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New Impression Technique Horseshoe Shaped to Eliminate The Nauseous Risk and Asphyxiation on Dental Office

KEYWORDS: Impression material, Impression technique horseshoe shaped, Nauseous reflexes, Asphyxia.

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ABSTRACT *Evaluate a new technique horseshoe shaped upper mouth printing to remove nauseous and asphyxia risks in patients. Comparison with the traditional technique.*

Material and Methods:

30 patients partially and fully toothed upper maxilla, were examined with two oral records, group A and group B. Group A was printed With the traditional impression technique complete upper jaw, with irreversible hydrocolloid a weight of 36g per 84ml of water.

Group B, 30 records were taken with the alternative printing technique in the same group of patients, but with a weight of 18 g of alginate by 42ml of water, distributing the material in the horseshoe-shaped impression tray.

Results: A and B oral records were observed, as well as the evaluation of nauseous sensation and asphyxia reflexes reflected on the patients at the moment of realizing the clinical procedure. As a result, it was observed a reduction in the nauseous risk and asphyxia sensations in patient examined with B records.

INTRODUCTION

A reflex is an involuntary response to a sensory stimulus, where two types of responses are being generated: muscular (contractile) or secretory (glandular) Certain sensations produce specific muscular responses, many of the child's reflexes disappear as people grow up, but others remain until an adult stage.

The gag reflex, as well as the swallowing corneous reflex and the cough reflex, represents the protection reflexes. These reflexes are associated with cranial nerves and their nuclei are close brainstem. The nauseous reflex, also known as pharyngeal reflex, appears during the 32 weeks of gestations as a protective mechanism from feeding. This reflex appears in the presence of a foreign body, at the moment of enter in the space placed between the oral cavity and the pharynx, previous wall of the veil of the palate, half part from the tongue, floor of mouth, mucous oral placed lingual of the later pieces of the lower jaw, zone of the tuberosity of the maxillary one, soft palate and the later third part of the hard palate.

The pharyngeal reflex, is a reflection of respiratory, easier to evaluate and it is characterized for implying the elevation of the stomach through the stimulation of the whole mouth caused by the presence of a foreign body. The afferent component of the nauseous reflex is regulated by the sensory axons of the glossopharyngeal nerve (ninth cranial nerve) and the efferent component is developed across the vague nerve (tenth cranial nerve).

The nerve that activates the reflex is located in the parasymphatetic portion of the autonomous nervous system. It is shown since birth and it appears in different forms in people, depending on several factors, most of them psychological factors. It can be stimulated it by the touch sense, which stimulates the other senses, taste, smell, sight and hearing. [1]

In the odontologic daily practice, the printing or mouth record is taken with an irreversible hidrocoloide (alginate), elastic printing material. It is an acid alginíco salt in powder, easy to use and with low fidelity, but appropriate for an anatomical printing. At the moment of mixing it with water, the material gelled is as solid as rubber. This product fulfills the norm 18 of the ADA, for the alginates, due to it adjusts itself to the work period lasting from 60 to 90 seconds and its time of coagulation lasts around 15 seconds depending on the manufacturer.[2]

At the moment of taking the upper mouth records, the technique and the excess of the material that moves towards the pharynx during the printing, cause a high nauseous and vomit risk related to a possible asphyxia of the patient.

Exist a high percentage in the dental patient to developing nauseous reflex as a defensive mechanism, which prevents strange substances to penetrate the digestive track or to the respiratory tract, as it happens when the soft palate is stimulated, the Isthmus of the jaws, the wall of the pharynx and the third part of the back the tongue. Generally these zones are touched by the technique and the impressions materials at the moment of taking the upper mouth records. This occurs as the material is introduced in its semifluid condition in the oral cavity, and it is kept in this position until it gelled approximately during 2 minutes, enough time to provoke the nauseous reflex and asphyxia sensation, which endanger the condition and general health of the dental patient.

Nevertheless, there are diverse procedures that an odon-

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tology professional can apply in order to diminish the nauseous reflex in certain procedures; such as, the application of anesthetics in spray in order to decrease the sensibility of the oral mucous and the threshold of appearance of the reflex and to increase the confidence of the patient. Equally, the prophylactic administration of a small dose of 0.5 mg/kg of Propofol, and the design of mouth protectors made with acrylic and silicone, but the disadvantage of this protector is the time of production and if it is going to register the zone of the molars, the protector causes interference for the good adjustment of the impression tray with the impression material.

The nauseous reflex is highly determined by psychological factors. Everything that distracts the attention of the patient from his mouth and throat to another object will diminish the nauseous sensation and vomit.[2]

For this reason, the actual case study proposes an alternative technique of mouth record to diminish nauseous reflex and asphyxia risk every time this procedure is realized in the dental office.

