



FORECASTING THE WIDTH OF THE SOFT TISSUE IN THE DENTAL IMPLANTATION AREA

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Article history:	Abstract:
<p>Received: April 10th 2021 Accepted: April 26th 2021 Published: May 31th 2021</p>	<p>The width of the attached gum (Gingiva) is one of the main factors in the stability of dental implants [4, 5]. Most authors believe that in the area of implants the SPD should be at least 2 mm [6]. The attached gum successfully resists mechanical loads and thus improves the prognosis of the functioning of orthopedic structures over implants [1, 3]. Clinical studies show that the percentage of removed implants, in the area of which there is no attached gum, is higher than with that.</p> <p>However, there is still uncertainty on two issues:</p> <ol style="list-style-type: none">1. What is the essence of the concept of an attached gum near a dental implant and how to evaluate it? After all, the structure of the soft tissues around the implant differs from the natural tooth and therefore it is not correct to determine the SPA in the implant area in the same way as a natural tooth.2. How to predict BBA in the area of the alveolar ridge in which dental implantation is planned? Because after the installation of a dental implant, the BBA changes significantly.

Keywords: Gingiva, dental implants

THE AIM OF THIS WORK

Is to increase the efficiency of dental implantation in the area of the alveolar ridge with a narrow attached gum.

MATERIALS AND RESEARCH METHODS

It is known that SPD near a natural tooth is clinically determined between the gingival groove and the mucogingival border [2]. The gingival groove, running parallel to the edge of the gum at a distance of about 0.5-1.5 mm from it, is located at the level of the bottom of the clinical gingival groove and corresponds to the transition zone of the attached epithelium to the attached connective tissue. In fact, the mucogingival border is the line of transition of the stratified keratinizing epithelium of the gums into the stratified squamous non-keratinizing epithelium of the alveolar process. In clinical practice, to determine the level of the mucogingival border, staining with the Schiller-Pisarev solution of the gingival mucosa is performed. The method is based on the relationship between the amount of glycogen and the severity of keratinization processes in the oral mucosa. A large amount of glycogen is contained in the parts of the oral mucosa, where the epithelium is not normally keratinized. It is little or completely absent in the keratinizing epithelium of the gums, which is associated with the pale color of the staining of the gingival mucosa.

Considering that collagen fibrils of connective tissue near the implant are directed relative to the axis of the implant, connective tissue can also be considered conditionally free. Based on this, we consider it more appropriate to determine the SPA between the edge of the alveolar bone at the implant neck and the mucogingival border.

Based on the above interpretation of the attached gum, we have developed a method for determining the indication for vestibuloplasty in the area of the alveolar ridge, in which dental implantation is planned.

To determine the indication, we propose the following formula:

$$PSHPD = \text{broadband} + 2 \gg$$

PSHPD is the predicted width of the attached gum after implant placement, which determines the indication for vestibuloplasty.

SPD is the width of the attached gum in the area of the virtual-planned dental implant, which is determined by the following method

1. An impression of the alveolar ridge, where the dental implantation is planned, is obtained using a silicone impression material.
2. A plaster model is cast and an axial line is drawn in the center of the planned implantation zone with a pencil.
3. On the plaster model, a mouthguard is made of a transparent material.
4. To determine the level of the mucogingival border, the mucous membrane of the gums is stained with a Schiller-Pisarev solution.
5. The transparent mouthguard is put on the patient's alveolar ridge and the mucogingival border is transferred to the mouthguard using a bur.
6. Along the corresponding axial line of plaster in the inner surface of the mouthguard at three points (vestibular, apical and oral), a hole is opened with a bur and these holes are filled with gutta-percha. The vestibular foramen is located at the mucogingival border, the apical foramen is at the apex of the alveolar ridge, and the oral foramen is not far from the edge of the mouthguard on the oral side.
7. The kappa is put on the patient's mouth and the cross section of the alveolar ridge is performed using computed tomography, which passes through three holes.
8. On the cross section, passing through three holes, the position of the implant with the optimal diameter and length is virtually planned.
9. The distance from the transition zone of the virtual implant neck to the edge of the alveolar bone to the vestibular radiopaque gutta-percha is determined. It is this distance that we consider the SPD at the dental implant. 2 mm is the amount of estimated atrophy of the marginal bone around the planned dental implant in the first and subsequent years.

If $SPD = 2$ mm (for the normal functioning of a dental implant, some researchers consider 2 mm to be adequate SPA), then $PSHP = 4$ mm. This means that $PSHPD < 4$ mm is an indication for vestibuloplasty.

Clinical example. Male, 27 years old. Secondary adentia of the tooth 36. Dental implantation was planned.

Before the operation, the indication for vestibuloplasty was determined according to the above technique, a plaster model was cast, and after an axial line was drawn in the center of the planned implantation zone, a transparent mouthguard was made.

Then the mucogingival border was outlined using green diamonds after staining the gingival mucosa with Schiller-Pisarev's solution. The mouthguard was put on the mouth and the place of the mucogingival border was transferred to the mouthguard using a boppa.

On the mouthguard, along the axial line of the plaster at three points (vestibular, apical and oral), the holes were opened with a bur and these holes were filled with gutta-percha.

Kappy was re-dressed the patient and had a cross-section of the alveolar ridge using computed tomography. On the cross-section, which passed through three points, the position of the implant with the optimal diameter and length was planned.

Determined the value of SPD between the edge of the alveolar bone at the neck of the virtual implant and the mucogingival border (Figure 5 between the green dots). This distance was less than 2 mm. In this case, the PSHPD according to the above proposed formula received a value of less than 4 mm. This is an indication for vestibuloplasty.

The patient underwent transgingival implantation with simultaneous vestibuloplasty.

Foreign and domestic authors are of the same opinion: the minimum zone of the attached gum should be "adequate to maintain the clinical health of the tissues around the dental implant". For the first time, we have introduced into clinical practice a method for predicting the width of the attached gum before placing a dental implant. Predicting the width of the attached gums makes it possible to determine the indication for vestibuloplasty. This tactic also makes it possible to choose the width of the graft for vestibuloplasty operations using free mucosal grafts.

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