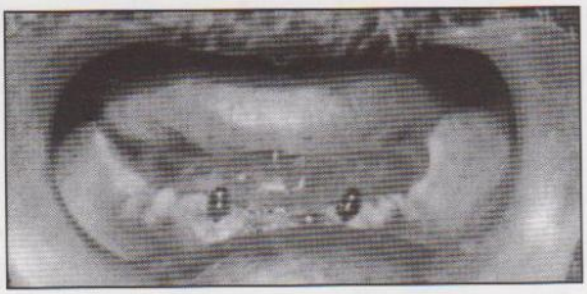

Fig. 7 :

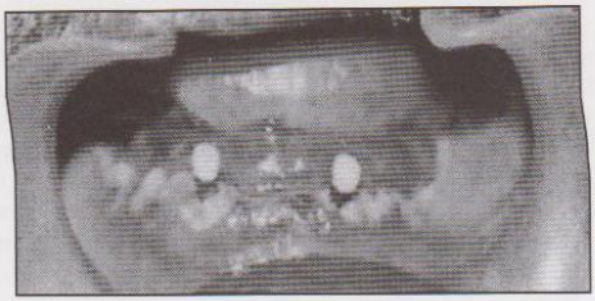

Fig. 8 :

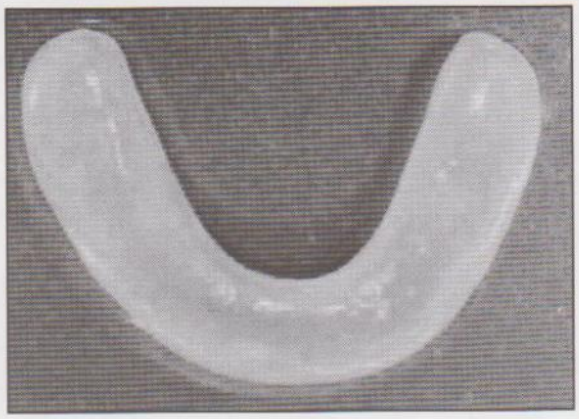

Fig. 9 :

Fig. 10 :

The final appearance of the patient with the transitional implant and dentures (*Fig, 11,12,13*), and OPG x-ray (*Fig. 14*).

Fig. 11 :

Fig. 12 :

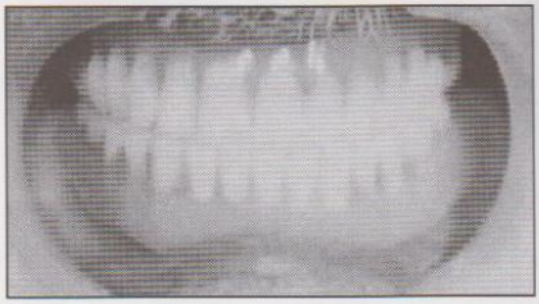

Fig. 13 :

Fig. 14 :

DISCUSSION

Transitional support allows the patient to enjoy a stable prosthesis that will mimic the final restoration[3]. It helps in the retention and support of the denture & helps the neuromuscular system to get friendly with the denture for a period of 6 months to 1 year. It is implant and tissue supported prosthesis.

CONCLUSION

Transitional implants allow the patient to leave the office with stable prosthesis. Patient restored with transitional implants are more compliant and satisfied. Clinician can test the form and function as well as esthetics and phonetics of the definitive prosthesis. Last but not least it allows the neuromuscular system to adapt to the denture for a period of 6 months to one year. It is a motivating factor for the patient to commit to implant therapy. It is compatible with all implants and makes implantology more rewarding. The emergence of a one-stage early loading protocol does not imply that submersion is no longer necessary, but rather suggests that it is not always essential. The two-stage procedure remains the treatment of choice. However, under the right circumstances successful early loading can reduce the length of prosthetic rehabilitation.

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4. Immediate loading of threaded implants at stage 1 surgery in edentulous arches: Ten consecutive case reports with 1 to 5 years data. Int J Oral and Maxillofac Implants 1997'12(3):319-324
5. Initiating restorative procedures at the first-stage implant surgery with a provisional index: A case report. Int J Periodontics Restorative Dent 1992;12:279-29.

