Every time a member of your staff speaks face-to-face with a patient, a parent, a co-worker, or the doctor, the image of your entire practice is on the line.

Every time a member of your staff speaks face-to-face with a patient, a parent, a co-worker, or the doctor, the image of your entire practice is on the line. The goals of using professional communication are as follows: (1) to create trust; (2) to enhance service; (3) to build relationships with patients and parents; (4) to persuade and promote people; and (5) to impress and influence people. This 2-part guest lecture represents specific suggestions for improving phone communication, written communication, and verbal communication in your practice.

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Keywords: Communication, Image

Print Tag: Refer to original journal article
Immediate vs Late Extrusion of Traumatically Intruded Teeth

Immediate vs Late Orthodontic Extrusion of Traumatically Intruded Teeth.

Medeiros RB, Mucha JN:

Dent Traumatol 2009; 25 (380-385):

A comprehensive literature review of orthodontic extrusion for traumatically intruded teeth shows a high rate of overall success, and treatment appears to progress faster with early extrusion than with delayed extrusion.

**Background:** The optimal timing for orthodontic extrusion of traumatically intruded teeth has not been determined. Arguments have been made for both early and delayed treatment.

**Objective:** To conduct a comprehensive review of the literature to address the question of timing for orthodontic extrusion of traumatically intruded teeth.

**Participants:** 13 patients with a total of 22 traumatically intruded upper incisors were identified from published case reports.

**Design/Methods:** A total of 55 publications dealing with orthodontic treatment of traumatically intruded teeth were reviewed. After screening against the inclusion criteria, which included a minimum of 1-year follow-up, 13 case reports were identified. The age, gender, treatment protocol, complications, and long-term results were collected from each case. When orthodontic extrusion was performed before 3 months, the case was classified as immediate extrusion; if done after 3 months, the extrusion was classified as late. The success rate, treatment time, and need for endodontic treatment were compared between immediate and late extrusion.

**Results:** The average age of the subjects was approximately 16 years, and subjects were evenly divided between males and females. Of the 22 teeth, 18 had immediate extrusion (average, 2 weeks), and only 4 had delayed extrusion. All teeth except one were treated successfully, but nearly one-half had some complication such as root resorption. Almost all intruded teeth required endodontic treatment whether they were mature or immature. The treatment time for the delayed extrusion was much longer than for those treated immediately.

**Conclusions:** A high success rate is reported for both immediate and delayed extrusion of intruded teeth, but the treatment appears to progress much faster in the immediate group.

**Reviewer's Comments:** Although this might be the best evidence we currently have regarding the timing of orthodontic extrusion for traumatically intruded teeth, we must take care to realize these results are not from a controlled, clinical trial but from a series of published case reports. In general, case reports selectively publish successful treatment strategies; therefore, this may be a very biased study sample. However, in spite of this significant limitation, it does show that immediate treatment does not appear to be obviously harmful to the intruded teeth, and that immediate extrusion can happen relatively rapidly. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Trauma, Extrusion

Print Tag: Refer to original journal article
Obese patients who undergo BSSO mandibular advancement tend to have additional horizontal advancement of the chin postsurgically.

**Background:** The striking increase in obesity nationally has been associated with an increased number of medical problems. If a normal-weight and an obese person both underwent surgical mandibular advancement, would the obese person have a greater tendency for relapse?

**Objective:** To evaluate the relationship of body mass index (BMI) to postoperative stability for patients who undergo surgical mandibular advancement.

**Participants:** 78 patients who underwent bilateral sagittal split osteotomy (BSSO) surgical mandibular advancement with rigid fixation.

**Methods:** Based on a standard BMI, the sample was divided into 3 groups: obese, overweight, and normal or thin. Cephalometric radiographs were taken before surgery, 1 week after surgery, 2 years after surgery, and 5 years after surgery to evaluate postsurgical hard- and soft-tissue changes. The differences for the 3 groups were statistically evaluated.

**Results:** Obese and overweight patients experienced relative postsurgical forward movement at B-point, whereas the normal or thin patients had relapses over 2 years, and the trend continued at 5 years.

**Conclusions:** Obese patients treated with BSSO advancement have a tendency for continued forward mandibular movement at both 2 and 5 years after surgery compared with normal-weight patients.

**Reviewer's Comments:** I must admit I was surprised by the results of this study. I would have expected greater relapse in the obese group. At the conclusion of the article, the authors suggested that, based on these results, the orthodontist and the surgeon can achieve better outcomes for their patients. While I believe the information from the study is very worthwhile, I'm not sure how I would change the treatment of patients undergoing surgical mandibular advancement based on their weight. This is because, for any patient, I believe it is critical to achieve a solid Class I occlusion postsurgically, no matter what the patient's BMI or tendency for postsurgical change might be. (Reviewer-John S. Casko, DDS, MS, PhD).

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Keywords: Obesity, Postsurgical Stability, BSSO

Print Tag: Refer to original journal article
Most orthognathic surgery prediction programs are inaccurate for predicting mandibular position after surgery.

**Background:** With the advent of computers, software programs have now been written that will predict the outcome of soft- and hard-tissue changes after orthognathic surgery. However, are these software programs accurate in their predictions?

