AIM or PURPOSE: The objective was to evaluate and compare the internal fit measurements of 3D-printed provisional restorations produced using direct and indirect digital scanning.

MATERIALS and METHOD: In a maxillary model, the first molar was prepared to receive 3D-printed provisional restorations. Conventional impressions were made utilizing standard trays and a two-step putty/wash polyvinyl siloxane material. Subsequently, the impressions were poured, and the stone casts were scanned using a laboratory scanner (Smart Optics, Vinyl High Resolution). Digital scans were made using an intraoral digital scanner (Trios5, 3Shape) (n=10). The provisional restorations were designed using a software program and sent to an LCD 3D-printer (Dentiq, Ackuretta) in STL format. After the manufacturing, washing, and polymerization procedures of the restorations were finished, a light-body material was applied to the restorations on the master model. The internal fit has been evaluated by measuring the weight of the light-body addition silicone used to represent a cement material. The data were analyzed using an independent sample t-test, with a significance level set at p=.05.

RESULTS: The mean and standard deviations of light-body weights were 27.99±4.76 mg for the intraoral digital scanner group and 20.79±2.89 mg for the laboratory scanner group. There was a significant difference between the two groups, based on statistical analysis (p=.225).

CONCLUSION(S): While the present study found a difference between the two groups, the internal fit values were consistent with the existing literature. The digital workflow is a dependable approach for fabricating 3D-printed provisional restorations with an acceptable degree of accuracy in their internal fit.

https://doi.org/10.1016/j.identj.2024.07.477

Similarity of visual color selection and spectrophotometer values

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AIM or PURPOSE: Although different methods have been developed to assist tooth shade selection and achieve better aesthetic results, shade selection is a challenge that affects aesthetic results. The aim of this study was to evaluate the similarity of participants' and clinician's shade choices based on two different shade guides with shade matches determined by the VITA Easyshade Advance intraoral spectrophotometer.

MATERIALS and METHOD: Visual color selection was performed by participants and the same clinician using 2 different color guides (VITAPAN Classical A1-D4 and VITA Toothguide 3D-MASTER with 29 tab; VITA Zahnfabrik). A spectrophotometer (VITA Easyshade Advance 4.0; VITA Zahnfabrik) was used for shade matching. To determine reproducibility, the application of the Spectrophotometer device was repeated 3 times on each tooth and the device was calibrated. Color selections were made at the same time of the day under controlled illumination. Shade matching was performed on the middle third of the maxillary right and left central incisor, lateral incisor and canine teeth of 100 participants. The data obtained were evaluated at the p<0.05 level using SPSS 22 package program.

RESULTS: Participants' and clinician's selections from the shade guides and spectrophotometer matches were found to be more similar in the central incisors than in the other teeth. Differences in the shade of the participants' central, lateral and canine teeth were observed in the values found with the spectrophotometer.

CONCLUSION(S): Visual color selection was more clinically accepted when supported by the VITA Easyshade Advance intraoral spectrophotometer. Further studies are needed to address the limitations of the current studies.

https://doi.org/10.1016/j.identj.2024.07.478

Fracture resistance of porcelain veneers with different preparation designs

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AIM or PURPOSE: The purpose of this in-vitro study was to investigate the fracture resistance and failure mode of porcelain veneers using three preparation designs.

MATERIALS and METHOD: Ninety porcelain veneers with different designs were fabricated using the refractory die method and divided into three groups (n=30 each): G1 - Feather preparation; G2 - Bevel preparation and G3 - Incisal overlap (palatal chamfer). Specimens from all three groups were subjected to failure testing using a triaxial testing machine (TRITECH WF 10056, Wykeham Farrance, Milan, Italy). Pressure was applied at a constant speed of 0.5 mm/min at a 45° angle to the long axis of the specimen until failure occurred (debonding or fracture). The compressive load (N) required to cause the failure was recorded. The statistical analysis of the obtained results was performed using statistical programs Statistic 7.1; SPSS 17.0.

RESULTS: The mean values of the mechanical force leading to changes in porcelain veneers were 150.2±38.9 N for G1, 192.8±45.7 N for G2, and 246.8±50.4 N for G3. Post hoc Tukey (HSD) test revealed significant differences between G1 vs. G2, G1 vs. G3, and G2 vs. G3 (p<0.05; p=0.001423, p=0.000107, p=0.000141, respectively). A statistically significant correlation was observed between failure mode (debonding and fracture) and the three preparation designs (Pearson Chi-square: 53.6508, df=2, p=0.000000).

