

Research Article**In Vitro Comparison of Microleakage of Two Type Sealants “Concise” and “Embrace” (Wet Bond) in Saliva Contamination****Tahereh Masum¹, Tayebeh Sajadi^{2*}, Nafiseh Elm Amooz³**

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Email: sajaditayebeh@gmail.com**ABSTRACT:**

Background and goal: dental caries is the most common chronic childhood disease. The use of fissure sealants and fluoride therapy is the most important ways to prevent decay. One of the reasons for the failure of fissure sealant etched enamel to saliva contaminated and to reduce the adverse effects of saliva contamination of the sealant and adhesive materials and the use of sealants which are less sensitive to moisture is recommended. This study aimed to compare two type of microleakage sealant wet bond in condition contaminated with saliva and Concise that is conventional sealant.

Materials and Methods: 80 healthy human premolar teeth were divided randomly into two groups of 40, both groups after etching with 37% phosphoric acid, fissure contaminated with human saliva and a group with sealant embrace and second group with concise were sealed. Sealed teeth were under thermal cycles (500 cycles 5 and 55 °C), then all surfaces with the exception of 1.5 mm around the sealant was covered with two layers of nail varnish and after the apex teeth sealed with wax. Then for 24 hours after dye 0.5% was submerged. The teeth were cut with a diamond disc for buccolingually amount of the fine was meeting every tooth stereo microscope.

Results: The embrace sealant less than concise session was fine and this difference was statistically significant $p = 13\%$. It is noteworthy that 54 percent of teeth were sealed with embrace color did not show any influence; while 31 percent of teeth were sealed with concise Microleakage were equivalent to 0 degrees.

Conclusion: While there is no possibility of complete isolation from saliva, in order to reduce the amount of fine fissure meeting, embrace sealant, which can be wet bonding property, is used instead of conventional fissure.

keyword: Microleakage, Sealants Concise, Embrace, Saliva

[I] INTRODUCTION:

Dental caries is the most common chronic disease of childhood asthma and seven times fever is prevalent 1 to 5 times. Occlusal surfaces of dental caries lesions 56 to 70 percent of children 5 to 17 years old formed 2. Use of sealants with fluoride therapy, occlusal and proximal surfaces the main way to prevent dental caries 3. Fissure sealants have the ability to connect mechanically etched

enamel and through this connection and seal the fissure caries are prevented 4. The ability to inhibit caries and fissure sealant to the quality of the mechanical connection as a result, there is no gap between the sealant and enamel etching and to reduce the fine depends meeting 5. Several studies have shown that dental pulp reaction to restorative materials depends on the amount of micro leakage

6. Small meeting could influence saliva, bacteria, molecules and ions as a result of fissure caries and fracture 4. Some studies have suggested that adding a layer of adhesive before putting sealant above the quality of the connection and reduce leakage 7. In addition, the mechanical removal of debris from the tooth surface sealant before making an important impact and increase retention and reduce the leakage of the sealant 8. Due to the problems of isolation in children and increase working time for bonding agents, sure sealants released which is less sensitive to moisture and a good connection with enamel isolation have sufficient even in environments lacking. Pulp dent a wet bond fissure sealant factory in 2001-2002 was announced the binding properties of wet enamel 9. The sensitivity of the occlusal surface of teeth to dental caries and pocket depth depends on the form the depth and direction of occlusal groove, the surface is ready for the retention of dental plaque and thus rots 10. The v-shaped grooves are shallow and wide and on their own are clean and somewhat resistant to decay. It form deep and narrow slots and similar containers, and are susceptible to dental caries 10. Today, the most popular and most common method for evaluating small meeting dye penetration 11 this method also has the sensitivity proper techniques 9. The exposure time varies depending on the concentration 11. This study intends to resolve the problems of small children sat in the fissure sealant application embrace (wet bond) and concise environments contaminated with saliva in the study.

[II] RESEARCH METHODOLOGY

In this study two sealants examined. Embrace sealant without Bisphenol A is a glass-filled sealant and fluoride release is the power light is hard. The manufacturer's pulp dent claims this month acidity and the presence of moisture activated. The contact angle between the sealant and tooth structure is low and this leads to reduced compliance and leakage are desirable marcial. The sealant containing acrylate monomers Fankshna

and an advanced network is hydrophilic unlike conventional sealant only in dry environments and mechanically connected to enamel it also mechanical; chemical both in moderately moist environments can be connected to the enamel. This study is the second in St. Concise sealant manufactured by 3M and its base is Bis-GMA. The hydrophobic sealant is hardened by light. The study on 80 healthy human premolar teeth had been extracted for orthodontic reasons. Teeth after being drawn in a sodium chloride solution 0.9% were stored at room temperature. The teeth were divided randomly into two groups of 40 at the first stage both groups similarly, the process of cleaning occlusal and fissure preparation with phosphoric acid Zell/37 phosphoric acid washed for 15 seconds. Then Zell and by spray dried air and were infected by the human saliva. In the second stage one of the groups were sealed with sealant embrace according to the manufacturer's instructions and with the intensity of light curing units with 400 MW/S were cured for 40 seconds. The second group was sealed by the sealant concise and intensity of light curing unit's 400 MW/S was cured for 40 seconds. After performing these steps for a week, all teeth were immersed in sodium chloride solution 0.9 percent. Then, it is under thermocycling (500 cycles- 5 and 55 ° C). Each thermal cycle lasted 80 seconds, as 30 seconds and 30 seconds at 5 budget at 55 ° and 20 seconds at room temperature (25 degrees). Then the apical part of the roots of teeth and the outer surface of the teeth were sealed with wax sealant 1.5 mm edges were covered with two layers of nail varnish. After drying varnish and dye samples for 24 hours at the game 0.5% were submerged. The teeth were then washed and dried and diamond disc two proximal and central buccolingual cut just under a stereo microscope to check for leakage of samples X40 magnification viewed by an observer at two different times and was ranked.

