

Prosthetically adverse implant position: an aesthetic surgical-prosthetic solution. Case report.

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Abstract: Clinical case of a 43-year-old female patient treated at the clinic of Universidad Nacional Mayor de San Marcos, Peru, in 2015 for aesthetic problems in the activation of a unitary implant placed at a distal and vestibular direction from the ideal position. The clinical examination revealed the vestibularization of the implant at the level of the upper right central incisor with the healing abutment visible above the gingival line and high gingival smile. Connective tissue grafts and ovoid pontics were carried out in order to improve the characteristics of the peri-implant tissue. This clinical case evidenced an improvement of the soft tissue profile and patient satisfaction regarding her smile. The management of a vestibularized implant may be solved through the management of ovoid pontics and connective tissue grafts.

Keywords: *Esthetics; dental implants; peri-implant tissue.*

INTRODUCTION.

Osseointegration is not the only criterion used to measure the success or failure of an implant in current oral implantology; a functional and esthetic favorable outcome is expected, as well as the stability of healthy peri-implant tissues. Therefore, both the three-dimensional position of the implant and the prosthetically guided surgery play a fundamental role.

It is known that unitary implants placed in the anterior sector have high success and survival rates (around 95-98%);¹ this is always the case when the three-dimensional positioning of the implant is optimal depending on the type of restoration; otherwise, complications will arise, which may disturb esthetics and function of the implant and affect the future prosthetic rehabilitation.^{2,3}

Incorrect positioning of the implant can cause multiple problems. In some cases, removal of the implant is usually the only solution. As such, the insertion of the implant in the vestibular direction gives the appearance of recession of the peri-implant mucosa, alters the emergence profile and contributes to the accumulation of bacterial plaque around the perimeter of the restoration and on the peri-implant tissue.⁴

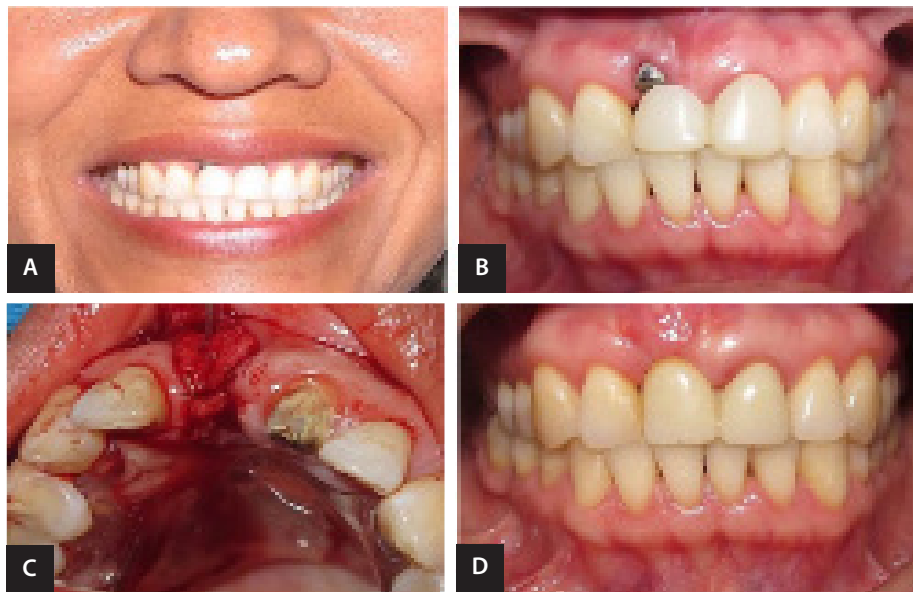
Martin *et al.*,⁵ also report that the appearance of buccal recessions of the mucosa have been associated with the oral position of the shoulder of the dental implant, so the excessive inclination of the implant as well as the preservation of the buccal bone should be anticipated. However, it has also been found that in some incisive-maxillary areas with scarce buccal bone the aesthetic outcome of the implant is not influenced.⁶

Solving the problems caused by an incorrect three-dimensional position of a dental implant involves the management of the soft tissues, knowledge of dental esthetics, and the expectations of the patient;⁷ ovoid pontics and custom implant provisionalization allow the esthetics to be improved by allowing the adaptation of gingival papillae.⁸ Pontics can further improve esthetics by combining connective tissue grafts in order to improve

the peri-implant biotype.⁹ Digital design of the smile and prosthetically guided surgery have also been described as ways to give patients a more harmonious smile, to better distribute the spaces and sizes of the teeth with the aim of aesthetically improving this area.¹⁰

