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RESEARCH ARTICLE

THE STAMP TECHNIQUE FOR DIRECT COMPOSITE RESTORATIONS

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Abstract

Introduction: A high level of aesthetics can only be achieved by refining old techniques and introducing new ones. One of the most recent techniques is the "stamp technique". This is a relatively new method that manages to restore the occlusal anatomy almost perfectly. Although it is practical, it has been adopted by only a small percentage of practitioners.

Methods: This technique was used on two patients with occlusal caries of different severity, which allowed for an esthetic filling with a close approximation of the natural dental anatomy.

Results: An esthetic restoration without retouching and without overbite allowing a hormonal integration in the occlusion.

Discussion: This is because manual restoration in esthetic direct composite is a technique that requires skill and finesse and finishing that is essential for the longevity of the restoration. With the buffer technique the overall time is reduced and the degree of porosity in the restoration is considerably reduced. The purpose of this article is to clarify this technique, to discuss its limitations and indications as to illustrate its protocol through a clinical case.

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Introduction:-

In conservative dentistry, in front of dental caries, a restorative therapy is set up in order to reconstruct lost dental tissues using various biomaterials. Directly on a dental chair, or indirectly in the laboratory, the restorations are sculpted to restore an anatomy as close as possible to the original one, and then they are adapted for optimal occlusal integration.

For the above reasons why not consider the development of a new method of restoration, which could allow an exact rehabilitation identical to the initial dental structure?

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This is the principle of the « Stamp Technique » which succeeds in restoring the occlusal anatomy almost perfectly; this technique consists of making an impression of the decayed occlusal surface, which is then applied to the final restoration composite before it is light-cured to impose the original shape of the tooth.

In fact, the manual restoration in direct aesthetic composite is a technique that requires skills, finesse and a finishing touch that are essential for the longevity of the restoration. With the stamp technique the overall time is reduced and the degree of porosity in the restoration is considerably reduced.

However, the only scenario in which the stamp technique is possible is when the tooth has intact anatomical characteristics and an occlusal surface that is not damaged despite the presence of a carious lesion.

This implies surprise caries with clinically imperceptible cavitation. The technique itself consists of an impression of the occlusal surface in the form of an isomould before any preparation, so that this impression can be used later on to sculpt the future restoration.

This technique presents some benefits such as avoiding the risks and consequences of a posterior restoration that does not meet the physiological criteria of occlusion.

The purpose of this article is to describe the method and present the material necessary for the implementation of a restoration using the stamp technique through 2 clinical cases.

Case Reports

Case n°1

A 25 year old female patient showcased an occlusal and mesial caries on the 37 (Site 1 stage 2 and Site 2 stage 2 according to the Si/Sta classification and class I and II according to Black's classification with preservation of the marginal ridge).

The occlusal anatomy is preserved despite the presence of the carious lesion (figure1), the periapical radiograph confirms the carious damage and gives an idea on its extent (figure2). Before starting the caries' removal, the occlusal surface is saved using a fluid composite. (figure3)

A microbrush is embedded in the material before polymerization to serve as a gripping device. The composite applied to the occlusal surface, without etching or prior application of adhesive, does not polymerize on its own. Once the microbrush is in place, the whole set is light cured so that a precise and resistant mould is obtained. (figure3)

The removal of teeth decay is carried out in a non invasive way in order to save the non decayed tissues. (figure4)

The usual steps of a composite reconstruction are realised, the composite resin is applied layer by layer. (figure5) During the last application and before the light-curing, the ready stamp is repositioned on the occlusal surface, interposing a tape of Teflon in order to avoid the adhesion of the composite of the isomoulding to the composite of reconstitution (figure6) then a light-curing after delicate withdrawal of the Teflon sheet (figure7). Picture after finishing. (figure8)



Figure1 Figure2 Figure3

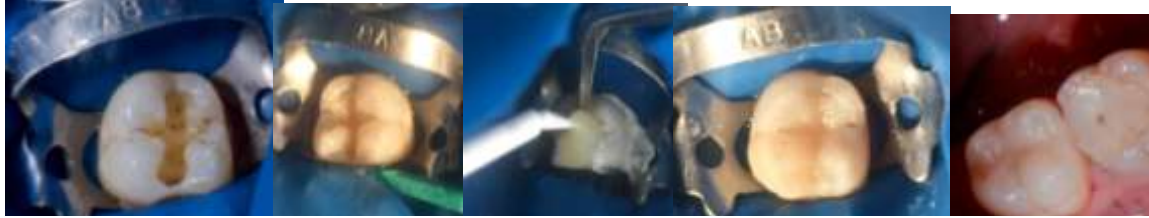


Figure4

Figure5

Figure6

Figure7

Figure8

Case n°2

A 21 year old female patient showcased an occlusal carious lesion on the 26 (Site 1. Stage 2 according to Si/Sta's classification and (Class I) according to Black's Classifications) (Figure 9). To impress the occlusal anatomy a heavy C-silicone key was based with its light silicone to reproduce the relief of the occlusal surface via the good fluidity offered by this material (Figure 11). After isolation of the tooth and removal of decayed dental tissues, the restoration with composite layer by layer was made (Figure 12). During the last application of the composite and before the final light curing, the silicone impression is repositioned on the occlusal surface with digital pressure and then gently removed. (Figure 13 and 14). Picture of the restoration just after the light curing and (Figure 15) a picture after finishing. (Figure 16)



Figure9

Figure10

Figure11

Figure12



Figure13

Figure14

Figure15

Figure16

Discussion:-

The "stamp technique" can be used in multiple cases. It is useful in the case of sulcus caries or hidden caries called surprise and even for proximal cavities where the occlusal anatomy is preserved. (1)

In matter of fact, the preservation of the initial morphology of the original occlusal anatomy is the major asset of this technique (2). Moreover, this method is time saving, once the technique is acquired, since the stamp allows to reproduce the occlusion in one gesture. And with the removal of the Teflon sheet or the key, only the excess composite that has blown off is removed. Also among the advantages we have minimal requirement of finishing and polishing.

This technique also avoids overbite and thus prevents occlusal trauma. (2) In addition, the pressure exerted by the stamp reduces the formation of oxygen bubbles within the composite (4).

The stamp technique does not require any specific instruments for its realization. A microbrush, a flowable composite and a Teflon tape are the minimum required for its realization. It should be noted that the flowable composite used for the realization of the stamp can be replaced by liquid dyke, or acrylic/calcinable resin or even silicones and the Teflon tape can be replaced by stretchable transparent film.

However, the major disadvantage of this technique is its indication, which remains very limited. In actual fact, it must be used on an intact occlusal surface or at least partially intact surface with microscopic tissue lost, i.e. class 1, 2, 3 and 4 of the ICDAS classification (5).

Also, this technique requires some learning time. The development of the stamp and its use are two steps that can be delicate and require a certain dexterity from the operator.

Furthermore, before adding the Teflon tape, it is necessary to know how to manage the quantity of composite to polymerize, without disturbing the insertion of the stamp. The last layer of composite must be as thin as possible (about 1mm) in order to limit the shrinkage stress as much as possible. (6)

Conclusion:-

The impression of a decayed but morphologically intact occlusal surface prior to a restoration offers the ability to achieve a treatment that perfectly meets occlusal expectations. The establishment of this method and the accurate morphological reproduction it offers makes it one of the conservative dentistry techniques to join daily practice of dentists when all the conditions for its operation are met.

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