Reduction of Intracanal Bacteria Using GT Rotary Instrumentation, 5.25% NaOCl, EDTA, and Ca(OH)2

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Aim
- To determine the ability of the ProFile GT file system with repeated application of 5.25% NaOCl and EDTA over 30min. to reduce or render root canals bacteria free.
- To see if Ca(OH)2 had any additional effect on bacteria remaining in the canals after instrumentation.

Materials & Methods
- 31 subjects were included in this study.

  Inclusion criteria
  1. Radiographic evidence of PAR
  2. No response to thermal or EPT
  3. Enough crown structure for adequate isolation
  4. No Hx. of previous RCT of the tooth
- Only MAN teeth were included in the study.
- In molars, only MB canals were sampled, but both MB & ML canals were fully instrumented.
- Access was opened and canals were sampled (S1).
- Canals were enlarged depending on the size of the root to:
  a. Small roots (incisors, 2 & 3 canal premolars, mesial root of molars) to size 30/.08.
  c. Large roots (canines & single-canal premolars) to size 70/.12.
- During instrumentation, the canal was irrigated with 5.25% NaOCl.
- After instrumentation, canals were irrigated for 1min. with EDTA, then 30min. with 5.25% NaOCl.
- Canals were sampled after instrumentation (S2).
- Ca(OH)2 was placed in canals for at least 1 wk.
- In the following visit, Ca(OH)2 was removed & canals were sampled (Sc).
- The differences in bacterial colonies were assessed at the three time points (S1, S2 & Sc).

Results
- S1 sampling showed that 93.5% of samples cultured bacteria.
- S2 sampling showed that 52.72% of samples cultured bacteria.
- The number of teeth that cultured anaerobic bacteria at SC was 14%.
- High significant difference in the mean bacterial count between S1 & S2, S1 & SC and S2 & Sc.

Conclusion
- GT protocol significantly reduced the no. of bacteria but failed to render the canal bacteria free.
- Ca(OH)2 further reduced the bacterial count significantly.
- Large apical instrumentation removed more bacteria than small apical instrumentation.

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