Effectiveness of treatment Studies on PerioScan - Abstracts


This study evaluated the ability of clinicians to detect residual calculus following subgingival scaling and root planing and compared the clinical detection to the microscopic presence and surface area occupied by calculus found on teeth extracted after instrumentation. Interexaminer and intraexaminer reproducibility in clinically detecting subgingival calculus was also determined. One hundred one extracted teeth with 476 instrumented tooth surfaces were evaluated stereomicroscopically for the presence of calculus and the percent surface area with calculus was determined by computerized imaging analysis; 57% of all surfaces had residual microscopic calculus and the mean percent calculus per surface area was 3.1% (0 to 31.9%). Shallow sites had greater surface area of calculus than moderate and deep sites. The difference was not significant. The interexaminer and intraexaminer clinical agreement in detecting calculus was low. There was a high false negative response (77.4% of the surfaces with microscopic calculus were clinically scored as being free of calculus) and a low false positive response (11.8% of the surfaces microscopically free of calculus were clinically determined to have calculus). This study indicates the difficulties in clinically determining the thoroughness of subgingival instrumentation.

The fact that these assessments were found to misrepresent the actual nature of the instrumented root surfaces in over 50% of the evaluations must lead us to question the usefulness of this subjective method of root surface evaluation.

A total of 266 surfaces (57.7%) exhibited microscopically visible residual calculus.

The total area of each tooth surface occupied by the pocket and the area of residual calculus found on each surface were calculated. Of the 461 surfaces evaluated, 20 were facial or lingual furcations which did not have surface area determined. This resulted in 441 surfaces for which the pocket area was calculated. Calculus was found on 266 surfaces, 13 of which were facial or lingual furcations. Since calculus found in these areas was not quantitated, the number of sites with the percent surface area of calculus reported was 253. Interproximal surfaces were found to have residual calculus more frequently than the facial/lingual surfaces both microscopically (63.3% versus 47.8%) and clinically (24.0% versus 12.1%)


Power instrumentation of periodontally-diseased root surfaces is gaining in significance as an alternative to conventional curette methods. In an experimental study employing manikins with simulated bone loss, we investigated whether inexperienced and experienced operators were able to achieve greater therapeutic success with power-driven devices than with hand instruments in subgingival scaling. 10 dentists experienced in periodontal treatment and 10 inexperienced dentists instrumented 7 teeth in the upper jaw, which had been covered with
artificial deposits. Hand instruments, the Perioplaner system, a sonic and an ultrasonic scaler were used. The time required for treatment was measured and the % of residual deposits was calculated by means of image-processing techniques. Weight loss was also determined for the teeth that were scaled with the hand instruments and the Perioplaner system. Experienced operators left significantly less % of residual deposits on the teeth (18+/-7.6%) than the inexperienced (27+/-8.4%), regardless of the type of instrument selected. Both experienced and inexperienced operators left the smallest amounts of residual deposits with hand instruments (13+/-9.8%/24+/-9.5%). Both treatment groups removed more hard tooth structure with hand instruments than with the Perioplaner system (53+/-48mg versus 47+/-25.9 mg). Experienced operators needed somewhat more time for debridement than unexperienced. Use of the sonic/ultrasonic device required somewhat less time than hand instrumentation. Inexperienced operators are, however, unable to improve their treatment results by using the power-driven instruments included in the study.