

Figure 1a. Method of determination of root curvature and root length. Angle (2) subtracted from 180 = root curvature in degrees. The distance from point 3 to point 4 is root length. In this case, $180 - 139.08 = 40.92$ degrees = root curvature. Distance from point 3 to point 4 is 13.68 mm = root length.

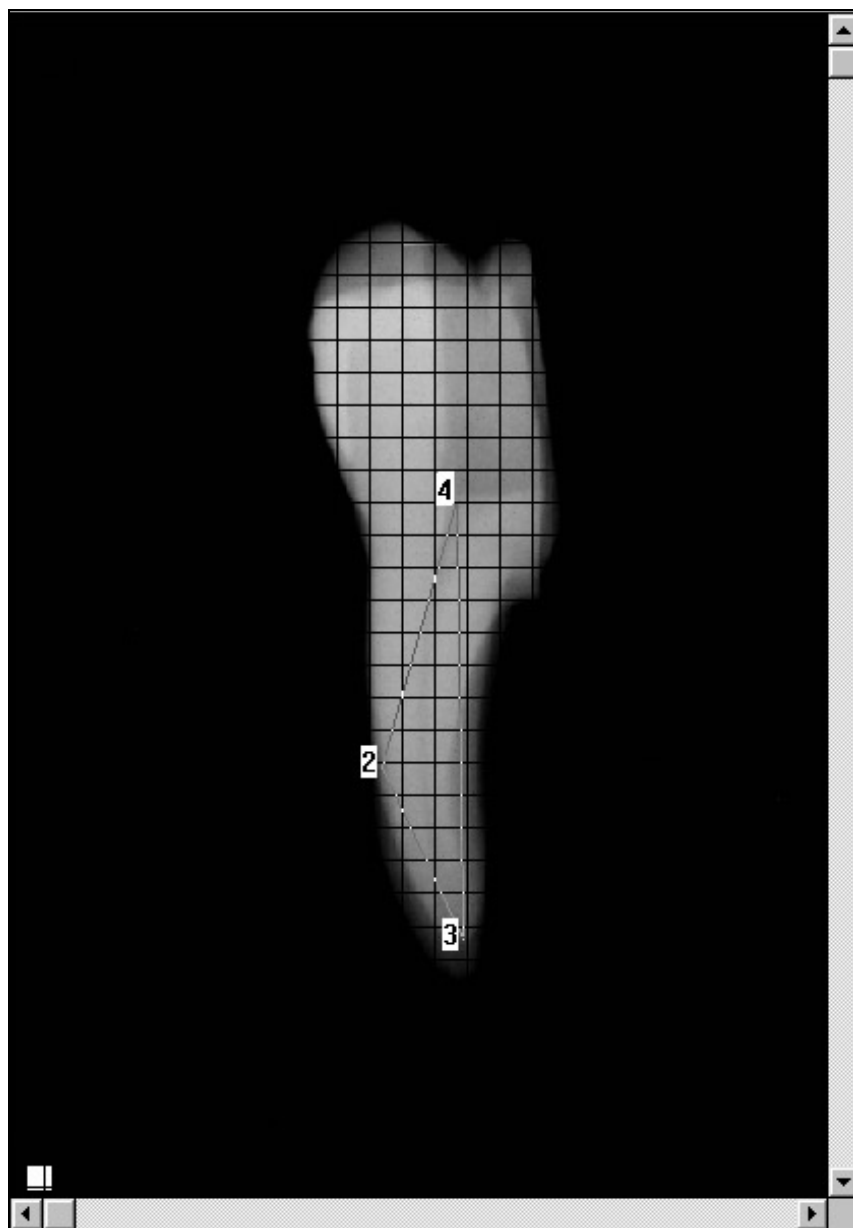


Figure 1b. Method of determination of root curvature. This is a variation of the method used by Berbert et al. 1994. (f) = line tangent to the pulp chamber floor. Capital letters (A), (B), and (C) represent points. Lowercase letters represent lines. (A) = point of intersection of line (f) with bisecting line (a). Line (d) is 2mm from line (f). Point (A') is the intersection of line (d) and bisecting line (a). Point (C) is the intersection of line (a) and the external root contour. Point (B) is drawn at the most apical point of the distal portion of the apical constriction. Line (b) is the intersection of point C and B. The angle (\hat{e}) is considered the root curvature. A line connecting points (A) and (B) would be considered the root length.