Abstract

The emotional effects of tooth loss in partially dentate people

The loss of natural teeth can result in significant disability by impacting on daily living activities including chewing food adequately, food selection and speech. Although, the physical aspects of tooth loss are well understood, the clinical condition alone does not fully indicate how people may be affected by the change in their oral state.

Exploration of the reactions to and feelings as a result of tooth loss in both edentulous and partially dentate people have major impacts like decreased self confidence restriction in dietary choice and social activities, and the avoidance of forming close relationship. The provision on partial dentures has been shown to increase masticatory efficiency, both subjectively and objectively without leading to change in food selection or dietary intake. The change in facial appearance is not always as dramatic or disfiguring for the partial denture wearer as it for the complete denture wearers when dentures are removed Majority of the people considered their denture to be a part of themselves. The difficulties related to coming to terms with tooth loss did not seem to be explained by denture dissatisfaction. The degree of preparation for the effects of tooth loss may contribute to how well or how quickly people are able to accept their tooth loss, as may the acceptance of its inevitability.

The main implication for clinicians from this study are (a) the finding can be relayed to patients in a positive manner as a motivating factor to prevent dental disease and subsequent tooth loss. (b) In case where some tooth loss is inevitable, focus on maintaining the shortened dental arch to preserve appearance and function is prudent. (c) Lastly, where tooth loss is inevitable, preparation by informing people of the emotions they might experience and how this may impact on their confidence, self esteem and lifestyle can help them to cope even though the outcome is the same.

A preliminary investigation, International Dental Journal (2001) 51, 457 – 461.

Effect of Various Surface Treatments on The Bond Strength of Composite to Ceramic Laminates

B.S.KULARASHMI, B.D.S.*, E. MUNIRATHNAM NAIDU, M.D.S.**, H. ANNAPOORANI, M.D.S.***

ABSTRACT

Etching has been widely used to enhance the retention between composite resin and ceramic restoration. The purpose of this study is to present the evaluation of bond strength of composite resin to ceramic laminates following various surface treatments of ceramic. Two methods of etching – Acid etching and Thermal etching were done. The variation in acid etchants included 7.5% and 10% Hydrofluoric acid; 7.5% and 10% Hydrochloric acid etched for 2.5 and 1 minute as per groups. Thermal etching was done for the second group of specimens. Scanning Electron Microscope (SEM) studies[1] were conducted to evaluate the surface configuration of the prepared ceramic surface, in both groups. A factorial experiment was under taken with Shimadzu Universal testing machine to derive the bond strengths. The results indicated significant difference in tensile bond strength for both the groups depending on the ceramic surface conditions. 10% Hydrochloric acid etched for 1 minute showed the highest strength and Thermal etching the least. Further clinical use will help us evaluate the success rate of Hydrochloric acid as an etchant for ceramic laminates.

INTRODUCTION

Veneering remained merely another form of cosmetics until the techniques and materials evolved to produce strong veneers that could be mechanically bonded to teeth. In 1955, Buonocore's research into acid etch technique provided a simple method of increasing the adhesion of porcelain veneers to enamel.

The covering power of porcelain veneers and their ability to reshape teeth make this procedure ideal for many clinical situations like extreme discoloration, fractured teeth[2], diastema closure, short teeth, progressive wear patterns and more. The bond strength between ceramic veneer and composite is influenced by bonding agents and surface treatments done to improve the surface area of contact and mechanical interlocking.

Since the use of porcelain laminate veneers requires considerable support from the underlying composite and enamel in order to resist stress in the oral cavity, the present study was undertaken to determine the bond strength of ceramic to composite resins by varying the surface treatment modalities.

Key Words : *➢ Ceramic Laminates, ➢ Tensile Bond Strength, ➢ Acid Etching*

This article has been presented in the 29th IPS conference at Hyderabad.

