

Anatomically Guided Site Prep Technique Aids in Favorable Implant Placement

Anatomically Guided Implant Site Preparation Technique at Molar Sites.

Rodriguez-Tizcareño MH, Bravo-Flores C:

Implant Dent 2009; 18 (November): 393-401

Immediate implant placement in areas of extraction of multiradicular teeth is enhanced by an anatomically guided preparation technique using interradicular septal bone.

Background: Preparation of an implant site may be performed either in an edentulous area that is totally healed or immediately after the tooth is extracted. The latter of these situations must address the preparation of the implant site to achieve placing the implant in the ideal position and to assure stability during alveolar healing and implant integration.

Objective: To discuss an anatomically guided site preparation technique that facilitates placement of dental implants in postextraction sockets of multiradicular molar teeth in a favorable position to enhance a good prognosis.

Methods: In the 2 cases reviewed, non-restorable molars were extracted, and an immediate implant was inserted in each edentulous space. The pre-existing tooth form, position, and soft tissue were evaluated clinically and radiographically. This technique is recommended where preservation of the molar extraction socket is possible. Progressive implant site preparation is done in order to use the interradicular alveolar septum to engage the implant in a favorable and proper position. After extraction, the initial osteotomy is performed. The bur is placed in the center of the interradicular septum following the long axis of the tooth. The endosseous implant is selected and inserted. The socket is then filled with freeze-dried demineralized bone allograft, and a healing abutment is placed. Follow-up evaluations should confirm the state of the healing and the position of the implant. In some cases, presurgical treatment of gingival tissue may be performed to ensure better coverage of the graft at the time of placement.

Results/Conclusions: Clinical and histologic studies have demonstrated predictable and successful results with immediate placement of implants into fresh extraction sites. Alveolar bone preservation and stability of the gingiva are achieved with this technique. However, the technique has some limitations. It is contraindicated in areas of active infection or pathology, with fused or ankylosed roots, and where the root integrity had been compromised preoperatively. Still, this technique is very successful when adequate preparation of the intra-septal bone is achieved. This allows sufficient depth and orientation of the implant. Subsequent use of allograft material and a physical membrane, or autogenous bone, improves the prognosis of implants placed with this technique.

Reviewer's Comments: This excellent, clinically supported study addresses a problem that is present with the immediate implant insertion technique. Although the authors specifically discuss only 2 cases in this article, other research confirms its validity. The basic principal of achieving maximum bone support of implants is, once again, reinforced by these authors. (Reviewer-Edward N. Friedman, DDS).

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Keywords: Immediate Implants, Postextraction Implant Insertion, Single-Tooth Implants

Print Tag: Refer to original journal article

Soft Tissue, Clinical Stability Are More Readily Achieved With Tapered Implant Abutments Than With Butt-Joint Abutments

Influence of Abutment Design on Clinical Status of Peri-Implant Tissues.

Taiyeb-Ali TB, Toh CG, et al:

Implant Dent 2009; 18 (October): 438-446

Tapered abutments provide superior soft tissue stability to butt-joint abutments when used to restore implants with crowns.

Background: Different types of implant abutment designs are being studied to achieve one that will result in the most biocompatible response with peri-implant tissues. Of primary importance is to have a design that minimizes the small microgap that can be seen at the junction of the implant fixture and the abutment. This space serves as an area for bacteria and food debris to accumulate. The localized inflammation can lead to increased pocket depth, probing attachment loss, plaque retention, bleeding, and crestal bone loss.

Objective: To compare the clinical response of the soft tissue around teeth restored with either tapered or butt-joint implant abutments prior to constructing 3-unit bridges.

Design/Methods: 1 month after extraction of teeth, Ankylos implants were placed in the posterior molar regions of 8 monkeys. After 3 months of healing, 3 implant-borne metal bridges were constructed contralaterally. One side had tapered joint abutments inserted, and the other had butt-joint abutments inserted. At baseline and at 3- and 6-month intervals, sites were measured for plaque index, sulcus bleeding, probing pocket depth, attachment loss, width of keratinized mucosa, and implant stability.

Results: No significant differences manifested until the 6-month interval. At that time, butt-joint abutments showed greater gingival attachment loss, and tapered abutments showed greater stability. It is thought that the depth of the titanium tapered screw implant thread design helps to direct the functional load apically. The precision fit of the tapered abutment within the implant prevents loosening and rotation of the abutment. The better fit reduced the presence of microgaps at the implant-abutment interface from what is observed with the butt-joint abutment. The smaller the gap, the less the inflammatory response of the tissue.

Conclusions: Implants using internal tapered conical abutments provide superior mucogingival stability to butt-joint abutments. This tapered type of abutment also results in less clinical mobility of bridges after 6 months.

Reviewer's Comments: As the number of companies and types of implants and abutments grows, we need to evaluate which type will prove most successful over time. Although the study covers a period of only 6 months, it does provide some data indicating the superiority of tapered implant abutment design. Further studies using more subjects over a longer time span would be helpful to ascertain whether tapered joint abutments should be the treatment of choice over butt-joint abutments. (Reviewer-Edward N. Friedman, DDS).

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Keywords: Monkeys, Tapered Joint Abutment, Butt-Joint Abutment, Platform Switching, 3-Unit Bridges

Print Tag: Refer to original journal article

PDT Offers No Enhancement in Nonsurgical Periodontal Tx of Diabetics

Short-Term Effects of Photodynamic Therapy on Periodontal Status and Glycemic Control of Patients With Diabetes.

Al-Zahrani MS, Bamshmous SO, et al:

J Periodontol 2009; 80 (October): 1568-1573

Photodynamic therapy is shown to not be effective in treating periodontal disease.

Background: Periodontitis leads to tooth loss and has been implicated in poor glycemic control in diabetic patients. Photodynamic therapy (PDT) has been shown to successfully treat periodontitis in some studies.

Objective: To evaluate the effect of PDT on the periodontal status and glycemic control of diabetic periodontal patients.

Participants/Methods: 45 type 2 diabetic patients with moderate to severe chronic periodontitis were randomly assigned to 1 of 3 groups: scale and root plane (SRP) only, SRP plus systemic doxycycline, or SRP and PDT. Standard evaluations of periodontal condition as well as glycosylated hemoglobin were evaluated. All results were subjected to the appropriate statistical analysis.

