Failure Rates of Upper Bonded Retainers Can Be Pretty High

Upper Bonded Retainers: Survival and Failure Rates.

Schneider E, Ruf S:

Angle Orthod 2011; 81 (November): 1050-1056

For maxillary bonded lingual retainers, the number of teeth that are included in the retainer, as well as the operator experience, are variables that significantly influence the long-term outcome.

Background: Some adult orthodontic patients prefer maxillary lingual bonded retainers instead of removable maxillary retainers. What is the failure rate of bonded maxillary lingual retainers? Is the failure rate related to the number of teeth that are bonded? Is operator experience a variable that influences failure rate of bonded maxillary lingual retainers?

Objective: To evaluate a consecutive sample of patients who had maxillary lingual retainers bonded between maxillary canine-to-canine, lateral-to-lateral, or between the central incisors.

Design/Methods: This was a retrospective analysis of the 1-year survival rate of maxillary lingual bonded retainers. A sample of 466 consecutively bonded retainers was evaluated over a 1-year period. Out of that group, 322 had lingual retainers bonded from canine-to-canine, 89 subjects had lingual retainers bonded between the lateral incisors, and 35 subjects had lingual bonded retainers between the 2 central incisors. The authors evaluated the debond or failure rate of these subjects.

Results: The results of this study showed that the overall failure rate of all lingual bonded retainers was 58.2%. The highest level of failure was for the canine-to-canine bonded retainers with a frequency of 75%. Maxillary lateral-to-lateral incisor lingual retainers failed at a rate of 16.8%. The least failure was seen in the lingual central-to-central incisor bonded retainers at 3%. The authors found that operator experience was a distinct variable, and the greater the experience, the fewer the failed retainers.

Conclusions: Lingual bonded maxillary retailers have a high failure rate, and the number of teeth that are included in the retainer, as well as the operator experience, are variables that significantly influence the long-term outcome.

Reviewer's Comments: Personally, I do not use maxillary lingual bonded retainers. My concern is that these could fail. Based upon the results of this study from a department that consistently used these retainers, the failure can be very high. A 75% failure rate of a maxillary lingual canine-to-canine bonded retainer is much too high for me. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: Maxillary Bonded Retainers, Failure Rate

Print Tag: Refer to original journal article

There Is No Need for Space Maintenance When Primary 1st Molars Are Lost Prematurely

Space Changes After Premature Loss of Deciduous Molars Among Brazilian Children.

Macena MC, Tornisiello Katz CR, et al:

Am J Orthod Dentofacial Orthop 2011; 140 (December): 771-778

Space maintenance should be placed as soon as possible and definitely within 3 months after the premature loss of primary second molars.

Background: When is the placement of space maintainers indicated, and how soon after the premature loss of a primary molar should they be placed? If you are going to advise one of your referring dentists about space maintenance, you should have answers to these questions.

Objective: To assess dimensional changes in the dental arches after the premature loss of deciduous molars.

Participants: 55 children aged 6 to 9 years with unilateral premature loss of first or second deciduous molars.

Methods: A clinical examination was performed and dental casts and radiographs were used to evaluate changes related to the premature primary molar loss. Patients were followed for 10 months, and measurement changes were recorded for the extraction space, arch length, and hemi-perimeter of the extraction and control sides. The primary molars were extracted due to extensive caries or other conditions that rendered them non-restorable.

Results: Subjects with premature loss of the first deciduous molars in either arch experienced no significant change in arch measurements. Only subjects with loss of the mandibular second deciduous molars exhibited mesial movement of the first permanent molar as confirmed by the reduction in the hemi-perimeter on the extraction side. The greatest amount of space loss occurred within the first 3 months after extraction. In the group with the premature loss of maxillary second deciduous molars there was a reduction in the extraction space in the first 3 months of follow-up; however, this group had recovered some of this space loss by the tenth month after the extractions. The reason for this space regaining is not clear.

Conclusions: The placement of space maintenance appliances is indicated in cases of premature loss of the second deciduous molars and should be placed within the first 3 months after primary molar loss.

Reviewer's Comments: I thought this was a good study. It seems to provide another piece of information to confirm that there is no need to place space maintainers when primary first molars are lost prematurely. While space loss initially occurred after the premature loss of the maxillary second molars, some of this loss was spontaneously regained over the 9-month period. It would be interesting to determine the mechanism that caused this regaining of space. (Reviewer-John S. Casko, DDS, MS, PhD).

Keywords: Deciduous Molars, Premature Loss, Space Changes

Print Tag: Refer to original journal article

Are Translucent Orthodontic Wires Ready for Clinical Use?

Viscoelastic Properties of an Aesthetic Translucent Orthodontic Wire.

Goldberg AJ, Liebler SA, Burstone CJ:

Eur J Orthod 2011; 33 (December): 673-678

When activating polyphenylene esthetic archwires, only 60% to 90% of the initial tensile stress is maintained after 2 days.

Background: Many patients express interest in esthetic orthodontic options. Although esthetic ceramic brackets have been developed, creating an esthetic archwire with adequate properties is difficult.

Objective: To characterize the viscoelastic effects of a newly developed polyphenylene esthetic archwire.

Design: Laboratory study.

Methods: Round (0.020") and rectangular (0.021" x 0.025") archwires were produced from polyphenylene pellets (PR-250). Four round archwires and 6 rectangular archwires were stressed near their yield strength in a universal testing machine and held at that elongation for 7 days. Stress relaxation during these 7 days was recorded. Further testing was performed on both round and rectangular archwires using 2 brackets mounted at an inter-bracket distance of 7 mm. The vertical discrepancy between the slots was varied between 1 and 3 mm, and the wire was secured in the slots with elastic ligatures for up to 6 weeks. When each wire was released from the second bracket, the remaining deformation was measured.