**Objective:** To systematically review the available literature on the topic of computer software programs to predict hard-tissue changes after orthognathic surgery.

**Design:** This was a systematic review that evaluated several different databases.

**Methods:** Based on their review, the authors identified 79 potential articles. Of these, only 9 articles fulfilled the final selection criteria to qualify for this systematic review. Next, each of these articles was assessed to determine the accuracy of the computer programs at predicting orthognathic surgery hard-tissue response.

**Results:** Computer programs accurately predicted horizontal dental changes and positioning of the anterior maxilla. However, these programs were not able to predict the position of the posterior maxilla or anterior mandible in the horizontal direction. In addition, skeletal and dental changes in the vertical direction were not predicted accurately.

**Conclusions:** Computer programs cannot consistently predict skeletal changes occurring after orthognathic surgery.

**Reviewer's Comments:** It is clear from this systematic review that computer programs do not accurately predict the outcome of orthognathic surgery with respect to the hard- and soft-tissue changes. However, the authors of this study did comment that the differences or the amount of inaccuracy was within 2 mm or 2 degrees. Therefore, the amount of inaccuracy may be within a clinically acceptable range. After all, the tracing error in cephalometric radiography could be as much as 1 mm. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Prediction Programs, Computers, Orthognathic Surgery

Print Tag: Refer to original journal article
**Are Rehabilitate Cleft Lip and Palate Patients Satisfied With Results?**

*Esthetic Analysis of Gingival Components of Smile and Degree of Satisfaction in Individuals With Cleft Lip and Palate.*

Esper LA, Sbrana MC, et al:

*Cleft Palate Craniofac J* 2009; 46 (July): 381-387

In a group of rehabilitated cleft lip and palate patients, most were happy with their smile aesthetics and rated them as much more pleasing than did the dentists.

**Background:** The rehabilitated cleft lip and palate patients' own perception of their smile is important to their long-term satisfaction with treatment and has not been well studied.

**Objective:** To measure the degree of satisfaction with their smile in a group of rehabilitated cleft lip and palate patients, and to compare this rating to that of dental professionals.

**Design:** Prospective study using patients' subjective ratings of their own smile and subjective ratings of dental professionals.

**Participants:** 45 cleft lip and palate patients who had completed their surgical and dental treatment. The age range was from 15 to 30 years.

**Methods:** Each patient had 3 standardized photographs taken: lips at rest, natural smile, and forced smile. Two panels of 3 periodontists each were formed and asked to do subjective ratings. The panels rated the overall smile on a 9-point scale and also scored various characteristics of the soft-tissue symmetry. Patients were asked to rate their own smile on the same 9-point scale and were asked several questions including things like, "Are you ashamed of your teeth and/or smile?"

**Results:** Patients rated their smile at 7.6 of 9 (84%), which is in the aesthetically pleasant category. The dentist rated the same smiles as 5.2 of 9 (58%), which was in the aesthetically accepta

**Conclusions:** Most rehabilitated cleft lip and palate subjects consider their smile aesthetic, and gingival contour is not an important factor in their perception of smile aesthetics.

**Reviewer's Comments:** It is often very challenging to get ideal gingival contours and symmetry when treating cleft patients. These results would indicate that these characteristics are not as important to patients as they are to us. This study was conducted in Brazil, so it is possible that patient expectations could be somewhat different than in other parts of the world, but the differences are not likely great. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Cleft Lip & Palate, Smile Aesthetics, Gingival Contour

Print Tag: Refer to original journal article
Angled titanium mesh can be very effective at overcoming asymmetries of the gonial angle in patients with mandibular prognathism.

**Background:** A common type of facial deformity is mandibular prognathism. Occasionally, this problem will be asymmetric, with more growth of one condyle and ramus than on the opposite side. This can produce an asymmetric gonial angle. Routine orthognathic surgical procedures such as sagittal osteotomy can correct the dental relationship, but seldom improves the gonial angle region. In some patients, this resulting asymmetry can be unattractive.

**Objective:** To describe the use of angled titanium mesh at the gonial angle in patients with asymmetric mandibular prognathism. The patients' response and aesthetic appearance were evaluated over several years.

**Design/Methods:** This was a retrospective analysis of the records of 5 subjects who had angled titanium mesh placed unilaterally on the gonial angle to improve facial asymmetry following orthognathic surgery. Several years later, subjects were asked their opinion about the improvement in facial appearance. Other intraoral and occlusal factors were also assessed.

**Results:** All patients were happy with their functional asymmetry and stated that the implant felt natural compared to the contralateral side. No infection, implant migration, or implant exposure occurred in any of the subjects. All patients had a stable occlusion throughout their follow-up. Patients also reported regaining normal sensation along the distribution of the inferior alveolar nerve.

**Conclusions:** Angled titanium mesh can be a viable method of re-establishing symmetry of the gonial angle in subjects who have asymmetric mandibular prognathism.