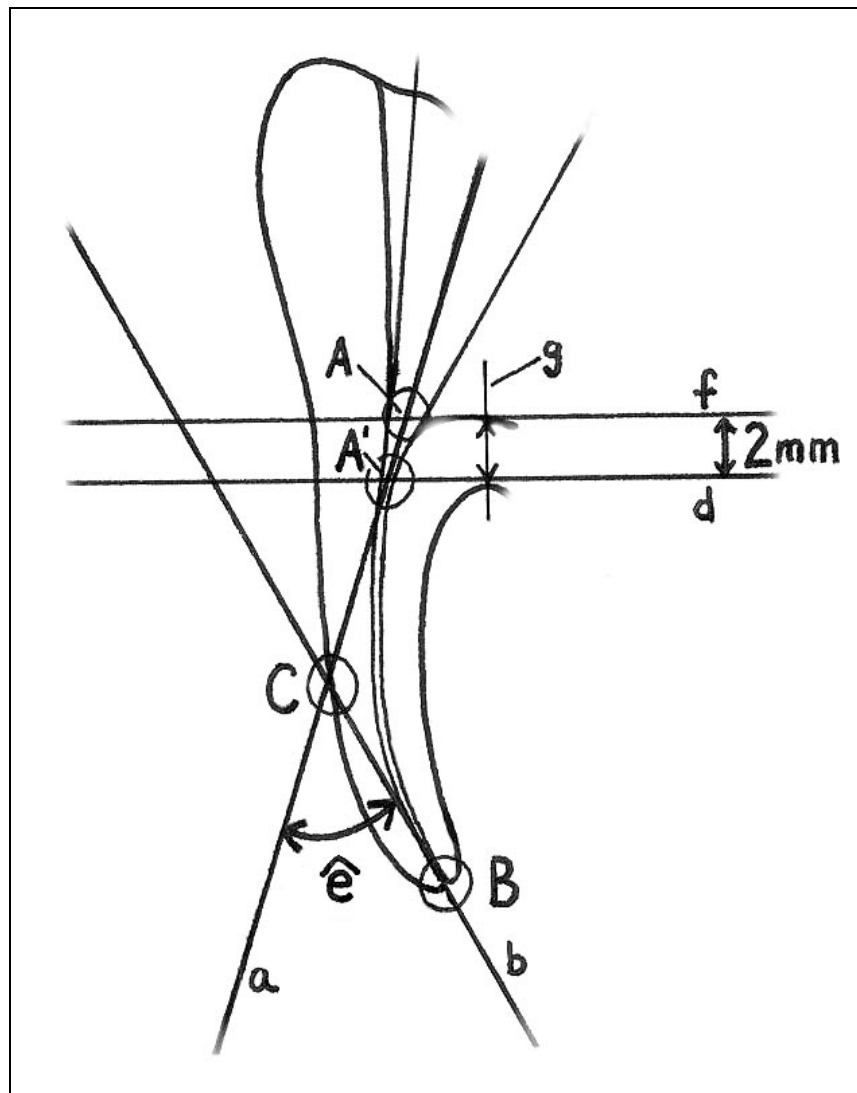


Figure 2. Photos of muffle device for mounting root specimens

Figure 2a. Muffle device with sample ready to accept casting resin.



Figure 2b. Muffle device with Teflon sleeve removed.



Figure 3. A sample being sectioned



Figure 4. Illustration of the levels of sectioning of the root specimens. The level of sectioning is the distance in mm from the top of the furcation to the slice in the specimen. The 3 mm level of sectioning corresponded to the labeling of coronal (C), 5 mm to middle (M), and 7 mm to apical (A).

