

PERBANDINGAN TIGA TEKNIK IRIGASI TERHADAP PEMBERSIHAN RESIDU ANTARA KALSIMUM HIDROKSIDA YANG DICAMPUR DENGAN KITOSAN NANOPARTIKEL DAN GLISERIN PADA SEPERTIGA APIKAL SALURAN AKAR

INTISARI

Medikamen intrakanal merupakan salah satu sarana disinfeksi terutama pada area sepertiga saluran akar yang tidak terpreparasi. Medikamen intrakanal yang masih menjadi *gold standart* adalah kalsium hidroksida. Kalsium hidroksida harus dicampur dengan pelarut untuk memudahkan aplikasi ke dalam saluran akar. Kitosan saat ini telah dikembangkan sebagai alternatif pelarut kalsium hidroksida yang terbukti aman. Kalsium hidroksida harus dibersihkan dari saluran akar sebelum obturasi dilakukan, sebab residu kalsium hidroksida dapat mempengaruhi siler. Penelitian ini bertujuan untuk mengetahui perbedaan kebersihan sepertiga apikal dinding saluran akar dari residu antara kalsium hidroksida dengan pelarut gliserin dan kitosan nanopartikel menggunakan teknik irigasi *file NiTi rotary*, sonik dan *canal brush*.

Tiga puluh gigi premolar mandibula, dipotong dengan panjang 14 mm dari apeks. Semua sampel dipreparasi, diberi *medikamen intrakanal* kalsium hidroksida dengan pelarut gliserin dan pelarut kitosan nanopartikel. Sampel tersebut dibagi menjadi dua kelompok kemudian *medikamen intrakanal* dibersihkan menggunakan teknik irigasi *file NiTi rotary*, sonik dan *canal brush*. Gigi dibelah secara longitudinal. Pengukuran luas residu kalsium hidroksida pada sepertiga apikal menggunakan program *Optilabviewer* versi 4 dan data dianalisis menggunakan ANAVA dua jalur.

Hasil ANAVA dua jalur menunjukkan bahwa kebersihan residu kalsium hidroksida yang dicampur dengan pelarut kitosan nanopartikel lebih tinggi dibandingkan gliserin. Kebersihan residu kalsium hidroksida lebih tinggi dengan irigasi sonik dan *canal brush* daripada dengan irigasi *file NiTi rotary*, sedangkan *canal brush* dan sonik sama.

Kata kunci: teknik irigasi, residu medikamen intrakanal, pelarut kitosan

COMPARISON OF THE THREE IRRIGATION TECHNIQUES ON RESIDUE REMOVAL BETWEEN CALCIUM HYDROXIDE MIXED WITH CHITOSAN NANOPARTICLES AND GLYCERINE IN THE APICAL THIRD OF THE ROOT CANAL

ABSTRACT

The intracanal medicament is essential for disinfection, especially in the unprepared apical third of the root canal area. The gold standard of intracanal medicament is calcium hydroxide. Calcium hydroxide must be mixed with a solvent to facilitate application into the root canal system. Currently, chitosan has been developed as an alternative calcium hydroxide solvent that is safe. Calcium hydroxide must be removed from the root canal system before obturation is performed because residues of calcium hydroxide can affect the sealer penetration into dentinal tubules. This study aims to determine the difference in cleanliness of the apical third of the root canal wall from residue between calcium hydroxide mixed with glycerin and chitosan nanoparticles using rotary, sonic and canal brush NiTi file irrigation techniques.

Thirty premolars of mandibular teeth were cut at the cemento-enamel junction, leaving a root length of 14 mm, used in this study. All samples were prepared, applied an intracanal medicament using calcium hydroxide with glycerin and chitosan nanoparticles as solvents. The samples were divided into two groups, and then the intracanal medicament was cleaned using NiTi rotary, sonic, and canal brush irrigation techniques. Teeth were split longitudinally. The residual area of calcium hydroxide of the apical third was measurement using the Optilab viewer version 4 and data were analyzed using two-way ANOVA.

The two-way ANOVA showed that the cleanliness of the residual calcium hydroxide mixed with chitosan nanoparticles was higher than glycerin. The cleanliness of residual calcium hydroxide was higher with sonic and canal brush irrigation than with rotary NiTi file irrigation, while the brush and sonic canal were the same.

Keywords: irrigation technique, residue intracanal medicament, chitosan solvent