Results: Data at 12 weeks on clinical parameters showed statistically significant improvement in all groups. The 12-week analysis showed improvement in glycosylated hemoglobin, but only the improvement in the SRP and doxycycline group was statistically significant. There was no significant variation on probing depths, which were the primary outcome measures, or other clinical parameters between treatment groups. **Discussion:** The results were different from other clinical studies in which the addition of PDT to SRP produced significant improvements.

Conclusions: There is not enough difference in the decrease in clinical parameters or hemoglobin glycolysis to justify inclusion of PDT in the treatment of periodontitis in diabetic patients.

Reviewer's Comments: After viewing the raw data, it was difficult to see why all groups did not have a similar significance in the reduction of clinical parameters. More investigation needs to be pursued to determine the cause of differing results and conclusions between this and other similar studies. (Reviewer-Charles R. Hoopingarner, DDS).

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Keywords: Photodynamic Therapy, Nonsurgical Periodontal Therapy

Print Tag: Refer to original journal article

Getting More Primary Stability in Implant Placement

Clinical Methodologies for Achieving Primary Dental Implant Stability: The Effects of Alveolar Bone Density.

Cavallaro J Jr, Greenstein B, Greenstein G:

J Am Dent Assoc 2009; 140 (November): 1366-1372

Much information can be gained in the osteotomy creation if the operator looks for information.

Objective: To correlate alveolar bone density with surgical techniques that would enhance primary stability.

Design: Literature review.

Results: Various types of bone density can occur throughout the mouth. It is critical that the operator evaluate bone density during the osteotomy procedure. Traditional classification of bone density was types I through IV. As studies have shown that not many operators can make the fine differentiations from one type to the next, a different classification is offered that classifies bone as dense, medium, or soft. Dense type is cortical bone that extends the entire length or most of the length of the osteotomy, and it has a medullary component offering resistance to a 2-mm twist drill. Medium type offers a 2- to 3-mm length of cortical bone and limited drilling resistance in the medullary compartment to the 2-mm twist drill. Soft type has minimal cortical bone and poor-quality medullary bone that offers little resistance. It is necessary to consider that many implant systems, when placing a platform at the level of the crest of the bone, will initiate an immediate resorption of 1.5 to 2.0 mm of bone from the microgap. Clinical biologic width is usually 1.5 to 2.0 mm in height and refers to the combined epithelial and connective tissue attachment, which must be present above the level of the bone before the microgap occurs. This can be significantly altered with platform switching, which creates somewhat of a horizontal biologic width. It is stated that vertical bone loss in platform-switched implants is nearly 1 mm less than in traditional types. When initiating the osteotomy, the dentist should use a round bur or pilot drill to assess the depth of the cortical plate prior to using the 2-mm twist drill. This allows for an alternate decision should the cortical bone prove inadequate and the overall bone density is less than was anticipated. If softer or medium bone is encountered, osteotomes may be used to compact bone and increase density. During the osteotomy procedure, should softer than anticipated bone be present, use of a longer or wider implant would be appropriate if the patient's anatomy allows. A 1 mm wider or 3 mm longer implant will provide 20% to 30% more surface area. It is also noted that platform switching may be appropriate. It may be necessary to extend integration from 3 to 6 months prior to loading the implant. This information is used to modify or redirect treatment protocol in order to predictably develop a solid integration.

Reviewer's Comments: This very practical article offers suggestions to increase stability at the time of implant placement. The inclusion of platform switching is encouraging. (Reviewer-Charles R. Hoopingarner, DDS).

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Keywords: Implant Placement, Primary Stability, Bone Density

Print Tag: Refer to original journal article

No Difference Between Buccal Infiltration, PDL Injections for Acute Pulpitis

Anesthetic Efficacy of Inferior Alveolar Nerve Block Plus Buccal Infiltration or Periodontal Ligament Injections With Articaine in Patients With Irreversible Pulpitis in the Mandibular First Molar.

Fan S, Chen W-I, et al:

Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009; 108 (November): e89-e93

Inferior alveolar nerve block using articaine, supplemented by buccal infiltration or periodontal ligament injection, is effective anesthesia for mandibular molars with acute pulpitis.

Background: Profound anesthesia is necessary for most dental procedures, but this is especially true for patients in acute pain. Anesthetic success can be as low as 19% to 56% for blocks of the inferior alveolar nerve (IANB) in patients with acute pulpitis of mandibular molars. The relative efficacy of IANB with buccal infiltration (BI) or periodontal ligament (PDL) injection using articaine has not been assessed.

Objective: To compare the anesthetic efficacy of IANB/BI and IANB/PDL using articaine in patients with acute pulpitis in mandibular first molars.

Participants: 57 healthy subjects (34 men, 23 women) with a mean age of 33.98 years (range, 18 to 46 years) randomly received either IANB with BI or PDL for endodontic access of a vital mandibular first molar with acute pulpitis. Exclusion criteria were mobility >0.5 mm, periodontal probing depth >3.0 mm, no response to ice testing, periradicular pathosis, no vital coronal pulp tissue on endodontic access, allergy to articaine, severe systemic disease, and pregnancy. Articaine 4% with 1:100,000 epinephrine was used for all injections. Pain was assessed using a visual analog scale (VAS) before anesthesia with IANB (25-gauge needle, 1.7 mL anesthetic), during IANB injection and second injection, and during endodontic access. The VAS scale was as follows: no pain, 0 mm; mild, >0 mm to ≤54 mm; moderate, >54 mm to <114 mm; and severe, ≥114 mm to ≤170 mm. Five minutes after IANB, lip numbness was assessed; if not profound, the subject was eliminated from study. If numb, either BI at buccal apex of tooth (27-gauge needle, 0.4 mL anesthetic) or PDL injection (27-gauge needle, 0.2 mL 4% articaine) at 2 sites per tooth was done. Endodontic access was performed by an operator blinded to injection type. If the patient felt moderate to severe pain, it was stopped, a rescue injection was given, and the attempt was determined a failure. A dental assistant blinded to type of injection collected data.

Results: There was no significant difference between groups for age, gender, and initial pain score. All reported moderate to severe pain with IANB. None had moderate or higher pain with PDL or BI. Of patients, 81.48% in the IANB/BI group and 83.33% in the IANB/PDL group had anesthetic success. This was not significantly different ($P=0.85$).

Conclusions: Both IANB/BI and IANB/PDL using 4% articaine with 1:100,000 epinephrine provided effective anesthesia in most patients with acute pulpitis in mandibular first molars.

Reviewer's Comments: The high degree of anesthetic success in this study compared to previous studies could be attributed to use of articaine, which has been shown to have superior diffusion through soft tissues and superior anesthetic effect compared to other amide anesthetics. (Reviewer-Carol Anne Murdoch-Kinch, DDS, PhD).

