Perbedaan Kuat Rekat Geser Pada Tiga Jenis Braket Metal Nonmesh Pada Arah Mesiodistal Dan Oklusogingival = THE DIFFERENCES OF SHEAR BOND STRENGTH OF THE THREE NONMESH METAL BRAKETS IN THE MESIODISTAL AND OCCLUSOGINGIVAL DIRECTIONS

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Abstrak

Latar Belakang : Braket berperan sebagai media penyalur gaya ke gigi sehingga braket perlu didesain dengan tepat. Desain braket berdasarkan konfigurasi basisnya terdiri dari mesh dan nonmesh. Basis braket tipe nonmesh dengan desain yang tepat dapat menghasilkan kekuatan rekat sesuai kriteria optimal.
Tujuan : Untuk mengetahui nilai kuat rekat geser optimal pada tiga jenis braket metal nonmesh dan menvalidasi simulasi desain jenis rumus bangun ruang dasar braket metal nonmesh.
Metode : Tiga puluh gigi premolar pertama rahang atas dibagi ke dalam tiga kelompok uji braket metal nonmesh (Tipe 1, Tipe 2, dan Tipe 3). Gigi difiksasi dalam self acrylic. Permukaan bukal gigi dibersihkan dengan pumice lalu dietsa dengan asam fosforik 37% selama 15 detik. Braket di-bonding pada permukaan tengah mahkota klinis lalu di-light cure selama 20 detik. Kuat rekat geser diuji menggunakan universal testing machine dengan blade method dan cross- head speed 0,5mm/min pada arah oklusogingival dan mesiodistal. Penilaian Adhesive Remnant Index dengan magnifikasi 10x. Analisa data menggunakan software SPSS 27.
Hasil : Kuat rekat geser dan nilai Adhesif Remnant Index pada tiga jenis braket metal nonmesh pada arah oklusongivial tidak berbeda bermakna (p>0,05). Kuat rekat geser pada arah mesiodistal pada tiga jenis braket metal nonmesh berbeda bermakna antara braket tipe 2 dan tipe 3 (p£0,05) sedangkan nilai Adhesif Remnant Index tidak berbeda bermakna (p>0,05).
Kesimpulan : Kuat rekat paling optimal adalah braket tipe 2 dengan rumus bangun ruang dasar braket “Maze Base Design” dengan konfigurasi area undercut menyerupai labirin. Konfigurasi tersebut memberikan retensi optimum pada perlekatan braket ke gigi.
.....Background : Bracket acts as medium for transmitting force to the teeth therefore bracket needs to be designed appropriately. Bracket design based on the base configuration consists of mesh and nonmesh. The appropriate design of nonmesh bracket produce bond strength according to optimal criteria.
Objective : Determine optimal shear bond strength and validate design simulation of the base bracket structure formula for three types of nonmesh metal bracket.
Material and Method : Thirty maxillary first premolars were divided into three test groups (Type 1, Type 2, and Type). Teeth were fixed in self acrylic. Buccal surface of tooth was cleaned with pumice and etched (37% phosphoric acid) for 15 seconds. Bracket was bonded to the middle surface of clinical crown and light cured for 20 seconds. Shear bond strength was tested using universal testing machine with blade method and cross head speed of 0.5 mm/min in occlusogingival and mesiodistal directions. Adhesive Remnant Index (ARI) assessment was 10x magnification. Data was analyzed by using SPSS 27 software.
Result : Shear bond strength and ARI for three types of nonmesh metal brackets in occlusogingival direction were not significantly different (p>0.05). Shear bond strength in mesiodistal direction was significantly

different between type 2 and type 3 bracket (p£0,05), however the ARI was not significantly different (p>0.05).

Conclusion : The most optimal bond strength was type 2 bracket with “Maze Base Design” as type of bracket base structure formula. It had configuration a labyrinth-shaped undercut area providing optimum retention for bracket attachment to teeth.