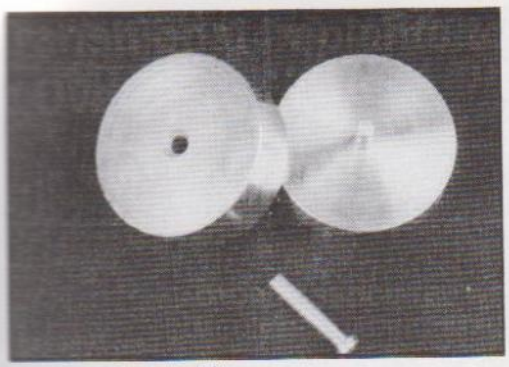
Post Graduate Student, Professor and Head**, Professor***, Department of Prosthodontics, Meenakshi Ammal Dental College And Hospital, Chennai.*

MATERIALS AND METHODS

Porcelain powder (Vita Dur Alpha) was mixed with modeling liquid and the mix was compacted into the stainless steel Jig measuring 3mm diameter at the testing end and 5mm diameter at the mounting end and total length of 5mm. The condensed porcelain was separated from the Jig with the stainless rod and transferred on to the saggertray and fired in the dentin bake programme. After firing, the specimens were examined for any surface irregularities or defects and polished. Screw Gauge was used to counter-check the standardization of size. Using the same method 120 pairs of specimens for mechanical testing and 10 specimens for S.E.M.study were prepared. Two surface treatments – Acid etching and thermal etching were evaluated. Thermal etching was done at 900°C for three minutes. The grouping were as follows:

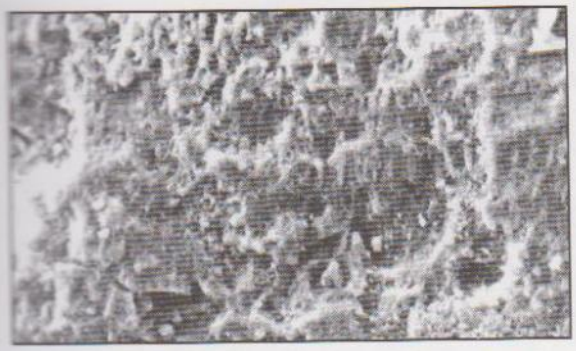
Group 1 : 7.5% HFA 1 min
Group 2 : 7.5% HFA 2.5 min
Group 3 : 10% HFA 1 min
Group 4 : 10% HFA 2.5 min
Group 5 : 7.5% HCL 1 min
Group 6 : 7.5% HCL 2.5 min
Group 7 : 10% HCL 1 min
Group 8 : 10% HCL 2.5min
Group 9 : Thermal Etching
Group 10 : Standard (no etching)

All the samples were cleaned using an ultrasonic cleanser for 60 seconds. Bonding agent was applied to the samples for mechanical testing as a thin layer with a brush. After the silane layer dried completely, Dual cure composite resin[3] was mixed on a glass slab (1unit) with a Agate spalula for a thickness of 0.5mm (Standardized using dead weight) and the excess removed. Curing was done from all the four directions for 40 seconds each. The excess was trimmed and



Group - 1 (7.5% HFA-1min)

Group - 5 (7.5% Hcl - 1min)



Group - 2 (7.5% HFA-2.5min)

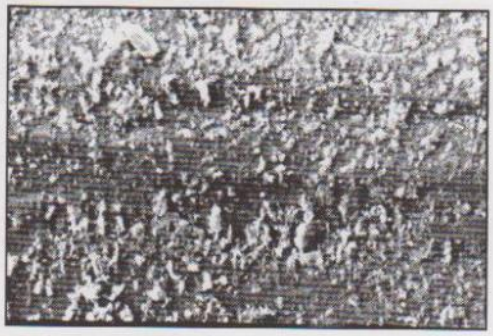
Group - 6 (7.5% Hcl - 2.5 min)

Group - 3 (10% HFA-1min)

Group - 7 (10% Hcl - 1min)

Group - 4 (10% HFA-2.5min)