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Keywords: Local Anesthesia, Acute Pulpitis

Print Tag: Refer to original journal article

No Harm Associated With Partial Removal of Carious Dentin in Primary Teeth

Microbiological Analysis After Complete or Partial Removal of Carious Dentin in Primary Teeth: A Randomized Clinical Trial.

Lula ECO, Monteiro-Neto V, et al:

Caries Res 2009; 43 (5): 354-358

Partial removal of carious dentin in deeply carious deciduous molars is not associated with growth of bacteria or disease progression.

Background: Complete removal of carious tissue has been the standard of care for treatment of dentinal caries. However, research suggests that partial removal of carious dentin does not affect disease progression or restoration longevity and may prevent pulp exposure. The results of partial and complete carious dentin removal have not been compared.

Objective: To quantitatively and qualitatively compare microbial flora in cavities with partial or complete removal of carious dentin in deciduous molars before and at 3 to 6 months after sealing of the cavity.

Design: Prospective clinical trial.

Participants: 30 healthy children aged 5 to 8 years with 36 deciduous molars.

Methods: Children were randomized to either partial caries removal or complete caries removal. Teeth with no previous restoration, no radiographic features of pulp or periapical pathology, and active caries involving the inner half of the dentin with the buccal-lingual opening measuring at least 2 mm and involving the occlusal or occlusal-proximal surface were prepared under local anesthesia and rubber dam isolation. Complete caries removal in the control group was ensured using a caries detector dye, and superficial necrotic dentin only was removed in the experimental group. Using aseptic technique, remaining dentin was sampled using a pre-weighed sterile bur and placed in a test tube with culture medium. Dentin weight was calculated, and bacteria were cultured, quantified, and identified. Calcium hydroxide was placed on the cavity floor, and teeth were etched and restored with adhesive and composite resin. Three to 6 months after treatment, all cavities were reopened to re-sample the dentin, pulp vitality was tested, and restorations were replaced.

Results: 4 of 36 teeth were lost. In the complete removal group, there was 1 necrotic pulp and 1 lost restoration. In the partial removal group, there was 1 tooth exfoliated and 1 patient lost. There was no sensitivity or clinical and radiographic signs of pulp pathology in any teeth. In the control group, 25% had pulp exposure. Microbial counts in controls were significantly greater ($P=0.027$) after cavity sealing compared to before. *Lactobacillus* spp were lower at cavity reopening. Microbial counts were significantly greater in experimental than in control patients before sealing, and they decreased in experimental patients by 11% to 19% after sealing. This was significant for mutans streptococci ($P=0.02$) and *Lactobacillus* spp ($P=0.005$). There was no difference in microbial counts between groups after cavity sealing. There was a significant reduction in frequency of mutans streptococci ($P=0.041$) and *Lactobacillus* spp ($P=0.023$) isolation after sealing in the partial removal group.

Conclusions: Partial removal of carious dentin in a single session in deeply carious deciduous molars is supported by the results of this study.

Reviewer's Comments: Removal of only the superficial necrotic layer of carious dentin is necessary and effective for treatment of deep dentinal caries in primary molars, and may reduce the risk of pulp exposure and its sequelae. (Reviewer-Carol Anne Murdoch-Kinch, DDS, PhD).

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Keywords: Caries Removal, Primary Teeth

Print Tag: Refer to original journal article

1-mm Ferrule Length for Bonded All-Ceramic Crown Shows Good Performance

Load Fatigue of Teeth With Different Ferrule Lengths, Restored With Fiber Posts, Composite Resin Cores, and All-Ceramic Crowns.

Ma PS, Nicholls JI, et al:

J Prosthet Dent 2009; 102 (October): 229-234

In this study, specimens with a 0.0-mm ferrule survived few fatigue cycles despite the fact that both the post and crown were bonded with resin cement.

Background: When restoring an endodontically treated tooth, the remaining circumferential tooth height remaining after a crown preparation is very important to create a ferrule effect. For a metal or metal ceramic crown, a ferrule length of 1.5 to 2.0 mm has traditionally been recommended to help prevent tooth fracture. The extent of a ferrule needed for a bonded all-ceramic crown has not been well established.

Objective: To determine the fatigue resistance of all-ceramic crowns with variable heights of remaining tooth structure for a comparison of adequate ferrule effect.

Methods: Extracted central incisors were evenly divided into 3 groups. Anatomic crowns were removed from all teeth and the 3 groups were distinguished by the remaining tooth structure coronal to the CEJ following endodontic instrumentation. The 3 groups were: (1) no-ferrule, (2) 0.5-mm ferrule, and (3) 1.0-mm ferrule. Composite fiber posts were bonded with self-cure cement followed by dual-cure resin cores (ParaPost Cement/ParaCore). The crown preparations were 7 mm in height with a 1.5-mm lingual axial wall and 1.0-mm shoulder. All-ceramic crowns (IPS Empress 2) were luted with dual-cure cement using a total-etch technique and subjected to fatigue testing to determine the number of load cycles required for failure of the crown cement.

Results: The mean (SD) number of load cycles to failure for the no-ferrule group was 213 (317), and approximately 155,000 (69k) and 263,000 (21k) cycles for the 0.5 mm and 1.0 mm groups, respectively. There was no significant difference in the number of cycles between the 0.5-mm ferrule group and the 1.0-mm ferrule group, while the no-ferrule group was significantly less resistant to fatigue failure. All specimens in the 1.0-mm ferrule group survived the set maximum number of cycles without failure.

Conclusions: A bonded post-and-core-retained, all-ceramic crown will survive a greater number of fatigue cycles as the ferrule length increases to 0.5 mm over no-ferrule and 1.0 mm over 0.5-mm ferrule length. A ferrule of 1.0 mm survived the greatest number of load cycles for the bonded restoration.

Reviewer's Comments: This study compares ferrule heights as they relate to breakage of cement seal under bonded composite-fiber post-and-core-retained all-ceramic crowns for maxillary central incisors using fatigue loading. This dynamic cyclic loading well simulates clinical conditions and guides the practitioner on how much vertical tooth needs to remain for predictable clinical outcomes on endodontically treated anterior teeth. While no statistically significant difference was detected between the 0.5-mm ferrule and 1.0-mm ferrule groups, the standard deviations were too high for the 0.5-mm design to be recommended. Only 5 specimens were tested per group. In the future, it would be beneficial to see a greater number of samples in order to arrive at more robust data. (Reviewer-Joe C. Ontiveros, DDS, MS).

