackets with plain preformed archwires. If the anterior teeth are at all crowded, bracketing in this area is postponed until the work of the head-gear and bumper and Class II mechanics against upper sliding hooks has gained sufficient space for these teeth. If an arch wire is placed in a lower arch with an excessive curve of Spee it will create extended arch length in anterior direction which is very hard to re-correct. It is better to always create the space first before bracketing the incisors, especially if they are slightly crowded. If an expansion screw is necessary, it is generally done at the very beginning and the anterior teeth are only bracketed after the opening is almost to its maximum.
 - C. Usually 1 to 2 appointments later (1 - 2 months) further advancement of the bumper is made and the curves of Spee are increased.
 - D. Usually 1 appointment later (1 month) Class II mechanics are started or at such time when bumper has been advanced at least once.
 - E. Case continued until upper incisors are upright, then tension springs are

soldered to existing .020 Elgiloy upper arch wire to ensure their continued upright position and tightened or tension increased as needed to maintain this uprightness. (After approximately 6 months - 1 year.)

- F. Rotations are constantly tied and about 6 months before the end of treatment rotation blocks are tied into the brackets and all rotated teeth are over-rotated and held in this position for at least 5 months until the treatment is finished.
- G. Artistic finishing is generally done in round wire (existing .020). Rarely are edgewise or heavier round wires used. Edgewise wires are used if posterior torque is required or torque on all of the lower incisors is required, or if crossbites or an adverse or lopsided bite is present, or if the overbite is extreme. Often in these cases, the lower second molars are banded to enhance the overbite reduction.

II. Extraction Therapy:

- A. Preliminary bracketing -- 2 to 3 one hour appointments.
 - 1. Band 1st molars first. 60 minutes. (Or bracket if that is customary and will take about 15 minutes).
 - 2. Bracket the bicuspids and canines next. Place .0175 or .0195 twist-flex arch wires in or .020 Elgiloy arch wires in if possible (20% of the time). If .020 Elgiloy arches are placed, a reverse curve of Spee is placed in lower arch and an excess curve of Spee is placed in upper arch to enhance paralleling of roots. If there is an anchorage problem sliding hooks are placed mesial to the canines with intra-maxillary elastics to be worn only with a cervical head-gear. This cervical head-gear is placed at this appointment but the elastics are started at the next appointment after the .020 Elgiloy arch is present in the upper arch.
- B. Usually 1 to 2 appointments later (1 - 2 months) .020 Elgiloy arch wires are placed.
- C. One appointment later (1 month) intra-max elastics are placed in the upper arch to be worn only when the head-gear is worn. If no anchorage problem exists, pull-coil springs or chain elastics can be used by extreme caution has to be exercised for fear of too rapid mesial movement of the first molars or mesial rotation of these teeth.
- D. The pull-coil springs or chain elastics can be at times placed in the upper arch to adjust the anchorage and to maintain a Class I molar relation. Generally, by the time the lower extraction sites are closed in a Class II case, the molars should be in a good Class I relation. If the patient is uncooperative with the head-gear at this stage, it is drastic since the molars will have closed the

extraction sites (upper and lower) and still be in a Class II relation. This tendency must be watched and patients warned. I have many times failed on cases due to lack of patient cooperation and the failure comes at this critical stage.

- E. If there is a deep overbite, the incisors must be bracketed as soon as the crowding has disappeared so that the overbite can be reduced. These teeth are generally bracketed in 4 to 6 months after the start of treatment.
- F. Class II mechanics can be started as soon as good control of the lower arch via incisors brackets and an .020 Elgiloy arch wire with a reverse curve of Spee placed into it. It is fairly important that all the brackets are engaged before starting Class II mechanics - 6 to 7 months.
- G. These mechanics are continued as in a non-extraction case and where necessary a bumper is placed. At times the bumper is placed while the extraction sites (lower) are being closed if anchorage is becoming a problem. In about 50% of all extraction cases, bumpers are used during the Class II mechanics phase.
- H. Edgewise arches are more frequently used in extraction cases in the lower arch than in any other type case due to the desire to prevent the lingual tipping of the crowns of the lower incisors (to maintain labial crown torque).
- I. I find that, contrary to most opinions, I can correct and maintain overbites easier in extraction cases than non-extraction cases. If a lot of growth is expected, especially in boys, this favors a non-extraction diagnosis while lack of growth favors an extraction diagnosis in very general terms.

III. RETENTION:

- A. All the bands and brackets are removed in a 30 minute appointment. Cement is removed and impressions are taken, head-plate, hand-film, intra-oral photographs. A measurement is taken and a preformed positioner is placed. These records can generally be eliminated, except the head-plate, and postponed until the next appointment. The positioner is to be worn 3 to 4 hours a day and at night.
- B. The next retention appointment (4 to 6 weeks) records can be taken. In 90% of the cases, the case is now fully finished into a perfect interdigitation. If the child had an excess overbite originally, the preformed positioner is worn one hour per day for at least one year. If incisal crowding in the lower arch was present originally, a 3-3 lower cuspid soldered or bonded retainer is placed. Lingual and/or labial wires are used, depending on directions of rotations, or a removable lower Hawley retainer can be used. The preformed positioner is trimmed to fit the 3-3 retainer. If heavy upper rotations were originally

present, a maxillary Hawley retainer is worn in conjunction with the positioner only when it becomes necessary.

- C. Initial incisal rotations greater than 20°, circumferential fiberotomies are done as quickly as possible.
- D. The patient is seen every 3 to 4 months until all cartilage in radius and ulna have closed in girls, and in boys the retention period is extended until about 21 years of age.

IV. RECORDS:

- A. Ideally, cephalometric records should be taken yearly during active treatment and every 2 to 3 years during retention. Models should be taken at the end of retention as well as photos, etc. They, of course, are taken at the end of treatment. Good records are a necessity, not only for your own legal protection but in order to know what is going on with your patient.

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