



ISSN: 0975-833X

CASE REPORT

DIREST COMPOSITE VENEERS AS TREATMENT OF EXTENSIVE EROSION ASSOCIATED WITH PEPSI SOFT DRINKS INTAKE

Prof. Roula albounni, B.D.S, M.D.S, PhD. and *Dr. Mona T. ALdaijy BDS.

Department of Restorative, Riyadh Colleges of Dentistry and Pharmacy, Riyadh- Kingdom of Saudi Arabia

ARTICLE INFO

Article History:

Received 20th September, 2014

Received in revised form

15th October, 2014

Accepted 05th November, 2014

Published online 27th December, 2014

Key words:

Composite Veneers,
Dental Erosion,
Soft Drink.

ABSTRACT

Many articles revealed the effects of soft drinks on the tooth structure as direct cause for extensive abrasive lesions, this study presents a case report of a patient with extensive erosion in the maxillary anterior teeth due to the consumption of soft drink (Pepsi). The lesions were managed by using direct composite veneers after controlling the reason of Erosion by stopping the consumption of the meant soft drink.

Copyright © 2014 Roula albounni and Mona T. ALdaijy. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Dental Erosion is one of the types of Tooth wearing, it's one of the etiological factors implicated in tooth surface loss, Erosion usually results from acids acting on the tooth surface. Extrinsic sources usually the acids included in food and drinks, medications and environmental acids (Zero, 1996). Intrinsic¹ sources always include regurgitation associated with eating disorders, gastro esophageal reflux disease (GERD), pregnancy sickness, chronic alcoholism, hiatus hernia and voluntary regurgitation (Neil *et al.*, 2004). The most common reason of erosion in young people is acidic beverages such as soft drinks and fruit juices which as has been reported the main cause of enamel loss. that's where the PH of these drinks below 5.5, so it's very easy to start the demineralization of enamel (Birkhed, 1984; Milosevic, 1997; Milosevic *et al.*, 1997) also the previous studies revealed that erosion almost correlates with the frequency and amount of soft drink intake (Milosevic, 1997; Milosevic *et al.*, 1997). The evidence shows that the consumption of soft drinks is in continuing increase upward trend in several countries (Milosevic, 1997). The dental sequence of erosion is manifold as follow:

- loss of enamel with progressive exposure of large dentin surfaces.
- loss of occlusal facial and lingual tooth anatomy with impact on function and esthetics
- shortening of teeth with impact on function and esthetics
- adaptive teeth displacement with impact on occlusion and esthetics.
- discoloration of exposed dentin surfaces.

Changes in color, shape, and structural abnormalities of anterior teeth might lead to important esthetic problems for patient (Yuzugulu and Tezczn, 2005). In order to solve these problems, the technique preferred frequently to treat the teeth by dental crowns, but the excessive preparation of teeth and damage of surrounding tissues as gingiva are some disadvantages of crowns (Arestidis and Dimitra, 2002). Therefore in recent years laminate veneers an additional adhesive cementing system are some advantages of this technique (Hickel *et al.*, 2004). Laminate veneers restorations have two different types: direct and indirect laminate veneers. Direct Laminate veneers are applied on prepared tooth surfaces with composite resin material directly in dental clinic. Absence of necessity for tooth preparation, low cost for patient, Intraoral polishing of direct laminate veneers is easy to use, and any cracks or fractures on the restorations may be repaired intraorally are some advantages of this technique, however, the main disadvantages of direct veneers are low resistance to wear, discoloration and fractures (Jordan, 1993).

*Corresponding author: Dr. Mona T. ALdaijy BDS.

Department of Restorative, Riyadh Colleges of Dentistry and Pharmacy, Riyadh- Kingdom of Saudi Arabia.

Indirect laminate veneers with high resistance against attrition, fractures and discolorations have some advantages compared with direct veneers (Jordan, 1993). However long chair time, cost and use of an adhesive cementing system are the main disadvantages of indirect laminate veneers. Every new material or technique introduced to field of dentistry aims to achieve esthetic and successful dental treatments with minimal invasiveness. Therefore, direct laminate veneers have developed for advanced esthetic problems of anterior teeth (Arestidis and Dimitra, 2002). Tooth discolorations, rotated teeth, coronal fractures, congenital or acquired malformations, diastemas, discolored restorations, palatally positioned teeth, abrasions and erosions are the main indications for direct laminate veneers (Arestidis and Dimitra, 2002). This case report describe the management of extensive loss of tooth structure due to erosion, caused by prolonged consumption of soft drink (Pepsi), treated by composite laminate veneers and success of six month follow up is discussed.

