IN-SITU ORAL MUCOSA REGENERATION IN DIABETIC RABBITS
Noha El Shazly1, Abdel Aziz Khalil2, Nevien Shawky2, Jui Chakraborty3, Mona Marei4

INTRODUCTION
Protracted wound healing in diabetes mellitus is related to many factors including retardation in cell proliferation and migration, obstructive vascular diseases that cause hypoxia and release of oxygen free radicals which impair wound healing process(1). The new generation of tissue engineering is based on using a 3d biomimetic scaffolds to stimulate in situ body regeneration capacity(2). Borate bioactive glass nanofibers (BBGNF) is well known with its angiogenic, antibacterial properties and stimulation of cell proliferation and differentiation in addition to its architecture which similar to fibrin clot(2).

METHODOLOGY
Twelve male New Zealand white rabbits were involved in this study.
1-Phase I: Chemical Induction of type I diabetes mellitus by Intravenous injection of alloxan monohydrate (AMH).
2-Phase II: Rabbits induced with diabetes were divided into two groups; an experimental group that received BBGNF in a 10*3mm elliptical mucosal defects that were created in the maxillary mucobuccal fold and control group where defects were left to heal without any intervention. Tissue samples were collected at 1,2,3 weeks and histological assessment was done.

RESULTS AND DISCUSSION
Macroscopic evaluation at one week time interval after wound creation showed complete wound closure of the mucosal wound grafted with BBGNF while control wound showed incomplete wound closure with signs of infection represented by purulent exudate fig (2). On the other hand both control and experimental groups showed complete wound closure at 3 weeks’ time intervals. Histological assessment of wounds at 3weeks time interval revealed Complete epithelization and high vascularization of the experimental wound in addition to, absence of any sign of inflammatory infiltration (fig 3c,d). For the control wound there was incomplete epithelization at the center of the wound defect with inflammatory infiltration all over the submucosal layer (fig3a,b).

CONCLUSION
BBGNF has a soft tissue regenerative, angiogenic and antibacterial ability that make it one of the important scaffolds in the new generation of tissue engineering.

REFERENCES
THE EFFECT OF TWO SINTERING METHODS ON THE DENSIFICATION & TRANSLUCENCY OF MONOLITHIC TRANSLUCENT ZIRCONIA (IN-VITRO STUDY)

Nourhan I. Hussein1*, ; Amir S. Azer2, Mona M. Abd El-Latif3, Mohamed M. El-Kateb4

INTRODUCTION
Microwave sintering of zirconia has been found to have several benefits such as reducing sintering temperature and time, improved mechanical properties, & higher densification (1). The lowered temperature and time is able to reduce the grain size of zirconia which should also improve the low light transmittance of dental zirconia affecting its translucency compared to conventional sintering (1).

METHODOLOGY
Prettau zirconia blocks (Zirkonzahn) were used to mill 56 Zirconia discs with presintering dimensions 10 mm in diameter and 1.5mm thickness.

The discs were divided into 2 groups I. Conventional sintering (n=8) (1530°C, dwell time 2 hours) & II. Microwave assisted sintering (n=48) with subgroups MIA(1300°C, 1 hour), MIB(1300°C, 2hours), MIIA(1400°C, 1 hour), MIIB(1400°C, 2 hours), MIIIA(1500°C, 1 hour), MIIB(1500°C, 2 hours).

The post-sintered density for all the specimens was measured & percentage densification in relation to theoretical density of zirconia was calculated. Translucency parameter (1) was calculated for all the specimens after measuring L,a,b values using spectrophotometer.

RESULTS AND DISCUSSION
The ANOVA suggested a significant difference in densities between the control group and groups MIA, MIB, MIIA (p<0.01), and no significant difference for the remaining groups, MIIB (p=0.162), MIIIA (p=0.997), and MIIBB (p=0.392).

The mean percentage densification in relation to the theoretical density of sintered zirconia (6.06 g/cm3) for groups MIIB, MIIIA, MIIBB were 94.7%, 97.5% and 99% respectively compared to 97% for the control group, with mean densities MIIB (5.74 ± 0.11 g/cm3), MIIIA (5.91 ± 0.12), MIIBB (5.99 ± 0.10), control (5.88 ± 0.10) (Figure1). This indicates the improved densification of zirconia by microwave sintering at lower temperatures and time compared to conventional sintering.

For the translucency parameter a significant difference was found between the control and MIA, MIB, MIIA, MIIB,(p<0.01), and no significant difference for the remaining groups, MIIIA (p=0.919) and MIIBB (p=0.420).

