

How Does Surface Treatment Affect Resistance to Orthodontic Loading of Mini-Implants?

Resistance to Immediate Orthodontic Loading of Surface-Treated Mini-Implants.

Mo S-S, Kim S-H, et al:

Angle Orthod 2010; 80 (1): 123-129

A sandblasted and acid-etched surface of a mini-implant provides greater resistance to removal immediately after placement compared to machined implant surfaces.

Background: Many different types of mini-implants are available. The differences between these implants usually relate to the shape, length, and variety of attachments. However, most mini-implants have a smooth or machined surface. Traditional dental implants have a sandblasted or acid-etched surface to enhance osseointegration. Would it be better for stability if mini-implants had a rough surface?

Objective: To determine the effect of immediate orthodontic loading on the stability and resistance of surface-treated titanium mini-implants.

Design/Methods: This was a carefully choreographed animal study in which 412 mini-implants were placed in the tibiae of 44 rabbits. Half of the implants had a machined surface, and the other half had a sandblasted or acid-etched surface. After placement of the mini-implants, they were either loaded or left unloaded. In addition, the removal torque values of the implants were tested immediately after placement 3 days after placement, and 1, 6, and 10 weeks after placement. These values were compared between the rough surface and smooth surface implants.

Results: After 10 weeks, there were no statistically significant differences between the removal torque value of the loaded or unloaded mini-implants in either the smooth or rough surface groups; however, immediately after placement, there was greater removal torque value for the rough surface implant compared to the smooth surface.

Conclusions: Either type of surface of a mini-implant can be used for implant anchorage; however, if one tends to load the implant immediately, a rough surface implant could provide better immediate stability than the machined-surface implants.

Reviewer's Comments: This is valuable information for orthodontists who typically use mini-implants for orthodontic anchorage. We tend to load these implants immediately, so it may be beneficial to use a rough surface implant in these situations. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Implant Surface Treatment

Print Tag: Refer to original journal article

Miniscrews That Penetrate Root Surfaces During Placement Do Not Usually Cause Significant Damage

Root and Pulp Response After Intentional Injury From Miniscrew Placement.

Renjen R, Maganzini AL, et al:

Am J Orthod Dentofacial Orthop 2009; 136 (November): 708-714

Permanent damage to the pulp and supporting tissues is not a regular occurrence when miniscrews abrade or even enter the root surface.

Background: More miniscrews are being placed by orthodontists to provide a form of noncompliance anchorage. If you placed a miniscrew that abrades or enters a root surface, what consequences or sequelae can be expected? It is important to be able to answer this question.

Objective: To evaluate the histological response of the dental attachment apparatus and pulp when miniscrews are intentionally placed in contact with or in roots.

Design: The sample for this animal study consisted of 3 beagle dogs.

Methods: 20 self-tapping miniscrews were placed in each of the 3 dogs between the premolars and molars. Radiographs were taken before and after miniscrew placement. After 12 weeks, the dogs were sacrificed. Based on the radiographs that were taken, 20 sites that were most likely to have root penetration were identified and subjected to microcomputed tomography scans.

Results: In each instance, evidence of continuous cementum repair was seen along the injured root surface. Only in cases of severe injury with displacement of root fragments was ankylosis noted. There was no evidence of root resorption, inflammatory infiltrate, or necrosis in the pulp tissue or on the injured root surfaces. Woven bone was present along the miniscrew threads.

Conclusions: Permanent damage to the pulp and supporting tissues is not a regular occurrence when miniscrews abrade or even enter the root surface.

Reviewer's Comments: The results of this study provide good news for the orthodontist. The only incidence that had a negative effect was when a miniscrew penetrated the root surface to the extent that it split the root. Because an orthodontist placing a miniscrew would most likely feel a significant change in resistance if root structure was contacted, this is not likely to occur clinically. (Reviewer-John S. Casco, DDS, MS, PhD).

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Keywords: Root & Pulp Response, Miniscrew Injury

Print Tag: Refer to original journal article

Can Occlusal Equilibration Reduce Treatment Requests for Head and Neck Pain?

Health Risk From Occlusal Interferences in Females.

Kirveskari P, Jämsä T:

Eur J Orthod 2009; 31 (): 490-495

Although most recent research has not demonstrated a strong association between occlusal interferences and TMD, this study found fewer subjects seeking treatment for head and neck pain after receiving occlusal equilibration.

Background: The effectiveness of occlusal adjustment in the management or prevention of temporomandibular disorders (TMDs) has been questioned in recent literature reviews. However, many clinicians still feel there is therapeutic benefit to an ideal occlusal relationship.

Objective: To test the effectiveness of occlusal adjustment (removal of occlusal interferences) in preventing treatment requests for head and cervicobrachial pain.

Design: Prospective, randomized clinical trial.

Participants: 112 females <45 years of age who had jobs deemed high risk for development of cervicobrachial pain. Participants were randomly divided into a treated (n=54) and untreated group (n=58).

