ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 7(E), pp. 28077-28081, July, 2018

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

PREVENTIVE ATTITUDE IN STAINED PIT AND FISSURES OF YOUNG PERMANENT TEETH

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DOI: http://dx.doi.org/10.24327/ijrsr.2018.0907.2389

ARTICLE INFO

Article History:

Received 4th April, 2018
Received in revised form 25th May, 2018
Accepted 23rd June, 2018
Published online 28th July, 2018

Key Words:

Enameloplasty, sealing, minimally invasive techniques, preventive restoration

ABSTRACT

Introduction: The aim of this study was to underline the new modern trend of using minimally invasive techniques in stained pits and fissures of dental surfaces. The remove of stains from pit and fissures helps the practitioner to identify the presence and the depth of carious lesion, and to make the proper decision of treatment.

Materials and methods: 10 young permanent teeth with colored pit and fissures and suspicious caries lesions were elected to be evaluated and treated by minimally invasive techniques. A fine fissure bur was used to remove stains from pit and fissures of the teeth. We used compomer sealant in each situation when preparations were limited to the enamel, and GIC material for preparations which reached enamel-dentin limit.

Results: After removing the stains from pits and fissures, 4 teeth needed enameloplasty sealing, and 6 teeth were treated by preventive restoration. Only 2 pits on vestibular surface were extended to enamel-dentin limit. None of the teeth needed classical restoration, because the lesions were small and confined.

Conclusion: In order to maintain oral health to the patients it is important to make minimum sacrifice of dental hard tissues. Suspicious pit and fissures with brown stains make the decay diagnosis very difficult.

INTRODUCTION

The pits and fissures of dental hard tissues are the most common location for caries, due to their retentive cracked surface. New findings of caries detection, demineralization-remineralization process and clinical management, has led to a change in the therapeutic approach into minimally invasive dentistry. [2]

Minimally invasive dentistry focuses on preventive procedures and minimal intervention on hard tissues. The minimal intervention consists in removing only the damaged tissue of the enamel while preserving the maximum tooth structure. [10] The principles of minimally invasive dentistry refers to early detection of caries, remineralization of early lesions, removing only damaged tooth structure, and use of conservative dental restoring materials. [7]

Many authors studying caries epidemiology suggested the use of sealants in order to prevent pit and fissure caries, especially to the teeth most prone to develop caries.

The presence of brown stains on pit and fissures is not surely associated with dentin damage because is hard to identify the extent and the confines of caries lesions. Enameloplasty or preventive restoration is required in teeth with minimal pit and fissure caries, the use of these preventive technics vary based on the presence and the depth of the carious lesion. [13]

Enameloplasty sealing technique is indicated on teeth with deep and narrow cracks or when we suspect caries on pit and fissure. [14]In everyday clinical practice, the caries management should focus on patient's needs and desires. [1]

MATERIAL AND METHODS

10 teeth, from 4 patients, 1 girl and 3 boys, aged 8 to 14 years old, were included in this study, after informing them, and their parents, about the procedure, with signing their consent. Each patient was visually examined to identify which teeth presented brown stained pit and fissure. We found first permanent molars, second permanent molars and premolars with stains on their surfaces. Also for each colored pit and fissure we used an explorer probe to exam if it sticks or not. The occlusal surface

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of each tooth was cleaned and polished, and then the surface was thoroughly rinsed with water and dried with air.

Next step was to enlarge the pit and fissure by using a specially designed bur, with care and controlled movements, often checking the depth of the removed tissue. After enlarging narrow or colored pit and fissure we decided which minimally invasive technique to adopt depending on the presence and the depth of carious lesion.