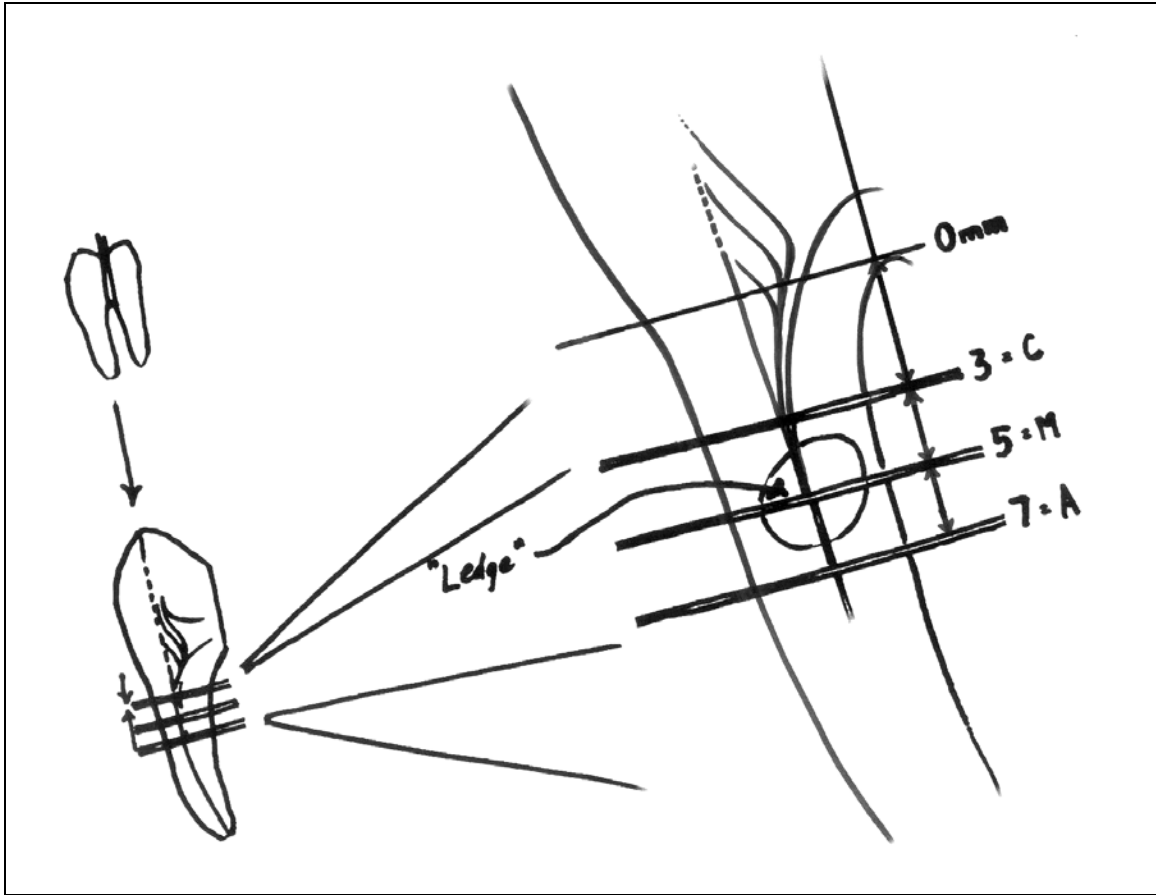


Figure 5. A sectioned sample reassembled and ready for instrumentation



Figure 6. DesignCAD3000 drawings

Figure 6a. DesignCAD3000 drawing file of one sample and all levels of sectioning

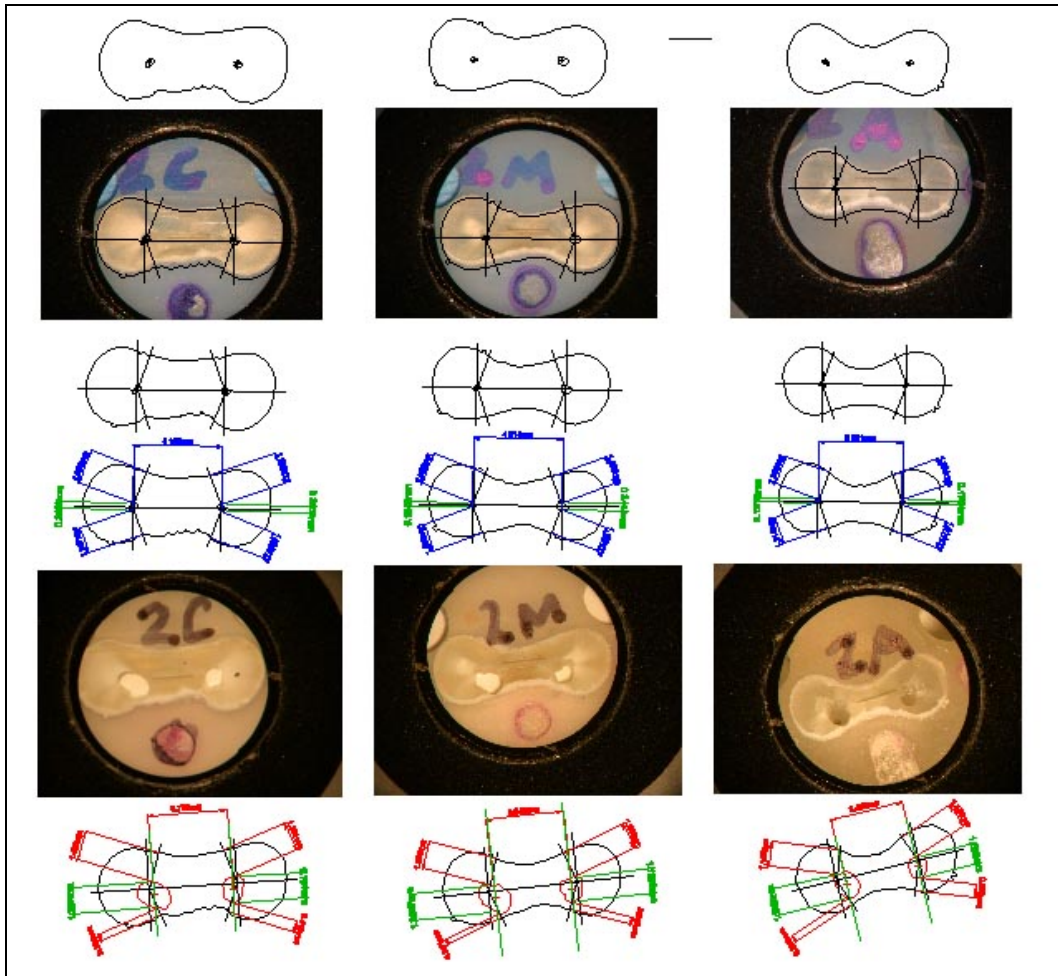


Figure 6b. Beginning template of root 2, middle level.