Methods: Occlusal adjustment was performed on the treatment group to achieve bilateral posterior contacts without interferences. Readjustments were made at a second appointment 1 to 3 weeks later to achieve a satisfactory result. Untreated patients had restorations and rough enamel smoothed without adjusting contacts. For a total of 4 years after baseline, patients were recalled yearly to readjust contacts and to complete questionnaires about TMD symptoms.

Results: 11 untreated patients and 2 treated patients sought care for head and cervicobrachial pain. The presence of occlusal interferences was found to have a relative risk of about 5, meaning that patients with occlusal interferences have 5 times the risk of developing TMD symptoms.

Conclusions: While universal occlusal adjustment may not be feasible, ideal occlusal contacts without interferences may reduce the need for treatment in susceptible adult females.

Reviewer's Comments: The authors acknowledge that this study does not determine a cause-and-effect relationship between occlusal interference and head/neck pain, but they seem determined to produce a study showing the effectiveness of occlusal adjustment. The fact that the study was funded by the American Equilibration Society raises further questions about the objective nature of the conclusions. Although I don't want to say the results are not correct, I would like to see independent verification of the results. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: TMJ, TMD, occlusal equilibration

Print Tag: Refer to original journal article

Effect of Soft-Tissue Thickness on Crestal Bone Loss Around Implants

The Influence of Soft Tissue Thickness on Crestal Bone Changes Around Implants: A 1-Year Prospective Controlled Clinical Trial.

Linkevicius T, Apse P, et al:

Int J Oral Maxillofac Implants 2009; 24 (4): 712-719

Thick gingival biotype results in less bone loss around single-tooth implants compared to thin gingival biotype.

Background: Single-tooth implants are commonly used to replace missing teeth. It is well known that bone loss can occur around the head of the implant with time. This can be a problem in the anterior region or in the aesthetic zone. Does the thickness of the gingiva affect the amount of bone loss?

Objective: To test the influence of initial gingival tissue thickness on marginal bone loss around implants.

Design: This was a prospective, controlled clinical trial. A total of 46 implants were placed in 19 patients. Before implant placement, the tissue thickness at all implant sites was measured with a periodontal probe. According to tissue thickness, the sites were divided into either thin or thick groups. The thick group included patients with gingival thickness >2 mm. After 1 year, radiographs were made of the implants to determine the amount of bone loss that occurred. The thick and thin tissue groups were compared.

Results: The mean bone loss around implants placed in subjects with thin gingival biotype was 1.28 mm. The bone loss around implants placed in subjects with thick gingival biotype was 0.26 mm. There was a statistically significant difference in bone loss between thick and thin gingival biotype groups.

Conclusions: Initial gingival thickness at the alveolar crest has a significant influence on marginal bone stability around implants, with greater stability around implants placed in individuals with a thicker gingival biotype.

Reviewer's Comments: This is excellent information for orthodontists and their restorative dentists who are using implants to replace congenitally missing teeth. Those with a thicker gingival biotype may have a greater chance of having more stable bone and tissue heights around the implant crowns long term. That conclusion could be verified by this study. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Bone Loss, Implants

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Is CBCT a Good Tool for Analysis of Human Airway?

Evaluation of the Human Airway Using Cone-Beam Computerized Tomography.

Tso HH, Lee JS, et al:

Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009; 108 (November): 768-776

This pilot study of subjects without known airway problems identified the greatest airway restriction to be at the level of the oropharynx.

Background: As cone-beam CT (CBCT) imaging becomes more routine and available, its usefulness for airway evaluation should be better defined.

Objective: To measure airway dimensions in a small group of normal adults using CBCT.

Design: Retrospective analysis of CBCT images.

Participants: 10 Class I adults (5 males, 5 females) without craniofacial anomalies or known airway issues.

Methods: The airway was segmented from the CBCT volume using thresholds to distinguish air-filled spaces. This airway was isolated from the level of the hard palate to below the epiglottis, and the isolated volume was used for analysis. Measurements of anterior-posterior (A-P) dimension, cross-sectional area, and volume were made. Comparisons were made between the A-P dimension and the cross-sectional area, and the level of the minimal cross-sectional area was determined.

Results: The minimal cross-sectional area for this group of subjects was between 90 and 360 mm². The level of the minimal cross-sectional area varied but was usually in the oropharynx. There was a high correlation between the A-P measurement and the cross-sectional area in this normal group.

Conclusions: CBCT provides a method for airway measurement that successfully measures cross-sectional area and that may have use in screening for obstructive sleep apnea problems.

Reviewer's Comments: The authors demonstrated a systematic method of assessing airway dimensions from CBCT images of humans in the upright position. It is still unclear how subjects with sleep obstruction of the airway would appear in such a scan or whether such a scan could help screen those at risk. The minimal cross-sectional area measurements of these normal subjects were greater than previously published values for sleep apnea patients, indicating at least a potential for future definition of a minimum threshold value to use in airway screening. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Airway, CBCT, Sleep Apnea

Print Tag: Refer to original journal article



Long-Term Results of Mandibular Advancement Device to Correct Sleep Apnea

Five Years of Sleep Apnea Treatment With a Mandibular Advancement Device: Side Effects and Technical Complications.

