

EV 4944/14 ISSN1339-5882 #20221-10021P

VOLUME II (8)/2016

CLINICAL AND  
SCIENTIFIC ISSUES

# INTERMEDICAL JOURNAL

**Interlekársky časopis  
Інтермедичний журнал**

Editorial board: Ukraine  
Uzhhorod, Universitetska st.,16-a  
[journal.intermedical@gmail.com](mailto:journal.intermedical@gmail.com)

Vydavateľ / Publishing a /and adresa redakcie / Address of editor: VPS - SLOVAKIA, spol. s r.o., Lúčna 1A,

080 06 Prešov, Slovenská republika, IČO: 36457256 IČ DPH: SK2020011697 Obch. reg. Okr. súdu PO, vložka 11334/P

☎ +421 51 7765 330 ☎ +421 905596201 ✉ [vpsslovakia@vpsslovakia.sk](mailto:vpsslovakia@vpsslovakia.sk)

<http://www.vpsslovakia.sk>

Číslo účtu / Account number: 2627729574 Kód banky 1100 Tatra banka, a.s. pobočka Prešov

IBAN: SK84 1100 0000 0026 2772 9574 Swiftový kód: TATRSKBX

Variabilný symbol / Variable symbol VS 114800 Konštantný symbol / Constant symbol KS 0308

**Generálny partner / General Partner:** MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE STATE UNIVERSITY "UZHOROD NATIONAL UNIVERSITY" 46 Pidhima St, Uzhorod, Transcarpathia, Ukraine, 88000,

☎ +380312233341 ☎ +380312234202 ✉ [official@uyhnu.edu.ua](mailto:official@uyhnu.edu.ua)

Identification code 02070832 <http://www.uzhnu.edu.ua/>

**Vedecká rada / Scientific board:**

Predseda: Editor in Chief: Dr.Sc Prof. Smolanka Volodymyr	Tajomník: Scientific Secretary: Dr.Sc Prof. Kostenko Yevhen	Podpredsedníčka: Vice Chairman: C.Sc Prof. Oksana Klitynska
---	---	---

Členovia: Scientific boards:

Dr.h.c., C.Sc., Prof. Andrej Jenca MUDR (Kosice, Slovak Republic)	Dr.Sc Prof. Rusyn Vasil (Uzhhorod, Ukraine)
Dr.h.c Prof. Hanna Eliasova, PhD (Presov, Slovak Republik)	Dr.Sc Prof. Rusyn Andryy (Uzhhorod, Ukraine)
Dr.h.c., Dzupa Peter, PhD, MUDR (Chadca, Slovak Republik)	Dr.Sc Prof. Boldizhar Patricia (Uzhhorod, Ukraine)
Dr.Sc. Prof. Savichuk Natalia (Kyiv, Ukraine)	Dr.Sc Prof. Boldizhar Oleksandr (Uzhhorod, Ukraine)
Dr.Sc Prof. Kasakova Rimma (Uzhhorod, Ukraine)	Dr.Sc Prof. Korsak Vyacheslav (Uzhhorod, Ukraine)
Dr.Sc Prof. Potapchuk Anatoly (Uzhhorod, Ukraine)	Dr.Sc Doc. Romyancev Kostyantyn (Uzhhorod, Ukraine)
Dr.Sc. Prof. Tore Solheim (Oslo, Norway)	Dr.Sc. Prof. Bobrov Nikita (Kosice, Slovak Republic)
Dr.Sc Prof. Mishalov Volodymyr (Kyiv, Ukraine)	Dr.Sc. Prof. Hokan Mornsted (Sweden)
Dr. Sc. Prof. Vilma Pinchi (Florence, Italy)	Dr.h.c., Prof. Jozef Zivcak, PhD (Kosice, Slovak Republik)
Dr.Sc. Prof. Tkachenko Pavlo (Poltava, Ukraine)	Dr.Sc. Doc. Gasuk Petro (Ternopil, Ukraine)
Dr.Sc. Prof. Kaskova Liudmyla (Poltava, Ukraine)	Dr.Sc. Doc. Gasuk Natalia (Ternopil, Ukraine)

Vedecký časopis je registrovaný na Ministerstve kultúry Slovenskej republiky a УКРАЇНА Держана реєстраційна служба України N<sup>o</sup> 20221 – 10021P

The Scientific journal registered at the Ministry of culture of the Slovak Republic.