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Keywords: All-Ceramic Crowns/Fatigue Testing, Ferrule

Print Tag: Refer to original journal article

Metal/Ceramic Primers Influence Zirconia Ceramic Bonding

Surface Conditioning Influences Zirconia Ceramic Bonding.

M Kern, A Barloï:

J Dent Res 2009; 88 (Sep): 817-22

Low pressure sandblasting combined with metal/ceramic primers shows good long-term resin bond strengths to zirconia ceramic.

Background: The application of zirconia ceramic is gaining in popularity, especially the high strength core of all-ceramic crowns. Traditionally, zirconia ceramics require special surface treatment, which includes high pressure air-abrasion in order to achieve durable bond strengths to resin. There is a concern that air-abrasion may have a negative effect on the structural integrity of zirconia ceramic. More recently, metal/ceramic primers have been advocated for bonding zirconia ceramics.

Objective: To investigate the influence of various combinations of metal/ceramic primers and/or air-abrasion surface treatments on zirconia ceramic bonding.

Methods: Zirconia disks (Cercon) were divided into 3 air-abrasion groups: (1) No air-abrasion, (2) 0.05 MPa air-abrasion (approximately 7 psi), and (4) 0.25 MPa air-abrasion (approximately 36 psi). The conditioned disks were further divided into 4 phosphate-based priming subgroups: (i) no primer, (ii) metal/zirconia primer (Ivoclar), (iii) alloy primer (Kuraray), and (iv) Clearfil ceramic primer (Kuraray). Surface-treated disks were bonded with self-adhesive dual-cure resin cement (Multilink) and subjected to tensile bond strength testing after 3 days water storage or 150 days with 37,500 thermal cycles. Fracture modes were analyzed to distinguish cohesive, adhesive, and mixed failures.

Results: Specimens that were air-abraded alone did not survive delayed bond strength testing. While primers improved the immediate bond strengths for non-abraded zirconia disks, all non-abraded specimens failed (0 MPa) within 150 days irrespective of the surface priming showing complete adhesive failure. Only the groups receiving both air-abrasion and primer application showed acceptable delayed bond strengths. Alloy primer and Clearfil ceramic primer groups showed mixed adhesive-cohesive failure modes and significantly higher bond strengths than the metal/zirconia primer group. No difference was shown between the uses of higher or low pressure air-abrasion.

Conclusions: A combination of air-abrasion and metal/ceramic primer improved long-term resin bond strengths to zirconia ceramic. Low pressure air-abrasion was as effective as high pressure air-abrasion.

Reviewer's Comments: This study demonstrates that we still need to sandblast our zirconia ceramic restorations, such as Lava crowns or Cercon restorations. If we combine the surface treatment with the application of a metal/ceramic primer (Alloy primer/Clearfil ceramic primer) we should be able reduce the air-abrasion pressure without affecting the long-term bond strength. (Reviewer-Joe C. Ontiveros, DDS, MS).

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Keywords: Zirconia Ceramic /Bonding, Surface conditioning

Print Tag: Refer to original journal article

Don't Count on the Infraorbital Block for Anesthesia of Maxillary Incisors

A Prospective, Randomized, Double-Blind Comparison of the Anesthetic Efficacy of Two Percent Lidocaine With 1:100,000 and 1:50,000 Epinephrine and Three Percent Mepivacaine in the Intraoral, Infraorbital Nerve Block.

Berberich G, Reader A, et al:

J Endod 2009; 35 (November): 1498-1504

Anesthesia with 2% lidocaine provides longer duration than does 3% mepivacaine for the intraoral, infraorbital nerve block technique.

Background: Block injections are advocated as providing superior local anesthesia compared to infiltration techniques, particularly in regard to the total number of structures innervated and the duration of hard- and soft-tissue anesthesia, particularly in the maxilla.

Objective: To compare the anesthetic efficacy of 3 local anesthetic preparations for the intraoral, infraorbital injection techniques.

Design: Prospective randomized double-blind controlled clinical trial.

Participants: 40 healthy adults of both sexes with no pathology in the teeth or supporting tissues in the areas of the oral cavity under study.

Methods: Subjects received in random order 1.8 mL of 1 of 3 dental local anesthetics (2% lidocaine with 1:100,000 epinephrine, 2% lidocaine with 1:50,000 epinephrine, and 3% mepivacaine) on 3 successive visits spaced a least 1 week apart in a crossover experimental design. A conventional intraoral, infraorbital nerve block technique was used, and electric pulp testing of the incisors, canine, premolars, and first molar on the injected sides was performed to assess anesthetic onset and efficacy beginning at 1 minute after injection and continuing up to 60 minutes. Anesthesia was defined as successful if 2 successive pulp test readings of 80 were obtained.

Results: Onset times ranged from 2.8 to 4.8 minutes, with no differences observed between the 3 anesthetic formulations. Successful anesthesia was obtained in 10% to 30% of incisor teeth, 85% to 92% of canines, 75% to 85% of premolars, and 50% to 62% of first molars. Mepivacaine anesthesia was of shorter duration than that of either of the lidocaine preparations.

Conclusions: The intraoral, infraorbital nerve block technique is not effective for providing pulpal anesthesia of the maxillary incisors and first molar, and anesthesia with 2% lidocaine provides longer duration than does 3% mepivacaine for this technique.

Reviewer's Comments: This study is yet another well-executed evaluation of various local anesthetic techniques from this group, and appears to contradict long-held beliefs about the efficacy of the infraorbital nerve block, even when excellent volume of anesthesia and technique are observed. Failure of the infraorbital technique to provide pulpal anesthesia of the maxillary incisors would likely be even more pronounced in the presence of irreversible pulpitis. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Epinephrine, Infraorbital Nerve Block, Lidocaine, Maxillary, Mepivacaine

Print Tag: Refer to original journal article

Oral Bisphosphonates May Not Significantly Affect Healing After Root Canal

A Retrospective Clinical and Radiographic Study on Healing of Periradicular Lesions in Patients Taking Oral Bisphosphonates.

Hsiao A, Glickman G, He J:

J Endod 2009; 35 (November): 1525-1528

Root canals in restorable teeth in patients taking bisphosphonates combined with good technique yield acceptable rates of healing.

Background: While bisphosphonates are known to predispose dental patients to osteonecrosis of the jaw, there is little documentation of the effects of these drugs on post-endodontic bone healing.