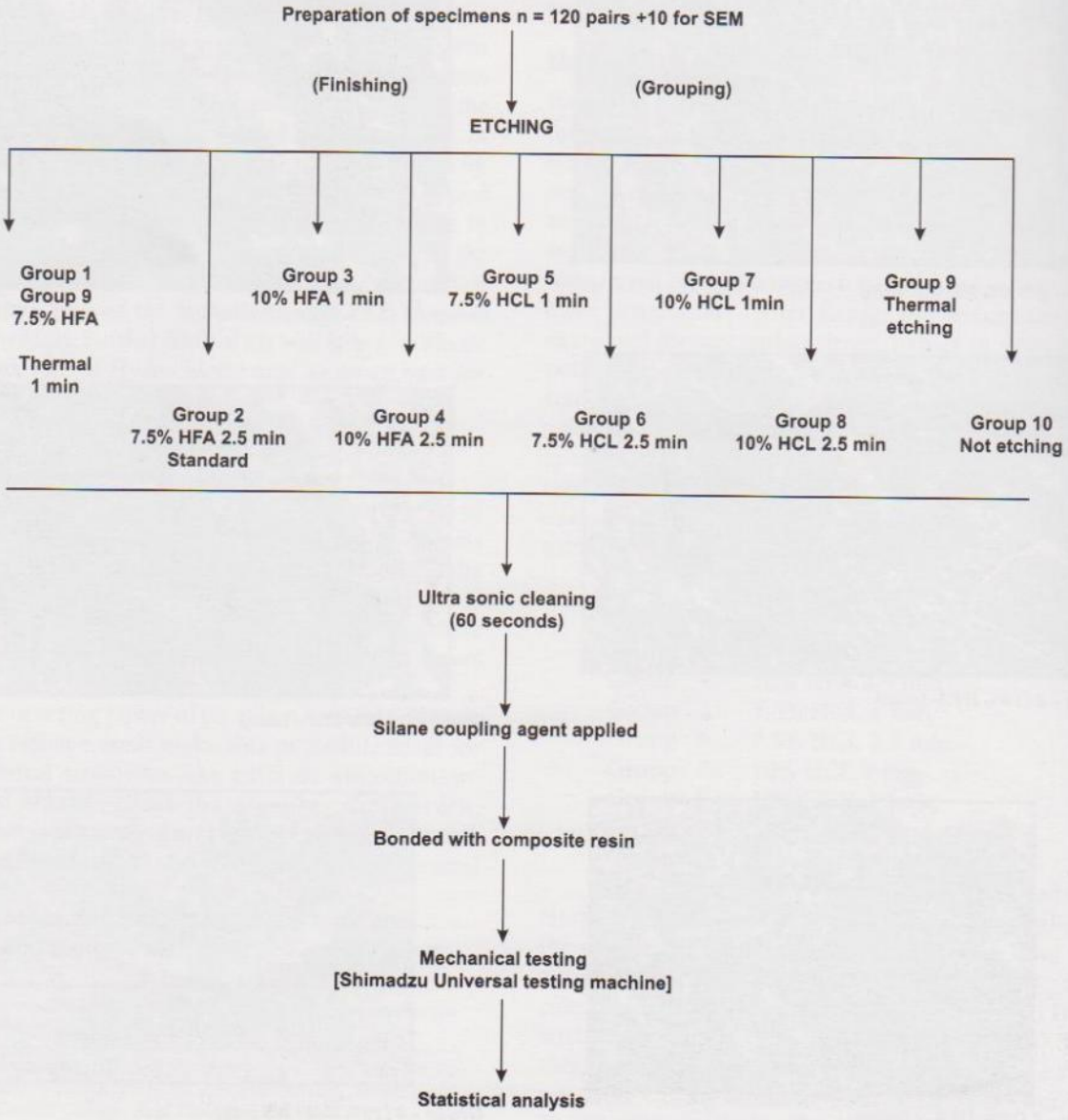
Group - 8 (10% Hcl - 2.5 min)



Group - 9 Thermal Etching

Group - 10 Standard

METHODOLOGY



finished.All the specimens were tested for their tensile bondstrength. Each bonded specimen was engaged into the mounting jig and tensile bondstrength ranges were recorded in KgF in Shimadzu universal computerised Materials testing device.The selection of the manipulation variables for producing the ceramic in the bond strength tests were empirically determined by S.E.M study of their etched surfaces.The specimens were surface treated as per their groups and ultrasonically cleaned for 60seconds.All the specimens were gold coated and viewed under scanning electron microscope at 1000X magnification and the surfaces recorded.