Vedecký časopis. Kategória publikačnej činnosti **ADF** podľa prílohy č. 1 Smernice č. 13/2008-R zo 16. októbra 2008 o bibliografickej registrácii a kategorizácii publikačnej činnosti, umeleckej činnosti a ohlasov Ministerstva školstva Slovenskej republiky. Vedecké práce v domácich nekarentovaných časopisoch. Články alebo štúdie, ktoré zverejňujú originálne (pôvodné) výsledky vlastnej práce autora alebo autorského kolektívu uverejnené v nekarentovaných vedeckých časopisoch.

The Scientific journal. A category of publishing activities pursuant to annex 1 of Directive no **ADF** No 13/2008-R from 16. October 2008 on the bibliographic entry registration and categorisation of the publishing activities of the Ministry of education of the Slovak Republic, artistic activity and responses. Scientific work in domestic not current journals. Articles or studies, which published the original work of the author or copyright (original) the results of its own staff members published in the not current scientific journals.

Periodicita: 4x ročne. Periodicity: 4x per year. Dátum vydania: August 2015. The date of issue: August 2015.

UDC:616.314-084-

053.2:612.392.691:546.15

## LABORATORY ANALYSIS OF ADHESIVE PROPERTIES OF MATERIALS FOR RESTORATION OF DECIDUOUS TEETH

Vasko A.A.

*Assistant Professor at the  
Department of Dentistry age of child  
Uzhorod National University*

**Summary :** The aim of the study was to experimentally determine the adhesive properties of glass ionomer cement «Ionofil Molar», (VOCO, Germany) and compomer «Twinky Star» (VOCO, Germany) to the temporary tooth tissue. For this the preparation cavities 36 teeth removed by surgery and orthodontic impressions. Results of the study indicate that kompommer «Twinky Star» (VOCO, Germany) has better adhesive properties to the tissues of deciduous teeth, which enables it to recommend the treatment of all forms of caries in children with temporary and variable bite.

**Key words :** materials for restoration, glass ionomer cement, compomer, composite light curing, adhesion.

Criteria for selection of filling materials for restoring cavities in temporary teeth. Determining the adhesive properties of filling materials in temporary teeth. Quality sealing deciduous teeth and classic GIC compomers. Morpho-clinical study of

deciduous teeth restored using classical GIC. Morpho-clinical study of deciduous teeth restored using compomers.

**Actuality:** the problem of choosing the material for restoring acute treatment of each tooth decay in children [1,3,4]. Limited access to organs, excessive salivation, excitement child during dental manipulation and several other factors determines the criteria to be met by sealing materials for use in pediatric dentistry [2,3,6,7,8].

Today, the most commonly used material for restoring the treatment of caries of deciduous teeth are glass ionomer cements and compomer [5,7,9,13]. This is due to a number of features of these materials such as hydrophilic, ability to provide fluoride ions, which reduces the risk of recurrent caries, simplicity and convenience in work performance abrasion as close to those in temporary teeth, etc. [10,11,12].

**Objective:** Determine the strength of adhesion materials based on renewable period of occlusion.

**Materials and Methods:** Restoration of coronal defects clinic preceded experimental study selection criteria for material recovery. To this end, we studied the nature of adhesion renewable materials for hard tissue of teeth by laboratory studies using selected materials, such as glass ionomer cement «Ionofil Molar», (VOCO, Germany) and compomer «Twinky Star» (VOCO, Germany).

The study was conducted preparation cavities 36 teeth removed, followed by drug treatment and thus led to the restoration materials according to the instructions of the manufacturer.

Samples were placed in an incubator for 24 hours to create an appropriate environment, consistent environment for oral temperature parameters. After 24 hours spent

vertical cut of each sample tooth using diamond blades at low revs. It is extremely important to maintain the integrity of the restored tooth mineral composition, organic matrix of enamel restorative material, which at high revs diamond disc due to friction and heat are usually burned.

Later carried macroscopic examination and photographing digital camera Taking pictures selected for illustration plots performed with a microscope Biorex-3 HM-500T digital macrofoto kit DCM-900 adapted for these research programs.

Assessment of quality of restoration carried out on the following criteria:

- Density material adhesion to the surface of dentin and enamel (using as an identifying dye polychrome)

- The presence of air inclusions and impurities;

- Uniform polymerization.