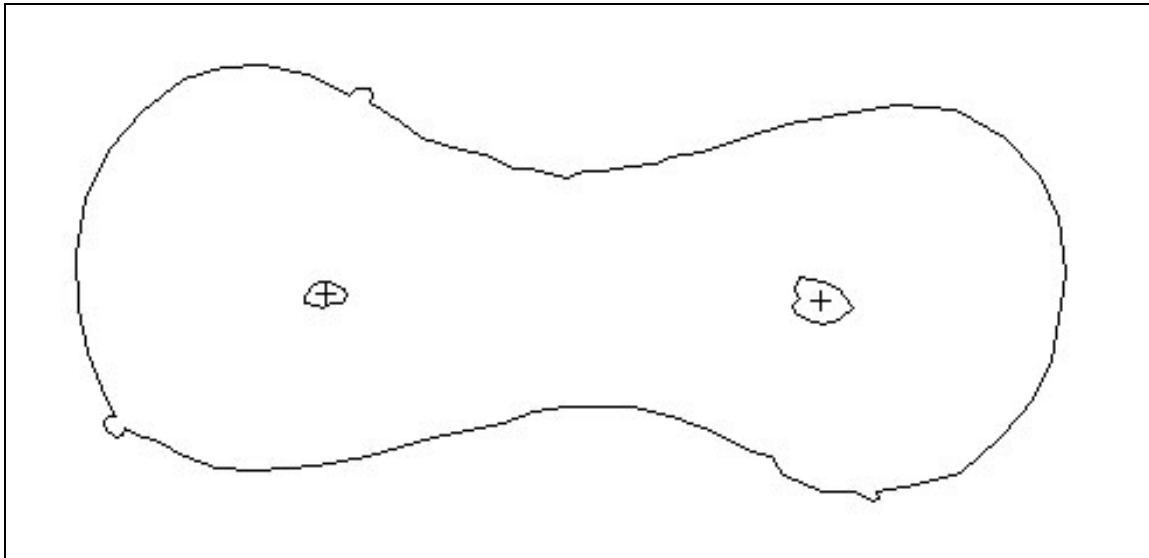


Figure 6b. Template added to pre-operative image.