Case Report

A 32 year old female patient reported to the clinics of dentistry and pharmacy colleges seeking for esthetic treatment of her front teeth, she complained from bad appearance of the anterior teeth, wearing, discoloration, fracture, and the demands of frequenter changes of old composite restorations on her front teeth, she was looking for steady solution for her dental problems, after asking about her diet, nutrition habits and home care, she stated that she used to drink some kinds of soft drinks (Pepsi) from the bottle directly without using straw, so she noticed the loss of her front teeth over a period of time, the patient also gave a history of repetition caries on tow central incisors due to severe erosion, on enquiring about her brushing habits, she stated that she brushes her teeth twice a day once in the morning and once in the night, on intra oral examination, we noticed severe erosion on all maxillary anterior teeth (Figure 1). On enquiring the patient about sensitivity, she didn't report any dentinal hypersensitivity. Also there were distinct recurrent caries on all anterior teeth, some of the maxillary and mandibular posterior teeth were decayed, on enquiring patient reported that these decayed teeth were present prior to drinking soft drinks, on extra oral examination no abnormality was detected, the facial profile was normal. pulp sensitivity test was done in relation to maxillary and mandibular anterior teeth using ethyl chloride, which shows a positive response on all anterior teeth due to the erosion there was loss of enamel in some areas in front teeth, the dentin was soft and friable. Based on clinical examination and patient history, we put the final diagnosis as severe erosion due to soft drink intake.



We instructed the patient to stop the consumption of soft drink first and she was full agreeing about that, according to the patient's history, she replaced the composite restorations many times during the last fifteen years and the patient's chief complaint was the unaesthetic appearance of the restorations. She rejected ceramic laminate veneers or ceramic crowns as treatment options due to their high cost. The remaining tooth structures were adequate in all teeth for composite laminate veneers restorations. The patient was recalled after a week for composite veneers.

Following local anesthesia for maxillary front quadrant and due to the mechanism of the technique of direct composite veneers, we couldn't apply the rubber dam as isolator, we used the resin insulator instead to isolate the soft tissues, Shade selection (A2) was done using the shade guide (ivoclar, vivadent). After removing the caries and excavating the soft dentin by high speed hand piece (NSK Pana Air, Japan) and round diamond bur under water cooling. Cervical borders of the preparation were arranged by light chamfer finish line only at the level of the gingiva by setting a cervical step without impinging on the natural gingival contour. start to apply the composite restorations as a body in those cavities, then we started the technique of final composite veneers, A total etch technique was employed using 37% phosphoric acid gel which was applied with syringe for 15 seconds, rinsed with water for 10 seconds and dried slightly. One- bottle bonding agent (Adper Single Bond, 3M ESPE, USA) was applied in two layers on the prepared tooth surfaces and each layer was cured for 20 seconds using LED lamp. Then A2 shade of composite resin (ceram x duo- Dentsply, Konstanz, Germany) was applied gradually on the whole facial surfaces and cured for 60 seconds. After that we finished the composite veneers by using the finishing burs first then by (Sof-Lex) disks (3M ESPE), the final polishing was accomplished using the rubber points and cups. As we said earlier, patient was instructed in oral hygiene and about erosive, staining effect of pepsi, smoking and tobacco on composite resin and advised not to use them further, she was scheduled for control appointments once every 6 months. So the conservative approach of composite veneers was used for restoring maxillary anterior teeth which were eroded due to the erosive effect of (Pepsi) and the esthetics was reestablished, and the patient was very pleased with the current esthetic situation of her teeth.

DISCUSSION

Severe erosion is one of the major dental problems that may have different causes. People who are at risk are individuals who habitually take acidic products or those who frequently regurgitate the acid and exhibit gastric symptoms (Javinan *et al.*, 1991), it's important to diagnose erosion at an early stage and to identify the risk factors. Early diagnosis increases the prospects of successful treatment and reduces the complications associated with mechanical investigation (Hayashi *et al.*, 2007), it's very clear that the routine consumption of acidic drinks may increase the risk of dentin loss and the risk of dentin demineralization and caries (Mc Andrew and Koukouta, 1995; Mordan *et al.*, 1997), as some articles revealed that soft drinks have been reported to have low PH (2.4) and high buffering capacity. They are sweetened

with highly refined carbohydrates (sucrose and glucose) which has strong impact to enamel surface dissolution.

