

Thoughts of home and abroad...

Lateral or vertical condensation?

Lateral condensation versus warm vertical condensation... Ray Bellamy asks why we are still having this debate

In 1867, Bowman, an American, popularised the use of gutta percha as a semi-solid root canal filling material. It remains the optimum root canal filling material of choice but, clearly, is no longer the best. However, this fact should not detract from the topic of this article.

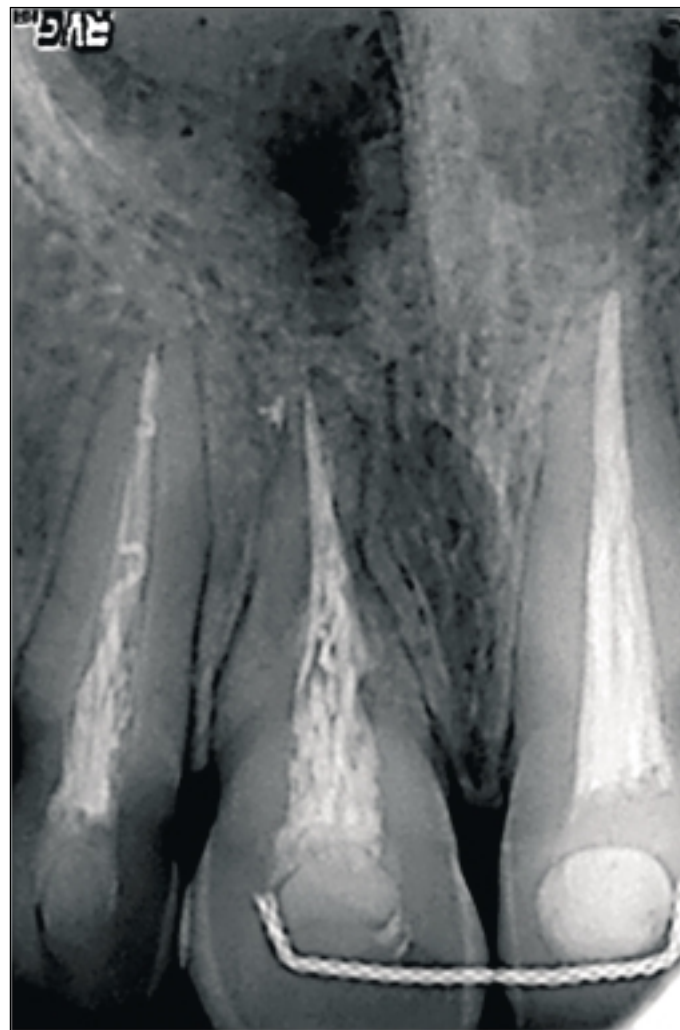
Ever since our dental colleagues in America decided to warm gutta percha for root canal therapy, there seems to have developed a cold (no pun intended) war between clinicians on both sides of the Atlantic divide.

Teaching institutions in these islands have been slow to respond and I do believe that this has resulted in a long-standing tenuous union of the endodontists and dentists within the profession.

Let's acknowledge that the objective of root canal therapy is to clean, shape, disinfect, pack and fill the root canal system in three dimensions totally, including the accessory canals. We have to think in three dimensions, not in the two dimensions of the silver point era.

Too often in the past the adequacy of the root canal

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The final filling invariably consists of a large number of separate gutta percha points tightly pressed together and joined by frictional grip and the cementing substance only. Above: A case obturated by lateral condensation.

filling procedure was based upon its vertical appearance on the dental radiograph. Excessive emphasis was placed upon whether the filling reached the radiographic apex of the tooth or whether it extended beyond the apical foramen. Too little emphasis was placed upon eliminating the root canal system as an entity by its total obturation.

It would seem desirable to fill root canals with a homogenous, inert, dimensionally stable, physiologically acceptable material like gutta percha that can be manipulated with sufficient plasticity to form a permanent cast of the internal configuration of the root canal system.

Gutta percha, when used in

lateral condensation, without heat, never obtains the state of a homogenous mass. The final filling invariably consists of a large number of separate gutta percha points tightly pressed together and joined by frictional grip and the cementing substance only. It is the gradual setting of the root canal cement that gives the digital (as in fingers not radiographs) illusion of homogeneity as the lateral condensation continues. Ironically, only at the point where the coronal excess is removed with a hot instrument is true homogeneity achieved.

In lateral condensation, the middle and coronal one-third of the root canal are the densest in their fill. The apical seal, where it matters most, is little improved by the further addition of points. There is no doubt that in the presence of good cleaning and shaping lateral condensation is effective and a big improvement over the silver point technique.

I would question, however, the application and efficiency of lateral condensation in sealing the root canal system effectively in the curved canals of molar teeth. How much lateral condensation occurs, do you suppose, in the apical one-third of the MB root of an upper first molar?

Heated gutta percha

However, the thermo-mechanical properties of gutta percha lend themselves well to the obturation of the root canal system when heated. Not to heat the gutta percha is to deny the operator of its finest property.

Studies by Goodman (1974) have clearly demonstrated the unique



'How much lateral condensation occurs, do you suppose, in the apical one third of the MB root of an upper first molar?'

Above: A case obturated by warm vertical compaction

rheological properties of warm gutta percha. Cold gutta percha techniques rely heavily on root canal sealer to address the problems of the accessory anatomy.


This is not so in warm vertical condensation, where it is possible to utilise a minimal amount of sealer due to the close adaptation of gutta percha. It has been

demonstrated that both gutta percha and sealer enter the lateral anatomy during obturation. The warm vertical compaction of gutta percha creates a dense (up to 25% by weight over LC), well adapted, homogenous mass of core filling the root canal system.

The next generation of warm gutta percha-like obturation technique is already

with us in the advent of Resilon and Epiphany, a thermoplastic, synthetic polymer and bonding agent, as root canal system fillers. Early results indicate that the chemo-mechanical bond that these products generate will greatly reduce the microbial ingress that can occur along the gutta percha dentine interface.

In conclusion, with so much pressure, from within and without, it rests upon the clinician to perform endodontics to the highest level; to do the very best that one can in any given situation. Not only to eliminate pain, remove pathology and promote healing in the short term, but to provide root canal therapy that is both predictable and reliable over a long period of time – i.e. decades. Therefore it is incumbent upon clinicians to embrace this technique. There will be few people deserting the warm vertical condensation

technique for lateral condensation! 

References

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Acknowledgements

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