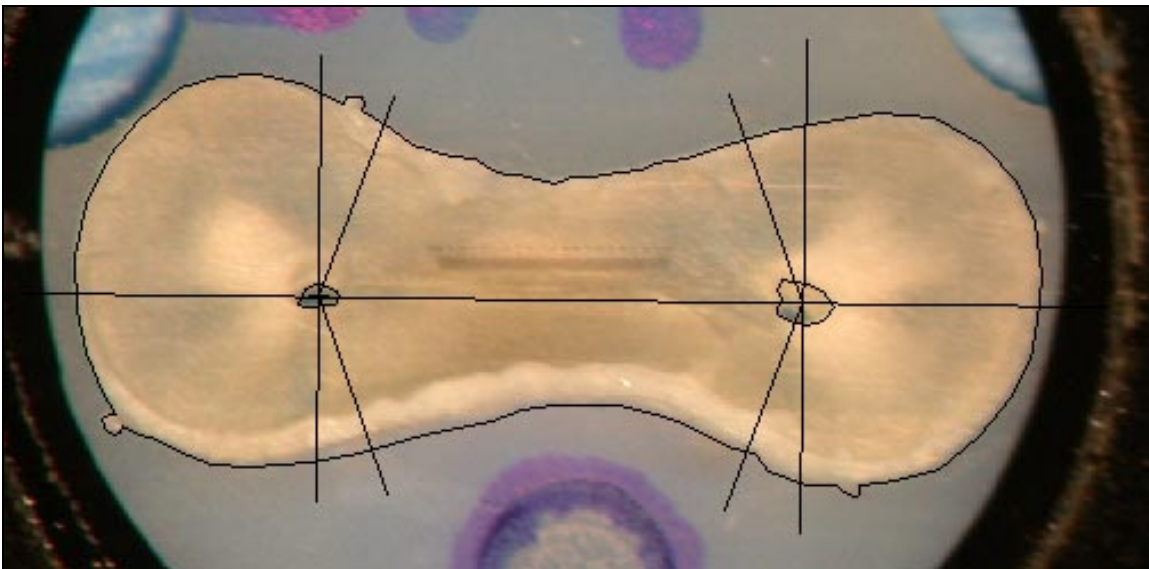


Fig. 6c. Template removed from pre-operative image

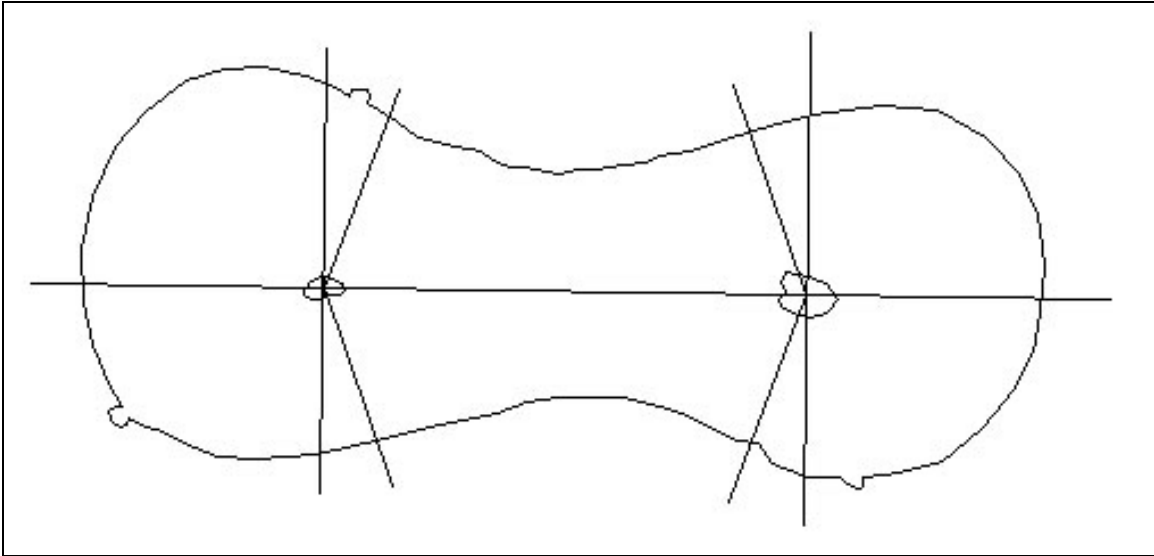


Figure 6d. Measurements added to pre-operative template

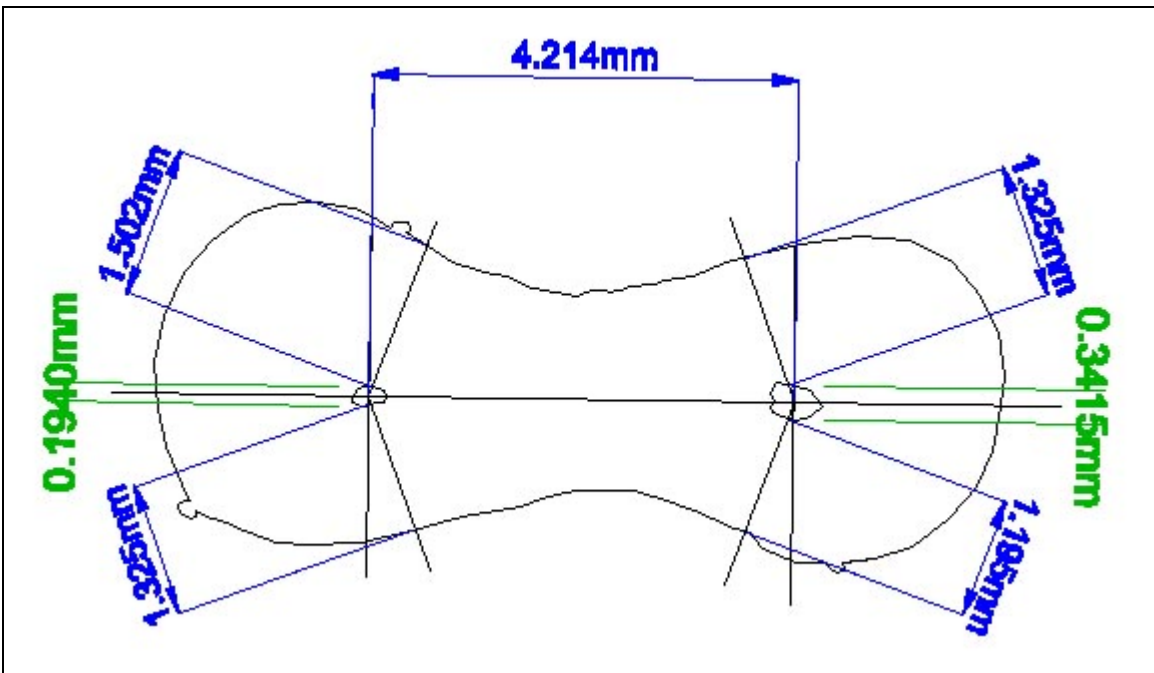