RESULTS

The mean tensile bond strengths of all experimental groups are listed in table1.The surfaces etched with 10% hydro chloric acid for 1minute provided the highest bond strength and thermal etching the least.These results were statistically significant.With S.E.M study,the etched ceramic surface configuration varied with acid concentration and etching time.When exposed to 10% hydro chloric acid for 1minute, the etch patterns appeared uniformly scalloped.*(fig. 7)* These scallopings were not observed with the hydro fluoric acid groups where the etch patterns were mostly crystalline *(fig. 1 to 4)*.

TABLE 1

Mean Tensile Bond strength in different study groups:

Group	Mean	Standard Deviation
1	4.56	0.26
2	5.84	0.55
3	5.62	0.36
4	3.46	0.24
5	4.37	0.60
6	4.48	0.39
7	7.44	0.62
8	3.82	0.30
9	2.78	0.15
10	1.10	0.32

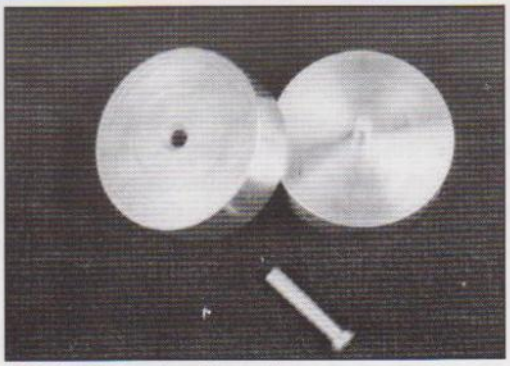


***Fig. 1** : JIG for fabrication of sample*

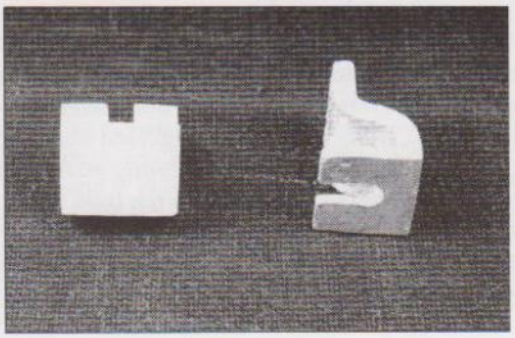


***Fig. 2** : Mounting JIG*

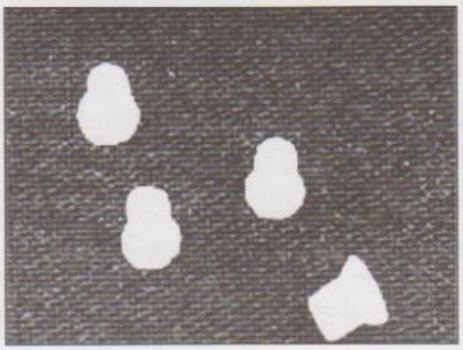


***Fig. 3** : Specimens*

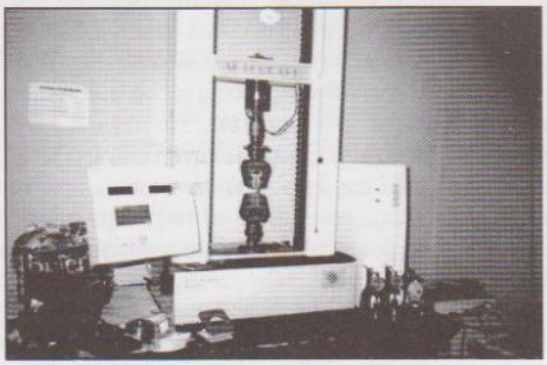


***Fig. 4** : Shimadzu universal testing machine*

DISCUSSION

Brittle materials such as dental ceramics fail because of the formation and growth of microscopic flaws that can form during fabrication or service. The accurate measurement of the bond strength at the Ceramo – Composite junction[4] presents formidable problems, since the complexity of the bonding probably defies the development of a single test experiment. Mechanical retention will be affected by the nature of the ceramic surface that is, surface treatment and degree of roughness.

The strength of ceramic laminates is mainly dependent on the intermediate luting agent – the composite resin[5]. Several tests have been used to assess

the strength of bond between the ceramic and composite. According to *Nicholls.J*[6], Ceramic was fired onto the cast ceramo metal specimens and a layer of composite resin was tested for their bond strength using tensile tests. *Horn*[7] in 1983 suggested etching the ceramic veneer with 10% Hydro fluoric acid where as *Simonsen* and *Calamia*[8] correlated etch time with bond strength when 7.5% Hydro fluoric acid was used for 3, 5 and 10 minutes. They found that bond strength increased with increased etch times.

