Distribution and interrelationships between structural elements of dentine have great influence on the form and quality of the hybrid layer. Heterogenous structure if dentine determines further specific properties of the dentine: permeability, humidity, physical properties (hardness, strength, elasticity). This dentine structure and dentine physiology variety determines adhesion to dentine as a complex interaction between biologic material (dentine) and adhesion system.

Most teeth that require adhesive restorative treatment are carious or have had a previous caries lesion. A number of tissue changes in the dentin and pulp take place as a result of caries (formation of tertiary dentine, sclerosis of the dentinal tubules, cellular changes in the pulp). Apart from caries-effected dentine, sclerosis takes place in the exposed, abraded, cervical dentine. Both types of dentine sclerosis prevent resin tag formation. Bond strength values are reduced in comparison to bond strenght on the normal, physiologic dentine surface. Adhesive system selection is a very important factor for hybridization and bond durability. Each adhesive system contents further components: acid, primer and adhesive resin. Multi-bottled adhesive system were used until 1994. These system required application in multiple steps.

After chemical treatment, hybridized dentin is formed in the subsurface. There is greatest change in the volume ratio between minerals, water and resin. The rate of collagen fibrils reamins the same. New chemical and physical properties of dentin and resin are developed due to the formation of the hybrid layer.

Broj dentinskih tubula kao funkcija dubine kaviteta

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Svrha ovog istraživanja je utvrditi postoji li razlika između broja i promjera otvora eksponiranih dentinskih tubula te udjela površine otvora eksponiranih dentinskih tubula od ukupne površine poprečnog presjeka humanoga koronarnog dentina s obzirom na udaljenost prema caklinsko-dentinskom spojištu i pulpi.

Scanning elektronsko-mikroskopska usporedbena raščlamba provedena je na 60 uzoraka humanoga koronarnog dentina razdijeljenih u tri skupine prema udaljenosti između pulpe i caklinsko-dentinskog spojišta. promatran je dentin na tri razine u području središnje fisure:

1. poprečni rez koronarnoga dentina, 1 mm ispod caklinsko-dentinskoga spojišta
2. poprečni rez koronarnoga dentina na polovini razmaka između caklinsko-dentinskoga spojišta i pulpne komore
3. poprečni rez koronarnoga dentina 1 mm iznad krova pulpne komore

Izbrojeni su vidljivi dentinski tubulusi unutar kvadrata površine 50 µm x 50 µm. Dobiveni broj podijeljen je s 2500 da bi se dobio N/µm^2 i pomnožen s 1.000.000 da bi se dobio N/mm^2).

Prosječan broj otvora eksponiranih dentinskih tubula na prvoj razini je 96000/mm^2, na drugoj razini 27100/mm^2, te na trećoj 58.300/mm^2. Jednosmjernom raščlambom varijance dobiven je omjer MStretman/MS pogrješka 305,22, koji je veći od F 0,99 (2,57) 4,98.

Rezultati upućuju da postoji statistički znatna razlika broja i promjera otvora eksponiranih dentinskih tubula i veličine površine koju zauzimaju sve tri promatrane skupine uzoraka.

Number of the Dentinal Tubules as a Function of Cavity Dept

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The aim of this study was to determine if there is any defference between the number of exposed dentinal tubules on the cross section of the coronal dentine.

By scanning electron microscopy comparative observation was carried out on 60 specimens of human coronal dentine, divided into 3 groups, in relation to the distance from the enamel-dentine junction and the pulp. Coronal dentine in the region of the central fissure was observed on three levels:

1. Cross section of the coronal dentine, 1 mm from the enamel-dentine junction.
2. Cross section of the coronal dentine, half-distance between the enamel-dentine junction and the pulp.
3. Cross section of the coronal dentine, 1 mm from the roof of the pulp chamber.

Openings of the exposed dentinal tubules were counted in a square size 50 x 50 μm of the dentinal surface. The number was divided by 2500 to obtain the number of the openings of the dentinal tubules in the square micrometer ($N/\mu m^2$). This number was multiplied by 10^6 to obtain the number of the openings of the dentinal tubules in the square millimeter (N/mm^2).

The mean number of the openings of the dentinal tubules on the first level was $9600/mm^2$, on the second level $27100/mm^2$ and on the third level $58300/mm^2$. Using the one-way analysis of variance was found ratio MStreatment/MSerror 305.22, that was greater than F 0.99 (2.57) 4.98.

The results showed that there is significant statistical difference in the number of exposed dentinal tubules between all three groups of specimens.

Individualni štitnik u prevenciji športskih ozljeda

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Traume zuba i mekih tkiva orofacijalnoga sustava zdravstveni su problem današnjice. Prema etiologiji, zasebnu skupinu dentalnih trauma čine športske ozljede. One su karakteristične za mnoge športove. Protektivna uloga športskoga štitnika u prevenciji je posjekotina jezika, usana i obraza od ozljeda oštrim incizalnim rubovima najčešće prednjih gornjih zuba, manjega rizika traume prednjih zuba, smanjene mogućnosti loma donje i gornje čeljusti te oštećenja stražnjih zuba i čeljusnih zglobova zbog udarca u donji rub donje čeljusti. Prikazan je postupak izradbe individualnoga športskog štitnika tehnikom oblikovanja na sadrenome modelu izvlačenjem s pomoću vakuma (Erkoform®, Erkodent). Individualni štitnik se najčešće izrađuje na gornjemu zubnom luku, a preduvjeti za nošenje štitnika jesu dobra oralna profilaksa i izlječenje svih zuba. Kliničke i laboratorijske postupke izradbe čine sljedeće radne faze: anatomski otisak gornje i donje čeljusti u alginatu, prijenos gornjega zubnog luka u artikulator i centrični registrat, laboratorijska izradba, obradba i poliranje te predaja pacijentu, brušenje i naknadna skrb. Individualni štitnik pruža najviše u profilaksi orofacijalnih ozljeda, a svojim konstrukcijskim i tehnološkim osobitostima najugodniji je športašima tijekom treninga i natjecanja.

Individual Mouthguard in Prevention of Sports Trauma

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Trauma of teeth and soft tissues of the orofacial system are today one of the major health problems. According to the aetiology of dental trauma a separate group are sports traumas which are characteristic for many sports. The protective role of the mouthguard in the prevention of laceration of tongue, lips and cheeks caused by sharp incisal edges, in most cases of anterior superior teeth, decreases possibility of mandibular and maxillary fracture as well as injuries to posterior teeth and temporomandibular joints as a result of a blow in the lower mandibular margin. The fabrication procedure of individual sports mouthguard by modelling technique on plaster casts by vaccuum forming (Erkoform®, Erkodent) is presented. Individual mouthguard is most frequently fabricated on superior dental arch, and the preconditions for wearing the mouthguard are good oral prophylaxis and completely cured teeth. Clinical and laboratory procedures of fabrication comprise the following working phases: preliminary impression of maxilla and mandibule in alginate, transfer of upper dental arch in articulator and centric record, laboratory fabrication, finishing and polishing, delivery to patient, grinding and subsequent care. Individual mouthguard offers most in the prophylaxis of orofacial traumas, and with its construction and tecnological characteristics is the most pleasant for athletes during training and competition.