Figure 6e. Template with measurements added to postoperative image

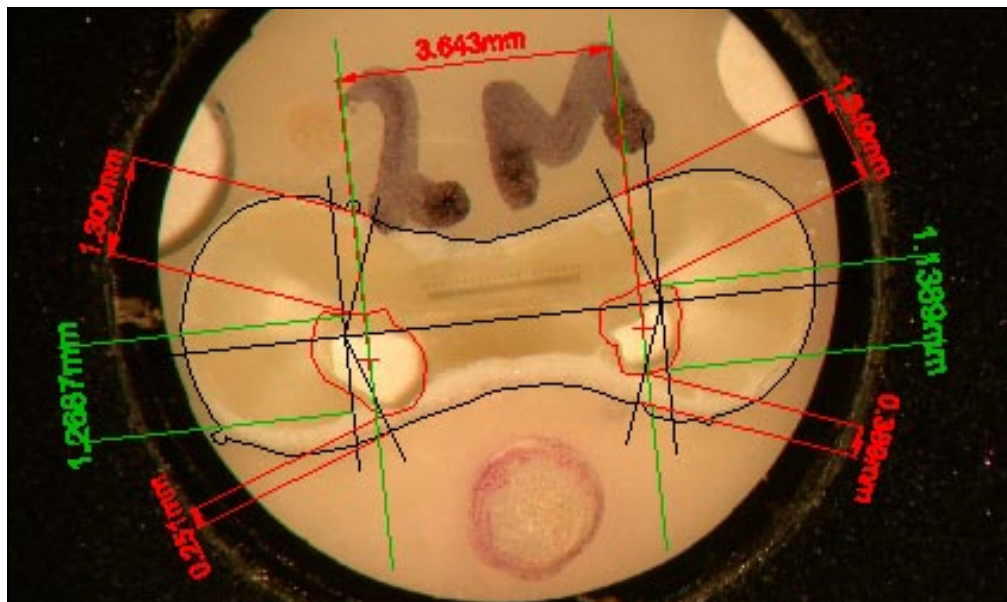


Figure 6f. Template with measurements removed from postoperative image

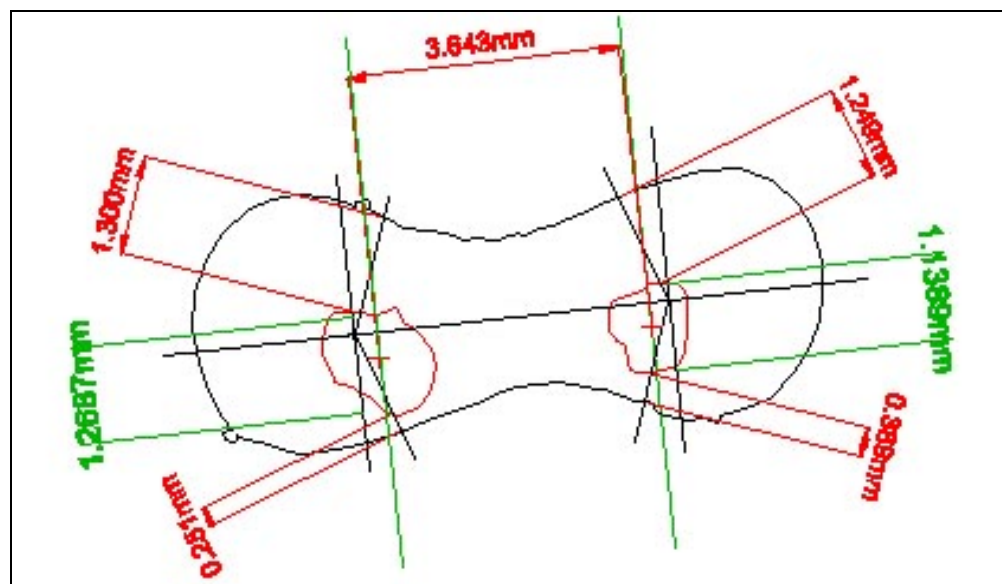
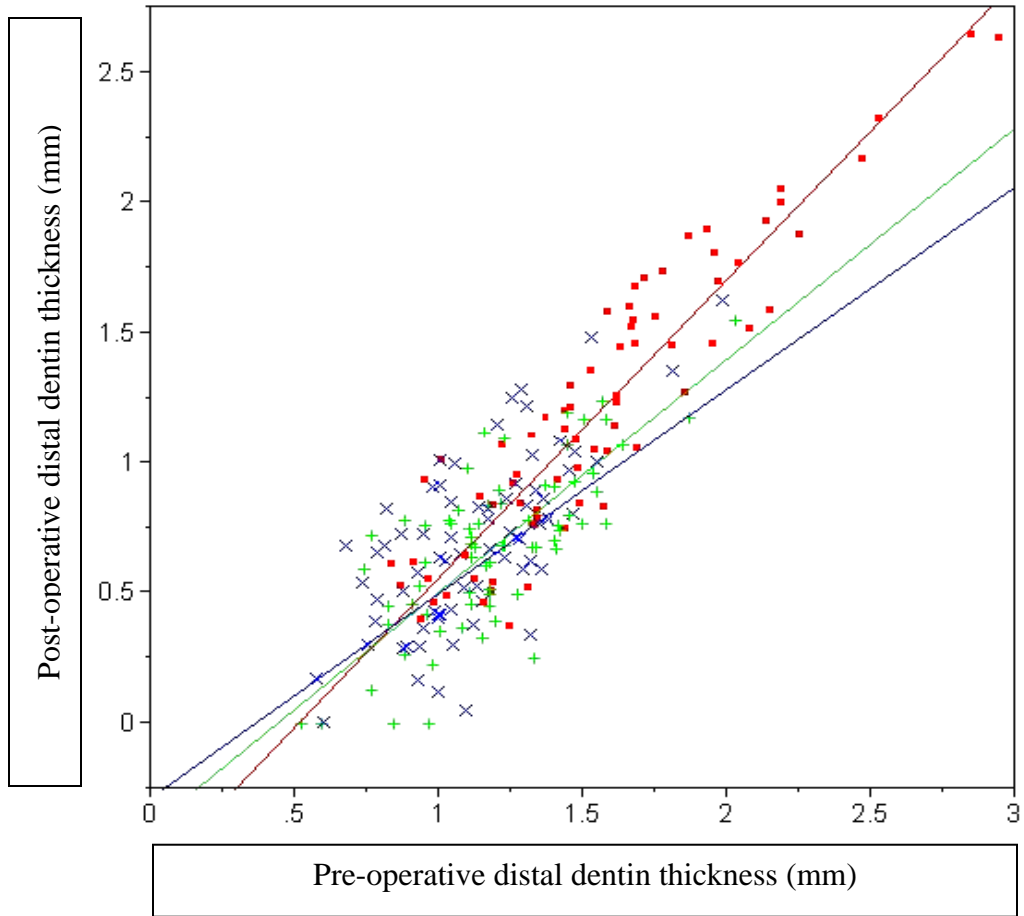