**Results and discussion.** In the macroscopic evaluation of longitudinal cuts teeth occlusal surface of which has been restored using glass ionomer cement «Ionofil Molar», observed few areas of uneven polymerization, which is optically bright and mostly located in areas of contact material with enamel-dentine border.

Air inclusions were observed, which is relatively short period of time for mixing (50-60 seconds) and work (3-4 minutes).

The surface of the restorative material containing coating on a dual protective varnish (according to the manufacturer) and the elastic polishing discs containing fine-grained inclusions (Fig. 1).

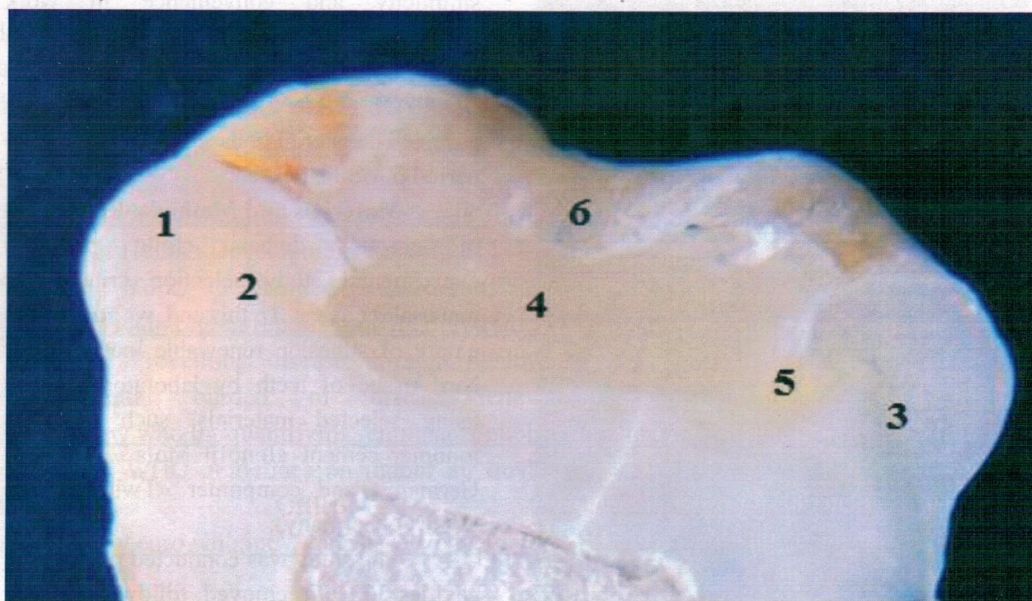


Fig. 1 Anatomical state crown tissues recovered using glass ionomer cement «Ionofil Molar». Native cut. Coll. Rev. x 10 approx. • 10:

- 1 - enamel;
- 2 - raincoat dentin;
- 3 - enamel-dentine border;

- 4 - reducing material;
- 5 - plot uneven polymerization;
- 6 - include fine-grained.

To analyze line adhesion between renewable material and hard tissues we

performed grindin color data using as an identifier polychrome dye.

This line adhesion of restorative material from dentin was quite good, as evidenced by its orientation and minor contour line, compounded in areas of uneven polymerization.

In the area adjoining glass ionomer cement «Ionofil Molar» with enamel, noted a sharp increase in the area of absorption of the dye, indicating a lower intensity of adhesion and consistent with the latest achievements of leading experts [3,6,12,13] for selective adhesive properties of glass ionomer cements (Fig. 2).