Martínez-Gomis J, Willaert E, et al:

Angle Orthod 2010; 80 (1): 30-36

The long-term use of a mandibular advancement device for treating sleep apnea produces a reduction in the number of posterior occlusal contacts.

Background: Sleep apnea can be a serious problem for some adults. Although a breathing machine can be worn at night to manage sleep apnea, some patients choose a mandibular advancement device instead. These removable devices can be worn to advance the mandible and open the airway. However, do they cause occlusal changes if they are worn long term?

Objective: To evaluate variations in the prevalence of TMD as well as any occlusal changes in obstructive sleep apnea patients who had worn a mandibular advancement device for 5 years.

Design/Methods: This was a retrospective analysis of the records of a sample of 40 patients (all adults) who had worn a mandibular advancement device to correct sleep apnea and/or snoring. Before treatment, all subjects were evaluated to determine if they had any TMJ disorders and to assess their occlusion and the number of occlusal contacts. Each individual was given a mandibular advancement device that consisted of maxillary and mandibular occlusal splints that were connected by a metal rod that could be used to gradually advance the mandible anteriorly. The mandible was advanced between 70% and 90% of maximum over time. These individuals were evaluated at 1, 2, and 5 years to determine side effects and occlusal changes.

Results: The prevalence of TMD did not increase during the use of the mandibular advancement device; however, there were occlusal changes. Posterior occlusal contacts were reduced over the 5-year period. There were no changes in anterior tooth contacts, and the overbite and overjet were both reduced over time in this sample population.

Conclusions: In most obstructive sleep apnea patients, 5 years of wear of a mandibular advancement device does cause permanent occlusal changes in the posterior region. However, the appliance did not produce a negative effect on TMJ function or the prevalence of TMD.

Reviewer's Comments: I found this to be a very interesting study. There are 2 general dentists in my area who have placed many of these mandibular advancement devices in adult subjects. I have wondered whether these would produce any occlusal changes if worn only at night over an extended period. This study clearly answers that question. As orthodontists, we should make our general dental colleagues aware of this study and perhaps send them a copy of this article if they are providing this type of therapy. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Sleep Apnea, Mandibular Advancement Device

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Intracoronaral Bleaching With Carbamide Peroxide Affects Bracket Bond Strength

Can Intracoronally Bleached Teeth Be Bonded Safely?

Uysal T, Er O, et al:

Am J Orthod Dentofacial Orthop 2009; 136 (November): 689-694

Waiting at least 30 days after intracoronaral bleaching to bond metal brackets can slightly improve bond strength as opposed to bonding immediately after bleaching.

Background: It is not unusual for orthodontic patients to have traumatized incisors that are discolored and require root canal therapy. A common way to treat these discolored teeth is intracoronaral bleaching with an agent such as carbamide peroxide. Does this type of intracoronaral bleaching reduce bond strength?

Objective: To determine the effects of intracoronaral bleaching on the shear bond strength and failure site of bonded metal brackets.

Design: The sample for this study consisted of 60 freshly extracted mandibular incisors.

Methods: The 60 incisors were divided into 3 groups of 20 each. Each of the incisors underwent root canal therapy. In group 1, no intracoronaral bleaching was done prior to bonding metal brackets. In group 2, intracoronaral bleaching was done, and metal brackets were bonded immediately after bleaching. In group 3, brackets were bonded 30 days after intracoronaral bleaching. Each of the 3 groups was tested for shear bond strength, and the adhesive remnant index (ARI) was evaluated for each tooth. The 3 groups were statistically evaluated for differences in shear bond strength and fracture site based on the ARI scores.

Results: The bond strengths of the group that did not have intracoronaral bleaching were significantly higher than that of the other 2 groups. While the shear bond strengths for the group that had brackets bonded 30 days after bleaching were higher than those of the other bleaching group, they were not statistically different. The site for the bond failures in the control group that did not have bleaching were likely to be cohesive failures within the resin, whereas in the 2 bleached groups, the failures were mostly at the adhesive and resin enamel interface, which supports the shear bond strength findings.

Conclusions: Intracoronaral bleaching with carbamide peroxide negatively affects the shear bond strength of orthodontic brackets.

Reviewer's Comments: I was somewhat surprised to find the large significant difference in shear bond strengths when the control group was compared to the other 2 groups that underwent intracoronaral bleaching. While the control group was well above the shear bond strength that is considered to be clinically acceptable, the other 2 groups were very close or below the acceptable limit. Based on these results, it might be somewhat helpful to delay bonding at least 30 days after intracoronaral bleaching and to advise patients that they are likely to experience more bond failures on teeth that have been intracoronally bleached. (Reviewer-John S. Casco, DDS, MS, PhD).