Objective: To evaluate healing periapical lesions in adults who took bisphosphonate drugs and required root canal therapy.

Design: Retrospective case-series, case-controlled.

Participants: Adult patients of a university dental clinic who had ≥ 2 -mm periapical radiolucencies and who had taken an oral bisphosphonate drug for ≥ 1 year at the time of root canal treatment.

Methods: Subjects were randomly selected from a pool of 727 cases who had been treated between 2001 and 2008 and who had been treated with a single endodontic technique (crown-down, NiTi rotary filing, gutta percha obturation). Patients in the same age range who had not taken bisphosphonates and had been similarly treated were selected randomly to serve as controls. Endodontic outcomes were assessed as healing or non-healing using symptoms and radiographic evaluation according to guidelines of the American Association of Endodontists. Statistical comparisons were performed using a Fisher exact test, with $P < 0.05$ set for significance.

Results: 34 teeth from 28 patients were evaluated in patients taking bisphosphonates, while 38 teeth from 30 patients served as the non-bisphosphonate control group. Nearly 27% of teeth in the bisphosphonate group were non-healing after at least 10 months had elapsed since endodontic treatment, while $>18\%$ of control teeth were non-healing, but the differences were not statistically significant, nor were there significant differences in healing rates among retreated cases. No cases of osteonecrosis of the jaw were observed.

Conclusions: This preliminary study indicates that root canal therapy is not contraindicated in patients taking oral bisphosphonates, although caution must still be exercised to follow such cases carefully. The results are limited by the relatively small size of the sample groups.

Reviewer's Comments: A pilot study possesses inherent limitations, including small sample sizes, and a retrospective study is limited by uncontrolled variations in treatment that may have occurred within the study subjects. However, the outcomes of this study are important because retention of restorable teeth in patients taking bisphosphonates is preferable to extraction and the significantly increased risk of osteonecrosis associated with tooth removal. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Bisphosphonate, Endodontics, Outcome Assessment, Periradicular Lesion

Print Tag: Refer to original journal article

Gaps in Resin Composites Related to C-Factor, Light-Curing Mode

Influence of C-Factor and Light-Curing Mode on Gap Formation in Resin Composite Restorations.

dos Santos GO, dos Santos ME, et al:

Oper Dent 2009; 34 (September-October): 544-550

The clinical performance of light-curing resin composites may be compromised by shrinkage stress generated during the polymerization. The resulting formation of gaps is related to the type of composite material and the light-curing mode used.

Background: Light-cured resin composites are being used more and more in both anterior and posterior restorations. One limitation of this material is its tendency to undergo a decrease in volume during the polymerization reaction. This shrinkage stress results in gap development at the tooth-composite interface, which can lead to the presence of bacteria, fluid penetration, and postoperative sensitivity.

Objective: To review the causes and present ways to diminish this occurrence.

Methods: Class I cavities were prepared in 60 human molars, and were bonded and restored either with mini-filled hybrid resin composite (P60) or a nanofilled resin composite (Supreme). A quartz-tungsten-halogen unit was used for curing. Two light-curing modes were used: a standard 20-second exposure or a ramp exposure of two 10-second exposures. After storage in distilled water, restorations were polished and cut into 3 slices. Gap widths were analyzed in a 3-dimensional scanning system.

Results: The smallest gap formation was found in cavities restored with Supreme, the nanofilled resin composite. The ratio of surfaces of bonded to unbonded resin composite in a restoration is measured, known as the C-factor (Cf), which correlates with the number of gaps. The differences in filler content, organic matrix, and flexural modulus would affect shrinkage stresses and marginal adaptation. The highest gap formation values were seen in the internal angles of the preparation. Cavity depth was found to be more of an influence than the diameter of the cavity. Superior marginal sealing was obtained using the lower powered light, but either power proved adequate.

Conclusions: High Cf values resulted in the largest number of gaps. However, the number of gaps can be reduced by using a ramp light-curing mode. Use of nanofilled, rather than mini-filled composite, was also shown to be more effective at sealing the cavity walls.

Reviewer's Comments: This article discusses one of the major limitations of composites, the polymerization shrinkage that occurs during the light curing. The prevalence of postoperative sensitivity after composite placement is a real phenomenon, and this study points out some reasons for that problem. Further studies that test other types of composites, and light-curing variables, are needed so that we may provide composite restorations with fewer gaps and better marginal adaptation. This in vivo study provides a good starting point for further research into improving the properties of the composite resins presently in use. (Reviewer-Edward N. Friedman, DDS).

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Keywords: C-Factor, Light-Curing Mode, Gap Formation, Resin Composite

Print Tag: Refer to original journal article

Third Molar Position Not Associated With Development of Periodontal Pathology

Changes Over Time in the Periodontal Status of Young Adults With No Third Molar Periodontal Pathology at Enrollment.

Blakey GH, Golden BA, et al:

J Oral Maxillofac Surg 2009; 67 (November): 2425-2430

Mandibular third molars and mandibular non-third molars are more likely to develop periodontal pathology over time than other erupted teeth.

Background: Patients want to know their risk of developing pathology around erupted third molars when considering elective extraction. This is not known.

Objective: To determine the frequency of developing periodontal pathology in healthy third molars, and its relationship to tooth position and patient demographics.

Methods: A subset of healthy participants, aged 14 to 45 years, of a longitudinal study of periodontal status of retained third molars was studied. All had 4 asymptomatic third molars with probing depths (PD) <4 mm at baseline, with adjacent second molars, and were retained for follow-up at least 2 years later. Exclusion criteria included antibiotic therapy within 3 months before enrollment and severe periodontitis. At baseline and annually, full-mouth periodontal PDs (6 sites per tooth) and from panoramic radiographs, the third molar position relative to occlusal plane, and angulation relative to long axis of second molar were recorded, followed by dental prophylaxis. Third molar region included third molars (12 PD sites) and distal of second molars (4 PD sites); non-third molar region included all other 80 PD sites. Outcome variables assessed included presence or absence of periodontal pathology (at least 1 site >4 mm) in third molar region and non-third molar region at longest follow-up.

Results: The overall study had 273 subjects with 4 retained third molars; 106 had periodontally healthy third molars (all PDs <4 mm) with at least 3 years' follow-up and were included. Forty (38%) had at least 1 third molar region with PD >4 mm at median of 4.1 years' follow-up; mandibular third molars were more often affected ($P < 0.001$). A median of 2 out of a possible 16 sites of mandibular third molar regions had PDs >4 mm in these 40 subjects. In total, 62% of subjects had all third molar regions PDs <4 mm at enrollment and remained so at the longest follow-up (median, 4.2 years). Overall, 50% of subjects with at least 1 third molar region PD >4 mm at follow-up also had at least 1 PD >4 mm in non-third molar regions compared to only 15% of subjects whose third molar region PDs were all <4 mm ($P < 0.001$). Third molar position and angulation were not associated with development of periodontal pathology.

