

## INDIRECT RESTORATION OF EROSION DENTAL LESIONS: CASE PRESENTATION

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**ABSTRACT:** Dental erosion is a dental non-cariogenic lesion produced by internal (gastro oesophageal reflux, regurgitations, gastro-intestinal diseases, symptoms associated to bulimia) or external factors (foods, beverages, erosive drugs). The treatment of non-cariogenic lesions is complex. It will include the removal of causal factors and preventive-therapeutical measures aiming to increase the resistance of dental tissues by remineralization. The coronal reconstruction varies from direct composite resins restorations to indirect restorations (veneers, inlays, crowns) in severe cases. **The aim of this study** is to present and discuss a clinical case of dental erosion produced by GERD (gastro oesophageal reflux disease) associated with frequent consume of acid foods (citrics). **Conclusions.** The treatment of dental lesions produced by erosions, using non-prep ceramic micro-veneers, represent an affordable, esthetical, biological and functional therapeutic solution, with optimal results both for patient and dental team.

**Key words:** dental erosion, wine, salivary micro-crystallization index, remineralization.

### INTRODUCTION

Dental erosion is a dental non-cariogenic lesion produced by internal (gastro oesophageal reflux, regurgitations, gastro-intestinal diseases, symptoms associated to bulimia) or external factors (foods, beverages, erosive drugs)[1-7]. Gastro oesophageal reflux disease (GERD) is associated with chronic regurgitations and continuous exposure of teeth to acids. In many cases, dental erosions are produced by the association of acids action with mechanical factors. The excessive consume of acid foods and beverages produces a 1 mm loss of enamel on a time interval between 2-20 years. Also these patients are affected by the decrease of saliva quality (buffering) and quantity [8-11]. Also the teeth position influences the rate of dental erosion [4,6]. The dental abrasion, produced initially by bruxism will accelerate enamel loss if erosion processes are associated. In

these situations the clinical aspect and distribution are important for an accurate diagnostic [6,10]. The dental erosions on oral surfaces of frontal maxillary teeth are associated to bulimia, and dental erosions on lateral surfaces of molars or bicuspid suggest the existence of gastro oesophageal reflux [12-17].

The treatment of non-cariogenic lesions is complex. It will include the removal of causal factors and preventive-therapeutical measures aiming to increase the resistance of dental tissues by remineralization. The coronal reconstruction varies from direct composite resins restorations to indirect restorations (veneers, inlays, crowns) in severe cases [17-20].

The use of ceramic veneers for treatment of dental erosions is limited only for cases characterized by certain clinical and functional parameters. The major factor that hinders their use is occlusal parafunctional activity. However the significant advantages of ceramic veneers (durability, esthetics, price

decrease) determined the increase of patients request in last ten years [21]. The evolution of veneers started with first acrylic veneers performed in 1938 by Pincus Charles for Hollywood actors [22] to actual ceramic veneers supported by latest technology [23-32].

**The aim of this study** is to present and discuss a clinical case of dental erosion produced by GERD (gastro oesophageal reflux disease) associated with frequent consume of acid foods (citrics).

#### Case presentation

Patient PA, age 21, student, examined in Restorative Dental Clinic of Dental Clinical Base M.Kogălniceanu, UMF Iasi, for esthetical disorders to frontal maxillary and mandibular teeth, and generalised hypersensitivity in cervical dental areas.

After clinical dental exam and anamnesis (including diet data), patient was submitted to clinical and paraclinical exam by gastro-intestinal doctor. It were performed intraoral and extraoral photos, impressions for study models and panoramic radiographs (fig.4,5).

After complete diagnostic, a complex treatment plan was planned. The focus was on the GERD therapy, followed by dental patient education, diet advices and esthetical analysis performed by the team patient- dentist -dental technician.

For this clinical case it was possible to indicate indirect E-max ceramic micro-veneers by no-prep method as patient presents mild

sagital inoclusion to maxillary incisive. The written consent of patient was recorded after presentation and explanation of treatment plan.