**Reviewer's Comments:** Although this was not a valid study, I did appreciate the authors' opinions, and I was particularly impressed by the photographs of the patients who had been treated in this manner. The use of angled mesh to re-establish symmetry of the gonial angle in these patients who had significant asymmetric mandibular prognathism was significant. Orthodontists and their surgeons should be aware of this possible treatment in patients in whom asymmetry can be significant. (Reviewer-Vincent G. Kokich, DDS, MSD).
How to Protect Your Office Against Computer Malware

Securing Your Digital Data Against Computer Threats.
Revankar AV, Gandedkar NH, Ganeshkar SV:

J Clin Orthod 2009; 43 (June): 393-399

There are many ways that office computers can be infected with malware. This article discusses how to keep your computers safe.

Background: Most orthodontic practices are highly dependent on computers for daily treatment activities and for practice management.

Objective: To describe common malware threats to office computer systems and ways to protect systems using appropriate software protection and staff education. Malware is a term combining "malicious" and "software." It refers to different forms of "hostile, intrusive, or annoying software or program code, some of which can cause catastrophic computer failure and data loss if appropriate and timely action is not taken."

Design: Expert knowledge and opinion article.

Methods: Computer malware includes viruses, but also things such as keyloggers, spyware, and Trojan horses. These unwanted software programs can be inadvertently downloaded from the Internet or transferred unknowingly using a flash drive. The authors give several recommendations to protect your computers from infection. (1) Keep operating systems, such as Windows, updated using automatic updates. (2) Use a reliable anti-virus, anti-spyware program that continually updates the virus definitions. (3) Use the Internet from a restricted account that does not have administrative rights to install software. (4) Restrict automatic software launching from flash drives. (5) Practice safe Internet behavior (which the authors review in detail). If you have computers that are infected, reboot in "safe mode" and run an anti-malware scan. Then delete unwanted files using a malware shredder. The authors highly recommend that your data be stored on a different drive (eg, D:) rather than your operating system to make your data available if you have a boot failure.

Conclusions: This is truly an area in which prevention is much easier than the cure. All staff should be aware of this risk to your office systems, and proper policies and procedure should be in place to minimize the threat of malware.

Reviewer's Comments: This is a very informative article, but a bit difficult to understand if you don't know much about computer systems. Even if you have someone else maintain your system, it would be a good idea to check their ideas of protection against the ones given in this article. Many of the suggestions are easy and inexpensive to implement, and could save a lot of money and anguish in the future. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Computers, Malware, Virus

Print Tag: Refer to original journal article
Maxillary anterior teeth can be retracted en masse without bonding the maxillary posterior teeth when TADs are used for anchorage.

**Background:** It is not uncommon to have to treat an adult patient with severe bimaxillary dental protrusion that requires excellent anchorage for successful treatment. If this patient was not willing to wear a headgear, could temporary anchorage devices (TADs) provide sufficient anchorage to retract the anterior teeth en masse and achieve a successful result?

**Objective:** To evaluate the treatment effects of specially designed TADs as the sole source of anchorage during en-masse retraction of the 6 maxillary anterior teeth after extraction of the premolars.

**Participants:** 17 adult patients with severe bimaxillary dental protrusion who required maximum anchorage for the retraction of the anterior teeth.

**Methods:** Each patient had 4 premolars extracted and had C-implant temporary anchorage device screws placed between the maxillary second premolars and the first premolars. These screws were sandblasted large-grit and acid-etch surface-treated mini-implants. The mandibular arch was bonded; however, in the maxillary arch, only the maxillary anterior teeth were bonded and retracted directly off the TADs, which provided the anchorage to retract both the maxillary and mandibular anterior teeth that were both retracted en masse. Cephalometric radiographs taken before and after retraction were used to evaluate dental and skeletal changes.

**Results:** The TADs used in this study were shown to provide excellent anchorage for en-masse retraction of the maxillary and mandibular anterior teeth.

**Conclusions:** TADs can provide excellent anchorage for en-masse retraction of the maxillary anterior teeth with minimal patient cooperation.

**Reviewer's Comments:** I was impressed that the TADs used in this study provided excellent anchorage. In addition, the authors were able to retract the maxillary anterior teeth en masse without any appliances on the maxillary posterior teeth. If I were treating a patient like the ones described in this study, I'm not sure I'd be courageous enough to leave the maxillary posterior teeth unbonded. I would feel a lot more comfortable bonding all the teeth and using the TAD indirectly to hold back the maxillary posterior teeth while I used typical retraction mechanics to retract the canines. I'm not sure how much the use of the sandblasted large-grit acid-etched treated mini-implant screws used in this study accounted for the success of treatment. Because of their proven effectiveness and reduced need for patient cooperation, I have no doubt we will be seeing more TADs used for anchorage in patients such as those described in this study. (Reviewer-John S. Casko, DDS, MS, PhD).

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**Keywords:** Temporary Skeletal Anchorage, En-Masse Retraction

**Print Tag:** Refer to original journal article
Effects of Intrusive Force on Pulpal Vitality

Effects of Intrusive Force on Selected Determinants of Pulpal Vitality.
Veberiene R, Smailiene D, et al:
Angle Orthod 2009; 79 (6): 1114-1118

Intrusive force over 7 days causes significant changes in the dental pulp.

