

**CHAPTER 8**  
**CONCLUSIONS AND RECOMMENDATION**

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#### 8.1 Conclusion

Within the limits imposed by the conditions used in this study, it is concluded that:

1. Based on conventional radiograph:-
  - a) The quality of filling is not dependent on different types of vehicles of calcium hydroxide used.
  - b) The quality of filling is dependent on different methods of placement. Lentulo spiral method of placement, with or without the syringe, resulted in extrusion of material from the apex and syringe method resulted in material which is short of the apex. However, the difference is not significant statistically.
2. The quality of filling (surface area) is not dependent on the types of vehicles of calcium hydroxide irrespective of the two horizontal levels.
3. The presence of voids and its location are not dependent on different types of vehicles of calcium hydroxide, irrespective of the two horizontal levels.
4. The syringe technique for placing the material resulted in presence of voids at the wall of the canal. Lentulo spiral method of placement gives the best quality of filling at both levels, regardless of types of vehicles of calcium hydroxide.

5. Conventional radiographs do not give an accurate representation of the quality of calcium hydroxide filling as the image obtained is captured by overlapping of images. Difficulties were noted in visualizing Pulpdent® Tempcanal™ from the conventional method due to the similar radiopacity and colour to that of dentine. A more reliable and accurate method of assessment was seen when a 3-dimensional image captured from microcomputed tomography was used.

## **8.2 Recommendations for further study**

1. More level of cross-sectioning is recommended especially at the apical part in assessing the quality of filling of calcium hydroxide. This is valuable since that is the area that needs to be filled completely with calcium hydroxide in order to maximize the antibacterial effect of calcium hydroxide and improve healing.
2. Three-dimensional imaging using microcomputed tomography was only carried out on six specimens due to the problems discussed earlier. The use of a bigger sample size is recommended as this will enable statistical analysis to be performed.
3. Further research of the same interest would not be costly if the microcomputed tomography machine is available locally. Thus, it would benefit all if the machine is available in the faculty.
4. Long term clinical study in this area will be of benefit to see the outcomes of different types of vehicles of calcium hydroxide in non-vital immature permanent teeth using different methods of placement.