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Keywords: Intracoronaral Bleaching, Bond Strength

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More Saliva and Different Composition During the First Month In Braces

The Effects of Fixed Orthodontic Appliances on Saliva Flow Rate and Saliva Electrolyte Concentrations.

Li Y, Hu B, et al:

J Oral Rehabil 2009; 36 (November): 781-785

Thinking that a change in saliva flow or composition may affect enamel decalcification during orthodontic treatment, the authors found more saliva and different electrolyte balance during the first month after the placement of braces.

Background: The placement of fixed appliances may affect the flow and content of saliva, which could possibly have an impact on the development of enamel decalcification during treatment.

Objective: To measure salivary flow and content after the placement of fixed orthodontic appliances.

Design: Prospective clinical trial with controls.

Participants: 14 adolescent patients with a Class I malocclusion were the study subjects. Ten middle school students acted as controls.

Methods: Saliva was collected from each individual at 4 time periods: before treatment and 1, 3, and 6 months after placement of fixed appliances. The whole salivary flow was measured along with the upper and lower labial salivary flow. The electrolyte content was measured in each collected sample, as was the pH level. The salivary content was compared at the different time points and between subjects and controls.

Results: The salivary flow rate was increased in subjects with fixed appliances 1 month after placement but returned to normal by 3 months. The content of the saliva was also different at 1 month, with higher levels of sodium and chlorine but lower levels of calcium, phosphate, and potassium. The salivary content also returned to pre-treatment levels by 3 months. The control subjects showed no change in salivary flow or content during the study period.

Conclusions: The placement of fixed appliances causes a short-term increase in salivary flow and a change in salivary content that can no longer be detected at 3 months.

Reviewer's Comments: The possible impact on decalcification of these salivary changes is not known, but the decrease in calcium and phosphate would not be positive for the balance between mineralization and demineralization. This may be offset by the increased salivary flow during the same time. Patients can be told to expect increased salivary flow during the first month in braces but can also be assured that this is a short-term response that will go away with time. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Saliva, Fixed Appliances, Decalcification

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Where Is Ideal Place to Position a Palatal Implant?

Palatal Bone Density in Adult Subjects: Implications for Mini-Implant Placement.

Moon HS, Park SH, et al:

Angle Orthod 2010; 80 (1): 137-144

The prime location for placing palatal implants is 3 mm posterior to the incisive foramen and within 5 mm of the midline suture.

Background: Today, many orthodontists are placing their own mini-implants. However, when implants are placed in certain parts of the alveolus, the bone can be too thin. This can occur in the palate. Where is the ideal place to position a palatal implant in an adult human?

Objective: To quantitatively evaluate bone density in the palate in order to provide guidelines for mini-implant placement in adult subjects.

Design: This was a prospective clinical trial.

Participants: 30 subjects were evaluated.

Methods: Subjects were divided equally between males and females, and the average age was 27 years. CT was used to analyze the thickness of the palates of each subject. Precise measurements were made using 1-mm thick slices through the maxillae of these subjects. The authors determined the ideal location or thickest bone for implant placement.

Results: The bone in the palate was thicker in males than in females. There were no right-to-left side differences in either gender. The thickest bone density was found 3 mm posterior to the incisive foramen and between 1 and 5 mm on either side of the median palatal suture.

Conclusions: The ideal position for placing palatal implants is within 5 mm of the midline and posterior to the incisive foramen in adult humans.

Reviewer's Comments: This is good information for orthodontists. Many orthodontists place their own mini-implant. Understanding the data from the study will be helpful to them when they are placing a palatal miniscrew. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Palatal Bone Thickness, Mini-Implants

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Does RME in Early Mixed Dentition Increase Rate of Canine Eruption?

Interceptive Treatment of Palatal Impaction of Maxillary Canines With Rapid Maxillary Expansion: A Randomized Clinical Trial.

Baccetti T, Mucedero M, et al:

Am J Orthod Dentofacial Orthop 2009; 136 (November): 657-661

Using rapid maxillary expansion in the early mixed dentition can increase the likelihood of palatal canine eruption.

Background: It is not unusual to see patients in the early mixed dentition who have palatally displaced canines. If you treated these patients with rapid palatal expansion, would it increase the likelihood of the canines erupting?

Design/Objective: To assess the rate of eruption of palatally displaced canines diagnosed at an early developmental age with posteroanterior radiographs and consequently treated by rapid maxillary expansion (RME).

Design: Prospective, randomized clinical study.

Participants: 60 subjects in the early mixed dentition with palatally displaced canines.

Methods: The subjects were randomly divided into a treatment group of 35 subjects and a non-treatment group of 25 subjects. The treatment group was treated with a banded maxillary expander. After expansion, all patients were retained with the expander in place for 6 months. When the expander was removed, the patients wore a retention plate at night for a year. The non-treatment group received no treatment. All subjects were re-evaluated in the early permanent dentition to determine the prevalence of successful eruption, which was defined as full eruption of the canine.

Results: The rate of eruption of the maxillary canines was >65% in the treatment group and slightly more than 13% in the non-treatment group. As might be expected, this difference was statistically significant.