Table 1 Evaluation and therapeutic decision on pit and fissures for each tooth

Patient	Tooth	Visually stained pit and fissure	Gentle probing	After removing stains	Therapeutic attitude
Pat 1	16	Occlusal	No sticking	Enlarged pit and fissures	Enameloplasty sealing
	26	Occlusal	No sticking	Enlarged pit and fissures	Enameloplasty sealing
Pat 2	26	Occlusal	No sticking	Enlarged pit and fissures	Enameloplasty sealing
	36	Occlusal	No sticking	Enlarged pit and fissures	Enameloplasty sealing
Pat 3	36	Occlusal, vestibular, mesialdecay	Vestibular pit sticking	Small enamel lesion	Preventive restoration
				Incipient dentin lesion	Preventive restoration
				Incipient dentin lesion	Preventive restoration
	46	Occlusal, vestibular, mesial decay	Vestibular pit sticking	Small enamel lesion	Preventive restoration
				Incipient dentin lesion	Preventive restoration
				Incipient dentin lesion	Preventive restoration
Pat 4	36	Occlusal	No sticking	Small enamel lesion	Preventive restoration
	45	Occlusal	Mesial pit sticking	Small enamel lesion	Preventive restoration
	46	Occlusal	No sticking	Small enamel lesion	Preventive restoration
	47	Occlusal	No sticking	Small enamel lesion	Preventive restoration

For the enameloplasty sealing, and also for the preventive restorations were the lesion was limited to the enamel, we used compomer sealant material. Preventive restorations where the lesions reached the enamel-dentin limit benefited by the use of glass ionomer cement material.

Cases

Patient 1, aged 8

Teeth: 16 and 26, stains on occlusal pits and fissures, stain on palatal pit,

Fig 1 Patient 1.Tooth 16 – occlusal aspect.Colored pit and fissure

Fig 2 Patient 1.Tooth 16, after enlarging pit and fissure

By using a fine fissure bur it was removed only the stain and it was a slightly invasive procedure which needed to be treated by enameloplasty sealing.

Fig 3 Tooth 16, final aspect, after sealing

Patient 2, aged 9

Teeth: 26 and 36, stains on occlusal pits and fissures,

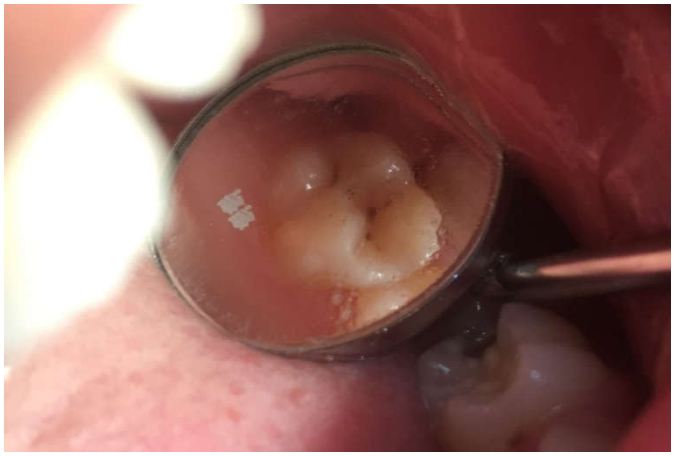

Fig 4 Patient 2.Tooth 26.Occlusal aspect with colored pit and fissure

The remove of stains only enlarged the pit and fissures, so we made an enameloplasty sealing.

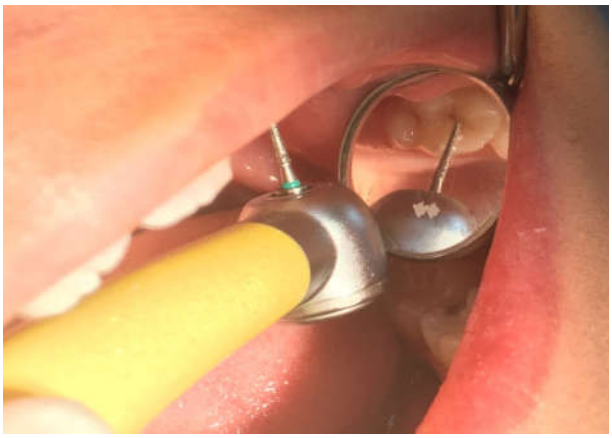

Fig 5 Tooth 26.Removing stains of pit and fissure

Fig 6 Tooth 26.Enameloplasty sealing of pit and fissure

Patient 3, 13 years old

Teeth: 36, 46, colored pits and fissures of occlusal and vestibular surfaces, and one mesial decay