MATERIALS AND METHODS

30 patients were observed partial and totally jagged of the upper jaw, from which two mouth records were taken per each patient, record A and record B, obtaining a total of 60 samples. The conventional impression technique was used, with controlled pressure of the complete upper jaw. The impression material used was alginate, an irreversible Hydrocolloid as the "Alginoplast" of the commercial house Heraeus and impression tray without drilling, brand Rim-Lock ". In every record, the manipulation's technique of the alginate was made according to the manufacturer instructions order to avoid mistakes in the mix. The impression trays were tested and selected according to the size of the upper jaw; then, the alginate was prepared and placed in tray "Rim-lock" to be positioned in the maxillary with the three steps technique, labial right time, left, center and position the back to the front area of the mouth; once it has been placed in its correct position, stop pressuring and it is kept firm and sure, until the material gelled approximately during 2 minutes.[3]

It is necessary to keep the printing in its place, avoiding any movement until the jellification is completed. Patient must never be allowed to hold the printing up.

In the A record, traditional printing technique was used, with a weight of 36 g per 84 ml of water, according to the instructions given by the manufacturer and the material was placed in a traditional way, which means in the whole tray. At the moment of applying this technique, 26 patients presented nauseous reflex and one of them sensation of asphyxia. (Figure 1)

The record B was realized with the alternative printing technique in a horseshoe shape, but with a weight of 18 g of alginate per 42 ml of water, the distribution of the material in the impression tray is made in a horseshoe shape, covering the periphery and placing most of the material in the previous zone of the spoon and diminishing it to the later zone. (Figure 2)

Both impression techniques were realized in the same patient, in order to obtain the precise information from the record; such as, nauseous sensation reflex, and the effect of asphyxia felt during this procedure. Both techniques were realized in the same position of work; that means, the patient was comfortable sat, with the head rested firmly on the compress and totally positioned in a horizontal way, laid on the dental armchair, as it is the position of the work technique of four hands.

Pictures were taken to compare both techniques. But the most valuable information was the one given by the patient expressing the sensations felt during the application of both printing techniques. All the information obtained was registered in a 10 questions survey.

Figure1. The framing is causing excess material gag reflex, vomiting and most dangerous patient asphyxia.

Figure2. With less material and in a horseshoe shape placed, to eliminate the risk of vomiting and asphyxia. Into the circle of free soft palate of the impression material is shown

RESULTS

To realize the evaluation and obtain the precise results due to it is a qualitative research, it was taken into account the following points to evaluate; 1) clinical registration from the impression techniques A and B, to evaluate the quantity of the excess material that moved to the pharynx provoking the nauseous reflex. 2) The sensation experienced by the patient during the procedure, or not he felt vomit sensation or asphyxia during the two different techniques and in both positions during the odontology work, which means, the patient totally laid down. The following results were obtained:

From the A records, realized with the traditional technology, it was observed, once the impression tray was removed from the mouth, there was an excess of material moved towards the later zone, which means the pharynx. In 21 patients, the sensations experienced were nauseous sensation, desire to vomit with a bit of asphyxia in obtained records, only 7 patients expressed to have felt a little nauseous sensation without feeling the desire to vomit and 2 asphyxia sensation.

In the B records, at the moment to apply the alternative technique with the quantity of material distributed in the shape of horse-shoe, it was observed that there was no excess material moved towards the later zone of the mouth. In the 30 records, the patients did not experience nauseous sensation, vomit, or asphyxia sensation. For this reason, the alternative for upper jaw printing technique must be applied in the dental consultation, in order to eliminate this dangerous and uncomfortable risk. (table 1).

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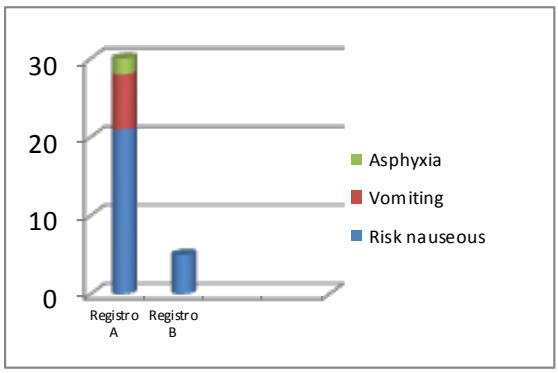

Table 1. The A record high risk and the registration B samples shows that decreases the risk that can be assumed to be removed

CONCLUSION

The impression process or upper jaw records applied with the traditional technique causes nauseous reflex and asphyxia sensation with the main risk of blocking the respiratory tract. As a result, it is demonstrated that the alternative impression technique in the shape of horseshoe, is a good solution to eliminate the risk of nauseas, vomit, or asphyxia, even in patients in horizontal position, is simultaneously avoided to be sitting the patient in angle of 45 ° for the record of an upper jaw impression, situation that is more comfortable for the patient having the same position during the whole dental treatment.

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