Effects on Smear Layer and Debris Removal with Varying Volumes of 17% REDTA after Rotary Instrumentation

**Author:** Crumpton et al  
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**Aim**
- To quantify the volume of 17% ETDA needed to efficiently remove the smear layer after rotary instrumentation, and to determine if additional irrigation has any effect on debris removal.

**Materials & Methods**
- 40 single-canal teeth were used in this study.
- Cleaning & shaping was performed using ProFile GT + 5.25% NaOCl.
- Teeth were divided into 4 groups and rinsed using 28 gauge Max-i-Probe with:
  - **Group A:** 1ml of 17% REDTA for 1min. + final rinse with 3ml of 5.25% NaOCl
  - **Group B:** 3ml of 17% REDTA for 1min. + final rinse with 3ml of 5.25% NaOCl
  - **Group C:** 10ml of 17% REDTA for 1min. + final rinse with 3ml of 5.25% NaOCl
  - **Ve control:** did not receive a rinse with 17% REDTA
- Samples were split, then photographed, canal area and debris were outlined & the % of debris remaining within the apical, middle & coronal thirds of the canal space was calculated.
- Statistical analysis was performed.
- To determine the quality of smear layer removal, 4 samples from each group were prepared for SEM.
- The smear layer was scored according to the following criteria:
  - **1= No smear layer** (No smear layer on the surface of the root canal; all tubules were clean and open)
  - **2= Moderate smear layer** (No smear layer on the surface of the root canal, but tubules contained debris)
  - **3= Heavy smear layer** (Smear layer covered the root canal surface and the tubules)

**Results**
- No significant difference between all groups with respect to debris remaining when comparing the apical, middle, and coronal thirds or the entire canal.
- No significant differences between all Exp. Groups in the removal of the smear layer.
- Very little to no peritubular or intertubular erosion was seen in coronal areas of samples in the Exp. groups.

**Conclusion**
- 1ml of EDTA was just as effective in removing the smear layer as 10ml.

**Authors**
Brent Crumpton, Gary Goodell & Scott McClanahan