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Evaluation of a Minimally Traumatic Trephination Procedure on Postoperative Endodontic Symptoms

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The purpose of this prospective, randomized study was to evaluate postoperative symptoms following a minimally traumatic trephination procedure in symptomatic, necrotic teeth. Fifty patients with a clinical diagnosis of a symptomatic necrotic tooth experiencing moderate to severe pain, without clinical swelling, and an associated periapical radiolucency participated. Following endodontic treatment (complete debridement), patients randomly received either a minimally traumatic trephination procedure (25 patients) or mock trephination procedure (25 patients). The trephination procedure utilized the Stabident intraosseous perforator for the initial opening which was then enlarged sequentially with endodontic files from a #25 to a #70 file and finally an endodontic spoon excavator was used to curette the cancellous bone. All subjects received analgesics, antibiotics, and a seven day diary to record pain, swelling, percussion pain, and number and type of pain medications taken. The results of this study revealed no statistically significant differences ($p > 0.05$), as analyzed by Mann Whitney Wilcoxon and chi-square tests, between the mock and minimal trephination procedure for the postoperative ratings of pain, swelling, percussion pain, nor for the analgesic medications taken (ibuprofen, Tylenol #3, or both). For both groups: 58% of the patients had moderate to severe pain on day 1; 28% on day 2; 20% on day 3; and 2% to 6% for days 4 through 7. In conclusion, the use of a minimally traumatic trephination procedure did not significantly reduce pain, swelling, percussion pain, or the number of analgesic medications taken for patients with symptomatic, necrotic teeth with radiolucencies.

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Comparison of three obturation techniques: An evaluation of root fracture resistance

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The prognosis for a vertical fracture of an endodontically treated tooth is poor. The use of glass ionomer sealer that can bond to dentin may improve resistance to root fracture. Recently a glass ionomer sealer was introduced that the manufacturer claims to strengthen roots. The purpose of this study was to compare lateral condensation technique with Roth's sealer to lateral condensation and single cone technique using Ketac-Endo. The roots of 40 single canal teeth were instrumented with a standard stepback technique. Teeth were randomly assigned to four groups: 1) unobturated control; 2) lateral condensation with GP and Roth's 801 sealer; 3) lateral condensation with GP and Ketac-Endo; and 4) single cone GP obturation with Ketac-Endo. The roots were placed in 100 % humidity for two weeks prior to being mounted in acrylic blocks. A steel tipped rod attached to an Instron testing machine was then positioned against the access opening and a slowly increasing force was applied until a root fracture occurred. Kruskal-Wallis One Way Analysis of Variance on Ranks failed to show a statistically significant difference ($P=0.234$) between the groups. Under the conditions of this study, the results indicate that Ketac-Endo sealer may not increase resistance to root fracture compared to Roth's sealer.

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Surgical Wound Healing Response to Alkaline Phosphatase and Phosphophoryn. D E. WITHERSPOON*, BDS, MS & J. L. GUTMANN, DDS. TAMUS-Baylor College of Dentistry, Dallas, TX.

The aim was to investigate the inductive potential of alkaline phosphatase in a collagen matrix (ALP) or alkaline phosphatase plus phosphophoryn in a collagen matrix (ALP-PP) in periradicular wound healing. 10 dogs with previously completed non-surgical root canal fillings on 2nd, 3rd, and 4th mandibular premolar teeth were used. Apices were surgically accessed, the root ends resected, and root-end cavities made. ALP and ALP-PP were placed in separate cavities. Diaket root-end fillings and resected gutta-percha were used as controls. The healing response was assessed with H&E, procion brilliant red dye, peanut agglutinin lectin histochemistry and cementum attachment protein polyclonal antibodies (CAP) at 55 d & 150 d. Results indicated that CAP failed to bind to cementum attachment protein within the existing and newly deposited cementum. Friedman two-way analysis of variance by rank was carried out ($\alpha = 0.05$). Healing significantly differed between the control materials and the experimental materials; root resorption (0.0035), PDL formation (0.000053), inflammation (0.0067), cementum deposition (0.0045), bone apposition (0.0025). Tissue response to Diaket was superior to all materials including the resected gutta-percha. The healing observed with ALP or ALP-PP in all cases was unexpected and unpredictable, and characterized by chronic inflammation, root resorption, lack of bone apposition, cementum deposition, and PDL formation. The use of ALP or ALP-PP does not appear to have inductive potential in periradicular wound healing. This study was supported in part by Graduate Student Award from TAMUS-BCOD & the AAE Foundation

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The effects of a resorbable membrane and hOP-1 on tissue healing following endodontic surgery.

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Membranes and growth factor proteins have been advocated to improve tissue healing following endodontic surgery. The purpose of this study was to investigate the effects of a resorbable membrane and the osteogenic protein hOP-1 on tissue healing following periradicular surgery. Twenty-four maxillary canine teeth of cats were used in this investigation. Following root canal therapy and periradicular surgery, eight of the osseous defects were covered with a resorbable membrane and eight were filled with hOP-1. The remaining eight defects received no further treatment and served as controls. The animals were sacrificed twelve weeks later. Block sections containing the maxillary canine teeth and their surrounding tissues were removed, examined histologically, and analyzed statistically . The results showed that the use of the membrane had no significant effect on osseous healing, or new cementum formation on the resected root ends. It was, however, associated with the presence of a significantly greater number of inflammatory cells at the surgical sites ($p<0.05$). The use of the osteogenic protein hOP-1 had no statistically significant effect on the tissue healing of the surgical sites or the number of inflammatory cells present. However, its use was associated with a significant. ($P<0.05$) decrease in the thickness of new cementum formed on the resected root ends. It is concluded that the use of resorbable membrane and hOP-1 may have an adverse effect on healing following periradicular surgery. Supported in part by a Grant from the AAE Foundation