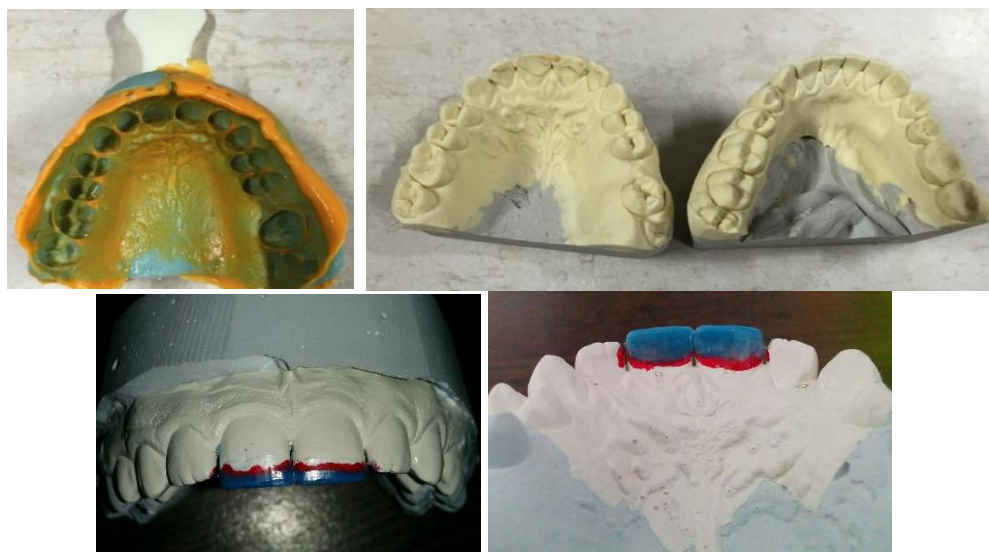
The future stage consists in the performance by dental technician of diagnostic wax-up helping to the analysis of real clinical situation and to preview final esthetical result (fig. 6,7). Starting from this initial model, dental technician can propose changes of shape and position. It is recommended that dentist will realise temporary direct veneers, transforming wax-up in diagnostic mock-up (fig. 8-12). The patient will preview and will accommodate to the future final veneers. Also patient will accommodate with the new dental contacts, helping him to avoid future imbalances and parafunctional occlusal loading.

The dental exam highlighted the presence of moderate loss of enamel and dentine to the level of incisal edge and oral surface of frontal teeth with highest loss on maxillary frontal teeth (slight incisal edge and oral surface, lower vertical dimension) (fig.1-3). The dental erosions are associated with mild hypersensitivity located on cervical buccal and oral surfaces, following toothbrush and cold stimulus.



**Figures 1-3.**Initial: Moderate dental erosions located on incisal edge and oral surfaces (1.1, 1.2.)

**Figures 4, 5.** Preliminary impression. Study models.



**Figures 6,7.** Performance of wax-up models for future restorations.



**Figures 8-12.** Temporary acrylic veneers (mock-up)

The performance of temporary veneers (fig.8-12) allows fittings in shape and length. These temporary veneers will be fixed for a

few hours with limited functional roles. The aim is to test length, shape and position of incisal edge and oral surfaces. Following final



agreement of patient, ceramic e.max Press (Ivoclar-Vivadent) micro-veneers were

performed (fig. 13-18).



**Figures 13-18.** Stages of veneers performance of veneers.

The preparation of the two surfaces (veneer-tooth) for cementation will influence final result and the durability of the ceramic veneers. After initial checking, using Try-in

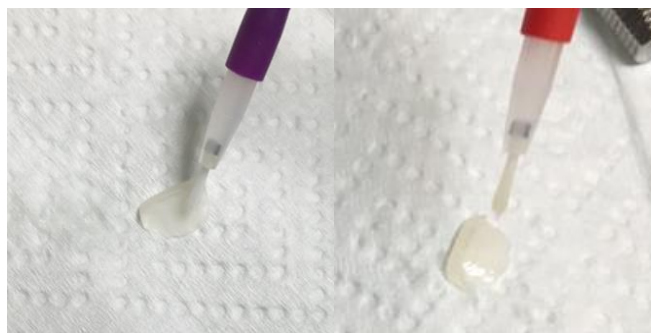
paste (Variolink Veneer/Syntac, Ivoclar), the internal surface preparation by water washing, acid conditioning, silanising (nobond Plus, 60 seconds) and drying with air spray.