In the present case patient used to drink Pepsi drink directly from the bottle without using straw. Hence the severity of the erosion which is seen on the labial surfaces of the maxillary anterior teeth in the present case may be attributed to the type of drinking habit by the patient. Also in the present case, erosion was more extensive in the anterior region, as the enamel here is thinner and is more susceptible to surface loss. When we looking for minimal invasive approach, direct and indirect laminate veneers are recommended. They are, as esthetic procedures, have become treatment alternative solution for patients with esthetic problems of anterior teeth in recent years. (Zero, 1996; Neil *et al.*, 2004; Birkhed, 1984; Milosevic, 1997; Milosevic *et al.*, 1997). To select the best treatment option for those problems we should demonstrate the advantages of each option, the cost, social and time factors must be considered (Zero, 1996). Although ceramic laminate veneers restorations have some advantages like color stability and high resistance to abrasion and many other benefits, they also have some disadvantages like cost, time consuming, and invasive preparation if compared with direct veneers (Zero, 1996; Neil *et al.*, 2004; Hayashi *et al.*, 2007). On the other side, Composite laminate veneers are conservative, could be repairable, with low cost and saving time, nowadays, composite resins correct existing deficiencies, increase the physical properties and more esthetic options instead of laminate veneer applications. (Robb *et al.*, 1991) additionally, today's dentistry requires more conservative treatment options (Hayashi *et al.*, 2007). However, direct composite laminate restorations have still less resistance against abrasions and fractures compared with indirect composite laminate veneers and ceramic laminate (Zero, 1996; Neil *et al.*, 2004; Birkhed, 1984; Milosevic, 1997; Milosevic *et al.*, 1997; Yuzugulu and Tezcan, 2005; Arestidis and Dimitra, 2002; Hickel *et al.*, 2004; Jordan, 1993; Javinan *et al.*, 1991; Hayashi *et al.*, 2007)

Therefore, composite laminate veneer restorations, which require minimal removal of tooth structure, are one of the best treatment choices (Zero, 1996; Neil *et al.*, 2004). With other advantages such as only one appointment for the whole treatment time, very low costs compared with the ceramics and no need for long laboratory procedures, direct composite laminate veneers are more popular in today's dentistry. Hence in this case composite veneers were placed. This esthetic treatment modality contributed the patient a clear positive effect upon his self-esteem. The discoloration was the most distinct complication on the 6th-month recall visit, it could be related to the insufficient dental hygiene. These were the discolorations which can be easily removed by slight polishing. the patient was instructed in the perfect use of brush and toothpaste.

However, long term follow up is necessary to evaluate the advantages of composite resin veneers for eroded teeth. So from the previous report, although there are some disadvantages, especially discolorations and fragility, with the development of new composite resins, direct laminate veneers restorations can be a treatment option for patients with esthetic problems of anterior teeth.

REFERENCES

- Arestidis, G.A. and Dimitra, B. 2002. Five –year clinical performance of porcelain laminate veneers. *Quint Int.*, 33:185-9.
- Birkhed, D. 1984. Sugar content; acidity and effect on plaque PH of fruit juices; fruit drinks; carbonated beverages and sport drinks. *Caries Res.*, 18: 120-127.
- Hayashi, M., Shimizu, K., Takeshige, F. and Ebisu, S. 2007. Restoration of Erosion associated with Gastroesophageal reflux caused by Anorexia nervosa using Ceramic Laminate veneers: a case report. *Oper. Dent.*, 30(3): 306-310.
- Hickel, R., Heidemann, D., Staehle, H.J., Minnig, P. and Wilson, N.H.F. 2004. Direct composite restorations extended use in anterior and posterior situations. *Clin. Oral Invest.*, 33:185-9.
- Javanian, V.K. and Rytomaa, Heinonen, O.P. 1991. Risk factors in dental erosion. *J. of Dent Res.*, 70(6):942-947.
- Jordan, R. E. 1993. Mosby-year book, Inc: Esthetic composite bonding techniques and materials, 2nd ed. St. Louis: 84-6,132-4,140,150.
- Mc Andrew, R. and Koukouta, S. 1995. Effect of tooth brushing prior and or subsequent to dietary acid application on smear layer formation and the patency of dentinal tubules: an SEM study. *J. Periodontol.*, 66: 443-448.
- Milosevic, A. 1997. Sports drinks hazard to teeth. *Br. J. Sports Med.*, 31:28-30.
- Milosevic, A., Kelly, M.J., Mclean, A.N. 1997. Sport supplement drinks and dental health in competitive swimmers and cyclists. *Br. Dent J.*, 182:303-308.
- Mordan, N.J., Barber, P.M., Gillam, D.G. 1997. The dentin disc. A review of its applicability as a model for in vitro testing of dentin hypersensitivity. *J. Oral Rehabil.*, 24: 148-156.
- Neil, J.P., David, R.N. and Peter, F.A. 2004. Medicinal Erosion: A Case report. *Eur. J. Prosthodont. Rest Dent*, 12(3):96-100.
- Robb, N.D., Cruwys, E., Smith, B.G.N. 1991. Regurgitation erosion as a possible cause of tooth wear in ancient British populations. *Arch Oral Biol.*, 36:595-602.
- Yuzugulu, B. and Tezcen, S. 2005. Renk degisimin ve mine erozyona ugramis dislerde laminate veneer restorasyon seceneklerin endikasyon bakimindan karsilastirilmasi. *Cu Dishek. Fak Der.*, 8 133-7.
- Zero, D.T. 1996. Etiology of dental erosion. Extrinsic factors. *Eur. J. Oral Sci.*, 104:162-177.