The mean translucency parameter for groups MIIA and MIIB were (10.27 ± 1.08) and (12.58 ± 1.36) respectively in comparison to the control that was (11.09 ± 0.74) (Figure 2). This indicates that the microwave has a significant effect on the grain size, hence translucency of zirconia.

CONCLUSION
Based on the results no statistical significance was found in the density between groups MIIB, MIIA, MIIBB and the control group, with even higher mean densities for groups MIIIA &MIIBB. No statistical significance was found in translucency parameter between MIIIA, MIIBB and the control group with even higher mean translucency parameter for groups MIIIA &MIIBB. In conclusion, microwave sintering can produce zirconia with higher densification and translucency than conventional sintering.

REFERENCES
COMPARISON BETWEEN THREE NOVEL INTRACANAL MEDICAMENTS USED FOR REGENERATIVE ENDODONTICS (IN VITRO STUDY)

Reem W. Sadek 1 BDS, Sybel M. Moussa 2 PhD, Rania M. El Backly 3 PhD, Abdel Fattah Hammouda 4 PhD

1. Dentist, ministry of health, Alexandria, Egypt.
2. Professor of Endodontics, Conservative Dentistry Department, Faculty of Dentistry, Alexandria University, Alexandria, Egypt.
3. Lecturer of Endodontics, Conservative Dentistry Department, Faculty of Dentistry, Alexandria University, Alexandria, Egypt.
4. Professor of microbiology, Department of microbiology, High institute of public health, Alexandria University, Alexandria, Egypt.

Corresponding author: reem.w.sadek@gmail.com

INTRODUCTION

One of the most critical challenges in regenerative endodontic procedures is achieving root canal disinfection. Recently, new disinfection methods have been developed to overcome the limitations of conventional disinfecting protocols.

METHODOLOGY

One hundred and twenty radicular dentin specimens were prepared and inoculated with Enterococcus faecalis for three weeks. Then samples were divided into three treatment groups where n=30. Group (1): were treated with double antibiotic paste 1mg/ml (DAP), group (2): were treated with silver nanoparticles gel (AgNPs) (0.02%), group (3): were treated with tailored amorphous multiporous bioactive glass 100 mg/ml (TAMP-BG) and control group. Each group was assessed after 24 hours and 7 days where n=15 per time interval. Among each time interval ten samples were assessed using colony forming units (CFUs/ml) and five samples were examined by SEM×10000 M. The mean differences amongst groups were compared by the Kruskal–Wallis test using SPSS version 20.

RESULTS AND DISCUSSION

The results showed that DAP and AgNPs significantly reduced bacterial counts after 7 days when compared to 24 hours. Furthermore, TAMP-BG had a comparable anti-biofilm effect, but it was less than DAP and AgNPs. (Fig.1) (Fig.2) (Graph 1). Besides the anti-biofilm effect of DAP recent study indicated no cytotoxic effect of it against stem cells. However, another recent study has also shown that even lower concentrations of it may affect viability of dental stem cells. On other hand the antibacterial effect of AgNPs gel (0.02%) was attributed to the nanoparticles ability to penetrate dentinal tubules besides its substantive action. The antibacterial behavior of TAMP-BG could be attributed to its reaction in the aqueous media as leaching of alkali ions may lead to bacterial cells calcification.

CONCLUSION

DAP (1mg/mL), 0.02% AgNPs and TAMP-BG (100 mg/mL) can significantly reduce E. faecalis biofilms. However, complete elimination was only possible with DAP and AgNPs.

REFERENCES

EFFECT OF IMPLANT DESIGN ON STRESS DISTRIBUTION AROUND IMPLANT SUPPORTED DISTAL CANTILEVER FIXED PARTIAL DENTURES. (CLINICAL AND REALISTIC THREE-DIMENSIONAL MODELS)

El-Hassan R$, MSc, Abd El-Kader S$ Ph.D, El Dibany R$ Ph.D, Nassef T$ Ph.D, Fahmy R$ Ph.D

1. Assistant lecturer of Fixed Prosthodontics, Department of Conservative Dentistry Department, Faculty of Dentistry, University of Alexandria
2. Professor of Fixed Prosthodontics, Department of Conservative Dentistry Department, Faculty of Dentistry, University of Alexandria
3. Professor of Oral and Maxillofacial Surgery, Department Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Alexandria
4. Assistant Professor of Computer Engineering, Department of Computer and Software, Faculty of Engineering, Misr University for Science and Technology
5. Lecturer of Periodontology, Department of Periodontology, Faculty of Dentistry, University of Alexandria

* Corresponding author: rewaal.elhassan@yahoo.com

INTRODUCTION
A key factor for the success or failure of a dental implant is the amount of stress transferred to the surrounding bone. In this regard, there have been technological improvements in dental implant designs, an increased understanding of biomechanics related to cantilever bridges and emerging data indicating a high survival rate for short-span cantilever fixed partial dentures (1).