Conclusions: The use of RME in the early mixed dentition appears to be an effective procedure to increase the rate of eruption of palatally displaced maxillary canines.

Reviewer's Comments: I was impressed by the large difference in the rate of eruption of the palatally displaced canines between the 2 groups. My only question is whether the increased rate of eruption is a valid reason to put patients into an unstable occlusion for an extended time in the early mixed dentition when studies have shown that simple extraction of the maxillary primary canines can result in a successful eruption rate as high as 78%. My main question is whether subjecting patients to RME in the early mixed dentition simply to improve the rate of canine eruption constitutes overtreatment. (Reviewer-John S. Casco, DDS, MS, PhD).

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Keywords: Rapid Maxillary Expansion, Palatally Impacted Canines, Effects

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Faster, Better Surgical Tx for Class II Deep Bite Patients

Maximizing Facial Esthetics in a Brachyfacial Class II Deep-Bite Case.

Badii K, Uribe F, Nanda R:

J Clin Orthod 2009; 43 (September): 591-599

In a Class II deep bite patient with reduced lower face height, mandibular advancement surgery should be done prior to lower arch leveling to maximize the desired increase in lower face height.

Background: Proper presurgical orthodontic treatment goals are critical to maximizing desired surgical movements and optimizing esthetics.

Objective: To demonstrate the positive effect of postsurgical lower arch leveling on the resultant lower face height.

Design: Expert opinion and case report. **Case Report:** A 14-year-old girl presented with a Class II deep bite malocclusion. The authors demonstrate use of segmental mechanics presurgically and postsurgically to maximize the esthetic outcome of a Class II deep bite treatment. Prior to treatment, the subject had a reduced lower face height, increased lower curve of Spee, and a deep overbite. Since the objective was to increase the lower face height at the time of surgery, the lower arch was treated to maintain the increased curve of Spee until surgery. The effect of the increased curve at the time of surgery was clockwise rotation of the distal segment of the mandible, which rotated the chin downward as well as forward. This resulted in a tripod occlusion postsurgery on the incisors and molars that was stabilized with an occlusal splint. Once initial bone healing occurred, the lower arch was rapidly leveled into the lateral open bite space using segmental mechanics that extruded lower molars and provided a moment to elevate premolars. Lateral box elastics were also used during posttreatment leveling to assist in the lateral open bite closure.

Results: The treatment result was excellent with achievement of the presurgical goal of increasing the lower face height along with advancement of the mandible. The profile was normalized, and the dentition finished in a Class I occlusion.

Conclusions: Proper planning for Class II deep bite patients undergoing mandibular surgery requires delay of lower arch leveling until after surgery if a significant increase in lower face height is desired.

Reviewer's Comments: I have encountered oral surgeons recently who want to have upper and lower arches perfectly leveled and aligned prior to surgery. This article emphasizes that, in Class II patients, needing an increase in lower face height, the proper presurgical orthodontic plan is to NOT level the lower arch. This approach maximizes the rotation of the distal segment of the mandible at the time of surgery and therefore optimizes the desired increase in face height. Additionally, this treatment is faster because the lower arch can be leveled into open space after surgery. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Class II, Orthognathic Surgery, Treatment Planning, Aesthetics, Deep Bite

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Flowable Composites Worthwhile for Bonding Orthodontic Retainers

Flowable Composites for Bonding Orthodontic Retainers.

Tabrizi S, Salemis E, Usumez S:

Angle Orthod 2010; 80 (January): 195-200

Flowable composites have adequate shear bond strength for use in bonding lingual retaining wires.

Background: Bonded lingual wires are commonly placed as orthodontic retainers for either maxillary or mandibular anterior teeth. In the past, these bonded retainers were adhered with composite paste. These pastes were highly filled for strength. Newer flowable composites make application of the composite around the wire more predictable, requiring less finishing. But these flowable pastes have less filler. Are they as strong in maintaining the shear bond strength around the retaining wire?

Objective: To determine differences between flowable composites and an orthodontic adhesive in terms of shear bond strength.

Design: Laboratory study involving application of a bonded wire to the lingual surface of teeth in 15 examples.

Methods: 60 extracted teeth were divided into 4 groups. One conventional composite paste was used and compared to 3 different flowable composites. After preparation of the enamel surface and bonding of each of the different types of composites, the shear bond strength was tested using a testing machine.

Results: There were no statistically significant differences between the composite paste or flowable composites when testing shear bond strength.

Conclusions: Flowable composites yield comparable shear bond strength values to those of traditional composite paste; therefore, they could be used to bond lingual retainers.

Reviewer's Comments: I have used lingual bonded retainers for many years. I like to use flowable composite because it is much easier to finish, and there is less need to remove the excess or to polish the material. I was gratified to learn from this study that flowable composites have similar bond strength to those of composite pastes when used for lingual retaining wires. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Flowable Composites, Retainers

Print Tag: Refer to original journal article

Does Sandblasting Damage Porcelain Surfaces?

