

INTISARI

Immediate dentin sealing (IDS) dan *resin coating* merupakan metode aplikasi *bonding* yang diharapkan dapat meningkatkan ketahanan restorasi indirek. Tujuan penelitian ini untuk mengkaji pengaruh jenis dan metode aplikasi *dentin bonding agent* terhadap *failure mode* dan ketebalan *hybrid layer* pada gigi tiruan cekat litium disilikat.

Gigi premolar cabutan sejumlah 30 buah di preparasi hingga seluruh permukaan oklusal dan dentin terekspos. Enam kelompok penelitian ($n=5$) diperoleh dari kombinasi dua macam *dentin bonding agent* (DBA): *Two-bottle system universal* DBA (*lightly-filled* DBA/ LFA) dan *total-etch* DBA (*filled* DBA/ FA); serta tiga metode aplikasi: *immediate dentin sealing* (IDS), *immediate dentin sealing* dengan *resin coating* (IDSRC), dan *delayed dentin sealing* (DDS). Aplikasi DBA dilakukan sesuai kriteria tiap kelompok kemudian dipasangkan restorasi sementara. Sampel diberi perlakuan *thermocycling aging* kemudian diinkubasi selama 14 hari (37°C). *Surface treatment* dilakukan untuk membersihkan sisa restorasi sementara dan menambah kekasaran permukaan. Sementasi litium disilikat menggunakan *preheated composite*. Pengamatan *failure mode* dan ketebalan *hybrid layer* dilakukan dengan *stereomicroscope*. Analisis *failure mode* menggunakan uji Kruskal-Wallis. Analisis data ketebalan *hybrid layer* menggunakan uji ANAVA dua jalur.

Hasil penelitian menunjukkan IDSRC LFA dapat meningkatkan ketebalan *hybrid layer* secara signifikan ($p<0,05$). Tidak ada perbedaan yang signifikan antara metode IDSRC LFA terhadap IDS FA dan IDSRC FA ($p>0,05$). Terdapat perbedaan *failure mode* yang signifikan antara tiap kelompok penelitian. Kesimpulan hasil penelitian terdapat pengaruh IDS dan *resin coating* terhadap *failure mode* dan ketebalan *hybrid layer* pada gigi tiruan cekat litium disilikat. *Two-bottle system universal* DBA dapat menjadi alternatif sebagai IDS yang digunakan bersamaan dengan *resin coating*.

Kata kunci: *immediate dentin sealing*, *resin coating*, ketebalan *hybrid layer*, *failure mode*

ABSTRACT

Immediate dentin sealing (IDS) and resin coating serves as a bonding application method which is expected to increase durability of indirect restoration. This study aims to determine the role of dentin bonding agent and its application method on failure mode and hybrid layer on lithium disilicate fixed partial denture.

A total of 30 recently extracted premolars were removed occlusally until the dentin was exposed. Six groups ($n=5$) were obtained from the combination of two DBAs: two-bottle system universal DBA (lightly-filled DBA/ LFA) and total-etch bonding system DBA (filled DBA/ FA); and three application methods: immediate dentin sealing (IDS), immediate dentin sealing with resin coating (IDSRC), and delayed dentin sealing (DDS). DBA application was performed based on each group criteria followed by provisional restoration. Specimens were then treated with thermocycling aging and incubated for 14 days at 37°C. Surface treatment was carried out to eliminate remaining provisionals and increase surface roughness. Lithium disilicate cementation performed by preheated composite. Failure mode and hybrid layer thickness observed using stereomicroscope. Failure mode analysis performed by Kruskal-Wallis. Hybrid layer analysis performed by two-way ANOVA.

It appears that IDSRC by LFA was confirmed to significantly improve hybrid layer thickness ($p<0.05$). There is no significant difference between this method and IDS by FA ($p>0.05$). Significant differences of failure mode were observed among groups. There is an influence of dentin bonding agent on hybrid layer thickness and failure mode. LFA can be an alternative of DBA for the application of IDS if performed with resin coating.

Keywords: immediate dentin sealing, resin coating, hybrid layer thickness, failure mode