One-piece design implant was introduced to offer several advantages over the conventional two-piece implant design, such as elimination of second-stage surgery, the use of an interim removable partial denture, and reduction in treatment cost (2).

METHODOLOGY
A total of 24 implants (DENTIUM Co. Ltd. Korea) were divided on 12 systemically healthy patients (N=6) with unilateral mandibular free-end saddles, every patient received two implants at the location of the second premolar (3.5(Ø) diameter X10mm length) and first molar (4(Ø) diameter X10mm length), they referred as primary and secondary abutment respectively. Group (1) received porcelain fused to metal three unit implant supported cantilever FPDs over conventional two-piece implants. Group (2) received porcelain fused to metal three unit implant-supported cantilever FPDs over one-piece implants. All groups were subjected to clinical parameters as specific plaque index(PI), gingival index(GI), and periodontal probing depth(PPD) and then Cone beam computerized tomography for densitometric analysis and marginal bone height detection around each implant at time of FPD loading (baseline), 6, and 12 months. Also both biological and technical success and failure were verified during the follow up period.

RESULTS AND DISCUSSION
Plaque index(PI) remained unchanged during the follow up periods in both groups. The gingival index(GI) was significantly increased from the base line to the second follow up period in group I, and there was a significant increase of GI between both study group P=0.045 for the primary abutment and 0.025 for the secondary abutment (figure 1a). The bleeding on probing and plaque accumulation in our study were within the ranges of previous studies. The evidence suggests that regular patient follow-ups to remind them about soft food mastication and good oral hygiene can reduce plaque accumulation and increase the success rates (3). The mean PPD was increased in group I and II from the baseline to reach its highest mean at the second follow up especially around the secondary abutment, there was a significant different between both groups at secondary abutment (figure 1b). The average amounts of bone loss around the implants increased one fold in group I, lead to significant difference between both groups especially around distal surface of secondary abutment during all the periods of follow up P=0.001, which results in a positive correlation between PPD and marginal bone loss at group I (figure c, d). Bone resorption of 1 to 1.5 mm is acceptable for implants in year one, as is continued 0.1-mm bone resorption annually (4). The effect of one-piece implants result in minimal bone resorption by eliminating the implant/abutment junction and its micropop and by minimally irritating the mucosa during the implant procedure (2). No significant difference in bone density between the two groups during the follow up period, 98% survival rate after 12 months, none of the one piece implant cases failed. Comparative Von Mises stress analysis of all models showed that the maximum stress overall was in the cervical portion of the secondary abutment. The maximum stress was when the two-piece implant was used compared to the one-piece implant.

CONCLUSION
Stress distribution on cantilever FPD is better in a one-piece implant design when compared with the two-piece implant design, with stress concentration being more at the junction of the abutment and the implant fixture in the two-piece implant. When implants are used as abutments (either primary or secondary), the secondary implant shows the maximum amount of stresses.

REFERENCES
EVALUATION OF STRESSES INDUCED FROM TOOTH IMPLANT ASSISTED PARTIAL OVERDENTURES USING RESILIENT ATTACHMENT WITH DIFFERENT CLASP DESIGN (IN VITRO STUDY)

Yasmine A. Elsayed1, Nermeen A. Rady2, Dawlat M. Ahmed3, Ahlam M. Elsharkawy4

1 BDS, Faculty of Dentistry, Alexandria University, MS, Alexandria University, Egypt.
2 Lecturer of Prosthodontics, Faculty of Dentistry, Alexandria University, Egypt.
3 Lecturer of Dental Biomaterials, Faculty of Dentistry, Alexandria University, Egypt
4 Professor of Prosthodontics, Faculty of Dentistry, Alexandria University, Egypt

Corresponding author: dentist2010_2014@yahoo.com

INTRODUCTION
Distal-extension removable partial dentures (RPDs) are associated with several problems related to their stability, retention, esthetics, and masticatory efficiency. Kennedy class I or II situation is considered one of the most challenging situations. Placement of posterior implants if anatomically possible, converts the edentulous defect from a distal extension Kennedy Class I or II situation to a more biomechanically favorable Kennedy Class III.