Fig 7 Patient 3. Tooth 46. Tooth stains aspect

On the occlusal surface it was removed a small amount of enamel, the colored tissue, and the therapeutically attitude was to make enameloplasty sealing using compomer sealant. The remove of the colored tissue of vestibular pit revealed a small dentin lesion, which was restored by using GIC material. The tooth had also a small mesial decay which was minimally prepared and filled with GIC material.

Fig 8 Patient 3.Tooth 46. Aspect after preventive preparation

Fig 9 Patient 3.Tooth 46. Final aspect after preventive procedures

Patient 4, 13 years old

Teeth: 36, 45, 46, 47, stains on occlusal pits and fissures,

Fig 10 Patient 4.Teeth 45, 46, 47.Occlusal aspect with colored pit and fissure

Fig 11 Pac. 4.Teeth 45, 46, 47, after enlarging pit and fissure

Each colored pit and fissure was enlarged by using one fissure bur, and after removing the brown stain we found that only a small amount of enamel was needed to be sacrificed in order to reach the health tissue. The decay was limited to enamel tissue and the therapeutic decision was to make a preventive filling using compomer sealant.

Fig 12 Teeth 45, 46, 47, after preventive restoration

After six month each treated tooth was examined aiming to verify the integrity of the restoration and the presence of carious lesions in the pit and fissures. No caries were detected to the visit and the restorations were in good condition.

DISCUSSIONS

The new preventive approach focuses on enameloplasty sealing for caries susceptible pits and fissures. (Priyanka Sharma, 2015) Enameloplasty is a minimum intervention on hard tissues of the tooth, which removes only the colored tissue, and gives the possibility to identify the extent of caries lesion, whether the damaged tissue is limited to the enamel or is it also the dentin affected by a limited lesion. P. Francescut and A. Lussi found in their study that, among dark brown pit and fissures, 57% of the permanent teeth had no caries or had an initial enamel lesion, 30% had a deep enamel lesion, and only 13% had dentin caries lesion.(Paola Francescut *et al*, *2003)*All previous studies showed that there is no evidence related to the presence of dental caries on stained surfaces of the teeth. (Ferreira Zandona AG *et al*, 1998).Brown pit and fissures are rarely associated with the presence of dentin lesions. Most of the colored pit and fissures are only signs of enamel limited lesion. (Rosenstiel SF, 2001).

It is also well known the fact that sticking of the probe is not concluding for the existence of decay. (Miller J and Hobson P, 1956).The tactile examination of pits and fissures with a sharp probe may lead to possible traumatic injuries favoring the caries progression. (Hannigan *et al*, 2000).The improvements in caries diagnosis and therapeutic preventive attitude changed a lot dentistry approaches, so that probing the tooth surface is less used lately. (Jan Kühnische *et al*, 2007)Taken this into account it is compulsory to have a careful approach of stained pit and fissures to make sure we avoid invasive treatment. (Featherstone J D, 2000)Enameloplasty is a successful procedure of pit and fissure sealing, because it reduces microleakages of pit and fissure sealants, especially when load is applied to teeth.(Zervou C *et al*, 2000)

Clinical and epidemiological researchers have found the fact that it is hard to categorize carious diseases into a scale because the caries are progressive illnesses and it is difficult to find the confines of affected tissues. (N. Pitts, 2009)

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How to cite this article:

Adina Magdalena Bunget. 2018, Preventive Attitude in Stained Pit and Fissures of Young Permanent Teeth. *Int J Recent Sci Res.* 9(7), pp. 28077-28081. DOI: http://dx.doi.org/10.24327/ijrsr.2018.0907.2389

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