Conclusions: In more than one third of healthy young adults, periodontal pathology developed in at least 1 third molar region approximately 4 years after enrollment. Mandibular third molars and mandibular molars were most often affected.

Reviewer's Comments: In the majority of healthy young adults with retained third molars, no periodontal pathology developed over a median follow-up time of 4 years. Therefore, elective extraction of asymptomatic erupted third molars to prevent the development of periodontal pathology is not supported by this study. (Reviewer-Carol Anne Murdoch-Kinch, DDS, PhD).

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Keywords: Third Molars, Periodontal Pathology

Print Tag: Refer to original journal article

Enamel Hypoplasia Predicts Higher Risk for Caries in Children

Association Between Enamel Hypoplasia and Dental Caries in Primary Second Molars: A Cohort Study.

Hong L, Levy SM, et al:

Caries Res 2009; 43 (5): 345-353

Presence of enamel hypoplasia predicted caries risk in affected and unaffected teeth in children at age 5 and 9 years.

Background: Enamel hypoplasia has been associated with increased risk of dental caries in several cross-sectional and longitudinal studies; however, these studies did not account for risk factors such as fluoride exposure.

Objective: To determine the longitudinal association between enamel hypoplasia and dental caries of primary second molars at 9 years of age.

Design/Methods: Subjects participated in the Iowa Fluoride Study, a longitudinal study of a cohort of 1390 children studied from birth to determine the relationship of fluoride exposure, biological and environmental factors, and oral health. In total, 491 children had dental exams at ages 5 and 9 years and baseline demographic data and water fluoride assessments were included in this study. Parents completed questionnaires at 3- to 6-month intervals about fluoride exposure, diet, breastfeeding, general health, and oral health behaviors. At 5 and 9 years of age, calibrated dental examiners recorded presence/absence of enamel hypoplasia on 4 primary second molars (n=1.892), caries presence on 4 primary second molars, and number of decayed and filled surfaces (dfs). Caries incidence was percentage of subjects with new caries; caries increment was increase in dfs. Non-cavitated enamel lesions were not included.

Results: 3.9% of children had hypoplasia, 17.7% had caries at age 5 years, 35.2% had caries at age 9 years, and 31.1% developed new caries from age 5 to 9 years. In total, 1.7% of all primary second molars had hypoplasia, 7.9% had caries at age 5 years, 18.7% at age 9 years, and 14.5% had an increase in caries from age 5 to 9 years. There were only 19 children with hypoplasia; they had more caries (36.8%) than children without hypoplasia (16.9%) at age 5 years ($P < 0.03$) and age 9 years (52.6% vs 34.5%). Teeth with enamel hypoplasia also had more caries at age 5 years (28.1% mean dfs=0.40% vs 7.6% mean dfs=0.11) and age 9 years (41.9% mean dfs=0.76% vs 18.3% mean dfs=0.34) [$P < 0.01$]. In a given subject, the caries risk for hypoplastic or non-hypoplastic teeth was not different. Other significant predictors for caries incidence at age 5 years and age 9 years and caries increment were toothbrushing frequency, and average daily fluoride intake. Average daily soda pop intake during ages 3 to 5 years was a significant predictor of caries at age 5 years.

Conclusions: Enamel hypoplasia is a significant risk factor for caries in primary second molars and should be included in caries risk assessment, starting at the time of tooth eruption.

Reviewer's Comments: Enamel hypoplasia is a predictor for increased dental caries risk in children, in affected and non-affected teeth. In addition to encouraging plaque retention and increasing solubility of affected enamel, hypoplasia may be a marker for underlying health and nutritional problems that increase caries risk. (Reviewer-Carol Anne Murdoch-Kinch, DDS, PhD).

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Keywords: Dental Caries, Enamel Hypoplasia, Primary Teeth

Print Tag: Refer to original journal article

Consider Disinfecting Autogenous Bone Collected From Osteotomy

Decontamination of Autogenous Bone Grafts Collected During Dental Implant Site Preparation: A Pilot Study.

Tezulas E, Dilek OC, et al:

Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009; 107 (5): 656-660

Research is needed to determine the proper protocol for decontamination of autogenous bone collected during osteotomy.

The preparation of an implant site produces autogenous grafting material that can be quite useful in the process of augmenting an implant site that may be slightly deficient prior to suturing. Often, an implant thread may require coverage due to inadequate ridge topography. Autogenous bone use has advantages over other bone grafting materials because it is osteoconductive, osteoinductive, and osteogenic and because it does not require harvesting of materials from a distant site (with its accompanying morbidity). In addition, it does not have the additional risks of either immunological reaction or disease transmission. Autogenous bone grafts can be harvested and applied in either block or particulate form or in some combination. They can also be harvested from intraoral or extraoral sites. This harvesting does not come without a price in terms of possible infection risk, patient discomfort, and/or other comorbid factors. The use of a bone harvesting device that is used in combination with a dedicated portion of the vacuum system or in connection with the drilling assembly makes logical use of a system already in place. However, the risk of disease transmission from the host must still be considered. Implantation of osteotomy-collected bone into an implant site can cause augmentation failure and can even compromise the implant survival. The authors investigated this process of decontamination by the use of sterile technique, a strict aspiration protocol, antibiotic prophylaxis, and a chlorhexidine rinse. However, they found this insufficient to eliminate bacterial contamination. The authors compared the use of a chlorhexidine and clindamycin solution in contact with the collected bone for 3 minutes but found little difference between the 2 solutions. Further studies need to investigate the optimal agent, concentration, and contact time that will decontaminate yet not harm the biological activity of the autogenous bone.

Reviewer's Comments: During surgical placement of dental implants, it is often advantageous to augment the buccal-lingual width of the osseous housing. This aids in long-term stability and improvement of the mechanical and aesthetic support of the implant. Clinicians often collect the autogenous bone that is removed during the osteotomy and use this for augmentation. However, if this bone has bacterial contamination, this can lead to loss of the augmented bone and compromised healing. Although this article is merely a pilot study with a small sample size, it is an area worth further study to eliminate possible contamination of the implant site and allow a better long-term implant prognosis. (Reviewer-Ralph J. Bozza, DDS).

