



Root canal sealers in dental practice

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ABSTRACT

Root canal sealers are important materials commonly used in endodontic treatment. Endodontic treatment for cleaning the root canal and removing the pulp and filling with manmade materials. The aim of the study was to assess the knowledge and attitude of the practitioners regarding root canal sealers in endodontic treatment. It is an online-based questionnaire study in which ten questions were circulated through an online forum through google forms and results were analysed using SPSS. In this study, it was observed that private practitioners most commonly use zinc oxide eugenol based sealers (50%), but it shows that methacrylate resin-based sealers (50%) are most effective in sealing. It shows that private practitioners are more aware of root canal sealers and its uses, and about its properties.

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INTRODUCTION

The success of optimal endodontic management is due to several important factors, such as appropriate instrumentation, bio-mechanical planning, obturation procedures and, finally, post-endodontic reconstruction. Sealer and sealing material work synergistically to produce hermetic seals (Torabinejad and Walton, 2009). The quality of the seal produced with guttapercha and traditional zinc oxide eugenol sealers is far from perfect. In comparison to resin-based seals, the setting reaction of zinc oxide-based sealers of eugenol is a chelation reaction that

occurs between eugenol and zinc concentrations of zinc oxide. Delayed setting shrinkage associated with zinc oxide based sealers is observed (Michaud, 2008). ZOE sealer within pulp chamber decontaminated dental tubules to a depths of 250 micrometres and had strong antimicrobial properties relative to other sealers

It comprised of a pasting device supplied in two tubes in a modern dual-barrel syringe. The epoxy paste includes radiopaque fillers. The amine paste consists of three different forms of amines, radiopaque fillers and serisol. Only the minimal release of formaldehyde following setting was reported by for AH plus (3.9ppm), followed by EZ-filling (540ppm) of endodontic cement and AH26 (1347ppm) of endodontic cement yielding the strongest release of formaldehyde (Vadde, 2016). In its structure, it has nanosilver. This is a metallic silver that is evenly dispersed on the surfaces of the filling.

This seal creates calcium hydroxide (Camilleri, 2008) that is transferred into solution (Fridland and Rosado, 2003) and induces the formation of hydroxyapatite frameworks in modelled body fluids (Sarkar, 2005). Pro root endo seal is a calcium

silicate endodontic seal. The main components of pro root endodontic seal powder and tricalcium silicate and dicalcium silicate, including calcium sulfate as a retardant environment, bismuth oxide as a radio-pacifier and a limited percentage of tricalcium aluminate when inserted in the canal, release calcium activity and induce adhesion and proliferation. The aim of the study was to assess the knowledge and attitude of the practitioners regarding root canal sealers in root canal treatment.

MATERIALS AND METHODS

It is a descriptive cross-sectional study it includes ten questions circulated among 100 population of dentists in Chennai, and the response was collected through google forms. The data were analysed statistically, and the result was obtained. Analysis software used was SPSS.

Data collection

An online platform known as survey planet was used. The questionnaire was uploaded on this site, and the data was verified by an external viewer. Data was reported to excel and later exported to SPSS for analysis. The results were analysed, and the responses were tabulated in the form of bar charts.

RESULTS AND DISCUSSION

Previously our team had conducted numerous clinical trials and survey studies over the past five years. Now we are focusing on epidemiological surveys. The idea for this survey stemmed from the current interest in our community.

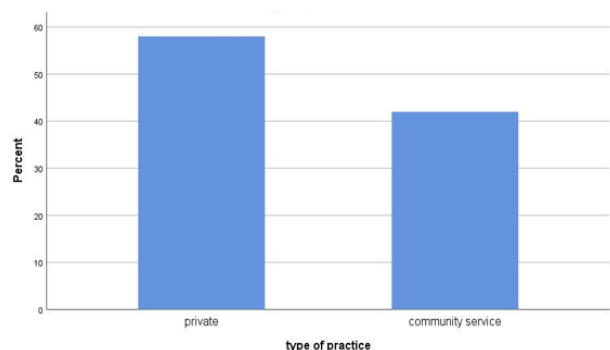


Figure 1: Bar chart depicts percent respondent for the type of practice

In this study it shows that private practitioners are more aware of root canal sealers than community service practitioners. About 58% of them are private practitioners in this study, and 42% of them are community service practitioners (Figure 1). It shows that zinc oxide-based sealers are most commonly used sealers (50%) followed by calcium

hydroxide based sealers (44%) and paraformaldehyde based sealers (6%) (Figure 2).

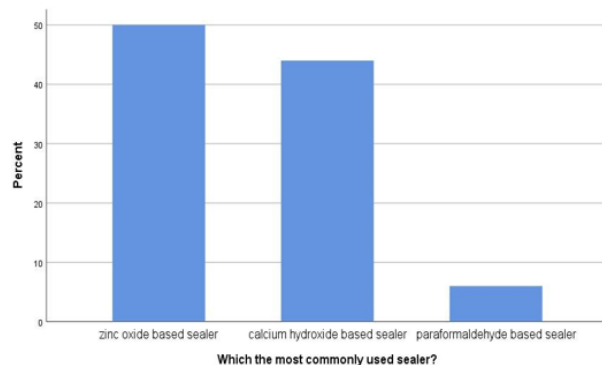


Figure 2: Bar chart depicts percent responded for most commonly used sealer

It shows that methacrylate resin-based sealers are more effective in sealing (50%) followed by zinc oxide eugenol based sealers (25%) and both (15%) (Figure 3). Zinc oxide eugenol sealer is more commonly used among private practitioners than community service practitioners, calcium hydroxide based sealer is more commonly used among private practitioners. P-value was observed to be 0.9>0.05, and this is statistically insignificant (Figure 4).