This study determined the relative tensile bond strengths of composite to ceramic laminates with different surface treatments. Based on earlier studies[9,10,11], 10% and 7.5% Hydro fluoric acid[12,13,14,15] and 7.5% Hydro-chloric acid are compared at etching times of 1 minute and 2.5 minutes[16] as per groups.

One group was subjected to thermal Etching and all the groups were compared with a control (standard) group.

The most effective surface treatment that provided highest bond strength values was 10% Hydro-chloric acid etched for 1 minute. This proved to be a better etchant than other groups separately. The reason for the significant difference was observed in the S.E.M study. The surface configuration of the ceramic etched with 10% Hydro-chloric acid for 1minute showed uniform scalloping with marked depths. There were regular pits formed without any sharp margins.

But the Hydro fluoric group provided uniform but crystalline matrix after etching. The reason for lesser bond strength values could be attributed to the crystal tips, which will act as points of stress concentration and fracture propagation. The other groups etched with 7.5% Hydro-chloric acid showed inadequate number of pits where as surface etched with 10% Hydro Chloric acid for 2.5 minutes showed crack propagation lines which can be reasoned as over etching leading to lesser bond strength. Thermal etching resulted in the lowest bond strength values for which the reason may be that the depth of the formed pits were less though etching occurred uniformly. Here the retentive tag formation was not effective.

Analysis within the groups revealed that, between group 5 (7.5%Hcl for 1minute) and group 6 (7.5%Hcl for 2.5minutes), there was no statistically significant difference. (Table 3).

But within other groups using Hydro-chloric as etchant, there was significant statistical difference (P-value<0.0001). Analysis within the groups using Hydro fluoric acid, groups 1 to 4 showed statistically significant difference in values. (Table 2)

The results of this study differ from earlier studies reporting higher bond strengths with Hydro fluoric acid as etchant for ceramic laminates. Our hypothesis is to use 10% Hydro-chloric acid for 1minute as an alternate etchant for ceramic laminates. It can be reasoned by the higher bond strength values, Hydro Chloric acid being a milder acid than hydro fluoric acid and its common availability.

TABLE 2

Results of students independent t test to compare the mean bond strength between different study groups – Hydrofluoric acid only

Group compared	Mean + S.D	t- value	d.f	P – value
Group 1 Group 2	4.56 + 0.26 5.84 + 0.54	7.25	15.50	<0.0001 (sig)
Group 3 Group 4	5.62 + 0.36 3.46 + 0.24	17.23	22	<0.0001 (sig)
Group 1 Group 3	4.56 + 0.26 5.62 + 0.36	8.24	22	<0.0001 (sig)
Group 2 Group 4	5.84 + 0.54 3.46 + 0.24	13.66	14.87	<0.0001 (sig)

Sig - significance

TABLE 3

Results of students independent t test to compare the mean bond strength between different study groups – Hydrochloric acid only

Group compared	Mean + S.D	t- value	d.f	P – value
Group 5 Group 6	4.37 + 0.60 4.84 + 0.39	00.52	22	0.61 (NS)
Group 7 Group 8	7.44 + 0.62 3.82 + 0.30	18.27	16	<0.0001 (Sig)
Group 5 Group 7	4.37 + 0.60 7.44 + 0.62	12.39	22	<0.0001 (Sig)
Group 6 Group 8	4.48 + 0.39 3.82 + 0.30	04.65	22	<0.0001 (Sig)

Sig - significance

SUMMARY AND CONCLUSION

A total of 130 specimens of ceramic were fabricated and subjected to nine different surface treatment procedures. The specimens were silane treated and bonded with dual cure composite resin. 12 bonded specimens were tested in each group by tensile (pull) strength test. Under the conditions of this study and the material used, the following conclusions were made.

1. Optimum concentration and etch time is required for best bond strengths.
2. Over etching decreases bond strength.
3. There is increase in mean bond strength of all the specimens after surface treatment with acid.

4. Uniform regular matrix after etching is necessary for better bonding.

5. Of the 9 groups analyzed, 10% Hcl acid used as etchant for one minute exhibited consistently high bond strength values.