Results: Between 61% and 90% of the initial stress was maintained over the 7-day testing period, with the majority of stress relaxation occurring within the first 48 hours. When wires were inserted into 2 brackets with a 3.0-mm step for a period of 6 weeks, the wire retained a 1.3-mm deformation after removal from the second bracket. For a 1-mm step at 6 weeks, 0.3 mm of deformation remained. Once removed from the brackets, partial recovery toward the original position occurred over 2 days.

Conclusions: Polyphenylene esthetic wires display predictable linearly viscoelastic behavior, which must be understood for any clinical application.

Reviewer's Comments: Esthetic wires to go along with our esthetic brackets would be appreciated by many patients, but clinicians must be aware that polymeric wires do not respond like metal wires. The observed viscoelastic behavior means that placing a single straight wire will not fully align all brackets—the wire may need to be removed and straightened (or replaced) to continue force application. Additionally, bends in the wire must be placed with caution, since they will tend to straighten. The authors suggest that over-bending and then bending back to the desired shape can help reduce this tendency. Whether these wires will become clinically useful is yet to be seen. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Esthetic Archwires, Polyphenylene, Viscoelasticity, Material Properties

Print Tag: Refer to original journal article

What Is the Effect of pH Levels on Non-Latex Vs Latex Interarch Elastics?

The Effect of pH Levels on Nonlatex vs Latex Interarch Elastics.

Sauget PS, Stewart KT, Katona TR:

Angle Orthod 2011; 81 (November): 1070-1074

There is no significant correlation between salivary pH level and force decay between latex and non-latex elastics.

Background: In some situations, orthodontic patients can be allergic to latex. If these patients need to wear intermaxillary elastics, the orthodontist must avoid latex elastics. There are non-latex elastics available, but do these perform as well in terms of their force decay in different pH levels of saliva?

Objective: To determine the force decay characteristics of non-latex versus latex elastics in different ranges of salivary pH levels.

Design: Laboratory study.

Methods: 2 brands of non-latex elastics and 1 brand of latex elastics were compared, and these were divided into various groups. The elastics were stretched for 15 mm. This stretching lasted for 10 seconds, 4 hours, 8 hours, or 12 hours. In addition, the groups were divided into 5.0, 6.0, or 7.5 pH levels of artificial saliva. They were submerged in this artificial saliva during the stretching time periods. After each of these time intervals, the force decay of the elastics was measured. The authors wanted to determine if time or pH level had an effect on force decay differences between latex and non-latex elastics.

Results: There were no statistically significant differences between latex and non-latex elastics with respect to force degradation over time and at different salivary pH levels.

Conclusions: Latex and non-latex elastics perform equally well at different salivary pH levels and over time.

Reviewer's Comments: This study was fairly convincing. In addition, the authors did mention that their results could have been influenced by the tremendous variations in the sizes, deformities, and irregularities that are present among commercially available non-latex and latex elastics. The authors mentioned that the manufacturers should have a better method of making more uniform elastics. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: Elastics, Non-Latex Elastics, Force Decay, Salivary pH Levels

Print Tag: Refer to original journal article

Obesity Affects Average Tongue Size and Arch Dimensions

Difference in Dental Arch Size Between Obese and Non-Obese Patients With Obstructive Sleep Apnoea.

Maeda K, Tsuiki S, et al:

J Oral Rehabil 2012; 39 (February): 111-117

Obese patients with sleep apnea were found to have significantly larger tongue sizes and dental arch widths when compared to matched, non-obese patients with the same disease severity.

Background: With our growing awareness of obstructive sleep apnea (OSA), it is important to recognize risk factors that may influence orthodontic treatment, such as obesity and tongue size.

Objective: To compare dental arch size and tongue size in obese and non-obese OSA patients.

Design: Case-control study.

Participants: 23 obese (body mass index [BMI] >25 kg/m2) Japanese males (mean 36.5 years) with OSA were matched with 23 non-obese (BMI <25 kg/m2) Japanese males (mean age 39.0 years) with OSA. Patients with prior otolaryngeal surgery, orthodontic treatment, severe periodontitis, unclear records, or missing teeth essential for dental width measurements were not included in this study.

Methods: Study models were taken on all patients. The maxillary and mandibular dental width was measured from first premolar to first premolar, and dental length was measured from the incisal edge of the central incisor to a line connecting the distal surfaces of the first molars. Lateral cephalograms were also taken on all patients. The tongue size was measured using the visible cross-sectional area bounded by the tongue tip, retrognathion, hyoid bone, and base of the epiglottis. Twenty sets of records were re-examined to confirm intra-rater reliability.

Results: No significant differences in severity of OSA, patient demographics, or skeletal pattern were found between the obese and non-obese group. However, the obese group had a significantly larger tongue area (36.8 cm2 vs 34.3 cm2), maxillary arch width (30.6 mm vs 29.0 mm), and mandibular arch width (28.5 mm vs 27.7 mm). Increased dental arch widths may help reduce the impact of the enlarged tongue on OSA.

Conclusions: Obese Japanese males were found to have increased tongue size and dental arch widths compared to matched, non-obese Japanese males.

Reviewer's Comments: Interestingly, the tongue cross-sectional area in obese patients was enlarged even without considering the transverse dimension (which included widened dental arches). A 3D cone-beam CT study may therefore find a more dramatic increase in size if tongue volume was measured. This case-control study design only highlights an association between obesity and dental arch width, not a cause and effect relationship. Even without further knowledge about causality, I would avoid any reduction in arch width in these patients. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Obstructive Sleep Apnea, Tongue, Dental Arch, Cephalogram

Print Tag: Refer to original journal article

2-Phase Tx on Deep Overbite Correction May Not Be as Efficient as 1 Phase

Outcomes of Two-Phase Orthodontic Treatment of Deepbite Malocclusions.