CONCLUSION(S): Porcelain veneers demonstrate sufficient strength to withstand masticatory forces and ensure restoration durability. However, the preparation design significantly influences the fracture load of porcelain veneers. Notably, the use of an incisal overlap (palatal chamfer)

design significantly enhances fracture resistance compared to other designs.

https://doi.org/10.1016/j.identj.2024.07.479

Evaluating metal-ceramic bridge imbalance via two in-vivo techniques

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AIM or PURPOSE: For clinicians, achieving balance during metal try-ins for metal-porcelain bridges can be challenging despite the availability of various techniques. These techniques may be complex, costly, and time-consuming, potentially resulting in inadequacies in certain cases.This study evaluates occlusal spray and light body techniques commonly used during metal try-ins, examining their implications for imbalance issues in metal-porcelain bridges.

MATERIALS and METHOD: In this study involved 10 randomly selected patients aged 30 to 60 requiring metal-porcelain bridges. Impressions were taken using light body silicone material during the metal try-in, followed by application to the metal and insertion into the patient's mouth. Subsequently, photographs of the light body-infused metal were taken for documentation, and occlusal spray was applied for recording. The recorded data underwent analysis using the ImageJ program, utilizing Friedman and Wilcoxon signed-rank tests for quantitative data and the Chi-square test for qualitative data.

RESULTS: Detachment was observed in 81% of the Light Body group and all cases of the Occlusal Spray group, with significant differences in regional area opening measurements between the two techniques. However, no significant difference was noted in buccal and distal area openings based on material type.

CONCLUSION(S): In conclusion, the occlusal spray technique appears more favorable in terms of reliability in routine clinical practice and material cost, potentially shortening patient seating time.

https://doi.org/10.1016/j.identj.2024.07.480

Prevalence of edentulism in patients applied department of prosthodontics

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AIM or PURPOSE: The aim of the present study was to determine current status of oral health related with the age group and gender who were first applied to University of Ankara, Faculty of Dentistry, Department of Prosthodontics.

MATERIALS and METHOD: Present study was designed to examine the patients who were first applied for the need of prosthetic treatment at University of Ankara, Faculty of Dentistry, Department of Prosthodontics during the period of 01 January - 29 March 2024. Oral examination results were verified using panoramic radyographies of related patients. Total 562 patients were examined (318 women and 244 men) and the age of the patients were varied 30- to 90-year (53,9± 12,3). The mean and standart deviation of the age of the women and men were 52,8±12,1 and 55,3±12,5, respectively. Depending on the age of the examined patients, age-group were classified as: 30-40; 41-50; 51-60; 61-70; 71-80 and 81-over and prosthetic treatment need were determined according to requirement of the fixed-denture, removable partial-denture and removable complete-denture. Results were expressed by means of percentage.

RESULTS: Gender distribution % of total patient number for women and men were 56,59% and 43,41%, respectively. Except 61-70 age group, female patients applied for prosthetic treatment more than male patients. The lowest and the highest need for prosthetic treatment according to the age group were 81-over and 41-50, respectively.

CONCLUSION(S): Although the number of applied patients for prosthetic treatment were decreased at the age-group over 81-year old, special unit with specialized practitioner could be beneficial for the treatment of elderly.

https://doi.org/10.1016/j.identj.2024.07.481

Fracture strengths of the abutments with concave emergence profile

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AIM or PURPOSE: To investigate the effect of thinning the abutment neck to allow more space for soft tissue at the implant-abutment junction to the fracture strength of zirconia, lithium disilicate and polyether ether ketone (PEEK) materials.

MATERIALS and METHOD: Fifteen abutment crowns with concave emergence profile were digitally fabricated from each material group (zirconia (IPS e.max ZirCAD LT), PEEK (Whitepeaks, Cobrapeek Medium) and lithium disilicate (IPS e.max CAD). The abutment crowns were cemented on Ti-bases with a dual-curing luting cement (Calibra Universal Self Adhesive Cement). The specimens were tested for fracture strength with a universal testing machine (Autograph, Shimadzu) using Trapezium X software. A fractographic analysis was made. The location of the fractures on the designs and their decementation status were recorded. The data (N±SD) were statistically analyzed (α=0.05, One-way ANOVA, Tukey HSD, SPSS 21.0).

RESULTS: Screw and/or material fracture was observed at 2073.50 N,1773.25 N, for zirconia, and lithium disilicate, respectively while decementation was observed at 1227.50 N and screw fracture at 1100 N for PEEK. The differences between the control (1535,07± 409,5), zirconia, lithium disilicate and PEEK were significant (p=0,00). The differences between experimental groups were insignificant.

CONCLUSION(S): PEEK was the most suitable material for the concave emergence profile design.

https://doi.org/10.1016/j.identj.2024.07.482