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Abstract

Effect of toothbrushing on the toxicity of casting Alloys

The biological properties of casting alloys have been assessed largely under passive conditions. The effect of common intraoral stresses such as brushing, toothpastes, and low PH on alloy toxicity are not known.

This study assessed the toxicity of 5 types of casting alloys commonly used in prosthodontics after tooth brushing, brushing in an acidic environment or brushing with toothpaste. These toxicities were compared with those observed without any brushing.

***Material and methods** : Au-Pt, Au-Pd, Pd-Cu-Ga, Ni-Cr-Be, and Ni-Cr (no Be) alloys were brushed for 48 hours in a toothbrushing machine at 90 strokes/minute and 200g force. Alloys were brushed with either saline at pH-7, saline at pH 4 (acidified with sodium lactate), or saline with 1:7 (wt/wt) tooth paste. After the brushing regimen, the cytotoxicity of the alloys was assessed in a standard in vitro test. Cytotoxicities of the alloys after different brushing treatments were compaired with unbrushed (control) specimens. Analysis of variance (ANOVA) and Tukey multiple comparison intervals (= 0.05) were used to identity significant differences among brushing conditions.*

***Results** : Brushing at pH-7 significantly increased the toxicity of the Pd-Cu-Ga alloys (15% to 20% over unbrushed specimens). Brushing at pH 4 increased the toxicity of the Au-Pt and Au-Pd alloys by 30% and the Pd-Cu-Ga alloys by >40%. The Ni-based alloys were not affected by acid. After being brushed with toothpaste, both Ni-based alloys were significantly more toxic, but Ni-Cr-Be was the worst, increasing more than 60% in toxicity over the controls. The toxicity of the Au-Pd alloy also increased significantly (15%).*

***Conclusion** : Brushing dental casting alloys may increase their cytotoxicity in vitro, but the increase depends heavily on the alloy type and brushing condition.*

John Wataha, Petra Lockwood, JPD 87 (1) 2002 94-98.

TIP OF THE MONTH

A simple & effective method of removal of FPD

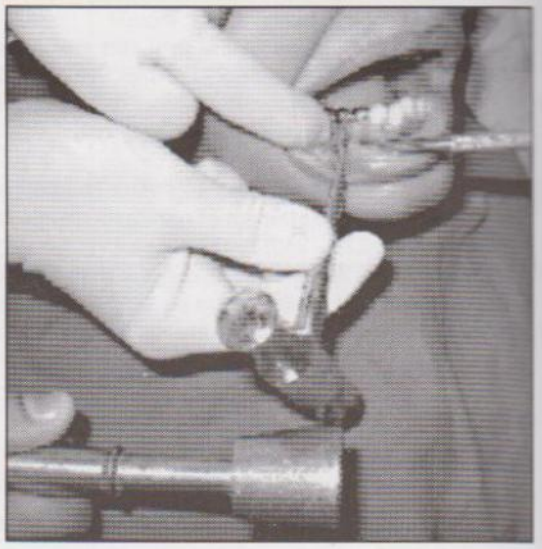
E. MUNIRATHNAM NAIDU, M.D.S.*

In fixed Prosthodontics importance is given for fabrication of a prosthesis which satisfies the biologic, mechanical and esthetic needs of the patient. But due to unforeseen circumstances there may be a failure of the prosthesis. When such a situation arises, it is mandatory that in some cases the prosthesis should be removed.

However when such a procedure is being performed it should be kept in mind that there is minimum damage to the prosthesis and also to the abutment teeth and their supporting structures. Various techniques have been put forth and are being used for the removal of bridges over the years.

Here is an effective and simple technique using a cross bar (winters elevator) and a mallet to facilitate bridge removal.

Methods: The tip of the cross bar is placed in the gingival embrasure between the pontic and retainer. A gentle tap is applied on the handle of the elevator. Two to three taps will be sufficient to dislodge the bridge (as shown in figure 1). In case of lower bridge mandible can be stabilized by biting on a mouth prop placed on the opposite side.