Franchia L, Baccetti T, et al:

Angle Orthod 2011; 81 (November): 945-952

Two-phase treatment of deep anterior overbite only results in a modest difference when evaluated 1 year following the second phase of orthodontic treatment compared to controls who had no treatment.

Background: 2-phase orthodontic treatment is becoming less popular. Randomized controlled trials have shown that for treatment of Class II, division 1 malocclusions there is little difference when comparing 2-phase and 1-phase treatment. Although correction of posterior crossbite should probably be done in 2 phases, what about correction of deep anterior overbite? Is it more efficient to perform overbite correction in 2 phases when assessing the patient 1 year after completion of the second phase of treatment compared to a control group?

Objective: To compare a sample of subjects who had 2-phase treatment of deep anterior overbite with a control group of subjects with deep overbite who were untreated.

Design: Prospective trial comparing a control and treated group.

Participants/Methods: 58 subjects participated in the treated sample and were treated consecutively using a first phase of treatment to reduce overbite by proclining maxillary and mandibular incisors. The control group simply had cephalometric radiographs taken at different time intervals. After a second phase of treatment had been completed, the authors gathered a third set of cephalometric radiographs 1 year after completion of the second phase of treatment. The authors compared the amount of overbite between the 2 groups.

Results: The results of this study showed that the overall overbite reduction in the treated group was 1.9 mm when compared to the control group. This was only a modest difference in overbite correction between the 2 groups. The authors also found that the method of correcting the overbite in the 2-phase treatment group was primarily by incisor proclination.

Conclusions: Deep overbite correction using 2-phase treatment only results in a modest difference of slightly less than 2 mm 1 year after completion of 2-phase treatment compared to controls.

Reviewer's Comments: This is another study that has shown that 2-phase treatment may not be as efficient as 1 phase of treatment for correcting deep anterior overbite. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: Deep Overbite, 2-Phase Orthodontic Treatment

Print Tag: Refer to original journal article

Nonsurgical Tx of an Extremely Difficult Class III Patient With a Lateral Openbite

Nonsurgical Treatment of a Class III Patient With a Lateral Open-Bite Malocclusion.

Bilodeau JE:

Am J Orthod Dentofacial Orthop 2011; 140 (December): 861-868

Rapid maxillary expansion appliances and implants can be used to provide anchorage for patients with multiple missing teeth.

Objective: To describe the treatment of a 15.3-year-old white girl with a skeletal Class III malocclusion with multiple congenitally missing teeth and a severe lateral open bite.

Design: Case report. **Case Discussion:** The patient had a posterior open bite, multiple missing teeth, edge-to-edge anterior occlusion, and a posterior crossbite. Any one of these factors would make orthodontic treatment difficult; however, the combination of all of them makes treatment incredibly difficult. The patient was offered a combined orthodontic surgical treatment plan initially, which the parents adamantly refused to do. Both maxillary right premolars were congenitally missing and the maxillary canine had erupted against the mesial of the maxillary right first molar. In addition to the bilateral posterior open bites, the anterior teeth had edge-to-edge occlusion only on the maxillary central incisors. The patient was treated by extracting the mandibular second primary molars and using a hook-on straight-pull headgear to retract the mandibular anterior teeth and premolars, which were in a Class III occlusion. Rapid maxillary expansion was used to correct the posterior crossbite and was left in place to provide anchorage to move the maxillary right canine that was against the first molar into a normal Class I position. When this was accomplished, the space between the maxillary canine and first molar was too large for a single implant and too small for 2 implants. To correct this, an implant was placed in the maxillary right first premolar area, and when it integrated it was used as anchorage to complete the mesial movement of the maxillary right first molar. One-year post-treatment records are presented that show the facial and dental corrections that were achieved to be stable.

Conclusions: The information in this case report demonstrated the use of basic biomechanical and anchorage principles to achieve an excellent result in an extremely difficult malocclusion.

Reviewer's Comments: I strongly encourage you to read this case report article in detail because there is no way that I can reasonably explain all the extremely challenging problems presented in this case. The treatment results achieved were outstanding and stable 1 year post-treatment. Any one of the number of problems presented in this case would have made treatment difficult, and the combination of all of them made it almost impossible to treat. (Reviewer-John S. Casko, DDS, MS, PhD).

Keywords: Lateral Open Bite, Nonsurgical Treatment

Print Tag: Refer to original journal article

Surface Conditioning of Abrasive Particles Improves Shear Bond Strength to Ceramics

Effects of Surface-Conditioning Methods on Shear Bond Strength of Brackets Bonded to Different All-Ceramic Materials.

Saraç YS, Külünk T, et al:

Eur J Orthod 2011; 33 (December): 667-672

Surface conditioning with Al_2O_3 particles modified by silica as opposed to standard Al_2O_3 abrasion nearly doubles shear bond strength to various ceramic surfaces.

Background: With the increase in adult orthodontic treatment, bonding to porcelain surfaces has become commonplace. Obtaining adequate bond strength can be problematic, but can be improved by techniques that increase micromechanical retention, such as air abrasion.

Objective: To compare the shear bond strength of bonding to ceramics using either standard Al_2O_3 air-particle abrasion or Al_2O_3 particles modified by silica.

Design: Laboratory study.

