PENGARUH KONSENTRASI DAN LAMA APLIKASI IRIGASI SODIUM TIOSULFAT TERHADAP KEKUATAN PELEKATAN *PUSH-OUT* BAHAN OBTURASI SALURAN AKAR

INTISARI

Sodium hipoklorit merupakan larutan irigasi yang digunakan saat preparasi saluran akar karena memiliki daya antibakteri, namun memiliki efek samping yang dapat menyebabkan degradasi kolagen dan meninggalkan radikal bebas pada dinding dentin dan tubulus dentin sehingga berpotensi menganggu penetrasi siler. Sodium tiosulfat merupakan antioksidan dan dapat menetralkan efek samping tersebut.Tujuan penelitian ini untuk mengetahui pengaruh konsentrasi dan lama aplikasi irigasi sodium tiosulfat terhadap kekuatan pelekatan *push-out* bahan obturasi saluran akar.

Penelitian menggunakan gigi premolar mandibula pasca pencabutan. Saluran akar dilakukan preparasi dengan teknik *crown down* hingga *file* F3. Spesimen dibagi empat kelompok perlakuan. Kelompok IA dan IB diirigasi sodium tiosulfat 5 % selama 3 menit dan 5 menit, kelompok IIA dan IIB diirigasi sodium tiosulfat 10% selama 3 menit dan 5 menit. Kelompok kontrol diirigasi salin selama 3 menit dan 5 menit. Saluran akar diobturasi dengan siler resin epoksi dan guta perca, lalu diinkubasi selama 7 hari. Spesimen dipotong horizontal pada sepertiga apikal dengan ketebalan 2 mm, kemudian dilakukan uji *push-out* menggunakan *universal testing machine*. Spesimen dilakukan pengamatan tipe kegagalan pelekatan menggunakan mikroskop stereo (perbesaran 40X). Data dilakukan analisis dengan ANAVA dua jalur dengan tingkat kepercayaan 95%.

Hasil analisis data menunjukkan perbedaan bermakna antar konsentrasi sodium tiosulfat terhadap kekuatan pelekatan *push-out* ($p < 0,05$), namun antar lama aplikasi menunjukkan pengaruh yang sama. Tidak ada interaksi antara konsentrasi dengan lama aplikasi. Tipe kegagalan pelekatan dominan pada tipe kombinasi. Kesimpulan penelitian ini adalah konsentrasi sodium tiosulfat 10% menghasilkan kekuatan pelekatan *push-out* lebih tinggi dibandingkan konsentrasi 5%.

Kata kunci : sodium tiosulfat, *push-out*, konsentrasi, lama aplikasi

THE EFFECT OF CONCENTRATION AND APPLICATION TIME OF SODIUM THIOSULFATE ON PUSH-OUT BOND STRENGTH OF ROOT CANAL OBTURATION MATERIAL

ABSTRACT

Sodium hypochlorite was used as irrigation solution during root canal preparation because its antibacterial effect, however it has side effect degrades dentinal collagen and generates oxygen free layer on dentin surfaces that might prevent penetration of sealer. Sodium thiosulfate is an antioxidant and it has been reported can neutralize that side effect.The purpose of this study was to determine the effect of concentration and application time sodhium thiosulfate irrigation on push-out bond strength of root canal obturation material.

This study used extracted human mandibular premolars single root post extraction. The root canals were prepared using crown down technique up to file F3. The specimens divided four groups. Group IA and IB were irrigated with sodium thiosulfate 5% for 3 minutes and 5 minutes, Group IIA and IIB were irrigated with sodium thiosulfate 10% for 3 minutes and 5 minutes. Group control were irrigated with saline for 3 minutes and 5 minutes The root canals were obturated with epoxy resin sealer and gutta percha, and were incubated for 7 days. Specimens were horizontally sectioned into 2 mm thickness in apical third and were tested with push-out technique using universal testing machine. Specimens were observed the adherence failure using microscope stereo (magnification of 40X).Data were analyzed with two-way ANOVA at 95% confidence level.

The results of data analyzed test showed that there was significant effect between concentration of sodium thiosulfate on push-out bond strength, however application time showed same effect. There is no interaction betweeen concentration and application time. The failure type was observed predominantly as combination. The conclusion of this study is that sodium thiosulfate 10% showed higher push-out bond strength than sodium thiosulfate 5%

Keywords : sodium thiosulfate, push-out, concentration, application time