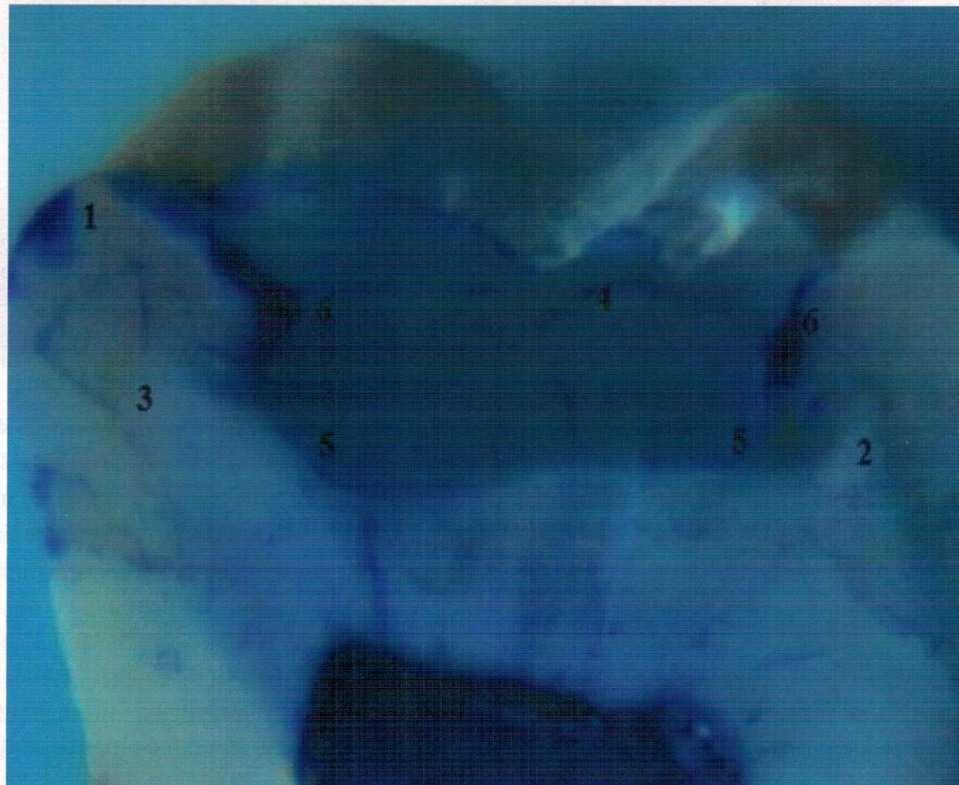


Fig. 2. Anatomical state crown tissues recovered using glass ionomer cement «Ionofil Molar». Color: polychrome dye. Coll.: Rev. x 10 approx. • 10:

- 1 - enamel;
- 2 - raincoat dentin;
- 3 - enamel-dentine border;
- 4 - reducing material;
- 5 - plot uneven polymerization;
- 6 - dye absorption area.

In the macroscopic evaluation of longitudinal cuts teeth occlusal surface of which has been restored using compomer «Twinky Star» can assert the uniformity of polymerization of the material at different levels.

Material well-adapted, as evidenced by good adhesion to the bottom boundary walls and mounted the cavity is material properties make it possible to leave the area demineralized dentin (Fig. 3).



Fig. 3. Anatomical state crown tissues recovered by kompomeru «Twinky Star». Native cut. Coll. : Rev. x 10 approx. • 10:

- 1 - enamel;
- 2 - enamel-dentine border;
- 3 - demineralized dentin;
- 4 - reducing material.

To analyze the regional adjoining density reducing material is relatively hard

tissue of teeth made us grindin color data using as an identifier polychrome dye.

This line fit as restorative material from enamel and dentin of contour line, but its area was small and it is equivalent to a relatively enamel and dentin (Fig. 4).

The results shows the equal ability of this material to both enamel and dentin to crossing and practices of contemporary [2,3,6,11] for compomer adhesive properties (Fig. 4).