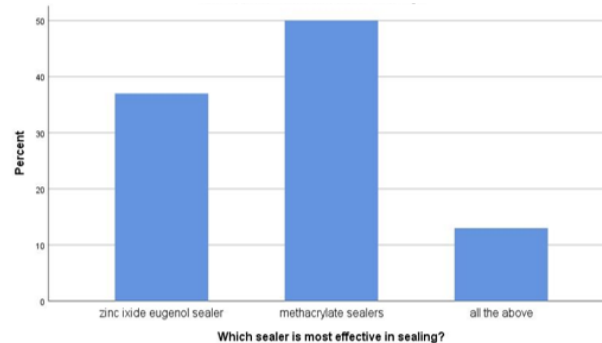


Figure 3: Bar chart depicts percent responded for most effective sealer

Zinc oxide eugenol based sealer follows methacrylate sealers in both private and community practitioners was estimated with P-value 0.7>0.05, which again is statistically insignificant. (Figure 5). Private practitioners have performed a higher number of root canal treatment than community service practitioners. P-value was determined to be 0.4>0.05; it was statistically insignificant (Figure 6).

The study of (Ravikumar and Sharma, 2017), showed a high prevalence for zinc oxide-based sealers showed higher prevalence for AH plus sealer. In the study of (Naghavi, 2014), resin-based sealers are more effective in sealing. The study of (Swanson and Madison, 1987), concluded that methacrylate sealers are the most effective in sealing than other

sealers. The study of (Torabinejad *et al.*, 1990), concluded that epiphany and resilon leaked significantly less than guttapercha and AH26, it shows the leakage property of the sealers.

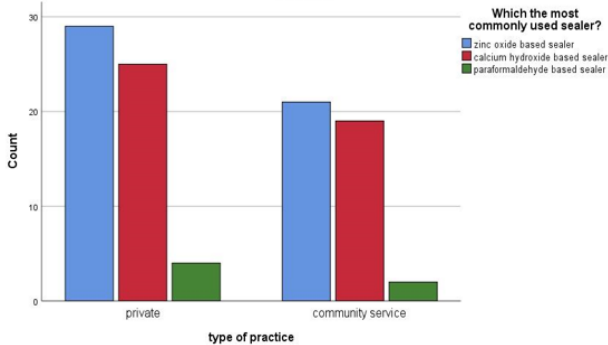


Figure 4: Bar chart depicting Zinc oxide eugenol sealer is more commonly used among private practitioners than community service practitioners

In a study by (Weller, 2008), it was suggested that the newly introduced pro-root endo seal based calcium silicate is more analogous in sealing consistency to the epoxy resin-based seal and seals than the ZOE-based seal after submersion in fluid-containing phosphate. In a study by (Scarpato *et al.*, 2009), it was found that more macrophages were developed by methacrylate composite resins sealers.

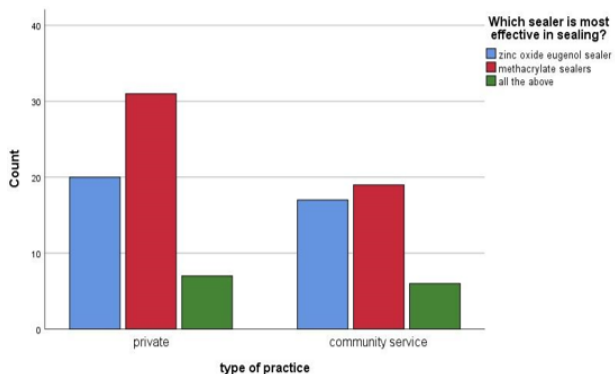


Figure 5: Bar chart depicting private practitioners more for methacrylate base sealer as the most effective sealer than community service practitioners

Research has also shown that epiphany root canal sealers were the only component that demonstrated intraosseous cytocompatibility with resin-based sealants (Sousa, 2006). A number of studies have also shown that Tubliseal EWT had a finer film thickness among traditional zinc oxide eugenol sealers. Higher strain rate resulted in a major improvement in the flow velocity of all sealers. (McMichen *et al.*, 2003) confirmed that Endomethasone did not

follow with ISO requirements among the medicinal sealers.

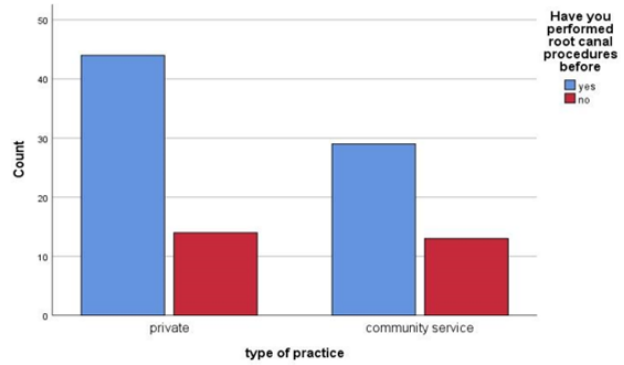


Figure 6: Bar charts depicting private practitioners have performed a higher number of root canal treatment than community service practitioners

In a study performed by (Souza *et al.*, 2009), it was observed that epiphany had higher flow, polymerization stress and weaker strength properties to dentine than AH plus. In the (Kayaoglu *et al.*, 2005), it was observed that AH plus and Grossman's sealer were efficacious in decreasing the amount of bactericidal activity whereas the calcium hydroxide Sealapex, Apexit were unsuccessful.

CONCLUSION

In this study, it shows that zinc oxide sealers are the most commonly used sealers among both originate, and community service practitioners and resin-based sealers are more effective in sealing than other sealers. Private practitioners are more aware of root canal sealers than community service practitioners.

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The authors declare that they have no funding support for this study.

Conflict of Interest

The authors declare that they have no conflict of interest.

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