Background: From time to time, orthodontists must produce an intrusive force on the dentition. When specific teeth are intruded, this potentially could cause an impact on the blood vessels that enter the apex of that tooth. This pressure of intrusion could cause strangulation of the blood vessel and nerve. What is the effect on the pulpal tissue of these teeth undergoing an intrusive force?

Objective: To measure the pulpal response to tooth intrusion.

Design/Participants: Prospective study involving 21 healthy subjects who needed extraction of first premolars for orthodontic reasons.

Methods: Prior to the beginning of orthodontic treatment, an intrusive force was applied to one of the first premolars for 7 days. The amount of force was 60 g. The contralateral premolar was used as a control. After 7 days of force application, both premolars underwent electronic pulp testing to determine their response. Next, the first premolars were extracted. The pulp tissue was evaluated to determine the presence of aspartate aminotransferase, which is an enzyme that is given off from the cell wall when cells undergo lysis. The authors compared the reaction of right and left first premolars.

Results: There was a 64% increase in the amount of aspartate aminotransferase in the pulp tissue of teeth that had been intruded for 7 days. This would indicate a higher degree of cell death in the pulps of intruded teeth. In addition, there was a higher threshold response during electronic pulp testing of teeth that were intruded.

Conclusions: Tooth intrusion produces an increased pulpal neural response and an increase in aspartate aminotransferase activity in intruded teeth.

Reviewer's Comments: Although these responses occurred at 7 days, it would be interesting to know what happens over time. Does the pulpal tissue accommodate to this intrusion as the bone resorbs around these teeth following the tooth intrusion? After all, patients typically do not require root canal therapy following orthodontic treatment, in spite of the type of tooth movement that has occurred. Perhaps these researchers will continue these studies and look at the pulpal response to tooth movement over a longer period of time.

(Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Intrusion, Pulp Vitality

Print Tag: Refer to original journal article
In this retrospective study, Class II treatment occurred faster and produced a greater improvement in PAR score when done with upper premolar extraction compared to a pendulum appliance.

**Background:** Information on treatment efficiency would be helpful when considering molar distalization versus upper premolar extraction for the correction of Class II malocclusion.

**Objective:** To compare the efficiency of upper premolar extraction to molar distalization with a pendulum appliance for treatment of a Class II malocclusion.

**Design/Participants:** Retrospective study using existing records of 48 completed Class II patients; 22 patients were treated with a pendulum appliance, and 26 were treated with upper premolar extractions. The average age was 13 to 14 years and was slightly higher in the pendulum group. The before and after study models were evaluated using the Peer Assessment Rating (PAR) to calculate the initial and final results. Cephalometric assessment was used to compare the groups prior to treatment. Treatment time information was extracted from the patient record.

**Methods:** Both groups had fixed appliance treatment.

**Results:** The 2 groups were similar before treatment, but the extraction group had more severe Class II characteristics and had higher initial PAR scores. The final PAR scores were comparable between groups, with a greater PAR improvement in the extraction group because of the higher initial PAR score. The treatment time was much longer in the pendulum group, making the treatment efficiency significantly better in the extraction cases.

**Conclusions:** The treatment efficiency for upper premolar extraction was much better than the pendulum appliance for the Class II malocclusion.

**Reviewer's Comments:** This was a retrospective study and, therefore, subject to susceptibility bias. We don’t know exactly why each subject received the treatment they did. However, the differences in treatment efficiency were quite large. The more severe cases were treated to the same end result much faster with upper premolar extractions. It would be nice to see a comparison of the final incisor position and arch width to determine if the final results were comparable in other ways. (Reviewer-Brent E. Larson, DDS, MS).
Understanding Pattern of Buccal Cortical Bone Thickness

Buccal Cortical Bone Thickness for Mini-Implant Placement.

Baumgaertel S, Hans MG:


Interdental buccal cortical bone thickness appears to vary according to a distinctive pattern. Understanding this pattern can be helpful in implant site selection.

**Background:** The quality of bone is a large factor in determining the stability of temporary anchorage devices (TADs). Understanding the pattern of buccal cortical bone thickness in the maxilla and mandible would be a great aid in identifying the ideal site to place a TAD.

**Objective:** To investigate buccal cortical bone thickness at every interdental site in both jaws to provide a guideline for implant site selection and placement.

**Methods:** The sample for this study consisted of 30 human dry skulls. From cone-beam CT (CBCT) scans, 2-dimensional slices through every interdental area were generated. On these slices, cortical bone thickness was measured at 2, 4, and 6 mm from the alveolar crest.

**Results:** Buccal cortical bone thickness was greater in the mandible than in the maxilla. In the mandible and in the maxillary anterior segment, the thickness of buccal cortical bone increased with increasing distance from the alveolar crest. In the maxillary buccal segments, cortical bone thickness was thickest at the 6-mm level but thinnest at the 4-mm level. In general, cortical bone thickness increased in both jaws with increasing distance from the midsagittal plane except distally to the maxillary second molars, where it decreased.

**Conclusions:** Understanding the general pattern of buccal cortical bone thickness in both the maxilla and mandible can help improve site selection for implant placement.