Porcelain Surface Alterations and Refinishing After Use of Two Orthodontic Bonding Methods.

Herion D, Ferracane JL, Covell DA:

Angle Orthod 2010; 80 (January): 167-174

Phosphoric acid and silane surface preparation of porcelain restorations produces less destruction than sandblasting, hydrofluoric acid, and silane prior to orthodontic bracketing.

Background: Many adult patients require orthodontic therapy. Some of these adults have existing porcelain restorations. As a result, when bonding brackets, the porcelain surface must be treated prior to bracket bonding. Two possibilities exist for treatment of the porcelain surface: sandblasting, hydrofluoric acid, and silane or phosphoric acid and silane. Which of these causes the least undesirable effects to the porcelain surface?

Objective: To compare the damage to porcelain surfaces at debonding following use of 2 orthodontic bracket bonding methods.

Design/Methods: This was a laboratory study. Two different methods of preparing a porcelain surface were used prior to bracket bonding. A group of 20 porcelain disks was prepared initially with hydrofluoric acid, sandblasting, and silane. Another 20 porcelain disks were prepared with phosphoric acid and silane. Then, brackets were bonded to the teeth and cured. After bracket removal, the surfaces were evaluated with scanning electron microscopy to determine any changes in porcelain finish, surface roughness, and color.

Results: The results of this study show clearly that the phosphoric acid and silane method caused insignificant changes to the gloss and color of the porcelain surface. On the other hand, phosphoric acid and silane increased the surface roughness of the porcelain, but this change was significantly less than that caused by sandblasting, hydrofluoric acid, and silane.

Conclusions: The best preparation for a porcelain surface is phosphoric acid and silane in order to reduce the potential for destruction and damage to the porcelain surface.

Reviewer's Comments: This is important information for orthodontists. We treat many adults who have existing porcelain crowns. Some of these crowns do not need to be replaced after orthodontics. Less damage will be produced during bonding by using phosphoric acid and silane and avoiding sandblasting and hydrofluoric acid. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Porcelain Surface Alteration, Bracket Bonding Methods

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Novel Cephalometric Method for Assessing Class III Craniofacial Growth

Determination of Craniofacial Growth in Patients With Untreated Class III Malocclusions and Anterior Crossbites Using the Centroid Method.

Murata S:

Eur J Orthod 2009; 31 (October): 496-502

In this non-traditional analysis of Class III growth in Japanese subjects, similar growth patterns were seen in males and females.

Background: Understanding growth in Class III patients is essential to proper diagnosis and treatment planning. Earlier studies often miss incorporating the vertical dimension or relying on ANB or Wits appraisal. The centroid method, using the palatal, articulare-gnathion, and A-B planes, may more comprehensively examine the growth pattern.

Objective: To investigate the Class III growth pattern among Japanese subjects.

Design: Cross-sectional study.

Participants: 934 Class III Japanese subjects (323 males, 611 females) between the ages of 2 and 25 years meeting the inclusion criteria were evaluated.

Methods: Patients were divided into 10 developmental stages based on age. A single lateral cephalogram was taken of each patient and was then analyzed using the centroid method.

Results: Significant relative mandibular growth (increase in palatal plane to A-B angle) was found up until age 14 to 15 years. Then, balanced growth occurred downward and forward until age 16 to 17 years. No significant gender differences were found with the female subjects showing growth tendencies very similar to the male subjects.

Conclusions: The centroid method can be an effective cephalometric analysis in Class III patients. Results may serve as guidelines for managing Class III Japanese patients.

Reviewer's Comments: This study is interesting in that it presents a different way to assess Class III growth that includes the vertical dimension in an integrated way. The study is limited by its cross-sectional design so that we do not really see how subjects change with time—we can only infer it from the different age groups. To confirm the fact that males and females grow similarly, some longitudinal data would be beneficial. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Class III, Growth, Cephalometrics

Print Tag: Refer to original journal article

Cleft Patients Have More Dental Caries Than Same-Sex Siblings

Comparison of Dental Caries Prevalence in Patients With Cleft Lip and/or Palate and Their Sibling Controls.

Al-Dajani M:

Cleft Pal Craniofac J 2009; 46 (September): 529-531

Compared to their same-sex siblings, cleft patients have more dental caries and therefore should be the focus of educational efforts to encourage good hygiene.

Background: There have been conflicting results when determining the caries risk of cleft patients relative to non-cleft controls.

Objective: To compare the caries activity of cleft subjects with same-sex siblings.

Design: Cross-sectional study using siblings as controls.

Participants: The cleft group consisted of 53 consecutively recruited subjects between the ages of 12 and 29 years with cleft lip and/or palate. Same-sex siblings within 3 years of age of the cleft subject served as controls.

Methods: All subjects underwent a clinical examination to determine the number of carious, filled, or missing teeth. Each subject was classified as caries-free, or as having a low, moderate, or high caries rate, and the decayed, missing, or filled permanent teeth (DMFT) index was calculated. No radiographs were used as part of the examination process.