Methods: 3 different all-ceramic materials were tested: feldspathic (Vitadur Alpha); fluoro-apatite (IPA Eris layering material); and leucite-reinforced (IPA Empress Esthetic). For each material, 20 specimens were conditioned using air abrasion with 25-µm Al_2O_3 particles and 20 specimens were conditioned using air abrasion with 30-µm Al_2O_3 particles with a tribochemical silica coating. This coating provides chemical bonding sites as well as the micromechanical retention. For all specimens, silane was applied, followed by Transbond XT primer. A central incisor bracket was bonded to the surface using Transbond XT composite. After thermocycling, shear bond strength testing was performed.

Results: Statistically significant differences were found in bond strength based on both ceramic material and the method of surface-conditioning. Standard air-particle abrasion showed significantly lower bond strengths when compared to air abrasion particles modified by silica for all ceramic materials: fluoro-apatite (11.8 MPa vs 22.2 MPa), feldspathic (13.6 MPa vs 23.5 MPa), and leucite-reinforced (14.8 MPa vs 24.2 MPa). Failure occurred at the ceramic-adhesive interface in all cases, with no observed ceramic fractures.

Conclusions: Air abrasion with Al_2O_3 particles modified by silica significantly increases shear bond strength when bonding to ceramics compared to standard Al_2O_3 particles.

Reviewer's Comments: The shear bond strength for all ceramics and both air abrasion methods were acceptable for use in clinical orthodontics using the common recommended minimum of 6 to 8 MPa. In fact, if anything, the dramatic increase in bond strength should be treated with caution, as bracket removal following treatment may become more difficult and more prone to ceramic fracture. In problem situations, the use of silica-coated particles as opposed to standard Al_2O_3 particles may be an excellent way to improve bond strength since no additional time is required. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Ceramic Bonding, Shear Bond Strength, Air-Particle Abrasion, Silica Coating

Print Tag: Refer to original journal article

Impact of Different Retainers on Periodontal Health

Impact of Orthodontic Retainers on Periodontal Health Status Assessed By Biomarkers in Gingival Crevicular Fluid.

Rody WJ Jr, Akhlaghi H, et al:

Angle Orthod 2011; 81 (November): 1083-1089

Fixed and removable retainers have different effects on the inflammatory constituents within the gingival crevicular fluid.

Background: There are distinct differences between mandibular retainer types. One common type is a mandibular lingual fixed bonded retainer; the other is a removable retainer. Typically, these are chosen because of the preference of the orthodontic clinician. But, do these different retainers have different potential impacts on periodontal health as measured by inflammatory constituents within the gingival crevicular fluid?

Objective: To determine whether the constituents of the gingival crevicular fluid indicating inflammatory processes are different in patients wearing removable or fixed retainers.

Design: Retrospective study.

Participants/Methods: 3 groups of patients were assembled. One group had been wearing a fixed mandibular lingual bonded retainer, another group had been wearing a removable retainer, and a third group did not have any retainer. The plaque index, probing pocket depth, and bleeding index were assessed for each of these groups. In addition, on the lingual of the mandibular left central incisor and the lingual of the mandibular left first premolar, gingival crevicular fluid samples were harvested in order to determine the presence of inflammatory constituents within the gingival crevicular fluid.

Results: The results of this study showed that the lingual of the mandibular incisors showed elevated levels of specific inflammatory factors and constituents within the gingival crevicular fluid that were different than those found in the removable retainer group. On the other hand, there were other inflammatory constituents found in the lingual of the mandibular first premolar sites in those subjects wearing removable mandibular retainers.

Conclusions: The specific retainer type does affect the presence of inflammatory mediators in the gingival crevicular fluid in orthodontic patients differently.

Reviewer's Comments: Although this study provides some interesting information, the sample sizes were dreadfully small. There were only 10 subjects in each group. It would be interesting if these authors continued to gather a larger sample in the future to determine the importance or validity of their findings. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: Periodontal Health, Retainers, Gingival Crevicular Fluid

Print Tag: Refer to original journal article

Advances in Information Sharing -- Not All of It Is Accurate or Fair

Dealing With Negative Publicity.

Levin RP

70-71

Be aware of what is being said about your practice by constantly monitoring social media and rating websites.

Background: Communication is rapidly changing and patients are using social media and rating websites to exchange information on a daily basis. If a negative comment is made about your practice on one of these websites, how should you deal with it?

Objective: To discuss how to deal with negative publicity about your practice. **Discussion:** In this era of social media and rating websites, anyone can post a negative comment about your practice, and a single negative comment can spiral out of control and look like a landslide. How do you deal with negative publicity? In this article, Dr. Levin suggests 4 ways to deal with negative publicity about your practice. He suggests that you first and foremost try to avoid negative publicity by having a formal system in place in your practice to provide patients an opportunity to express how satisfied they are about your practice or if they have had a negative experience. Be aware of what is being said about the practice. This means that you or someone on your staff needs to monitor the social and rating websites so that if something negative is said about your practice you are aware of it as soon as it occurs. If that happens, try not to act defensively. Dr. Levin notes that aggressively challenging negative publicity or the people who created it seldom works. It simply makes you appear defensive. He suggests to respond to negative publicity by using excellent public relations. A low-key humble response to a patient who is dissatisfied with something in your practice can be made by simply stating that you are sorry for whatever happened and that you and your practice strive to achieve excellence in both orthodontic results and patient relations.

Conclusions: Orthodontists have a legitimate reason to be concerned about negative publicity and should have a plan to deal with it if it occurs.

Reviewer's Comments: I thought this was an excellent, timely, and practical article. The old adage about a happy patient telling one other person and an unhappy patient telling 20 other people about their experiences is blown up exponentially in this era of social media and rating sites. There is probably no way to prevent somebody who wants to make a negative comment about your practice from publishing it on one of these sites. However, as Dr Levin points out, it is critical that you know about any negative comments as soon as they occur and have a game plan in place for responding to them. (Reviewer-John S. Casko, DDS, MS, PhD).