Gradation of color depth;

Grade 0; No dye penetration

Grade 1; Dye penetration limited to exterior sealant 2.1

Grade 2; color penetration 2.1 of interior sealant

Grade 3; Dye penetration depth of the groove and the sealant

Data collected and analyzed by SPSS 13 statistical program and because of the nature of the non-parametric Mann Whitney ratings of leakage test was used.

[III] RESULTS:

54 percent of teeth were sealed with Embrace did not show grade 0 microleakage

32 percent of teeth were sealed with Embrace showed grade 1 microleakage.

5 percent of teeth were sealed with Embrace showed grade 2 microleakage.

9 percent of teeth were sealed with Embrace showed grade 3 microleakage.

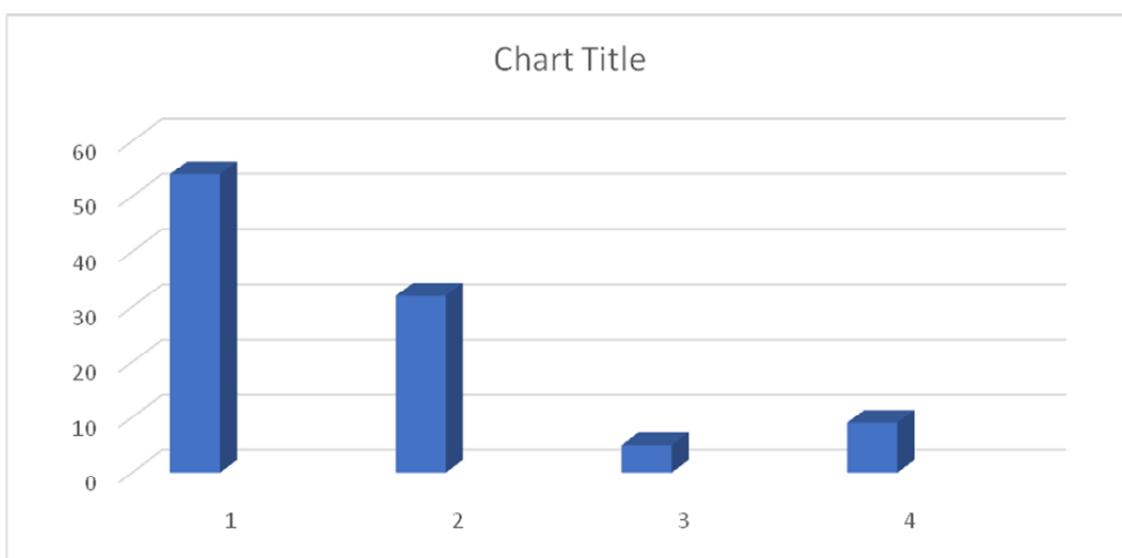


Figure 1: Microleakage Embrace

31 percent of teeth were sealed by the concise did not show microleakage (grade 0)