**Reviewer's Comments:** This was an excellent study. It is a very practical alternative to taking a CBCT scan for each of your patients. The color-coded chart presented in this article provides an excellent visual aid in understanding the pattern of buccal cortical bone thickness in both the maxilla and mandible. It would be a good idea to copy it and keep in your office. (Reviewer-John S. Casko, DDS, MS, PhD).

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Keywords: Buccal Cortical Thickness, Mini-Implant Placement

Print Tag: Refer to original journal article
First premolar extraction results in improved angulation of mandibular third molars compared to nonextraction.

**Background:** The mandibular third molar is the most commonly impacted tooth. Attempts to treat the mandibular arch nonextraction can exacerbate the possibility of mandibular third molar impaction. Does first premolar extraction improve the angulation and potential eruption of mandibular third molars?

**Objective:** To determine whether extraction of first premolars results in more mesial movement of the mandibular buccal segment and causes favorable rotational changes in mandibular third molar angulation.

**Design/Participants:** This retrospective analysis of orthodontically treated subjects included 50 patients in the sample.

**Methods:** All subjects received full-banded orthodontic therapy. Twenty-five subjects had been treated with first premolar extractions, and the other 25 subjects were nonextraction. Pretreatment and post-treatment panoramic radiographs were available for measurement. The palatal plane was identified and placed perpendicular to the midline of the nasal septum. Then, the angulations of the mandibular second and third molars were identified before and after orthodontic treatment. Changes in these angulations in extraction and nonextraction cases were measured and compared.

**Results:** Results showed that in nonextraction cases, the third molar angulation improved approximately 1°. In the first premolar extraction cases, the third molar angulation improved between 6° and 8°.

**Conclusions:** First premolar extraction has a positive influence on developing third molar angulation, and these improved angulations could favor third molar eruption later in life.

**Reviewer's Comments:** This was an interesting study. It makes sense that the third molar angulation should improve if the mandibular second molars are moved mesially. With the greater incidence of nonextraction therapy today in order to preserve facial aesthetics, more third molars are probably becoming impacted. Perhaps a benefit of first premolar extraction in appropriate cases would be a reduction in the incidence of third molar impaction. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Mandibular Third Molar Angulation, Extraction, First Premolar

Print Tag: Refer to original journal article
How Does Malocclusion Affect Oral HRQOL?

The Impact of Malocclusion/Orthodontic Treatment Need on the Quality of Life: A Systematic Review.
Liu Z, McGrath C, Hăfăgg:

Angle Orthod 2009; 79 (May): 585-591

There is a weak association between malocclusion/orthodontic treatment needs and poor oral health-related quality of life.

**Background:** What is the impact of orthodontic treatment? Obviously, orthodontics can improve occlusal function and aesthetics, but, do these changes affect a person's health-related quality of life (HRQOL)?

**Objective:** To assess the literature related to the impact of malocclusion, orthodontic treatment need, and orthodontic care on a patient's HRQOL.

**Methods:** This systematic review evaluated 4 electronic databases. The authors were seeking articles that specifically evaluated a patient's oral HRQOL to the pre-existing malocclusion. Based upon the search, a list of 134 articles was obtained. The majority of these articles were eliminated, and the final review consisted of 23 articles that met the inclusion criteria. Of these, 19 were cross-sectional studies and 4 were longitudinal studies.

**Results:** The level of strength of evidence that could be gleaned from the papers that were included was relatively low. First of all, most of the studies were cross-sectional, and the research questions were concerned primarily with identifying an association between malocclusion and quality of life. Basically, the authors found that there was a weak association, not a correlation, between malocclusion/orthodontic treatment need, and poor HRQOL.

**Conclusions:** There are no strong correlations between the degree of malocclusion, its correction, and an improvement in a person's oral HRQOL.

**Reviewer's Comments:** It is clear that there is a need to determine appropriate assessment methods of malocclusion/orthodontic treatment need and quality of life. If there were more consistencies in studies that evaluate these issues, perhaps we would see a more positive correlation between the orthodontic treatment and the patient's perception of its impact on their oral HRQOL. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Malocclusion Treatment, Quality of Life

Print Tag: Refer to original journal article
The success rate for mini-implants for orthodontic anchorage is nearly 90%.

**Background:** Mini-implants have now been used for several years as orthodontic anchorage. However, in order to support anchorage, these mini-implants must be stable. A common complaint is that the failure rate of mini-implants seems high.

**Objective:** To investigate factors relating to the clinical failure of mini-implants in a large group of patients.

**Methods:** This was a retrospective analysis of all mini-implants placed from January 2001 to December 2006 in 166 patients. A variety of implants were placed in these individuals in a variety of locations. Implant success was identified as those mini-implants that were maintained in the bone for >6 months without obvious mobility. If the implants loosened or were lost prior to 6 months, they were considered failures.

**Results:** The overall failure rate was 10.1% (42 of 414 screws). The main reason for implant failure was screw loosening, which usually occurred within the first 2 weeks. The failure rate was not significantly affected by age or gender, and the diameter and length of the mini-implant did not attribute to its success or failure. There was a difference in the failure rate between the maxilla and the mandible, but this difference was not statistically significant.

