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3**Effectiveness of Gutta Percha Tracing Sinus Tracts as a Diagnostic Aid in Endodontics.**L.A. Baldassari-Cruz\* and R. E. Walton  
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Diagnostic dilemmas often require additional tests. One such suggested diagnostic aid is tracing sinus tracts with gutta percha. However, there are no clinical studies demonstrating whether this will effectively identify the source of the tract. **Objective:** To demonstrate the effectiveness of gutta percha in tracing sinus tracts using different sized cones and whether clinicians consider the technique to be helpful. **Study Design:** Sinus tracts were traced on 39 patients using different sized cones. Individual periapical radiographs were made with each cone in position. Following clinical and radiographic analysis, each clinician completed a questionnaire regarding: 1) how close the tip of each gutta percha cone was in relationship to the periapical lesion; 2) size of gutta percha cone most effective for tracing; and 3) the helpfulness of using this method to make the diagnosis. **Results:** 82% of the tracings were judged to be <3mm from the lesion. Gutta percha cone size 40 was chosen 67% of the time due to ease of placement. Clinicians considered this to be very helpful in making the diagnosis 41% of the time and somewhat helpful 33% of the time. 18% reported that tracing the sinus tract was not useful. The results indicate that tracing sinus tracts with gutta percha is usually beneficial as a diagnostic adjunct and that a medium sized cone is the most useful size.

OR  
4**Use of vital stains in evaluation of bacterial viability in infected dentin.**D.C. Beachler\*, W. Cook, and K. Safavi  
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It is shown that chemomechanical debridement does not predictably result in a bacteria free root canal system. Residual bacteria in dentinal tubules after obturation has been suggested to cause persistent periapical inflammation. The elimination of residual microorganisms in infected root canals requires inter-appointment antimicrobial medication. Microorganisms remaining in the root canal and dentinal tubules can be observed with light or electron microscopic methods. These methods, however, do not allow determination of viability of the microorganisms at the time of specimen fixation. The purpose of this study was to evaluate the effectiveness of a fluorescent vital stain method to determine the viability of microorganisms after root canal disinfection. Bovine root sections were infected with *E. faecalis*, for 9 days at 37°C. The bacterial culture was replaced with fresh inoculum every 12 h. Samples were treated with a 2% solution of IKI, an aqueous paste of Ca(OH)<sub>2</sub>, or a 1% solution of NaOCl. Infected but untreated samples were used as positive controls, uninfected root sections served as negative controls. Sequential dentinal shavings were obtained from samples with burs of increasing diameter. Samples were stained with SYTO 9/propidium iodide vital dyes, and evaluated by fluorescent microscopy. Viable bacteria were observed in all positive control samples. No viable bacteria were observed in negative controls. Viable and non viable bacteria could be observed in the dentinal tubules at various depths in experimental groups. These results indicate that vital stains may be used for qualitative and quantitative evaluation of bacteria viability in dentin. Supported in part by grant from the AAE Foundation.

OR  
5**Evaluation of Diamond Coated Ultrasonic Instruments for Root-end Preparation.**Paul D. Brent, Leslie A. Morgan, J. Gordon Marshall, J. Craig Baumgartner  
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Ultrasonic instrumentation has been associated with cracking of the dentin in the area of the root-end preparation. The purpose of this study was to evaluate root-end preparations for cracking and to describe cavo-surface morphology following the use of diamond coated ultrasonic instruments. Forty teeth were inspected for intradentin cracks, incomplete canal cracks, and complete canal cracks before and after preparation with a stainless steel CT-5 ultrasonic instrument and again after ultrasonic root-end preparation with an S12D/90° diamond coated instrument. Six additional teeth had polyvinylsiloxane impressions taken of the root-ends after preparation with the CT-5 and again following preparation with the diamond coated instrument. Resin replicas made from the impressions were split, sputter coated, and inspected using the SEM. This study indicates that use of the diamond coated instrument for root-end preparation does not result in significant root-end cracking and that it can remove cracks created by a prior instrument's use. The use of the diamond coated instrument resulted in a heavily abraded, debris covered cavosurface which may affect the apical seal.

OR  
6***Porphyromonas endodontalis* and symptoms from teeth with endodontic infections.**S. Makkar<sup>1</sup>\*, R. Nissan<sup>1</sup>, D. Wilkinson<sup>1</sup>, M. Sela<sup>2</sup>, R. Stevens<sup>1</sup>  
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Previous reports have implicated *Porphyromonas* spp. and *Prevotella* spp. in the development of signs and symptoms from teeth with endodontic infections. Some of these previous studies were conducted prior to the identification of several species of these bacteria, and others were conducted using cultural methods to detect some of these extremely fastidious organisms. We report in the present investigation, the use of a DNA hybridization technique to identify *P. endodontalis* (*Pe*) in endodontic infections to test the hypothesis that the presence of this organism is related to signs and symptoms from teeth with endodontic infections. A species-specific probe was prepared from the DNA extracted from *Pe* (Nissan et al, 1998 IADR Abstr. # 1347). Samples were obtained from the root canals of 90, non-vital teeth prior to endodontic therapy. The samples were subjected to dot-blot hybridization procedures using the *Pe* DNA probe. Of the 90 teeth sampled, 22 (37%) were positive for *Pe*. 70 of the 90 teeth sampled displayed periapical radiolucencies. Of these 70 teeth, 25 (36%) were positive for *Pe*, whereas *Pe* was detected in 8 (40%) of the 20 teeth lacking radiolucent periapical areas. Pain was reported from 48 (53%) of the teeth sampled. Of these, 17 (35%) had detectable levels of *Pe*. Of the 42 pain-free teeth, 16 (38%) were positive for *Pe*. Swelling was reported associated with 29 (32%) of the teeth sampled. Of these teeth, 7 (24%) harbored *Pe*, whereas 24 (39%) of the 61 teeth without associated swelling had evidence of *Pe* infection. Our results indicate that *P. endodontalis* is frequently found in endodontic infections, however its presence is not related to clinical signs and symptoms such as pain, swelling or periapical radiolucencies. Supported by Faculty Incentive Award #466 and Advanced Student Research Awards from Temple Univ.