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Keywords: Decontamination, Autogenous Bone, Grafting, Donor Site Morbidity, Chlorhexidine, Clindamycin

Print Tag: Refer to original journal article

Mini Prep CAD-CAM Inlays May Be Stronger

Fracture Strength of Minimally Prepared Resin Bonded CEREC Inlays.

Tsitrou E, Helvatjoglou-Antoniades M, et al:

Oper Dent 2009; 34 (5): 537-543

A bonded inlay may have adequate strength with a minimum preparation design.

Background: The traditional preparation design for bonded CAD-CAM inlays call for an occlusal reduction of 2 mm. The goal of minimum intervention dentistry is to preserve the most amount of tooth structure as possible. It is unknown how conservative the preparation design can be for bonded CAD-CAM inlays.

Objective: To investigate the minimum preparation design of bonded CAD-CAM inlay in vitro.

Methods: 40 extracted teeth were evenly divided into 4 groups. Groups 1 and 2 were prepared according to traditional preparation design (occlusal reduction, 2.0 mm; proximal box width, 1.5 mm). Groups 3 and 4 were prepared according to a minimum preparation design (occlusal reduction, 1.0 mm; U-shape proximal, 1.0 mm). Inlays were fabricated from resin or ceramic using a CAD-CAM system (CEREC). The resin inlays were cemented with a self-adhesive dual-cure resin cement (Unicem), whereas the ceramic inlays were bonded following a total-etch technique and dual-cure cement (Variolink II). All specimens were subjected to static loading to determine the fracture strength and mode after 24-hour water storage.

Results: There was no statistically significant difference in fracture strength among the resin inlay groups when comparing the traditional preparation design (1322N) to the minimum preparation design (1511N). For the ceramic inlay groups, the fracture strength for the minimum preparation design (1761N) was significantly higher than for the traditional preparation design (1135N). No difference in fracture mode was found among groups.

Conclusions: This study suggests that a minimum preparation design for bonded CAD-CAM inlays may render the restored tooth with greater fracture strength than a traditional preparation design.

Reviewer's Comments: It is clear that preserving the maximum amount of tooth structure will result in a restoration with the higher fracture resistance. It may come down to a question of feasibility between restoring a minimally prepared tooth with an indirect restoration over a direct bonded restoration. (Reviewer-Joe C. Ontiveros, DDS, MS).

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Keywords: Bonded Inlays, CAD-CAM, Fracture Strength, Minimum Preparation

Print Tag: Refer to original journal article

Can CPP-ACP Paste Protect Enamel?

Protective Effect on Enamel Demineralization of a CPP-ACP Paste: An AFM In Vitro Study.

Poggio C, Lombardini M, et al:

J Dent 2009; 37 (December): 949-954

CCP-ACP paste is beneficial at protecting enamel from acid soft drinks.

Background: The prevalence of acidic beverages such as Coca Cola® may contribute to premature erosive tooth wear among a young population. Low pH fluids disrupt the demineralization/remineralization balance of the oral environment, leading to enamel loss. Casein phosphopeptides (CCP)/calcium phosphate (ACP) paste is an agent that is purported to protect enamel by shifting the balance toward remineralization. Atomic Force Microscopy (AFM) allows researchers to study the demineralization and remineralization of enamel surfaces with minimal specimen preparation.

Objective: To test the hypothesis that CCP-ACP will prevent dental erosion caused by an acid beverage using AFM.

Methods: Extracted teeth were sectioned longitudinally and divided into an unexposed control group and 3 treatment groups. The treatment groups were: (1) soft drink (Coca-Cola); (2) soft drink plus CCP-ACP paste (Tooth Mousse); and (3) CCP-ACP paste. Soft-drink exposure in groups 1 and 2 was done for 4 consecutive intervals of 2 minutes for a total of 8 minutes. CCP-ACP paste exposure in groups 2 and 3 was done for 3 minutes at 0, 8, 24, and 36 hours, for a total of 12 minutes, and were then stored in artificial saliva. Mean roughness values (R_{rms}) measurements were taken using AFM along with erosive cavity depth estimates.

Results: Enamel demineralization was observed when the teeth were exposed to the soft drink and measured to a depth of 0.50 μm ($R_{rms} = 0.29$) in group 1 and 0.20 μm ($R_{rms} = 0.14$) in group 2. No measurable enamel loss was noted for the nonexposed groups. The R_{rms} values between the treatment halves and the nonexposed halves were statistically significant for groups 1 and 2.

Conclusions: AFM was used to demonstrate that CCP-ACP paste is able to decrease the erosive effect of an acid soft drink (Coca-Cola).

Reviewer's Comments: CCP-ACP, better known as Recaldent™, is the ingredient incorporated in chewing gum such as Trident® to help protect and strengthen enamel. This study shows that dentists can help patients protect their teeth from enamel erosion by applying a topical application of CCP-ACP in the form of a paste. (Reviewer-Joe C. Ontiveros, DDS, MS).

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Keywords: CCP-ACP Paste, Remineralization, Demineralization, Erosion

Print Tag: Refer to original journal article

The Debate Rages On--Amalgam vs Composite

Restoration of Posterior Teeth in Clinical Practice: Evidence Base for Choosing Amalgam Versus Composite.

Kovarik RE:

Dent Clin North Am 2009; 53 (January): 71-76

Amalgam performs better than composite for posterior direct restorations based on replacement and recurrent caries. High-quality scientific findings, however, are limited to studies with children.

Background: Improved esthetics of posterior composites and concerns about mercury toxicity from amalgam restorations are central to the continuing debate over the best material for posterior direct restorations in contemporary dental practice.

Objective: To identify high-quality scientific studies (randomized controlled trials [RCTs]), and to summarize, in a general format, the body of scientific information related to evidence favoring use of posterior composite restorations versus posterior amalgam restorations.

Design/Methods: A literature search was performed of 2 electronic databases (PubMed and the Cochrane Library) and "similar resources" using the author's format. Studies were not represented as a systematic review or meta-analysis, and the following search terms were used: "composite," "amalgam," "clinical," and "longevity." All relevant studies were apparently included and classified generally by their design, with specific identification of RCTs. Specific exclusion criteria for the studies being reviewed were not described.