METHODOLOGY
For this study, two different designs of removable partial dentures were made on epoxy resin model representing mandibular bilateral distal extension edentulous areas with the first premolar as the main abutment and implant was placed at the site of the second molar on both sides. For group (A), The design principle was (Aker clasp on the first premolar abutments on both sides, lingual bar major connector and ball & socket attachment retained the implant). For group (B) the design principle was (RPA clasp on the first premolar abutments and ball & socket attachment on the implants). A self-protected linear strain gauge was used for this study to measure the micro-strain induced on the buccal and lingual sides of the implants, premolar abutments and on the crest of the ridge.

RESULTS
SPSS software program was used in the statistical analysis of the results. With significant level 0.05 the results revealed that maximum stresses induced were in case of group (A). Strains recorded for all groups were compressive in nature; under central loading the highest strain value was recorded at the buccal side of right implant for group (A)(419.5) while the lowest strain value recorded at the lingual side of left abutment for group (B)(178.7).

Table (1): Comparison between the Aker clasp and RPA clasp at right side under central vertical load.

<table>
<thead>
<tr>
<th>Examined site (under central vertical load at right side)</th>
<th>Aker clasp Group (A)</th>
<th>RPA clasp Group (B)</th>
<th>P1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buccal side of abutment</td>
<td>175.2-325.6</td>
<td>145.6-239.2</td>
<td>0.038</td>
</tr>
<tr>
<td>Mean S.D.</td>
<td>240.1</td>
<td>182.9</td>
<td></td>
</tr>
<tr>
<td>Buccal side of implant</td>
<td>325.2-582.4</td>
<td>234.5-490.4</td>
<td>0.0335*</td>
</tr>
<tr>
<td>Range</td>
<td>419.5</td>
<td>342.2</td>
<td></td>
</tr>
<tr>
<td>Mean S.D.</td>
<td>113.1</td>
<td>123.9</td>
<td></td>
</tr>
<tr>
<td>Lingual side of abutment</td>
<td>168.9-325.2</td>
<td>107.6-285.5</td>
<td>0.2467</td>
</tr>
<tr>
<td>Range</td>
<td>247.8</td>
<td>200.9</td>
<td></td>
</tr>
<tr>
<td>Mean S.D.</td>
<td>69.2</td>
<td>76.9</td>
<td></td>
</tr>
<tr>
<td>Lingual side of implant</td>
<td>254.5-310.5</td>
<td>256.1-308.1</td>
<td>0.239</td>
</tr>
<tr>
<td>Range</td>
<td>286.9</td>
<td>266.1</td>
<td></td>
</tr>
<tr>
<td>Mean S.D.</td>
<td>23.4</td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td>Crest of the ridge</td>
<td>216.2-411.2</td>
<td>159.6-358.5</td>
<td>0.106</td>
</tr>
<tr>
<td>Range</td>
<td>291.2</td>
<td>277.1</td>
<td></td>
</tr>
<tr>
<td>Mean S.D.</td>
<td>88.0</td>
<td>64.6</td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSION
Within the limitation of the present study; stresses induced on the implants, abutments and crest of the ridge in case of using RPA clasp as a direct retainer for implant assisted overdenture was lower than those induced from using Aker clasp.

REFERENCES
BIOLOGICAL MARKERS AND SOCIODEMOGRAPHIC FACTORS AS INDICATORS FOR EARLY CHILDHOOD CARIES

Dina Y. Attia1*, Mona K. ElKashlan2 PhD, Susan M. Saleh3 PhD
1. Department of Pediatric Dentistry and Dental Public Health, Faculty of Dentistry, Alexandria University, Egypt
2. Department of Pediatric Dentistry and Dental Public Health, Faculty of Dentistry, Alexandria University, Egypt

*Corresponding author: dina.youssef29@gmail.com

INTRODUCTION

Early childhood caries (ECC) is a critical problem in both developing and developed countries that adversely affects children’s overall health and oral health-related quality of life. Sociodemographic factors are important variables with regards its relationship with ECC (1).

Non-invasive salivary analysis contains a wide spectrum of analytics, which can serve as biomarkers in caries risk assessment that can identify patients at high caries risk for preventive therapies (2). The aim of the present study was to determine the ability of biological markers and sociodemographic factors to classify preschool children based on their ECC status.

METHODOLOGY

Ethical approval was obtained by Dental Research Ethics Committee at the Faculty of Dentistry, Alexandria University, prior to commencement of study.

