

Development of Educational Material for Oral and Maxillofacial Training

Francisco Samuel Rodrigues Carvalho^{1,2} · Fernando André Campos Viana³ ·
Marillia Louise Sales Paiva de Moraes⁴ · Rebeca Gabriel Teixeira Guimarães⁴ ·
Fábio Wildson Gurgel Costa⁵

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The performance of a procedure in oral and maxillofacial surgery requires the acquisition of surgical skills, as well as technical knowledge, repetitive training, and professional ability to adapt when submitted to different clinical situations [1].

The preclinical incision and suture training have usually been performed through sponge and molding material-related simulators [2], gypsum, molding material and orange peel [3], and animal tissue-based models. Although these methods have provided mucosa-like texture and skin, they do not simulate clinical conditions such as oval palate and alveolar ridge. These facts may limit the simulation process and teaching-related feedback.

Thus, this technical note aimed to present an alternative, simple, and low-cost educational method of training mucoperiosteal flaps and sutures in oral and maxillofacial surgery.

Firstly, a cast was made using type 4 gypsum. It was duplicated, covered with a 2.0-mm wax #7 layer, and then, a single acrylic resin custom tray was obtained. This procedure allowed to create a custom tray simulating an alveolar mucosa with 2.0 mm of thickness to be further

fulfilled by the modeling material. The custom tray is used for modeling the aforementioned stone cast with condensation-cured silicone (Fig. 1). The obtained model presents a suitable silicone thickness for surgical training since it simulates the alveolar ridge gingiva (Fig. 2).

This model allows to perform incisions with a similar consistency of mucoperiosteal tissues, and it produces a sensation of “scratching the bone” after using the scalpel. Also, it allows the detachment of the material in a similar way to the soft mucosal tissue, as well as the suture procedures (Figs. 2, 3).

The repetition of surgical procedures favors the reduction in technical errors and related variables for the time required to perform the surgical activity. However, it does not guarantee adequate levels of concentration and physiological stress attributed to the task [4]. The repetitive training of surgical procedures associated with feedback performed by experts in the field of oral and maxillofacial surgery has benefits that favor the acquisition of suitable skills. The present designed teaching-related model potentially enhances the simulation of mucoperiosteal flaps in maxillary and mandibular casts, which may be helpful for reproducing common surgical conditions by graduate students and professionals in continuing education programs.

Regarding the previous published dental models [2, 3], it was commonly observed a limitation of simulating different types of incisions on bone tissue to design mucoperiosteal flaps. Interestingly, the present model shows versatility for using by different academic levels of training (graduate and postgraduate), as well as for different specialties (surgery and periodontics).

In summary, the present method has a simple methodology, low-cost, fast to run, easy reproducibility, and reusable, since it is possible to reuse the stone cast by

✉ Francisco Samuel Rodrigues Carvalho
samuelcarvalho@unifor.br

¹ Division of Oral and Maxillofacial Surgery, Federal University of Ceará, Rua Monsenhor Furtado, s/n. Rodolfo Teófilo, Fortaleza, Ceará CEP: 60.430-350, Brazil

² Division of Oral and Maxillofacial Surgery, University of Fortaleza - UNIFOR, Fortaleza, Brazil

³ Division of Pharmacology, UNIFOR, Fortaleza, Brazil

⁴ UNIFOR, Fortaleza, Brazil

⁵ Division of Oral Radiology, Walter Cantídio University Hospital, Federal University of Ceará, Fortaleza, Brazil



Fig. 1 Confection process of custom tray simulation device

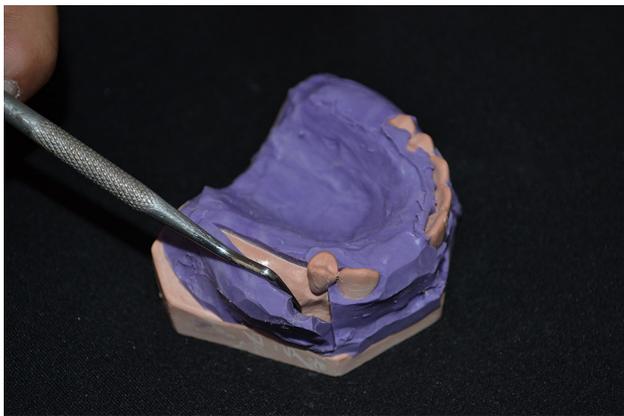


Fig. 2 Custom tray simulation device simulating the incision and mucoperiosteal elevation



Fig. 3 Custom tray simulation device simulating the tissue manipulation and suture

choosing another elastic impression material as an educational purpose in each new practice.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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