Results: The average age for both cleft patients and control siblings was approximately 18 years. There was generally a high caries rate in all subjects—cleft and control. The cleft subjects had a mean DMFT index nearly double that of the siblings (6.8 to 3.8) and more subjects in the cleft group were classified as having a high caries rate.

Conclusions: Cleft patients have more caries than same-sex siblings living in the same home and therefore should be the focus of greater oral hygiene education to reduce the caries risk.

Reviewer's Comments: This study was done in Syria and, therefore, may not be entirely applicable to cleft patients in the United States or other countries. However, even if the overall caries rate is lower in some locations, it is likely that the difference between cleft children and their siblings is still present. The authors make an excellent recommendation that cleft patients should be the focus of additional education programs to improve oral hygiene in order to reduce the caries rate. Early loss of primary or permanent teeth due to caries only complicates an already complex orthodontic situation. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Cleft Lip and Palate, Dental Caries

Print Tag: Refer to original journal article

Clofazimine May Be Effective for Recurrent Aphthous Stomatitis

Treatment of Recurrent Aphthous Stomatitis With Clofazimine.

de Abreu MA, Hirata CH, et al:

Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009; 108 (November): 714-721

In this clinical trial of treatment for recurrent aphthous stomatitis, clofazimine showed promise as a drug that provided significant relief for many subjects with few side effects.

Background: Recurrent aphthous stomatitis can be an extremely painful problem and can make fixed orthodontic treatment almost unbearable.

Objective: To test the effectiveness of clofazimine in treating recurrent aphthous stomatitis.

Design: Prospective, randomized clinical trial.

Participants: 66 patients aged 15 to 60 years who suffered from recurrent aphthous stomatitis. **Design:** Subjects were randomized to 1 of 3 groups. Group 1 received clofazimine for 6 months, group 2 received colchicine (another suggested treatment for aphthous stomatitis) for 6 months, and group 3 received a placebo medication for the same time period. The effectiveness of the treatment was measured by monthly examination of lesions and patient reports of aphthous episodes and their severity.

Results: Almost one third of patients in the clofazimine group reported no further aphthous episodes, while almost no one in the other groups had such a response. The colchicine group had a large number of subjects discontinue treatment because of gastrointestinal effects. Those in the clofazimine group who had continued aphthous episodes tended to have less severe episodes.

Conclusions: The authors believe that clofazimine should be considered a treatment option for recurrent aphthous stomatitis because of its effectiveness at reducing or eliminating aphthous episodes and its generally good patient acceptance.

Reviewer's Comments: It is very difficult to complete fixed orthodontic treatment on someone who suffers from recurrent aphthous stomatitis because the ulcerations are terribly painful and braces seem to make them even worse. Current treatment options for this condition are limited and those that are effective (eg, thalidomide) tend to have serious side effects. Clofazimine may offer a new option, and it may be worth consulting a patient's physician to see whether such treatment may be appropriate to help them get through orthodontic treatment more comfortably. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Aphthous Stomatitis, Clofazimine

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Lower Dose of Chlorhexidine Eliminates Teeth Staining

Effectiveness of 0.50% and 0.75% Chlorhexidine Dentifrices in Orthodontic Patients: A Double-Blind and Randomized Controlled Trial.

Oltramari-Navarro PV, Titarelli JM, et al:

Am J Orthod Dentofacial Orthop 2009; 136 (November): 651-656

The use of dentifrices with a lower concentration of chlorhexidine can reduce the risk of tooth staining without compromising its effectiveness in controlling gingivitis and bleeding in orthodontic patients.

Background: Chlorhexidine is widely used in clinical dentistry to inhibit plaque and reduce bacteria in the oral cavity. However, chlorhexidine increases the incidence of tooth staining. Would a lower concentration of chlorhexidine in dentifrices maintain its advantages while reducing the risk for tooth staining?

Objective: To evaluate whether lower concentrations of chlorhexidine (0.5% and 0.75%) in dentifrices could reduce the risk of tooth staining without compromising its effectiveness for gingivitis, bleeding, and dental plaque control.

Participants: 81 patients undergoing fixed orthodontic treatment.

Methods: 81 subjects were divided into 3 groups of 27 each. The first group was an experimental group, the second group used a dentifrice with 0.5% chlorhexidine, and the third group used a dentifrice with 0.75% chlorhexidine. Staining, calculus, gingivitis, bleeding, and dental plaque data were obtained at baseline and after 6 and 12 weeks, and the differences were statistically analyzed.

Results: When the 3 groups were compared, both experimental groups had better gingival and bleeding index scores. Only the third group that used the 0.75% chlorhexidine dentifrice had a significant increase in the stain index.

Conclusions: The use of dentifrices with a lower concentration of chlorhexidine can reduce the risk of tooth staining without compromising its effectiveness in controlling gingivitis and bleeding in orthodontic patients.

