

PERBANDINGAN KEBOCORAN MIKRO ANTARA *BIOACTIVE CALCIUM SILICATE CEMENT* DAN *ENHANCED RESIN MODIFIED GLASS IONOMER* SEBAGAI BAHAN PENUTUP PERFORASI

INTISARI

Perforasi merupakan suatu kesalahan yang dapat menyebabkan dampak luas pada perawatan endodontik. Bahan yang digunakan sebagai penutup perforasi harus memiliki sifat biokompatibilitas yang baik, tidak mudah larut, mempunyai efek antibakteri, dan mempunyai kemampuan penutupan yang baik. Tujuan penelitian ini adalah untuk mengetahui perbedaan kebocoran mikro pada bahan penutupan perforasi menggunakan *bioactive calcium silicate cement* dan *enhanced resin modified glass ionomer*.

Subjek penelitian 36 gigi permolar mandibula pasca pencabutan dan bebas karies. Sampel dibagi dua kelompok, masing-masing berisi 18 buah gigi. Sampel gigi dipreparasi akses kamar pulpa dengan bur intan bulat dan *outlined* akses dengan bur silindris. Simulasi perforasi 1 mm subgingiva dengan bur bulat intan no. 14 sampai ke kamar pulpa. Penutupan perforasi dengan *bioactive calcium silicate cement* dan *enhanced resin modified glass ionomer*. Sampel gigi dibungkus *cotton-roll* dilembabkan dengan *phosphat buffer saline* (PBS), dimasukkan dalam tabung, dan dimasukkan ke dalam inkubator selama 24 jam dengan suhu 37°C. Permukaan gigi dilapisi cat kuku dengan menyisakan daerah 1 mm disekeliling restorasi pada bagian bukal kemudian direndam *methylene blue* 1% selama 24 jam. Sampel dibilas dibawah air mengalir. Dilakukan pembelahan dalam arah buko lingual dengan menggunakan *diamond disc bur* dibawah pendingin air. Pengamatan menggunakan mikroskop stereo perbesaran 16 kali dan diukur kebocoran mikro menggunakan software *Image Raster* dalam ukuran milimeter.

Hasil uji statistik *Mann Whitney* menunjukkan tidak terdapat perbedaan bermakna antara *bioactive calcium silicate cement* dan *enhanced resin modified glass ionomer* dalam hal kebocoran mikro ($p > 0,05$). Kesimpulan dari penelitian ini adalah tidak terdapat adanya perbedaan dalam hal kebocoran mikro antara *bioactive calcium silicate cement* dan *enhanced resin modified glass ionomer* sebagai bahan penutup perforasi.

Kata kunci : perforasi, kebocoran mikro, *bioactive calcium silicate cement*, *enhanced resin modified glass ionomer*

**DIFFERENCE IN MICROLEAKAGE BETWEEN *BIOACTIVE
CALCIUM SILICATE CEMENT AND ENHANCED RESIN
MODIFIED GLASS IONOMER* AS MATERIAL
FOR TREATMENT OF PERFORATION**

ABSTRACT

Perforation is an error that can have a wide impact on endodontic treatment. The material used as a perforation cover must have good biocompatibility, do not dissolve easily, have an antibacterial effect, and have good sealing ability. The purpose of this study was to determine differences in microleakage in perforation closure materials using *bioactive calcium silicate cement* and *enhanced resin modified glass ionomer*.

The subjects of the study were 36 mandibular premolars after extraction and free of caries. The sample was divided into two groups, each containing 18 teeth. The tooth sample was prepared for pulp chamber access with a round diamond bur and outlined access with a cylindrical bur. Simulation of 1 mm subgingival perforation with round diamond bur no. 14 to the pulp chamber. Perforation closure with *bioactive calcium silicate cement* and *enhanced resin modified glass ionomer*. The tooth sample was wrapped in a cotton-roll moistened with *phosphate buffered saline* (PBS), put in a tube, and put in an incubator for 24 hours at 37°C. The tooth surface was coated with nail polish leaving an area of 1 mm around the buccal restoration and then soaked in 1% *methylene blue* for 24 hours. The sample was rinsed under running water. The cleavage was carried out in the buccal-lingual direction using a diamond disc bur under a water cooler. Observations using a stereo microscope with a magnification of 16 times and microleakage measured using *Image Raster* software in millimeters.

The results of the *Mann Whitney* statistical test showed that there was no significant difference between *bioactive calcium silicate cement* and *enhanced resin modified glass ionomer* in terms of microleakage ($p>0.05$). The conclusion of this study is that there is no difference in microleakage between *bioactive calcium silicate cement* and *enhanced resin modified glass ionomer* as material for treatment of perforation.

Keywords: perforation, microleakage, *bioactive calcium silicate cement*, *enhanced resin modified glass ionomer*