**Conclusions:** Mini-implants are highly successful, with a stability rate of nearly 90% in the authors' subject population.

**Reviewer's Comments:** Although the data reported in this study show that the implants were successful nearly 90% of the time, other studies have reported much lower success rates. Part of the discrepancy could be the type of implant used. If a pilot hole is drilled, this creates heat in the bone, and this can lead to bone necrosis and implant instability. Most of the implants in this study were self-tapping screws that required no predrilling, resulting in a higher success rate. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Orthodontic Anchorage, Mini-Implant Stability

Print Tag: Refer to original journal article
Orthodontists underestimate the degree to which orthodontic treatment causes pain for their patients.

**Background:** A common response to activation of an orthodontic appliance is pressure that is placed on the periodontal ligament as the tooth begins to move. This pressure may be interpreted as a painful response for some patients. As a result, patients may take analgesics to reduce the impact of the pressure. Do orthodontists realize the degree to which orthodontic patients are experiencing orthodontic pain?

**Objective:** To determine how much pain was reported by orthodontic patients and perceived by their orthodontists, as well as how much pain medication was used by the patient.

**Methods:** This was a prospective analysis of patients who were undergoing orthodontic treatment in a university-based orthodontic clinic. A survey was performed and collected from 116 adolescent patients (44 males, 72 females). The average age of the sample was 14 years. These patients were being treated by 14 graduate orthodontists. Prior to a regularly scheduled appointment, the patients were asked to participate in a survey following their appointment. The survey questioned whether or not pain had been experienced during the orthodontic appointment and whether or not pain medications had been taken to alleviate the pain. After the patients had filled out the questionnaire, the orthodontic provider was also asked to fill out a questionnaire regarding their perception of the patient's pain and the amount of analgesic that would be required following that specific appointment. These surveys were then compared to determine the responses of both patient and orthodontist.

**Results:** The results showed clearly that 58.5% of the patients agreed that they had pain for a few days following the appointment. On the other hand, the orthodontists underestimated their patients’ pain in conjunction with the orthodontic treatment. A second question evaluated the patient's use of analgesics. Approximately 26% of the patients used pain medication immediately following and 1 day after their last appointment.

**Conclusions:** On average, orthodontists underestimate the degree to which orthodontic treatment causes pain; they also underestimate how many of their patients use pain medication.

**Reviewer’s Comments:** This was a very interesting study. I would also probably underestimate the pain and amount of analgesic used in my patients. Perhaps we are not sensitive enough to our patients when it comes to the painful response that occurs when arch wires and appliances are activated. (Reviewer-Vincent G. Kokich, DDS, MSD).

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Keywords: Orthodontic Treatment, Pain Assessment, Patient vs Orthodontist

Print Tag: Refer to original journal article
Does Adhesion Promotor Improve Bond Strength?

Effects of Adhesion Promoters on the Shear Bond Strengths of Orthodontic Brackets to Fluorosed Enamel.

Adanir N, Türkkahraman H, Güngör Y:

Eur J Orthod 2009; 31 (June): 276-280

Bond strength to fluorosed enamel is significantly less than to normal enamel, but the use of an adhesion promoter with fluorosed teeth brings the bond strength close to normal.

**Background:** Orthodontic bracket retention can be a challenge when bonding to fluorosed enamel. It is unclear whether a commercially available adhesion enhancer can improve bond strength to fluorosed teeth.

**Objective:** To compare the shear bond strength of brackets bonded to normal enamel with brackets bonded to fluorosed enamel with and without an adhesion promoter.

**Design:** Laboratory study using 45 extracted human premolars. Groups 1 and 2 were each composed of 15 teeth with fluorosed enamel and Group 3 was composed of 15 teeth with normal enamel.

**Methods:** Group 3 (normal enamel) had a metal bracket bonded with a light-cured composite material and acted as the control group. Group 1 (fluorosis) had brackets bonded just like the control group and served as the fluorosis control. Group 2 had Enhance LC, an adhesion promoter, added to the bonding process, but was otherwise the same as the other 2 groups. All specimens were tested for shear bond strength.

**Results:** The fluorosed teeth without the Enhance LC had significantly reduced bond strength compared with normal enamel. The use of Enhance LC increased the mean shear bond strength of brackets to fluorosed teeth to be nearly equal to the controls.

**Conclusions:** The use of an adhesion enhancer (in this case, Enhance LC) when bonding to fluorosed teeth appears to improve bond strength and provide strength that is essentially equal to that of normal enamel.

**Reviewer's Comments:** Once again, I remind you that laboratory bond strength results do not necessarily transfer directly to clinical results. The bond strength improvements obtained with the adhesion enhancer are significant enough to warrant trying this enhancer clinically, since there is no apparent additional risk and little additional cost. I will certainly give the enhancer a try the next time I have a patient with apparent fluorosis and frequent bracket failures. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Bond Strength, Fluorosis, Adhesion Promotors

Print Tag: Refer to original journal article
This analysis of a consecutive series of missing lateral incisor cases treated by space closure indicates good incisor position is possible if mechanics are controlled to limit retractive forces on the upper incisors.

