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Fracture resistance of PEEK substructure veneered with different materials for fixed partial prosthesis

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To evaluate the fracture resistance of Bio-HPP frame work veneered by different materials for fixed partial prostheses, twenty – four 3 unites bridge with PEEK substructure were on standardized PMMA abutments for premolars and molars and divided into three groups according to veneering materials. Group I: PEEK Frame work veneered with vasoline composite. Group II: PEEK Frame work veneered with E-max CAD Lithium Disilicate glass. Group III: PEEK Frame work veneered with Hybrid ceramics. BIO-HPP/PEEK substructure veneered with vasoline composite, E-max CAD, and Vita Enamic groups (n=8). were stored in distilled water for 24 hours at 37°C, then subjected to thermocycling for 10,000 cycles (5-55oC) with a 30-s dwell time, 20 seconds transfer time, then subjected to thermo-dynamic stressing with maximum vertical load of 5 kg with cyclic frequency of 1.7 Hz for 150,000 cycles. Samples were mounted to a universal testing machine (Instron 3365) bridges fracture resistance were tested by applying a load through a 4.2 mm diameter steel ball at a crosshead speed of 1 mm/min occlusally in the central fossa area. The maximum load causing bridge failure was recorded in newton after ageing, one-way ANOVA test show highly stastically significant difference ($f=117,125$, $p<0.001$) between different studies group as regard fracture resistance with the highest mean value was recorded for bridge fabricated from PEEK frame work veneered with vasoline composite. Bio-HPP frame work veneered with vasoline composite higher fracture resistance than the other two groups. All groups gave comparable results with standing fracture resistance forces beyond maximum masticatory biting force.

Recent Publications

1. Amany M. Korsel, The Marginal Fit and Fracture Resistance of Four-Unit Monolithic and Bi -layered Zircon Fixed Dental Prosthesis, E.D.J. Vol. 66, No. 1
2. Amany M. Korsel , Effect of CAD/CAM Technology System and Timing of Dentin Sealing Application on Hybrid Ceramic Endo-crowns Marginal Fit, E.D.J. Vol. 65, No. 4
3. Hatem Talaate Mohammed Koheif, et. al. “Fracture Resistance of PEEK Substructure Veneered with Different Materials for Fixed Partial Prosthesis.” IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), 20(11), 2021, pp. 39-42.

Biography

Amany Mohamed Korsel was a professor of Fixed Prosthodontic. Faculty of Dentistry. Tanta University and expertise in evaluation and passionate about Fixed Prosthodontics especially in the Ceramic Materials and Techniques. Also, an open and contextual evaluation model based on responsive constructivists creates new pathways for improving healthcare and having experience in research, evaluation, teaching, and administration both in hospital and education institutions.

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