The present case control study sample consisted of 145 healthy preschool children aged 3-5 years (73 children with ECC and 72 caries free). A questionnaire was used to collect sociodemographic data including age, gender and father’s education. Caries status was clinically assessed according to the WHO criteria using dmft Index (3) and oral hygiene status using Plaque Index (4).

Unstimulated salivary samples were collected by spitting method from the children to measure the levels of salivary nitrate (NO) (5), pH and buffering capacity (6). Salivary biochemical analysis was carried out at the Biochemistry Laboratory in the Faculty of Medicine, Alexandria University.

Tests of significance (t-test and chi square tests) were calculated to compare sociodemographic and biological factors between the groups. Regression analysis was used to assess the relationship between the variables.

RESULTS AND DISCUSSION

Table 1: Description of the study sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>ECC children n=75</th>
<th>Caries free children n=75</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Mean ± SD</td>
<td>4.52 ± 0.62</td>
<td>3.79 ± 0.79</td>
</tr>
<tr>
<td>Gender</td>
<td>Male: n (%)</td>
<td>34 (46.6%)</td>
<td>31 (43.1%)</td>
</tr>
<tr>
<td></td>
<td>Female: n (%)</td>
<td>39 (53.4%)</td>
<td>41 (56.9%)</td>
</tr>
<tr>
<td>Father’s Education</td>
<td>Secondary or less: n (%)</td>
<td>58 (79.5%)</td>
<td>57 (79.2%)</td>
</tr>
<tr>
<td></td>
<td>College completed: n (%)</td>
<td>3 (4.1%)</td>
<td>14 (19.4%)</td>
</tr>
<tr>
<td>Plaque Index</td>
<td>Mean ± SD</td>
<td>0.78 ± 0.33</td>
<td>0.54 ± 0.23</td>
</tr>
<tr>
<td>Salivary pH</td>
<td>Mean ± SD</td>
<td>7.46 ± 0.41</td>
<td>7.71 ± 0.47</td>
</tr>
<tr>
<td>Buffering capacity</td>
<td>Mean ± SD</td>
<td>0.91 ± 0.18</td>
<td>0.97 ± 0.14</td>
</tr>
<tr>
<td>Salivary NO</td>
<td>Mean ± SD</td>
<td>59.82 ± 45.86</td>
<td>62.33 ± 42.83</td>
</tr>
</tbody>
</table>

Table 2: Association of sociodemographic factors and biological markers with ECC

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>P value</th>
<th>Odds ratio (95% C.I.)</th>
<th>Model 2</th>
<th>P value</th>
<th>Odds ratio (95% C.I.)</th>
<th>Model 3</th>
<th>P value</th>
<th>Odds ratio (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plaque index</td>
<td>&lt;0.0001*</td>
<td>37.71</td>
<td>(8.29, 171.52)</td>
<td>&lt;0.0001*</td>
<td>40.72</td>
<td>(6.53, 254.01)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salivary pH</td>
<td>0.001*</td>
<td>0.16</td>
<td>(0.05, 0.49)</td>
<td>0.022*</td>
<td>0.22</td>
<td>(0.06, 0.80)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffering capacity</td>
<td>0.89</td>
<td>1.21</td>
<td>(0.07, 20.91)</td>
<td>0.85</td>
<td>1.38</td>
<td>(0.05, 36.31)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salivary NO</td>
<td>0.89</td>
<td>1.00</td>
<td>(0.99, 1.01)</td>
<td>0.89</td>
<td>1.00</td>
<td>(0.99, 1.01)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>&lt;0.0001*</td>
<td>4.82</td>
<td>(2.74, 8.46)</td>
<td>&lt;0.0001*</td>
<td>4.94</td>
<td>(2.54, 9.58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male vs female</td>
<td>0.53</td>
<td>1.29</td>
<td>(0.58, 2.87)</td>
<td>0.85</td>
<td>1.09</td>
<td>(0.44, 2.70)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary educated or less vs illiterate</td>
<td>0.003*</td>
<td>0.04</td>
<td>(0.00, 0.34)</td>
<td>0.022*</td>
<td>0.06</td>
<td>(0.005, 0.66)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University educated vs illiterate</td>
<td>&lt;0.0001*</td>
<td>0.01</td>
<td>(0.00, 0.13)</td>
<td>0.006*</td>
<td>0.21</td>
<td>(0.001, 0.32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Correctly classified</td>
<td>72.7%</td>
<td>73.8%</td>
<td>81.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of the regression analysis showed that the model including biologic markers correctly classified 73.8% of the children compared to 72.7% of children classified using socioeconomic factors. When both were combined in the same model, 81.4% of children were correctly classified based on ECC.