Results: Most studies identified were retrospective case series, retrospective epidemiologic studies, or prospective, nonrandomized studies. Only 2 RCTs were identified that specifically compared posterior amalgam and posterior composite restorations in pediatric subjects. No studies in adult subjects were found. In the first of these, posterior composites required more frequent replacement than did amalgam (14.9% vs 10.8%) after 2- to 5-year follow-up, although this difference did not achieve statistical significance. In the second RCT involving 472 children with 1748 restorations followed over a 7-year period, amalgams demonstrated a 94.4% survival rate versus 85.5% for resins (recurrent caries in 12.7% of resins vs 3.7% for amalgam; 95% CI, 2.3 to 5.1; $P < 0.0001$).

Conclusions: While results in pediatric patients may not translate directly to adults, a limited number of high-quality studies suggest that the clinical performance of amalgam is superior to that of composites in posterior applications. No harm was associated with RCTs of amalgam in children, and future studies should focus on tooth loss as the primary clinical outcome for evaluation.

Reviewer's Comments: While not meeting the criteria for a formal systematic review, the findings of this article are consistent with current scientific understanding of amalgam and composite as direct posterior restoratives. These results also highlight the need for attentive placement techniques to minimize leakage and recurrent caries with posterior composites. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Amalgam, Composite, Posterior Restorations, Evidence-Based Dentistry, Clinical Recommendations

Print Tag: Refer to original journal article

Temporary Restorations Have 'Permanent' Place in Long-Term Dental Care

An Interdisciplinary Approach to the Use of Long-Term Temporary Restorations.

Spear F:

J Am Dent Assoc 2009; 140 (November): 1418-1424

Six months is considered "long-term" for temporary restorations, and the practitioner should probably select light-cured resins or other light-cured temporary materials (eg, Triad) for durability in such cases.

Background: Provisional restorations designed for long-term use are frequently required for stabilization of dental patients prior to orthodontics, periodontal surgery, and prosthodontic treatment. These restorations must be fabricated using appropriate designs and careful fabrication with suitable materials.

Objective: To describe the following: (1) techniques used by an experienced restorative dentist that have resulted in good treatment outcomes for long-term temporary restorations in the orthodontic treatment of children and adults; (2) periodontal aesthetic crown lengthening; and (3) techniques and materials used in these cases. **Description of Technique:** For children with congenital dental malformations, the author recommends mounting casts on an articulator using a face-bow transfer, removing cast teeth that will be moved orthodontically, reshaping and waxing malformed cast teeth, and consulting the orthodontist to make a decision on whether to alter the tooth before, during, or after orthodontic treatment. If space is required, the definitive temporary restorations can be placed following creation of space using composite resin to facilitate bracket bonding for further movement. Missing teeth can be managed by placement of a plastic denture tooth on the arch wire. Prior to periodontal surgery to improve anterior aesthetics, establishment of the incisal edge of the maxillary anterior teeth is critical so that overall tooth length can be visualized by the periodontist. This can be facilitated by fabrication of an overlay matrix. The addition of composite resin to the incisal edges is the most expedient method, but when this is not possible, the teeth may require preparation for crowns or veneers and then may be restored temporarily. For multiple-tooth resin veneer temporaries, the author recommends the use of a clear matrix and sawing the teeth apart after light curing (warming can be used to facilitate flow of the composite material). For full crowns, the author prefers light-cured provisional materials if the crowns will be used for >6 months. Cementation is done with 1 of 2 luting agents, either reinforced zinc oxide-eugenol (ZOE) or resin-reinforced glass ionomer, checked at 8- to 12-week intervals. After ZOE, pumice or air abrasion should be used if the final restoration will be bonded.

Conclusions: Several options exist for fabrication of provisionals, but the techniques described here have worked well in practical applications.

Reviewer's Comments: Although this is not a scientifically based study, the observations of this experienced clinician provide valuable insights on the best applications of current materials and techniques for provisionalization during orthodontic, periodontal, and prosthodontic treatment. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Provisional Restoration, Temporary Restoration, Periodontics, Orthodontics

Print Tag: Refer to original journal article

When to Use Quartz Fiber Post to Reduce Restoration Failure

Randomized Clinical Trial Comparing the Effects of Post Placement on Failure Rate of Postendodontic Restorations: Preliminary Results of a Mean Period of 32 Months.

Bitter K, Noetzel J, et al:

J Endod 2009; 35 (November): 1477-1482

In endodontically treated teeth, a quartz fiber post is efficacious in reducing restoration failures when there is no coronal dentin 2 mm above the gingiva.

Background: Restoration of endodontically treated teeth is complicated by loss of coronal tooth structure. Post placement may reduce the failure rate of the final restoration.

Objective: To investigate the time of failure of single restorations placed on teeth with and without pre-restoration placement of quartz fiber retentive posts.

Design: Randomized clinical trial using CONSORT design criteria.

Participants: 90 adult patients with 120 endodontically treated teeth.

Methods: Endodontically treated teeth were classified by remaining coronal tooth structure as having ≥ 2 coronal walls, 1 coronal wall, or no wall exceeding 2 mm above the free gingival margin. From these 3 groups, teeth were randomized into post or no-post subgroups. All teeth had been treated endodontically with gutta percha obturation. In the no-post groups, the coronal 3 mm of gutta percha was removed, and a core buildup was performed using Clearfil core material. In the post groups, a 7- to 8-mm DT Light Post was placed (size was based on root diameter), followed by a Clearfil core buildup. Four university-based clinicians fabricated final restorations with partial-ceramic coverage or full crowns, with appropriate 2-mm ferrules used when indicated. Patients were recalled at intervals of 6 months and 1, 2, and 3 years, up to 56 months. Loss of the restoration was the primary outcome measure.

Results: 42 male and 49 female patients were included. Of 120 restorations, the overall failure rate was 8% after 3 years. In the no-wall group, fiber posts significantly enhanced survival; 31% of teeth restored without a post failed versus only 7% with posts.

Conclusions: Based on this heterogeneous comparison of endodontically treated teeth restored with or without quartz fiber posts (different tooth types, different types of final restorations), a quartz fiber post is efficacious in reducing restoration failures when there is no coronal dentin 2 mm above the gingiva.

Reviewer's Comments: This study was well designed, but the findings are limited by relatively small numbers of treated teeth and significant heterogeneity due to restorative factors. However, 2 important outcomes are evident and should be considered by restorative dentists. First, when coronal tooth structure is absent, a retentive quartz fiber post will significantly enhance survival of the core and final restoration. Second, preservation of as much tooth structure as possible should be emphasized in planning the case. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Adhesive Luting, Failure Rate, Fiber Posts Postendodontic Restoration

Print Tag: Refer to original journal article