Keywords: Negative Publicity, Response

Print Tag: Refer to original journal article

Have You Thought About a 3-Segment Technique for SARME?

Advantages and Limits of 3-Segment (Paramedian) Versus 2-Segment (Median) Surgically Assisted Rapid Maxillary Expansion (SARME).

Landes CA, Laudemann K, et al:

Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2012; 113 (January): 29-40

Performing a 3-segment osteotomy for surgically assisted rapid maxillary expansion can provide more expansion with a higher degree of symmetry, while preserving the esthetics of the midline papilla.

Background: Surgically assisted rapid maxillary expansion (SARME) is frequently performed in patients with transverse maxilla hypoplasia and a closed palatal suture. Traditionally, a 2-segment osteotomy is performed, opening a diastema at the midline during expansion.

Objective: To compare the outcomes of a 3-segment osteotomy technique with a traditional 2-segment osteotomy during SARME.

Design: Observational study in which data were collected both retrospectively and prospectively.

Participants: 81 patients (mean age 24 years) were treated for transverse maxillary hypoplasia between 2003 and 2009. During that period, 98 patients were treated, but 17 had missing data or changes in treatment plans.

Methods: Of 81 patients, 24 had a 3-segment osteotomy performed (surgical cuts distal to lateral incisors), while 57 had a 2-segment osteotomy (surgical cut between central incisors). In all cases, surgical cuts were made under general anesthesia, including osteotomies of the sinus wall at the LeFort I level and of the pterygoid processes. Bone-borne distractors were placed in 13 of the 3-segment osteotomy cases and 17 of the 2-segment osteotomy cases. The remaining cases received tooth-borne distractors. The following protocol was used for distractor activation: 5-day latency period, 0.5 to 0.6 mm per day activation to ideal width, and 2.5-month consolidation period. Models were taken both pretreatment and an average of 21 months post-surgery to determine expansion and tipping. In 47 cases, the pink esthetic score (PES) was used to evaluate soft tissue esthetics from casts and photographs.

Results: Proper expansion and good wound healing was seen in 53 of 81 patients. The 3-segment osteotomy cases generally provided a higher degree of expansion and more symmetrical expansion; however, more dental tipping occurred compared to 2-segment osteotomy cases. PES measurements were higher in the 3-segment osteotomy group, likely due to the lack of a midline incision.

Conclusions: 3-segment osteotomy combined with SARME led to more symmetric expansion with better midline esthetics compared to a traditional 2-segment technique.

Reviewer's Comments: I believe it makes sense to place osteotomy cuts further posterior if possible to avoid papilla damage. Additionally, it makes sense that multiple cuts may increase the expansion and possibly increase stability. Overall, I am intrigued by the technique, but disappointed at the finding that only 53 of 81 patients overall had ideal expansion without complication. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Surgically Assisted Rapid Maxillary Expansion, SARME, 3-Segment, 2-Segment, Treatment Outcomes

Print Tag: Refer to original journal article

Daily Flossing Leads to Improved Periodontal Health in Orthodontic Patients

Association Between Dental Floss Use and Gingival Conditions in Orthodontic Patients.

Zanatta FB, Moreira CH, Rösing CK:

Am J Orthod Dentofacial Orthop 2011; 140 (December): 812-821

Flossing regularly during orthodontic treatment and removing excess resin around orthodontic brackets improves periodontal health.

Background: Maintaining excellent periodontal health in orthodontic patients is a challenge. If your patients flossed daily, would it improve their overall periodontal health?

Objective: To determine if orthodontic patients who floss regularly are likely to have improved periodontal health versus those who do not.

Participants: 330 orthodontic patients who had been in treatment for at least 6 months.

Methods: Plaque and gingival indices were performed, and probing pocket depths, clinical attachment loss, and bleeding on probing were also assessed. Additionally, excess resin around the brackets was recorded. After clinical examination, all subjects were interviewed to gather demographic, socioeconomic, and oral health-related data by using a structured written questionnaire. The primary individual variable that was evaluated was the recorded frequency of dental flossing reported in the questionnaire. Statistical analysis was performed to relate the questionnaire data to the results of the periodontal evaluation.

Results: Patients who did not floss regularly had a higher incidence of periodontal problems. The same held true for patients who had a lower socioeconomic status. Additionally, teeth that had excess resin remaining around the orthodontic brackets had a higher incidence of gingivitis and periodontal breakdown.

Conclusions: Flossing regularly during orthodontic treatment and removing excess resin around orthodontic brackets improves periodontal health.

Reviewer's Comments: I thought this was a well-conducted study with a good sample size, and I did not find the results to be surprising. The conclusions of this study should motivate patients to go through the extra effort of flossing during orthodontic treatment, and orthodontists to take the extra effort to make sure there is no excessive resin remaining around brackets after bonding. It would have been interesting to see if the results of this 6-month study held up long-term. (Reviewer-John S. Casko, DDS, MS, PhD).

Keywords: Flossing, Periodontal Problems

Print Tag: Refer to original journal article

Admission Procedures for Orthodontic Residents in the U.S. Vary Significantly

Applicant Selection Procedures for Orthodontic Specialty Programs in the United States: Survey or Program Directors.

Galang MT, Yuan JC, et al:

Am J Orthod Dentofacial Orthop 2011; 140 (December): 822.e4-827.e4

While the requirements for admission to advanced education programs in orthodontics in the United States vary significantly, all programs require an interview.

Background: How do advanced orthodontic education programs in the United States accept applicants for their program? The answer to this question should be of interest to most orthodontists and particularly to applicants for advanced education programs in orthodontics.