**Figure 19.** Cleaning the internal surface of the veneers with the steamer



**Figura 20, 21.** Cementing Dental System Variolink Veneer/Syntac (Light-cure Resine Cement) Ivoclar



**Figures 22, 23.** Veneers internal surface preparation: Monobond Plus, 60 sec, dry, Heliobond.

The preparation of internal surface is performed after washing, isolation and drying, following next stages: conditioning with Enamel Total Etch (Variolink Veneer Ivoclar) for 30 sec, washing, drying (fig.24-27), application of layer Syntac Primer (Variolink

Veneer Ivoclar) (fig.28), 15 sec, drying, application of layer Syntac Adhesive, 10 sec (fig.29), drying, application of layer Heliobond Enamel and dentin (Variolink Veneer Ivoclar).



**Figures 24-29.** Preparation of teeth surfaces: conditioning, washing, drying, Syntac Primer application, drying, Syntac Adhesive application, drying, Heliobond Enamel and dentin application

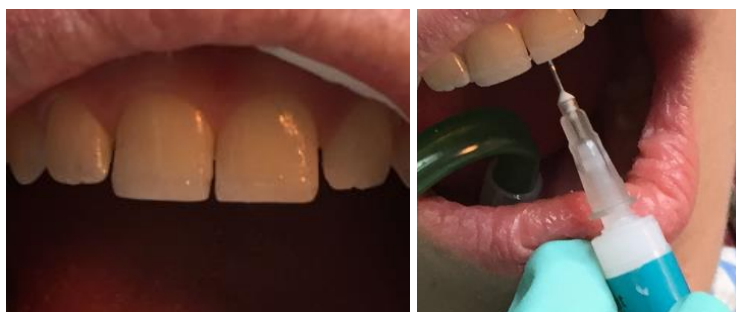
They have chosen the adhesive fastener, thanks to the cementing dental system Variolink Veneer/Syntac (Light-cure Resine Cement) Ivoclar (fig.30)



**Figure 30.** Cement insertion (Variolink Veneer) on internal surface.

The cemented veneers are applied on the already prepared dental surfaces by pressing slightly until they are perfectly

fixed. They get photopolymerised shortly, for 3 seconds until the cement turns into a jelly. The excess of the cement is removed. A jelly, Liquid Strip (fig. 32), is applied at the joint between the tooth and the veneer in order to finalise qualitatively the process of polymerising. It ensures the absence of the superficial unpolymersed layer, thanks to the lack of oxygen. They get finally photopolymerised for 30 seconds. After that, the surfaces are adjusted, brushed up and polished using flap discs and special gums especially designed to brush up and polish the ceramics having different grains D-Fine Double Diamond from Clinician's Choice, Canada (fig.33-37).



**Figures 31, 32.** Check-up, fitting, cementation.





**Figures 33-37.** Fitting, polishing.



**Figura 38-40.** Final aspect.



**Figure 41.** Final aspect after 12 months .



## DISCUSSIONS:

Due to many advantages, like superior esthetics, biological properties, durability (even in thin layer), veneers are one of the most requested therapeutic solution. Following the new technologies, veneers can be used in clinical situations that were impossible to be treated before with this therapy.

An excellent result can be obtained on long-term, if indications are respected (accurate material selection, precise performance of laboratory and cabinet stages)

Nowadays can be performed various categories of veneers, related to clinical situations and patients individual particularities. The therapeutic solutions can vary from incisal-buccal or incisal-oral micro-veneers (partial veneers), no-prep veneers, proximal micro-veneers, buccal veneers or extended veneers. All these veneers categories are now included in category BRP (Bondet Porcelain Restoration)[21].

The choice of veneer category must be related both to material esthetics and resistance as well as to requested space and presence/absence of occlusal forces or parafunctional loading.

Regarding the laboratory techniques, most ceramic veneers are divided in three

categories: press-ceramic veneers, veneers performed by burning in successive layers (laminated veneers) and veneers performed by abrading technique.

The press-ceramic veneers are most appreciated due to resistance, esthetics, reduced working time, possibility to be performed in various thickness (from 0,8-1 mm when requested resistance to 0,3 mm for non-prep veneers).

The cementation stage is important due to special preparation of the dental surface and internal surface of veneer, to obtain maximum adhesion.

Some recent studies [21, 31-40] confirmed high success rate on long-term, if indications and material selection are respected and the cabinet and laboratory techniques are accurately performed.

## CONCLUSIONS:

The treatment of dental lesions produced by erosions, using non-prep ceramic micro-veneers, represent an affordable, esthetical, biological and functional therapeutic solution, with optimal results both for patient and dental team.

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