CONCLUSION

Assessment of sociodemographic data coupled with measurement of oral hygiene status may efficiently identify ECC risk among preschool children similar to biological markers.

REFERENCES

ACCURACY OF CONE BEAM COMPUTED TOMOGRAPHY IN MIXED DENTITION ANALYSIS

Dina A. Sharaf 1’ MS, Magda H. El Tekeya 1 PhD, Karin M. Dowidar 1 PhD, Nadia M. El Harouni 2 PhD
1. Pediatric Dentistry Department, Alexandria University
2. Orthodontic Department, Alexandria University
* Corresponding author: dr.dinasharaf@gmail.com

INTRODUCTION
Mixed dentition space analysis has become a valuable tool in orthodontic diagnosis and treatment planning. 1 CBCT imaging provides three dimensional volumetric data construction of dental and associated maxillofacial structures with high resolution and high dimensional accuracy. 2 This study aimed to evaluate the accuracy of cone beam computed tomography in the mixed dentition analysis and compare cone beam computed tomography for mixed dentition analysis to Moyers analysis and Tanaka and Johnston analysis.

METHODOLOGY
An observational comparative study. This study was conducted on 30 participants with an age range from 13 to 18 years selected according to certain criteria after approval of ethical committee. Each participant had an impression taken using alginate impression material. A stone dental cast was poured immediately, then each participant’s upper and lower arch were scanned using CBCT. Measurements of mesiodistal widths of the canines and premolars were obtained from the cast using digital caliper and from the CBCT using special software. Then the measurements were statistically compared using paired t test. Bland-Altman plot was used to test accuracy of CBCT. The sum of the widths of canines and premolars obtained from the dental cast and from the CBCT were compared to the Moyers method and Tanaka and Johnston method.

RESULTS AND DISCUSSION
There was high agreement between measurements of canines and premolars obtained from the dental cast and those obtained from the CBCT. However, CBCT measurements were slightly larger than the dental cast measurements yet no statistically significant differences were found in most teeth and even if a slight difference appeared it did not exceed 0.3 mm which was clinically insignificant. The results also showed that the sum of widths of canines and premolars from the CBCT were comparable to the value obtained from the dental cast and Moyers method. The Bland-Altman plot revealed that the measurements from casts and CBCT had an agreement with mean differences close to zero for all plots indicating accuracy. These results agree with other authors 3,4

CONCLUSION
There is an agreement between Cone Beam Computed Tomography measurements and the cast measurements of canines and premolars. CBCT and Cast measurements as well as Moyers method of analysis showed comparable results.

REFERENCES
NANOLEAKAGE COMPARISON BETWEEN DIFFERENT ADHESIVE RESTORATIVE MATERIALS SYSTEMS IN DENTIN OF PRIMARY TEETH
(IN-VITRO STUDY)
Hussein Ghazy 1*, BDS, Karin M. Dowidar 2, BDS, MSc, PhD, Fayza ElAbbasy 3, BDS, MSc, PhD
1. Instructor of Pediatric Dentistry, Faculty of Dentistry, Alexandria University
2. Professor of Pediatric Dentistry, Faculty of Dentistry, Alexandria University
3. Professor of Dental Materials, Faculty of Dentistry, Alexandria University
*Corresponding author: Hussein.ezz@hotmail.com

INTRODUCTION
For the clinical success of composite resin, an effective bond between dental materials and tooth substrates is critical. The overall reduction in the application steps is expected to reduce the probability of handling mistakes. (1) A recent innovation in adhesive dentistry is the introduction of a self-adhering flowable composite resin that does not require preliminary treatment of the dental substrate. This simplification in the restorative procedure can be particularly relevant in pediatric dentistry. (2) Nanoleakage is a pattern of leakage occurring within the hybrid layer in nanometer scaled spaces, may be due to the presence of residual water around collagen fibrils, collagen network collapse, or incomplete resin infiltration into the exposed collagen network and polymerization. (3) In vitro studies determining the adhesive with least nanoleakage in primary teeth dentin are still lacking. Therefore, evaluation of their nanoleakage to primary teeth dentin surface will be the scope of this study. The null hypothesis is that no statistically significant differences in nanoleakage to primary dentin will exist among the test groups.