Objective: To evaluate the factors that influence applicant selection in accredited graduate orthodontic programs in the United States from the perspectives of the program directors.

Methods: A 31-item questionnaire regarding admission practices was sent to all orthodontic program directors in the United States. The survey questions were divided into 6 sections, which included general information about the program, applicant materials required for submission, questions related to the interview process, the decision-making process of selecting qualified applicants, and a retrospective view of currently accepted applicants and selection criteria. The responses were statistically analyzed.

Results: The process for admission into advanced education programs in orthodontics in the United States varies significantly. The most consistent aspect of the application process was that all programs required an interview. Interview ratings, letters of recommendation, and dental class rank were the top factors considered for admission. Factors not commonly requested from applicants included on-site oral presentations, dexterity or wire-bending exercises, and orthodontic externships. Orthodontic program directors seem to be searching for aspiring students who are mature with good speaking as well as listening skills. The top 3 qualities sought from applicants are integrity, interpersonal communication skills, and maturity.

Conclusions: While the requirements for admission to advanced education programs in orthodontics in the United States vary significantly, all programs require an interview.

Reviewer's Comments: I found one finding in this study to be of particular interest. In total, 84% of the program directors reported satisfaction with their current selection process. However, only one third reported that they would select all of their current and former residents from the past 5 years again. Only in academia could you have a dichotomy like this. (Reviewer-John S. Casko, DDS, MS, PhD).

Keywords: Applicant Selection Procedures, Orthodontics

Print Tag: Refer to original journal article

It May Not Be Necessary to Use an Occlusal Splint to Treat Myofascial Pain

Evaluation of the Short-Term Effectiveness of Education Versus an Occlusal Splint for the Treatment of Myofascial Pain of the Jaw Muscles.

Michelotti A, Iodice G, et al:

J Am Dent Assoc 2012; 143 (January): 47-53

Education alone can be more effective in treatment of temporomandibular disorder myofascial pain than an occlusal splint.

Background: Myofascial pain is the most common temporomandibular disorder (TMD), and occlusal splints are the most popular treatment modality for TMD. Is it possible that education alone would be as effective as an occlusal splint?

Objective: To compare the effectiveness of an education program versus an occlusal splint in treating myofascial pain of the jaw muscles.

Design: Randomized, controlled clinical trial.

Participants: 44 consecutively seen patients with myogenous TMD.

Methods: The subjects were randomly assigned to 2 treatment groups. The first group received information regarding the nature of TMD and self-care measures. The second group received an occlusal splint as the only treatment. Patients were evaluated every 3 weeks during a 3-month treatment period. The outcomes that were measured included pain-free maximal mouth opening, spontaneous muscle pain, pain during chewing, and headache.

Results: Changes in spontaneous muscle pain differed significantly between treatment groups, with reduced pain levels found only in the education group during the 3-month period. There was no significant difference between the 2 groups when pain-free mouth opening, headache, and pain during chewing were evaluated.

Conclusions: Education alone can be more effective in treatment of TMD myofascial pain than an occlusal splint.

Reviewer's Comments: This was a very interesting study. I believe it would have been improved with the inclusion of a third group as a placebo group. It would also be interesting to see if these short-term results held up long-term. The results were not surprising to me because of all the evidence that has been published that placebo treatment often is as effective as different modalities of treatment for TMJ pain. (Reviewer-John S. Casko, DDS, MS, PhD).

Keywords: Education, Splint, Myofascial Pain, Treatment

Print Tag: Refer to original journal article

Miniplates Are Highly Successful, Stable

Success Rate of Miniplate Anchorage for Bone-Anchored Maxillary Protraction.

De Clerck E, Swennen GR:

Angle Orthod 2011; 81 (November): 1010-1013

Miniplates placed for use in maxillary protraction have a 97% success rate after 2 years.

Background: Maxillary protraction is a common treatment for Class III malocclusion; however, the typical maxillary protraction uses teeth as the anchors to protract the maxilla. In this situation, the teeth will typically tip. Miniplates can be used to deliver force without attaching to the teeth. These miniplates are placed in the mandible and in the maxilla, but are these stable with time?

Objective: To evaluate 25 consecutive patients with an average age of 12 years who had maxillary hypoplasia, and had miniplates placed in the maxilla and mandible to facilitate maxillary protraction.

Design/Methods: This was a consecutive sample that was followed for nearly 4 years. Four miniplates were placed, 2 each in the maxilla and 2 each in the mandible. The majority were placed under general anesthesia. They were allowed to remain in place without a protraction force until an average of about 2 weeks after surgery. Then, a force of 150 grams was placed on the miniplates using elastics. The miniplates were left intraorally for an average of 20 months.

Results: The results of this study showed that the failure rate for the 100 miniplates that were placed was 3%. Three of 100 miniplates had to be repositioned. These were replaced using local anesthesia, and the second placement was successful. Therefore, the success rate for miniplates in this experiment was very high at 97%.

Conclusions: Miniplates are highly successful and stable when placed, with a failure rate of only 3%, and can be used successfully for maxillary protraction over for 2 to 4 years.

Reviewer's Comments: I was not doubtful that miniplates would be successful. When they are placed, they usually have a series of 3 screws holding each miniplate, so if 1 screw loosens, the other 2 will be able to maintain the miniplate in position. This study has shown that to be true. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: Miniplates, Maxillary Protraction

Print Tag: Refer to original journal article

Platelet-Rich Fibrin Improves Treatment of 3-Wall Intrabony Defects

Treatment of Three-Wall Intrabony Defects in Patients With Chronic Periodontitis With Autologous Platelet-Rich Fibrin: A Randomized Controlled Clinical Trial.