Figure 7. Graph showing the interaction of the level of sectioning and pre-operative distal dentin thickness on the outcome of postoperative distal dentin thickness



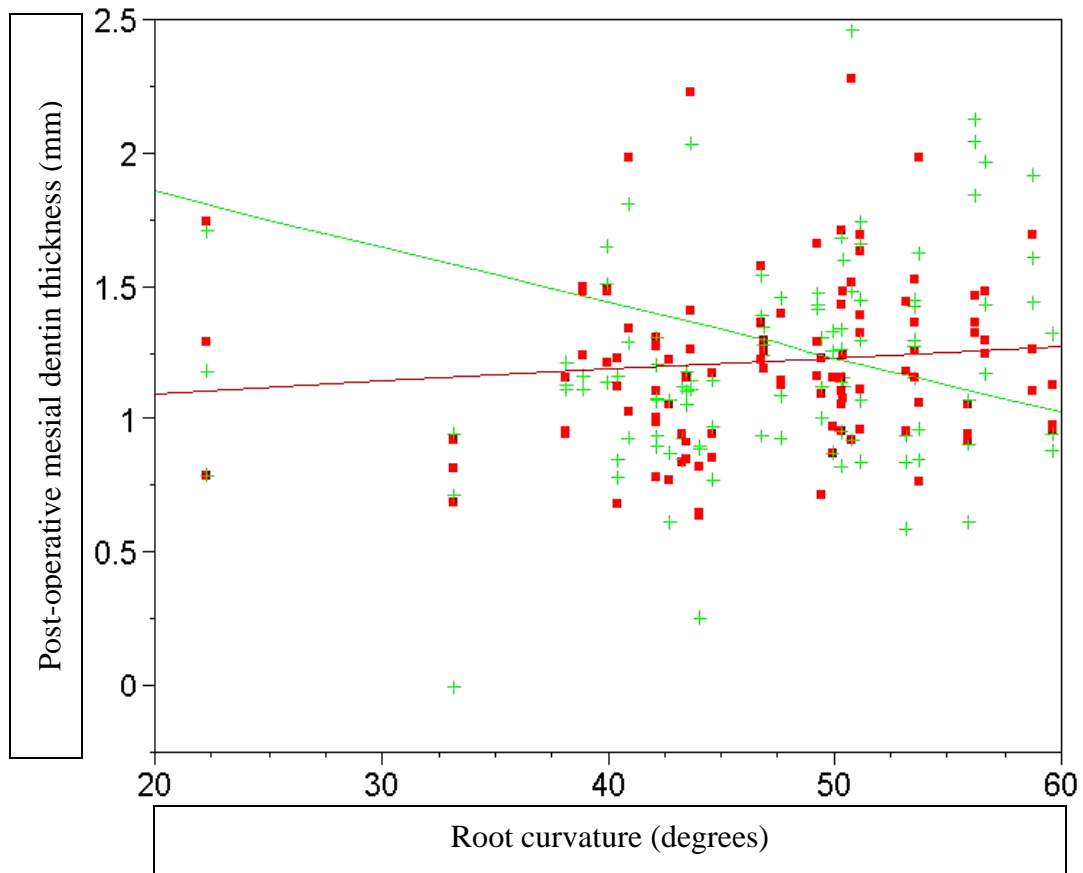
Legend

Level of sectioning

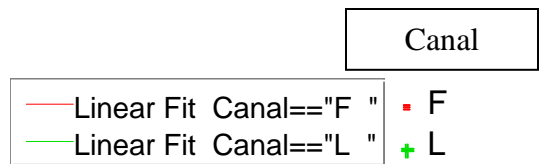
- | | |
|--|-----|
| — Linear Fit Distance from furcation ==3 | ■ 3 |
| — Linear Fit Distance from furcation ==5 | + 5 |
| — Linear Fit Distance from furcation ==7 | x 7 |

The steepest sloped line represents the 3mm level of sectioning, the middle sloped line represents the 5mm level of sectioning, and the least sloped line represents the 7mm level of sectioning.