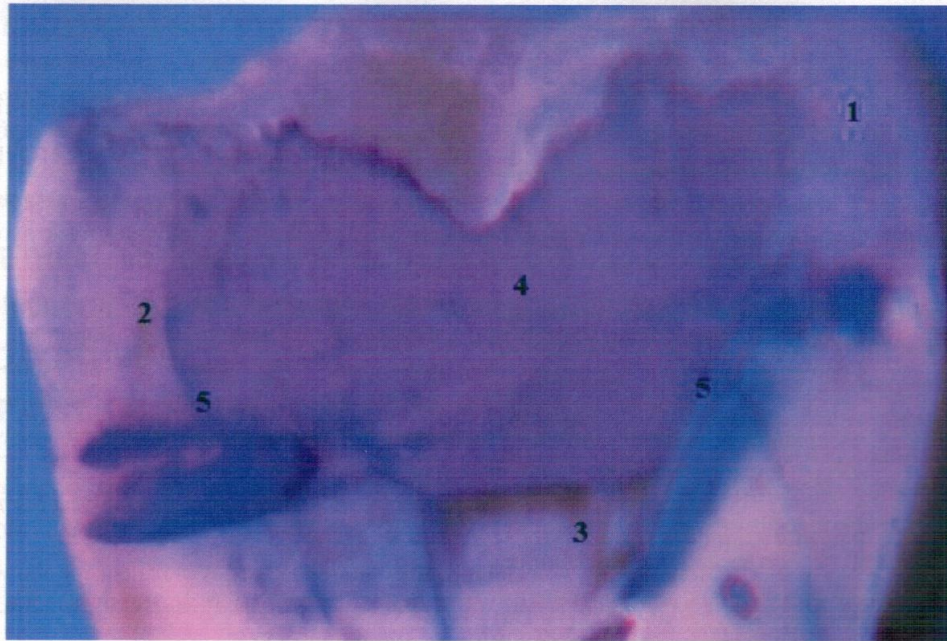


Fig. 4. Anatomical state crown tissues recovered by compomer «Twinky Star». Color: polychrome dye. Coll. : Rev. x 10 approx. • 10:

- 1 - enamel;
- 2 - demineralized dentin;
- 3 - enamel-dentine border;
- 4 - reducing material;
- 5 - line fitting material.

**Summary:** So we conducted a comprehensive integrated clinical and morphological analysis with advanced laboratory and histological study made it

possible to propose the concept of restorative material of choice from a position specified components, such as histological and topographic and determine which requirements indications for use of renewable materials in children with temporary occlusion.

The concept are morphological features of tooth tissue structure and peculiarities of the caries process and specific topography of the location of cavities in children.

#### REFERENCES:

1. Аммаев М. Г. Усовершенствованный способ оценки эффективности лечения начального кариеса / М. Г. Аммаев и др. // Кубанский научный медицинский вестник. – 2013. – №. 6 (141). – с. 32 – 34.
2. Ашаренкова О. В. Сучасні світлотвердіючі композитні матеріали для естетичної реставрації зубів (лекція) // Збірник наукових праць співробітників НМАПО ім. ПЛ Шупика. – 2013. – №. 22 (1). – С. 471–475.

3. Боровский Е.В. Кариес зубов: препарирование и пломбирование / Е.В. Боровский – М.: АО «Стоматология», 2001. – 144 с.
4. Виноградова Т.Ф. Лечение и реставрация молочных зубов / Виноградова Т.Ф., Даггал М.С., Керзон М.Е. – «МmBook», 2009. – 160с.
5. Герелюк В. І. Вивчення стану якості естетичних реставрацій фронтальної групи зубів / В. І. Герелюк, Н. Т. Кобрин // Клінічна стоматологія. – 2014. – №. 4. – С. 68–68.
6. Савичук Н. О. Застосування компомера Dyract XP при лікуванні кариесу постійних зубів у дітей та підлітків // Н. О. Савичук, К. А. Парпалей, Н. О. Сороченко [та ін.]. – Современная стоматология. – № 4. – 2013, – С. 84 – 88.
7. Каськова Л. Ф. Досвід застосування композиційних пломбувальних матеріалів у клініці дитячої терапевтичної стоматології / Л. Ф. Каськова //Український стоматологічний альманах. – 2011. – №. 5. – С. 62–63.
8. Рожко В. І. Клінічна оцінка реставрацій депульпованих зубів / В. І. Рожко // Клінічна стоматологія. – 2014. – №. 3. – С. 53–53.
9. Bönecker M. A social movement to reduce caries prevalence in the world / M. Bönecker, L.M. Andaló Tenuta, G. A. Pucca Jr, P. Bella Costa, N. Pitts // Braz Oral Res.(São Paulo). – 2013. – Vol. 27(1). – P. 5–6
10. Devoto W., Saracinelli M., Manauta J. Composite in everyday practice: how to choose the right material and simplify application techniques in the anterior teeth //Eur. J. Esthet. Dent. 2010. - Vol. 5, №. 1. - P. 102-124.
11. Failure of a glass ionomer to remineralize apatite-depleted dentin /Y.K. Kim, C.K.Y. Yiu, J.R. Kim et al. //J. Dent. Res. 2010. - Vol. 89, № 3. - P.230-235.
12. Ozsevik A.S. Effect of different contact materials on approximal caries detection by laser fluorescence and light-emitting diode devices /A.S. Ozsevik, E.S. Kararslan, A.M. Aktan, E. Bozdemir, F. Cebe, F. Sari // Photomed Laser Surg. – 2015. – Vol. 33(10). – P . 492–497.
13. Rugg-Gunn A. Dental caries: Strategies to control this preventable disease / A. Rugg-Gunn // Acta Medica Academica. – 2013. – Vol. 42(2). – P. 117 – 130.