Sharma A, Pradeep AR:

J Periodontol 2011; 82 (December): 1705-1712

Platelet-rich fibrin added to the treatment of 3-wall periodontal defects results in significantly greater improvement in periodontal attachment and reduction in pocket depth compared to a control group.

Background: 3-wall periodontal defects are commonly found in periodontal patients with advanced periodontal disease. In the past, these defects were treated with open-flap debridement in addition to regenerative therapy by adding freeze-dried demineralized bone graft material. It has been shown that platelet-rich fibrin stimulates attachment gain in some periodontal defects. Could platelet-rich fibrin be used to improve the treatment results for patients with 3-wall bony defects?

Objective: To compare the treatment of 3-wall intrabony defects with either open-flap debridement alone, or open-flap debridement and the addition of platelet-rich fibrin.

Design/Methods: This was a prospective, randomized controlled trial. A total of 56 intrabony defects were treated with 1 of 2 techniques: open-flap debridement or open-flap debridement and the introduction of platelet-rich fibrin. Prior to and 9 months postoperatively, the authors compared the pocket depth and periodontal attachment levels between the 2 groups.

Results: The results of this study showed that the pocket depth reduction was significantly greater in the test group compared with the control group. In addition, the periodontal attachment gain was greater in the group treated with the platelet-rich fibrin compared to the control group. Finally, there was a significantly greater percentage of bone fill in the test group compared to the open-flap debridement-only group.

Conclusions: In this small pilot study, platelet-rich fibrin seems to be a significant improvement in treating 3-wall intrabony defects in humans.

Reviewer's Comments: The authors did mention that this was a pilot study. Their sample size was relatively small. This study should be redone with a larger sample size, and perhaps a multicenter study design to verify the findings that these authors have reported. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: 3-Wall Periodontal Defects, Platelet-Rich Fibrin, Open-Flap Debridement

Print Tag: Refer to original journal article

Upper Airway Length Decreases as a Result of Maxillomandibular Advancement

Upper Airway Length Decreases After Maxillomandibular Advancement in Patients With Obstructive Sleep Apnea.

Susarla SM, Abramson ZR, et al:

J Oral Maxillofac Surg 2011; 69 (November): 2872-2878

The decrease in upper airway length due to maxillomandibular advancement results in a subjective improvement in breathing in patients with obstructive sleep apnea.

Background: For patients with severe obstructive sleep apnea, maxillomandibular advancement is a possibility. This type of procedure has been performed for at least 2 decades with considerably good results. Postoperative evaluations of these types of patients using cephalometric radiographs typically have measured the anatomic posterior airway space. However, little assessment has been made of upper airway length (hyoid bone to posterior nasal spine measured cephalometrically).

Objective: To assess the difference in upper airway length in subjects who had maxillomandibular advancement surgery.

Design/Methods: This was a retrospective cohort study. A sample of 23 subjects underwent maxillary and mandibular advancement surgery. The distance from the hyoid bone to the posterior nasal spine, or the upper airway length, was measured before and after the double jaw surgery.

Results: When the authors compared the pre-and postoperative upper airway lengths for these patients, the amount decreased significantly. In addition, the authors found that the average pre- and postoperative respiratory disturbance indices also decreased significantly.

Conclusions: Maxillomandibular advancement surgery results in a significant decrease in upper airway length as measured by cephalometric radiographs, which results in a subjective improvement for breathing in patients with obstructive sleep apnea.

Reviewer's Comments: The measurement of upper airway length is deceiving. It actually refers to a vertical distance that significantly changes when the maxilla and mandible are both advanced anteriorly. This certainly changes during this type of surgical procedure in patients with obstructive sleep apnea, and perhaps plays a role in the opening of the airway for many of these individuals following the surgery. (Reviewer-Vincent G. Kokich, Sr, DDS, MSD).

Keywords: Obstructive Sleep Apnea, Upper Airway Length

Print Tag: Refer to original journal article

A New Classification System for Impacted Maxillary Canines

The Impacted Maxillary Canine: A Proposed Classification for Surgical Exposure.

Chapokas AR, Almas K, Schincaglia GP:

Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2012; 113 (2): 222-228

Based on canine position and the amount of attached gingiva, impacted canines can be classified into 1 of 3 groups to help determine proper exposure technique.

Background: Impacted maxillary canines can be treated by a variety of techniques, frequently involving surgical exposure and orthodontic traction. Choosing the proper surgical exposure technique can minimize potential side effects and provide more consistent outcomes.

Objective: To introduce a classification system for impacted maxillary canines to assist with selection of the proper surgical technique.

Design: Literature review and introduction of classification system.

Methods: The authors reviewed previous literature on the epidemiology, diagnosis, and surgical outcomes related to impacted maxillary canines.

Results: The proposed classification system categorizes impacted canines into 3 groups based on canine position. A Class I impacted canine is located palatally, and an open exposure technique with gingivectomy is recommended. Placement of a fixed attachment is suggested to prevent the possibility of a second exposure, but traction should be delayed as spontaneous eruption typically occurs. A Class II impacted canine is centered in the alveolar crest or labially impacted, but not superimposed on the lateral incisor root. In this case, a closed eruption technique using a full thickness flap is recommended. This allows the tooth to erupt through attached tissue, providing better final keratinized tissue around the canine. A Class III impacted canine is located labial to the root. In canines in this position, an apically positioned flap is recommended, preserving attached tissue on both the lateral incisor and canine. Ideal force vectors can more easily be applied due to easy visualization of the canine crown.

Conclusions: This proposed classification divides impacted canines into 3 groups and provides guidelines for the recommended surgical exposure techniques.