METHODOLOGY
This in vitro, experimental study was conducted on 60 extracted human primary molars. Class V cavities were prepared in the labial surface and the teeth were divided randomly into 4 groups and restored with the material of choice:

Group 1: Self-adhering flowable composite (Vertise Flow, Kerr, USA).
Group 2: Total etch adhesive system with flowable composite (Phosphoric Acid/OptiBond Solo Plus/Herculite ultra flow, Kerr, USA).
Group 3: Self-etch adhesive system with flowable composite (Optibond All-In-One/Herculite Kerr, USA).
Group 4: Glass ionomer based material (Fuji II LC, GC Japan).

Nanoleakage test: (2) After tooth preparation, restoration and thermocycling the restored tooth was be immersed in 50% ammoniacal silver nitrate solution for 24 hrs, sectioning and examination was conducted using EDX Unit (Energy Dispersive X-ray Analyses) to measure the quantity of silver-ion penetration (Figure 1) (Table 1) followed by SEM to evaluate the quality of the hybrid layer (Figure 2).

RESULTS AND DISCUSSION
By using Kruskal Wallis H test, it was found that there is a statistically significant difference in the percentage of silver penetration between the 4 groups, p<0.001. Pairwise comparisons revealed significant difference between group 1 and group 3 (p=0.003) and between group 2 and group 4 (p<0.001) and between group 3 and group 4 (p=0.056) and between group 2 and group 3 (p=0.597). (Table 1)

Figure (2): Showing SEM image evaluating the quality of hybrid layer and showing silver deposits. (a) Group 1 (b) Group 2 (c) Group 3 (d) Group 4, metallic silver deposits (red arrow), thickness of hybrid layer (blue arrow), resin tags penetrating dentinal tubules (green arrow). Left side is dentinal tubules while right side is the filling

Table (1): Comparison between the different groups according to Ag %

<table>
<thead>
<tr>
<th>Ag %</th>
<th>Group 1 (n=15)</th>
<th>Group 2 (n=15)</th>
<th>Group 3 (n=15)</th>
<th>Group 4 (n=15)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min.</td>
<td>0.97</td>
<td>1.25</td>
<td>0.70</td>
<td>4.90</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Max.</td>
<td>5.40</td>
<td>3.43</td>
<td>3.00</td>
<td>6.50</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>4.34</td>
<td>2.70</td>
<td>1.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>IQR</td>
<td>0.96–5.40</td>
<td>1.25–3.43</td>
<td>0.70–3.00</td>
<td>4.90–6.50</td>
<td></td>
</tr>
<tr>
<td>Sig. between groups p&lt;0.001, p&lt;0.001, p=0.009, p&lt;0.001, p&lt;0.001, p=0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSION
Self-etch adhesive system showed the least nanoleakage in primary teeth dentin and the most uniform hybrid layer. There is no significant difference between self-etch and total etch adhesive systems.

REFERENCES
A HISTOPATHOLOGICAL STUDY TO EVALUATE THE EFFECT OF OZONE AS A PULPOTOMY MEDICAMENT IN PRIMARY TEETH

Marwa K. Hassan 1 BDS, MSc, Fatma A. El Hendawy 2 BDS, MSc, PhD, Nahed A. Abo Hamila 3 BDS, MSc, PhD, Eman M. Megahed 4 BDS, MSc, PhD, Mohamed N. Mawsouf 5 BDS, MSc, PhD

1. Faculty of Dentistry, Alexandria University
2,3,4. Faculty of Dentistry, Tanta University
5. National Cancer Institute, Cairo University
*Corresponding author: marwalkhanis79@gmail.com

INTRODUCTION
Pulpotomy is the ablation of infected or affected coronal pulp tissues leaving the residual radicular vital pulp tissues intact, thus preserving its vitality and function. Pulpotomy is the most controversial technique, as its results can be satisfactory; depending on case selection, capping material and hermetic seal (1). Although many materials have been suggested, Formocresol (FC) has long been considered the gold standard medicament used for this procedure (2). However, the use of FC has been questioned because of its adverse effects as; potential carcinogenicity, mutagenicity and cytotoxicity, so it is still important to identify an effective and preferably natural pulpotomy medicament to increase the therapeutic arsenal and successfully perform pulpotomy procedure.