**Background:** Routine space closure in missing upper lateral incisor cases has been criticized because of the potential for upper incisor retraction and poor final position of the dentition.

**Objective:** To critically evaluate a consecutive series of missing lateral incisor cases treated by upper arch space closure without lower arch extractions.

**Design:** Retrospective case study.

**Participants:** 25 patients who underwent upper arch space closure for the treatment of missing lateral incisors were included. Patients were approximately 14 years of age at the start of treatment.

**Methods:** The dental records (models, cephalometric radiographs) of the participants were analyzed, and clinical examination variables were assessed from the pre-treatment and post-treatment records. The changes in various dental and skeletal relationships as a result of treatment were determined. The final measurements were compared to normative values ±1 standard deviation to determine nonideal results.

**Interventions:** All subjects were treated with space closure in the upper arch using push-and-pull mechanics and Class III elastics.

**Results:** The average treatment time was 2.6 years. There were significant changes in many dental and cephalometric measurements as a result of treatment, most of which were intended as part of the treatment goals. The position of the upper incisors was unchanged during treatment, but there was mild uprighting of the lower incisors, likely as a result of long-term Class III elastic wear (average, 1.3 years). The Class III elastic wear also resulted in slight flattening of the occlusal plane.

**Conclusions:** The authors believe that space closure in the upper arch for the treatment of missing lateral incisors should be a routine treatment option since proper mechanics can maintain upper incisor position and minimize unwanted treatment effects.

**Reviewer’s Comments:** I agree with the authors that space closure should be a routine treatment option for missing lateral incisors. Using mechanics described by the author, it is possible to close space forward without a negative effect on the upper incisor position. There were some small side-effects from the long-term Class III elastic wear that included mild lower incisor uprighting and slight occlusal plane rotation. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Congenitally Missing Lateral Incisors, Space Closure, Canine Substitution

Print Tag: Refer to original journal article
Using a special reference pin placed in the nasofrontal bone, accurate vertical positioning of the maxilla can routinely be accomplished.

**Background:** Vertical positioning of the maxilla during orthognathic surgery is very important for optimal tooth display and smile aesthetics following treatment.

**Objective:** To test a new method of vertically positioning the maxilla at the time of surgery by comparing the actual postsurgical position with the intended position.

**Design:** Clinical trial using consecutive patients.

**Participants:** 239 consecutive patients undergoing bimaxillary orthognathic surgery during a 2-year period.

**Methods:** Lateral cephalograms were taken before surgery and 3 to 5 days after surgery. These radiographs were traced and superimposed on anterior cranial base structures. Actual changes in maxillary position were measured and compared to the planned changes.

**Interventions:** A unique reference marker designed to accommodate one end of a caliper was placed into the nasofrontal bone of all subjects. The vertical distance from this marker to the orthodontic wire was used as the baseline for vertical maxillary positioning.

**Results:** The average difference in actual vertical maxillary position compared to plan was almost zero. There was a fair amount of variation, however, in both directions. The vertical position was within 0.5 approximately 62% of the time, within 1 mm almost 90% of the time, and within 2 mm 97% of the time.

**Conclusions:** The use of this new external reference placed in the nasofrontal bone resulted in accurate vertical positioning of the maxilla at the time of surgery, which could help to maximize smile aesthetics following treatment.

**Reviewer's Comments:** Anteroposterior and transverse relationships of the maxilla have been well controlled at the time of orthognathic surgery by using positioning splints. Vertical positioning has been more difficult because of the autorotation of the mandible that occurs with the splint in position. The external reference tested in this study seems to offer a simple and accurate method of vertical positioning that can insure the surgical results are close to the planned movements. (Reviewer-Brent E. Larson, DDS, MS).

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Keywords: Orthognathic Surgery, Maxilla, Vertical Positioning

Print Tag: Refer to original journal article
Achieving a Class I molar relationship for patients with Class II malocclusion is no more stable than finishing with a Class II molar relationship.

**Background:** For the correction of class II malocclusions, appropriate treatment protocols include extraction of both 2 maxillary premolars and 4 premolars. Does one or the other of these protocols result in better long-term stability?

**Objective:** To compare the stability of 2 maxillary first premolar extractions versus 4 premolar extractions for the correction of Class II malocclusions.

**Participants:** 57 patients who had completed treatment for Class II malocclusion and had complete records were divided into 2 groups.

**Methods:** Group 1 consisted of 30 patients treated with the extraction of 2 maxillary premolars, and group 2 consisted of 27 patients treated with the extraction of 4 premolars. Cephalometric radiographs and study models taken prior to treatment as well as posttreatment and postretention were evaluated. Differences between the 2 groups were statistically analyzed.

**Results:** During the posttreatment period, the findings for both groups were similar, except that group 1 (2 maxillary premolars) had a greater maxillary forward displacement and a greater increase in the apical-base relationship than group 2 (4 premolar extractions). Also, the Class I molar relationship established in group 2 had significantly greater relapse than the Class II molar relationship established in group 1.

**Conclusions:** Overall, treatment of complete Class II malocclusions with 2 maxillary premolar extractions or 4 premolar extractions had similar long-term posttreatment stability.