Reviewer's Comments: Although the article provides good general guidelines, be cautious when breaking impacted canines down into only 3 categories. Just as an orthodontic diagnosis of Class I, II, or III cannot provide a full treatment plan, canine exposure techniques should be carefully considered. For example, a full open exposure may not be indicated for a palatal canine dangerously close to a lateral incisor root, and a gingivectomy may be preferred for some canines on the buccal with more than adequate attached tissue. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Impaction, Maxillary Canines, Exposure, Surgical Techniques

Print Tag: Refer to original journal article

No Ideal Guidelines Exist for Prevention, Management of Ankylosis of the TMJ

Pathogenesis of Post-Traumatic Ankylosis of the Temporomandibular Joint: A Critical Review.

Arakeri G, Kusanale A, et al:

Br J Oral Maxillofac Surg 2012; 50 (January): 8-12

Temporomandibular joint ankylosis appears more likely in patients not compliant with physical therapy after trauma or after surgical treatment of ankylosis.

Background: Bony ankylosis of the temporomandibular joint (TMJ) occurs infrequently, but can have a profound negative influence on quality of life.

Objective: To review current literature on the pathogenesis of TMJ ankylosis.

Design: Literature review. **Discussion:** No formal guidelines for systematic article selection were provided in the article. Complete ankylosis of the TMJ is defined by <5 mm of interinsical opening. The most commonly cited cause of TMJ ankylosis is trauma, but infection (eg, otitis media, mastoiditis, tuberculosis, gonorrhea) and systemic disease (eg, ankylosing spondylitis, rheumatoid arthritis, psoriasis) are also cited as possible causes. Antegonial notching and mandibular bony distortion are common findings, along with arrested condylar growth. Methods of treatment greatly vary, including gap arthroplasty, interpositional arthroplasty, and excision of the ankylotic mass. No method consistently produces successful results, with lack of aggressive physiotherapy, poor compliance, and inadequate surgical mobilization cited as the most common reasons for recurrence of ankylosis. Some studies hypothesize that complete removal of the ankylotic mass leads to formation of a dense fibrotic bridge that limits movement during healing, so conservative surgeries are recommended. Formation of an intra-articular hematoma following trauma may potentially create ankylosis but doesn't always give rise to bone formation. Some authors cite damage to the meniscus as playing a prime role in ankylosis, but cases of ankylosis occur following trauma in children with an intact meniscus or occur after placement of an ideal interpositional graft. A few studies compare the mechanism of ankylosis to that of distraction osteogenesis or fracture healing, but this may be inappropriate as no exposed bony edges are present during ankylosis. Finally, the incidence of ankylosis is increased in developing countries, which may be due to the effects of malnutrition.

Conclusions: No clear consensus exists on the etiology or management of TMJ ankylosis, although a variety of hypotheses exist.

Reviewer's Comments: Since these cases are rarely seen, especially in the orthodontic office, it is useful to have an updated summary of research on this condition. Aggressive physical therapy seems prudent following trauma or treatment for existing ankylosis. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Temporomandibular Joint, Ankylosis, Review

Print Tag: Refer to original journal article

Do We Overestimate the Risk of Overeruption of Unopposed Molars in Adults?

Changes in Molar Position Associated With Missing Opposed and/or Adjacent Tooth: A 12-Year Study in Women.

Lindskog-Stokland B, Hansen K, et al:

J Oral Rehabil 2012; 39 (February): 136-143

Over 12 years, unopposed molars erupted an average of 0.9 mm and had nearly 5 times the risk of >2 mm of overeruption compared to molars in occlusion.

Background: With more adult patients seeking treatment, clinicians commonly see patients with unopposed molars.

Objective: To examine long-term changes in molar position when the molar is either unopposed or adjacent to a mesial edentulous space.

Design: Longitudinal study.

Participants: This study was comprised of 292 participants (initially in a 50-year-old age group) from a prospective population study of Swedish women initiated in 1968. Cases with either an unopposed molar or a molar with a mesial edentulous space were included, leaving 102 patients with 169 molars to be analyzed.

Methods: Initial panoramic radiographs were compared to panoramic radiographs taken after a 12-year period. Overeruption was measured on the radiograph as a linear distance to the inferior border of the mandible for mandibular molars and as a distance to a line connecting the zygomatic process to the anterior nasal spine in the maxilla. Inclination of the molars was measured as an angle to the same reference lines in the maxilla and mandible. Alveolar bone height and amount of edentulous space were also measured. Repeated measurements were performed on 20 subjects, finding a combined method error no greater than 3.5% for overeruption and 2.8° for tipping.

Results: More maxillary molars were found to be unopposed, while more mandibular molars had a mesial edentulous space. The average overeruption of an unopposed molar was 0.9 mm, with 20.7% of molars overerupting >2.0 mm, a 5 times greater risk than opposed molars. The degree of overeruption significantly increased in cases with initial alveolar bone loss. The average tipping of molars with a mesial edentulous space was 0.8°, with 17.9% of molars tipping >5.0° and only 1.8% tipping >10.0°.

Conclusions: Unopposed molars have an increased risk of overeruption over a 12-year period, but minimal mesial tipping was seen in molars with a mesial edentulous space.

Reviewer's Comments: It is difficult to rely on the exact numbers in this study, as precise measurements are difficult from a panoramic radiograph, and the combined method error was larger than the average changes in many categories. However, I was struck by how little change was seen on average. Perhaps I see a biased sample of patients in orthodontic practice, since people seeking treatment may be the ones having more problems with overeruption or tipping. (Reviewer-Brent E. Larson, DDS, MS).

Keywords: Overeruption, Elongation, Tipping, Adult Women, Molars, Bone Level

Print Tag: Refer to original journal article