International Dental Material Congress 2011

Seoul, Korea

27-29 Mei 2011

Prof. Madya Sam'an Malik Masudi
Pusat Pengajian Sains Pergigian

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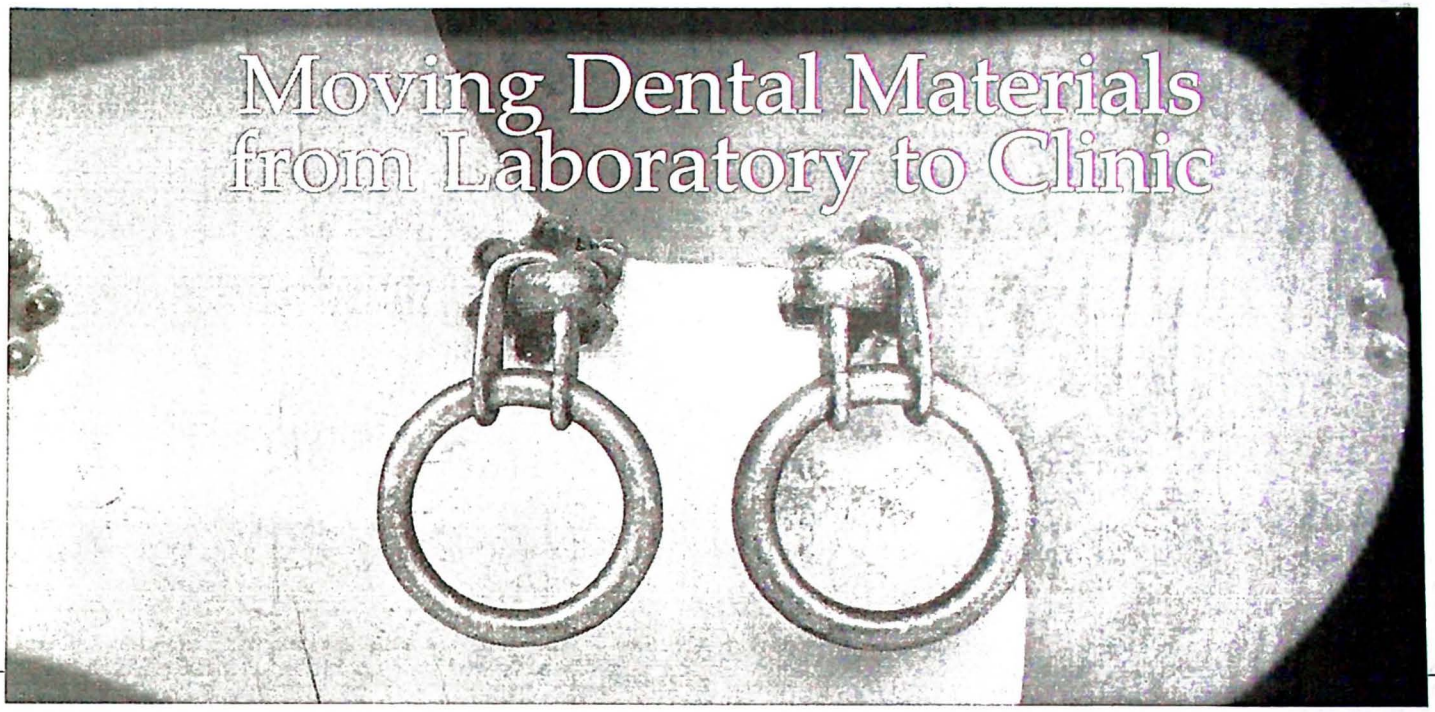

Proceedings of the International Dental Materials Congress 2011

In conjunction with

KRSDM
2011 Annual Meeting of
The Korea Research Society
for Dental Materials

JSDMD
57th Meeting of
The Japanese Society
for Dental Materials and Devices

Eun-Myung Auditorium
Yonsei University Severance Hospital

Seoul, Korea
May 27-29, 2011

The International Dental Materials Congress 2011
Organizing Committee

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The Korea Research Society for Dental Materials
The Japanese Society for Dental Materials and Devices

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General Session

Oral Presentation

General Session Program

Oral Presentation I (O1–O12): Sunday, May 29, 8:30 am – 10:30 am, Eun-Myung Auditorium

Chair: Isao Hirata (Hiroshima University), Jin-Soo Ahn (Seoul National University), Seung-Han Oh (Wonkwang University), Yoshiya Hashimoto(Osaka Dental University)

O1-Adh01 TEM Characterization of a Silorane Composite Bonded to Enamel/Dentin.
*Mine A[1)], De Munck J[2)], Kuboki T[1)], Yoshida Y[1)], Suzuki K[1)], Van Meerbeek B[2)]
([1]Dentistry and Pharmaceutical Science, Graduate School of Medicine, Okayama Univ., Okayama, Japan, [2]Catholic University of Leuven, Leuven, Belgium)

O1-Com01 Biopolymer-coated Glass Nanofibers with Bioactivity for Use as Tissue Regenerative Matrices.
Kim JJ[1,2)], Won JE[1,2)], Shin US[1,2)], Kim HW[1,2,3)]
([1]Department of Nanobiomedical Science & WCU Research Center, [2]Institute of Tissue Regeneration Engineering, [3]Department of Biomaterials Science School of Dentistry, Dankook Univ., Cheonan, Korea)

O1-Com02 Contraction Stresses in Direct and Indirect Resin Composite Restorations Evaluated by Crack Analysis.
*Yamamoto T[1)], Nakamura Y[2)], Nishide A[1)], Kubota Y[1)], Momoi Y[1)]
([1]Dept. of Oper. Dent., [2]Dept. of Fixed Pros., Tsurumi Univ., Yokohama, Japan)