Advantages:

- No extra armamentarium is required
- Force is always parallel to the long axis of the tooth
- Since it is placed in the gingival embrasure chipping of ceramic at the margin is minimal
- Slippage of the instrument is less

Disadvantages:

- Care should be taken as to the amount force being applied, as excessive force may lead to periodontal breakdown of the abutments.
- It can only be used to remove bridges and not crowns.

*Principal & H.O.D. of Prosthodontics**, Meenakshi Ammal Dental College, Chennai 602 102.

Upcoming Events

9th-13th Sept. 2002,
Advanced Operative Techniques in Head and Neck, Malignancy
Liverpool, UK
Information:
Mr. Jean Speke
Regional Moxillofacial Unit
University Hospital Aintree
Liverpool LS TAL

15th-19th Sept. 2002,
CLEFT 2002, 2nd world cleft congress of the International cleft lip and Palate foundation
Munich, GERMANY.
Information:
Univ. – Prof. Dr. H. C. H. H. Horch
Priv. – Doz. Dr. R. Sader
Dept. of oral and Maxillofacial Surgery
Cleft Palate Centre, Munich – Klinikum rechts der Isar.
University of Technology Munich
Ismaninger Street 22.
D – 81675 Munich, Germany
Tel: 498941402932

20th Sept. 2002
Quintessence International Dental Conference and Trade Show
Mumbai, India.

25th-28th Sept. 2002
American Academy of Periodontology
New Orleans, Louisiana
Information :
AAP
737 North Michigan Avenue, Suite 800
Chicago, Illinois 60611
Fax : 312-573 3225
http//www.perio.org

26th Sept., 2002
26th International Conference on Asthetic Dentistry.
Las Vagas, NV.

25th-28th Sept. 2002,
European Festival of oral Science 2002
Cardiff. UK.
Information:
Global Meeting Plang
World Trade Centre
Mary. Anne Street
Cardiff CF 10 2EQ UK

1st-5th Oct., 2002
World Dental Congress of the FDI
Vienna, Austria
Information :
FDI
7 Carlisle Street London WIV SRG.
England
Email : fdi2002@aont.at
http//www.fdi.org.uk

1st – 5th Oct. 2002,
FDI Annual World Dental Congress
Vienna, Austria
Information:
FDI World Dental Congress
13, Chemin du Levant, L Avant Centre
F – 01210, Ferney Voltaire, France
Tel: + 33450405050
Fax: + 33450405555

3th-5th Oct., 2002
American Association of Oral and Maxillofacial Surgeons.
Chicago, Illinosis
Information :
AAOMS
9700 West Bryn Mawr Avenue
Rosemont, Illinois 60018
Fax : 847-6786286

2nd Oct. 2002
American Academy of Implant Dentistry
Los Angeles. CA

3rd Oct., 2002
5th International Congress on Maxillofacial Relabilitation.
Okinawa, Japan.

18th-20th Oct., 2002
4th World Dental Meeting Yokohama, Japan.
Information :
Quintessence Publishing Co. Inc.
Fax : 630-682 3288
Email : service@quintbook.com

19th-23th Oct., 2002
American Dental Association
New Orleans, Louisiana.
Information :
ADA
211 East, Chicago Avenue
Chicago, Illinois 60611
Fax : 312-4402707, http//www.ada.org

3rd Nov., 2002
Orlando, FL
American Academy of Maxillofacial Prosthetics

6th-9th Nov., 2002
American College of Prosthodontists
Orlando, Floridea
Information :
ACP
211 East Chicago Avenue, Suite 1000
Chicago, Illionois 60611
Fax : 312-5731257
Email : acp@prosthodontics.org

14th-16th Nov. 2002
5th Congress Asian Academy of Preventive Dentistry and 24th Annual Congress of Indian Society of Pedodontics and Preventive dentistry.
Chandigarh
Information:
Prof. H. E. Chawla
Post Graduate Institute of Medical Research and education
Chandigarh 160012

1th-4th December, 2002
Greater New York Dental Meeting,
New York.
Information :
GNY Dental Meeting 1535 Broadway,
3rd Floor,
New York - 10036-4017
Fax : 212-398 6922

5th-6th December, 2002
Academy of operative dentistry European Section University of Nijmegen College of Dental Science
Nijmegen, The Netherlands
Nitherland
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University of Nijmegen ,
The Nitherland
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