**Reviewer’s Comments:** The results from this study did not surprise me. There are still some orthodontists who feel that a Class I molar relationship is more stable than either a Class II or Class III molar relationship; however, this study refutes that concept. It seems to me that there are more important criteria for deciding between the extraction of 3 maxillary premolars or 5 premolars for Class II correction, such as anteroposterior skeletal discrepancy, amount of crowding, and profile. I am not sure why the 2-premolar group had a greater anterior repositioning of the maxilla during posttreatment, except for the possibility of the 4-premolar group receiving more headgear-type therapy. (Reviewer-John S. Casko, DDS, MS, PhD).

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Keywords: Premolar Extraction Protocols, Class II Malocclusion, Stability

Print Tag: Refer to original journal article
Orthodontists and their staff should engage patients in light conversation about their families, jobs, and interests.

Background: The current recession has affected almost every sector of the economy including dentistry and orthodontics. What can you do for your practice to maintain or improve its viability during these difficult economic times?

Objective: This guest presentation article by Dr. Roger P. Levin discussed areas that you would address in your practice to help avoid the necessary consequences of the current downturn in the economy. Summary: While >50% of dentists said their gross billings had decreased between the third and fourth quarters of 2008, 18% said they experienced an increase in gross billings during that time, making it clear that it is possible to achieve growth despite the current economic conditions. In his article, Dr. Levin suggests a number of steps you can take in your practice to help during the current economy. He suggests that above all, maintaining a positive attitude in the face of adversity is a necessary ingredient for managing a practice during challenging times. When presenting treatment plans to patients, continue to present ideal treatment plans to every patient. It is important to build better relationships with patients, and strong interpersonal skills practiced by staff members can enhance the patient experience in your office. You and your team members should engage patients in light conversation about their families, jobs, and interests. You should also develop a system for scheduling new patients quickly. Once they have contacted your practice, new patients should be scheduled within 7 to 10 days while they are still well motivated. Dr. Levin suggests that your goal should be to improve customer service and exceed patient expectations. To do this, you need to look at your practice through the eyes of your patients. Small things, like having healthy refreshments available in your reception room, can help patients relax and means a great deal to them. You should also thank patients who refer friends and family members.

Conclusions: While the economic recovery may be a slow one, you can take steps in your practice to improve its viability.

Reviewer's Comments: Dr. Levin's suggestions for improving your practice in a down economy time are not only valid, but also very practical. Although this article was written primarily for general dentists, most of the suggestions apply directly to orthodontic practices. In down economic times, it is easy to become obsessed with efficiency at the expense of patient relations, which is not in the long-term best interest of your practice. Hopefully, the suggestions in this article will spur you to look more closely at the operation of your practice to see if there are changes that you can make to offset some of the negative results of the economy. (Reviewer- John S. Casko, DDS, MS, PhD).

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Keywords: Success, Strategies, Practice Viability

Print Tag: Refer to original journal article
Preserving Anchorage When Retracting Canines

Rate of Tooth Movement Under Heavy and Light Continuous Orthodontic Forces.

Yee J, Turk T, et al:


For maximum anchorage cases, it is best to use light forces for canine retraction.

**Background:** In maxillary first premolar extraction cases, one might question whether it makes any difference if you use light or heavy forces to retract the canines. It is important to understand the different effects of retracting canines with light versus heavy forces and their effect on anchorage loss or preservation. **Objective:** To measure the rate and amount of orthodontically induced tooth movement under heavy and light continuous forces. **Participants:** The sample for this study consisted of 14 patients who required maxillary canine retraction into the first premolar extraction site. **Methods:** A split-mouth design was used for this study, with a 50-g retraction spring used on one side and a 300-g retraction spring used on the opposite side. Intraoral and maxillary model measurements were made at the beginning of canine retraction and every 28 days for a total of 84 days. **Results:** Heavy forces increased the rate and amount of canine retraction; however, the negative effect of using heavy forces was a loss of canine rotation control and greater anchorage loss when compared to lighter forces. Although the actual amount of total space closure was significantly greater in the heavy-force group, the percentage of space closure from canine retraction was greater in the light-force group. The amount of anchorage loss was also less in the light-force group. **Conclusions:** For moderate anchorage cases, it might be appropriate to use heavy retraction forces to the canines, whereas for maximum anchorage cases, it would be appropriate to use lighter retraction forces. **Reviewer's Comments:** The only concern that I had about this study was the conclusion that heavy retraction forces result in greater rotation of the canines. To avoid differences in friction, the authors bonded the canines with nickel-titanium (NiTi) speed clips; in 6 of the 14 patients, the heavy force retraction overcame the retentive lock of the NiTi speed clip causing the archwire to pop out of the bracket, which in my mind, would make it inappropriate to reach any conclusions about the effect of heavy or light forces on canine rotation. Other than that, the study seems to support the concept of lighter forces being more effective in preserving anchorage when retracting canines. (Reviewer—John S. Casko, DDS, MS, PhD).

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Keywords: Orthodontic Forces, Heavy vs Light, Tooth Movement

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