O1-Com03 Biocompatible-modified Magnetic Nanoparticles for Biomedicine.
Singh RK[1)], Eltohamy M[1)], El-Fiqi AM[1,2)], Shin US[1,2)], Kim HW[1,2,3)]
([1]Department of Nanobiomedical Science & WCU Research Center, [2]Institute of Tissue Regeneration Engineering, [3]Department of Biomaterials Science School of Dentistry, Dankook Univ., Cheonan Korea)

O1-Com04 Curing Efficiency of Three Different Curing Modes at Different Distances for Four Composites.
*Zhu S[1)], Platt JA[2)]
([1]JiLin Univ., ChangChun, China, [2]Indiana Univ., Indianapolis, USA)

O1-Pol01 The Influence of Film-forming Materials on the Properties of Fluoride Varnish.
*Zhao XY, Li ZH, Wang JQ, Li SB
(The 4th Military Medical Univ., Xi'an 710032, China)

O1-Pol02 Development of 4-META/MMA-based Adhesive Resin with FGF-2 Releasing Property - Influences of Resin Monomers on Functions of FGF-2.
*Takeda K[1)], Imazato S[2)], Kiba W[1)], Ebisu S[1)]
([1]Department of Restorative Dentistry and Endodontology, [2]Department of Biomaterial Science, Osaka Univ., Osaka, Japan)

O1-Pol03 Effect of Polymer-based Rotary File in Root Canal Irrigation on Smear Layer Removal: A SEM Study.
*Masudi SM, Thauk M, Ariffin Z, Tin Oo MM
(Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia)

O1-Mis01 Analysis of Strengthening Mechanisms of Human Dentin by UV Irradiation.
*Furuya Y, Hayashi M, Takeda Y, Ebisu S
(Graduate School of Dentistry, Osaka Univ., Suita, Japan)

O1-Mis02 Biomechanics of Viscoelastic Masticatory Mucosa.
*Wakabayashi N[1)], Ona M[1)], Takaichi A[1)], Sawada A[2)], Suzuki T[2)], Igarashi Y[1)]
([1]Tokyo Medical and Dental Univ., Tokyo, Japan, [2]Iwate Medical Univ., Morioka, Japan)

O1-Pol03 Effect of Polymer-based Rotary File in Root Canal Irrigation on Smear Layer Removal: A SEM Study.

***Masudi SM, Thauk M, Ariffin Z, Tin Oo MM**
(Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia)

Introduction: Removing of smear layer is an essential step for endodontic success. Smear layer is composed of an amorphous layer of organic and inorganic materials. It acts as a physical barrier interfering with adhesion and penetration of the sealer into the dentinal tubule. The aim of this study was to compare the cleaning efficiency of smear layer removal on prepared root canal surfaces by using syringe irrigation method and polymer-based rotary file for fluid agitation under scanning electron microscope (SEM).

Materials and Methods: A total of 32 human extracted premolar teeth with single root canal were used in this experiment. Crown of all teeth were removed at the level of CEJ and randomly divided into two groups as G1 and G2 of 16 teeth respectively. Working length was determined and canal prepared using K3 NiTi rotary files with a crown-down technique, by taking #25 and 0.12 taper, followed by 0.10, 0.08 and finished by 0.06 taper K3 files.

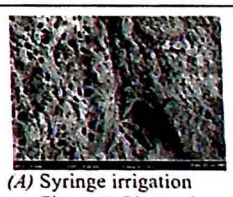
Root canal irrigation in G1 was performed by alternate use of 5% NaOCl and 17% EDTA with an endodontic syringe with a 27-gauge blunt needle during instrumentation. In grou p G2, irrigation was performed by the alternate use of 5% NaOCl and 17% EDTA similar to G1, but for the last irrigation, polymer-based rotary file with the rotation speed of 600-900 rpm at 30s was used for agitation of NaOCl fluid in up and down cyclic motion.

The teeth then were vertically split into half by placing a small chisel for SEM evaluation. The specimens were dehydrated in a graded series of ethanol solutions, coated with gold-palladium, and then examined by SEM. Six photomicrographs at 1000x for each root canal were taken (two in coronal third, middle third and apical third) and analyzed. The specimens were scored from one to five using five categories according to the Hulsmann *et al* (2001) scoring system. Evaluation was performed by three trained observers and data were carried out using Mann-Whitney test.

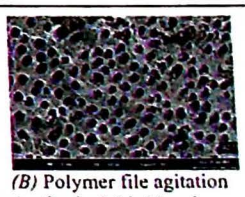
Results: The result showed that smear layer score was statistically significantly lower after using polymer-based rotary file than syringe irrigation on the apical region.

Table 1. Scores of smear layer within groups

Level	G1 (n=16) Median (IQR)	G2 (n=16) Median (IQR)	Z statistic[a]	P value
Coronal	2.25 (0.50)	2.00 (1.50)	-.676	0.499
Middle	2.00 (1.38)	2.00 (0.50)	-1.09	0.278
Apical	3.25 (1.50)	2.50 (1.13)	-2.50	0.015*
a Mann-Whitney test		* P<0.05		



(A) Syringe irrigation



(B) Polymer file agitation

Figure 1: Photomicrograph of apical third level

Discussion:

The polymer-based file is designed to flush out the debris and clean the smear layer with rotation that promotes the effervescent action of NaOCl inside the canal. Furthermore, the tip of the polymer-based file can reach closer to the apical area and its agitation on fluid can occur mechanical washing on prepared root canal surface more vigorously than syringe irrigation. Apical third is difficult area to be cleaned due to its narrow canals.

Conclusions:

In conclusion using polymer-based rotary file is more efficient than syringe irrigation for smear layer removing especially on the apical third of the prepared canals