Figure 8. Graph showing the interaction of canal (facial or lingual) and root curvature on the outcome of postoperative mesial dentin thickness

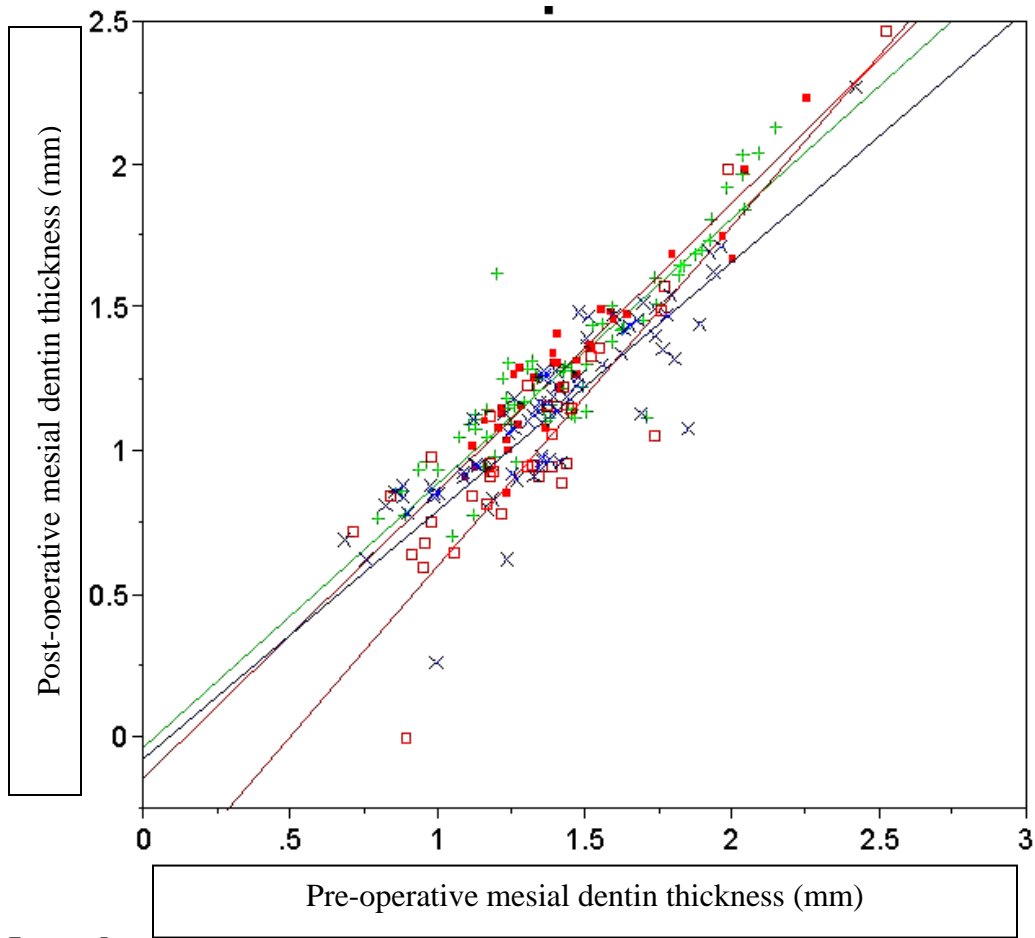


Legend

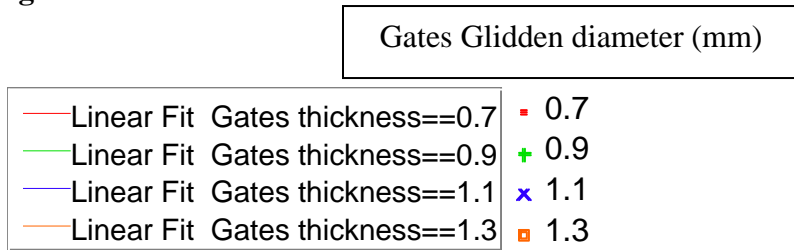


The negatively sloped line represents the lingual canal, showing an inverse relationship between root curvature and postoperative mesial dentin thickness. The nearly level line represents the facial canal, showing no relationship of root curvature to mesial dentin thickness.

Figure 9. Graph showing the interaction of Gates Glidden instrument size and pre-operative mesial dentin thickness on the outcome of post-operative mesial dentin thickness



Legend



The steepest sloped line represents the size 5 Gates Glidden burs that have an estimated diameter of 1.3mm. This instrument group removed significantly more post-operative mesial dentin than the other Gates Glidden instrument groups.