METHODOLOGY
The present study was conducted on 3 puppies in a split mouth design, where 24 pulpotomies were performed. Every puppy received 8 pulpotomies, where; the remaining pulp tissue in half of the molars was covered with ozone cream and the other half was covered with FC leaving 2 untreated molars for histological comparison. The effect of both materials was evaluated both coronally and apically at 1, 2 and 4 weeks, the grades of inflammation recorded in the ozone specimens were less than that recorded in the FC specimens. Also the grades of inflammation recorded in the apical portion of the pulp was less than that recorded in the coronal portion of the pulp under both materials. (figure 1)

RESULTS AND DISCUSSION
It was found that at different sacrificing times (1, 2 & 4 weeks), the grades of inflammation recorded in the ozone specimens were less than that recorded in the FC specimens. Also the grades of inflammation recorded in the apical portion of the pulp was less than that recorded in the coronal portion of the pulp under both materials. (figure 1)

The ozone was found to be more preservative to the odontoblastic layer than FC both coronally and apically at the three study periods. (figure 2)

There was a statistical significance between the two materials at 4 weeks coronally regarding the degree of inflammation and 1 week apically regarding the degree of inflammation and preservation of the odontoblastic layer.

The biochemical role of antioxidants is to function as coenzyme precursors in healing processes. The trace elements essentially act as cofactors for antioxidant enzymes involved in the destruction of toxic free radicals produced in the body as a normal consequence of the healing processes (3). Ozone has a strong antioxidant capacity that enhances the immune system to release growth factors. It stimulates the expression of the adaptive inflammatory responses and induces synthesis of interleukins and leukotriens. It helps the secretion of vasodilators and activation of aerobic processes. Most importantly it is a powerful antimicrobial against bacteria, fungi and viruses (4).

CONCLUSION
The ozone was found to be less irritant and more preservative to the odontoblastic layer than FC.

REFERENCES
1. AAPD: Guideline on pulp therapy for primary and immature permanent teeth. Pediatric dentistry. 2017-2018
ORAL REHABILITATION OF A CHILD WITH ECTRODACTYLY ECTODERMAL DYSPLASIA CLEFTING SYNDROME: A CASE REPORT

Yasmine I. Elhamouly ¹ BDS, MSc, Karin M. Dowidar ² BDS, MSc, PhD

¹ Faculty of Dentistry, Pharos University
² Faculty of Dentistry, Alexandria University

*Corresponding author: dr_yasmine80@hotmail.com

INTRODUCTION
Ectodactyly Ectodermal Dysplasia Clefting syndrome (EEC) is a rare syndrome inherited as autosomal dominant or as a de-novo transfiguration due to mutations of TP63 gene, affecting the early development of ectodermal tissues and other organs. It is characterized by ectodermal dysplasia, ectodactyly and syndactyly of some fingers and/or toes. Hypodontia, malformed teeth, dental caries and clefting are commonly seen.¹ This report presents a clinical case of oral rehabilitation of an EEC child under general anesthesia with further chairside treatment stages.

CASE REPORT
A male child aged 5.6 years from a non-consanguineous marriage and no familial predisposition was presented to the Pediatric Dentistry Clinics in Alexandria University. Upon general and extra-oral (EO) examination, fine fair hair, sparse eye lashes, and a postsurgical scar on the upper lip were evident. Ectodactyly of the 2nd and 4th right toes and the 2nd left toe was detected. The intraoral (IO) examination displayed mobile teeth and multiple carious lesions. The panoramic radiograph confirmed the presence of: remaining root of # 62, gemination of #81, congenitally missing # 32, 42, undetected crypts of #15, 25, 35, 45 and ectopically positioned, unerupted # 11, 12, 21, 22. Supernumerary teeth were suspected in the pre-maxillary region. (Figure 1).

MANAGEMENT AND FOLLOW UP
The treatment was firstly done under general anesthesia due to the definitely negative behavior of the child. Treatment approval has been provided by the Ethics Committee, Faculty of Dentistry, Alexandria University, Egypt (IRB 0010556)-(ORG 0008839) and the guardians’ consent was obtained. Oral health related quality of life (OHRQoL) was reassessed 3 months after the operation.³ (Figure 2)

RESULTS AND DISCUSSION
The child’s acceptance to the chairside treatment were improved after dental rehabilitation. A removable functional space maintainer was placed to guide the eruption of tooth # 26. After its emergence, a reverse band and loop SpM [2e].

CONCLUSION
Treatment under general anesthesia was mandatory to fulfill the unmet dental needs of such definitely negative child. The treatment outcomes positively influenced his attitude towards treatment procedures. The enhancement in aesthetics and function boosted the child’s self-esteem and consequently improved his quality of life.

REFERENCES
2. Brown A, Al-Khayal Z. Validity and reliability of the Arabic Translation of the child oral health related quality of life questionnaire (CPQ11-14) after oral rehabilitation. (Table 1)