Reviewer's Comments: I was impressed by the results of this study. The advantages of using chlorhexidine to inhibit plaque and reduce bacteria in the oral cavity are well documented. However, I believe many orthodontists resist using chlorhexidine because of its tendency to stain teeth. The results of this study indicate that by reducing the amount of chlorhexidine in a dentifrice, it may be possible to take advantage of the positive aspects of chlorhexidine and at the same time reduce the likelihood of staining. This sounds like a win-win situation to me. (Reviewer-John S. Casco, DDS, MS, PhD).

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Keywords: Chlorhexidine Dentifrices, Effectiveness

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98% of a Dentist's Time Should Be Spent in Direct Patient Care

The 98 Percent Factor.

Levin RP:

J Am Dent Assoc 2009; 140 (November): 1425-1426

Good leaders delegate appropriate responsibilities to team members and experience greater professional satisfaction.

Background: What percentage of a dentist's time should be spent on direct patient care? Knowing the answer to this question could help to significantly improve the quality and success of your practice.

Objective: To discuss the 98% factor as a means of improving your practice. **Discussion:** The author suggests that good leaders entrust their staff members to perform duties and meet responsibility without interfering or micromanaging. He suggests that by striving to reach the goal of the 98% factor, you can reach a new level of practice efficiency and elevated patient satisfaction. He lists 3 main steps that need to be taken to achieve this goal. Step 1 is to implement documented systems, a goal of which is to create the highest possible levels of efficiency in all areas of the practice. The practice with outdated systems is simply operating according to habit rather than clear guidelines and protocols. Step 2 is to train the team. Any new systems that you implement will be ineffective if team members do not understand how those systems work. Team training should be done hand-in-hand with the implementation of new systems in your practice. When policies are documented, communication between dentists and staff and current and future staff members is significantly improved. Step 3 is to delegate responsibilities. Delegation empowers the team members to take ownership of their roles in contributing to practice success. It is not possible to spend more time in direct patient care without delegating appropriate responsibilities to specific staff members.

Conclusions: Good practice leaders delegate appropriate responsibilities to team members and experience greater professional satisfaction.

Reviewer's Comments: I believe the advice presented by Dr Levin in this article is very practical. One of the easiest ways to have the quality of your practice decline is to lose touch with your patients. Often this happens because practitioners are involved in performing office tasks that could easily be delegated to competent staff members who are well trained. This in no way suggests that staff members should be performing office tasks beyond their legal limitations. (Reviewer-John S. Casco, DDS, MS, PhD).

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Keywords: Office Efficiency, Patient Care

Print Tag: Refer to original journal article

Intellectual Stimulation Major Attraction of Canadian Orthodontic Applicants

Motivations and Future Plans of Canadian Orthodontic Residents.

Noble J, Karaiskos N, Wiltshire WA:

Am J Orthod Dentofacial Orthop 2009; 136 (November): 644-650

The most common reasons why Canadian residents choose orthodontics as a career is intellectual stimulation and a passion for orthodontics.

Background: What motivates dental students to become orthodontists? How do current orthodontic residents envision themselves practicing in the future? It is important for practicing orthodontists to understand the answers to these questions.

Objective: To investigate factors influencing career choice and to identify future plans of Canadian orthodontic residents.

Participants: The sample for this study consisted of all the orthodontic residents in the 5 Canadian orthodontic residency training programs.

Methods: All orthodontic residents were sent an email with an online link and were invited to complete an anonymous 41-item survey.

Results: 81% of the orthodontic residents completed the survey. The most common reasons why Canadian residents chose orthodontics as a career was intellectual stimulation and a passion for orthodontics. Working with younger patients and work flexibility were also identified as important factors. Most residents indicated that they intended to practice orthodontics as an associate in a private practice. A total of 22% stated that they intended to buy an existing orthodontic practice and 13% planned to start a new orthodontic practice. Only 4% indicated that they intended to pursue a full-time research and teaching career. Related to how they expected they would be practicing, 80% said that they will be using self-ligating brackets in private practice and almost 80% said that they will use Invisalign. Seventy-seven percent of the residents thought that a 24- to 30-month program was too short to adequately prepare them for private practice.

Conclusions: Intellectual stimulation was the major attraction of most applicants to orthodontic programs.

Reviewer's Comments: I found the results of this survey to be interesting and I wonder how the results would compare to a similar survey given to U.S. orthodontic residents. I was somewhat surprised that a majority of the Canadian orthodontic residents felt that a 24- to 30-month program was too short to adequately prepare them for private practice. I have always felt that the length of orthodontic programs is a poor way for evaluating them. To me, more important factors are the number and quality of faculty, organization and efficiency of the program, and the availability of appropriate patients and treatment resources. I am fairly confident that if you surveyed the University of Iowa orthodontic residents, they would not be suggesting that the length of our 24-month program be increased. The very small percentage of Canadian residents who are planning to pursue an academic career is not surprising but should be a matter of concern to organized orthodontics. (Reviewer-John S. Casco, DDS, MS, PhD).

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Keywords: Career Choice, Future Plans, Canadian Orthodontic Residents

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