32 percent of teeth were sealed by the concise microleakage grade 1

5 percent of teeth were sealed by the concise microleakage grade 2

32 percent of teeth were sealed by the concise microleakage grade 3

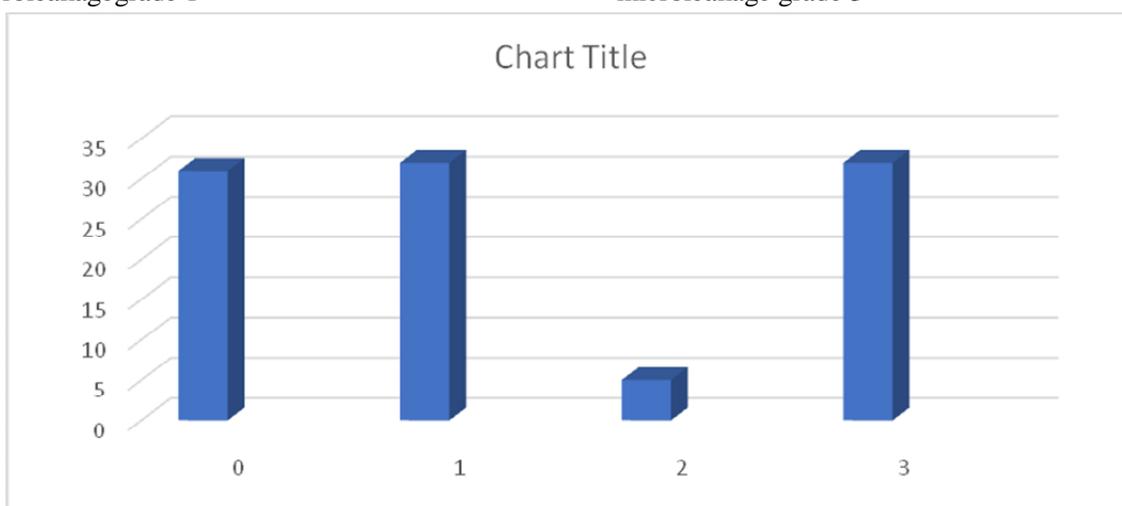


Figure 2: Microleakage Consise

The chart below compares different degrees of leakage has two types of sealant it is obvious

that there is a significant difference between the two types of sealant leakage condition is

contaminated with saliva.

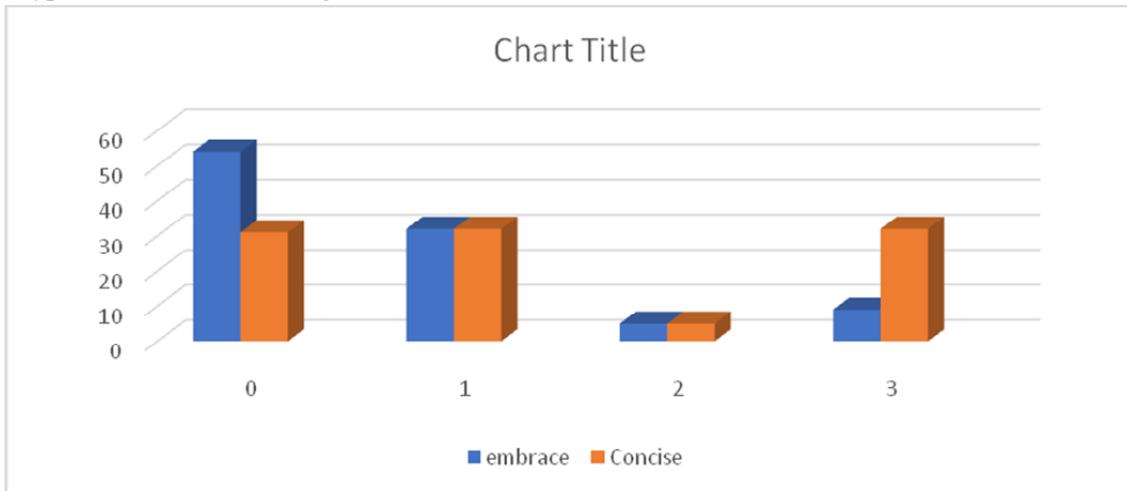


Figure 3: Microleakage Embrace & Concise

P-value	Average rating micro leakage	Number	Type of sealant
P= 0.013 significant	35.35	40	Embrace
	47.65	40	Concise

Table 1: Comparison of two types of sealant leakage rate in infected saliva Embrace and Concise

Embrace sealant contaminated with saliva in less leakage compared to sealants Concise shown and this difference is statistically significant and P is less than 0.05.

[IV] DISCUSSION:

The lack of saliva contaminated enamel etching has been reported sealants 4. Some researchers sealant and one way to reduce the sensitivity to moisture from saliva contaminated enamel surface prior to sealant bonding agents as have invested 12 13 14 but the problem is that this method is the addition of a business process and increase the time the seat 12. Sealant Embrace (wet bond) is a type of glass-filled resin that has the ability to release fluoride. Its acidity and the presence of moisture is activated. The sealant contains an advanced network is hydrophilic unlike conventional sealant that can be relatively humid environments chemically and mechanically connected to the enamel and matching tooth structure establish appropriate marcial 9. Unlike conventional sealants that are hydrophilic and hydrophobic sealant makes Embrace use it in saliva contaminated conditions partly offset the negative impacts and improves connection quality sealant to the tooth structure

and reduce leakage 9. Coarson et al in 2002 micro leakage and leverage are two types of sealant Delton Embrace and compare the results of their study suggests superior quality sealant Embrace connection to Delton 15. Joseph P et al in 2005 for two years on a retrospective study conducted clinical value sealant Embrace and their study showed that 100% of the teeth after two years and 94 percent had no caries were intact and had a good marcial 16. Boren LM et al., 1994, Concise sealant microleakage in saliva contaminated conditions and bonding agents studied and they concluded that in terms of leakage Concise contaminated with saliva without the use of bonding increases 17. Nefrieh study in 1384 showed that saliva contaminated conditions can be used without the use of bonding of the sealant Embrace well 18.

[V] CONCLUSION:

Complete isolation is not possible in the absence of saliva instead of conventional sealant and

better bonding of the sealant embrace sealant used because it has the ability to release fluoride and without the need for mechanical and chemical bonding agent can connect enamel. In the end, it is suggested that resistance to sealant retention embrace studied and also microleakage sealant embrace studied by other methods of microleakage assessment.

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