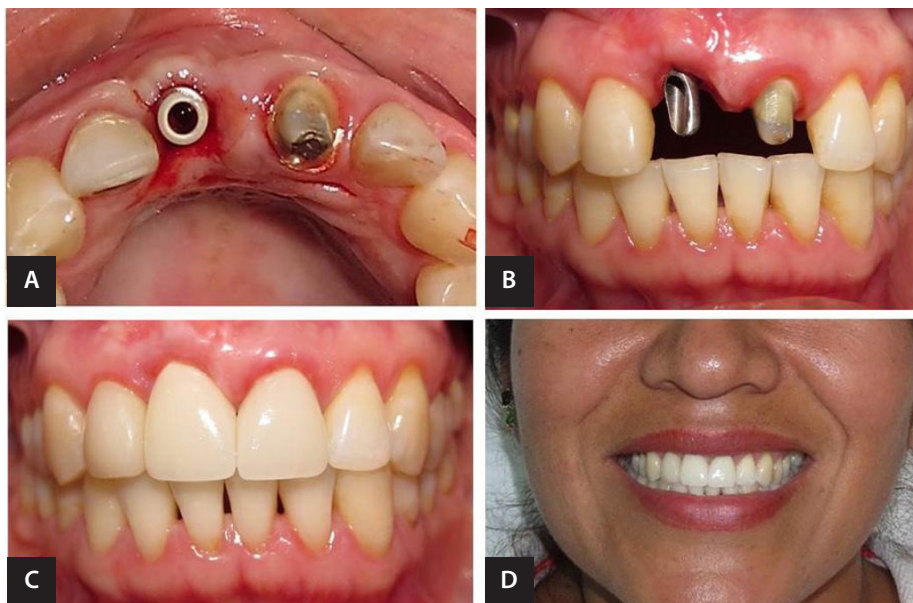
The present case report shows the prosthetic and esthetic management of a vestibularized anterior implant that compromised the patient's smile.

Figure 1. Intraoral views of the preoperative period and during the surgical interventions.



A. High smile and exposure of the implant abutment. B. Vestibularization of the implant and peri-implant dehiscence. C. Placement of a connective graft in vestibular. D. Ovoid pontic to adapt the peri-implant tissue.

Figure 2. Prosthetic rehabilitation of the case.



A. Prosthetic abutment in its position. B. Customization of the prosthetic abutment. C. Gingivectomy of the adjacent gingiva D. Finished ceramic metal crown.

CASE REPORT.

A 43-year-old, systemically healthy female patient (ASA I) with no relevant pathologies, who presented esthetic problems in the activation of a unitary implant placed in a distal and vestibular direction at the anterior-superior region.

On examination, a bone-integrated unitary implant was observed at the level of the upper right central incisor. The implant was connected to a healing abutment located towards the vestibule of the profile of the sector. The area did not look aesthetically pleasing when the patient smiled. (Figure 1. A and Figure 1. B) Diagnosis included vertical and horizontal deficiency of the alveolar ridge (Seibert's Classification III),¹¹ a decrease in keratinized tissue (less than 2mm) and loss of interdental papilla around the implant (grade III loss of papilla according to Nordland and Tarnow);¹² tomography imaging showed lack of vestibular cortex (<0.5mm) and loss of continuity of the bony margin.

The chosen approach to solve the problem included subepithelial connective tissue graft to improve the peri-implant biotype of the anterosuperior sector, gingival reconstruction of the left central incisor; custom abutment manufacture with temporary adhesives to later cement metal-free crowns on the implant and left central incisor.

Once the healing abutment was removed, a subepithelial connective graft was placed; the graft was obtained from the palate of the patient through partial-thickness incisions; a trapezoidal flap was designed on the receptor area with a partial-thickness papilla preservation base. (Figure 1. C)

After one month of healing, the vestibular profile of the soft tissue was handled with an ovoid pontic (Figure 1. D). One month after this appointment, the implant was exposed, modifying the incision of the flap towards the palate and placing a provisional abutment in the area of the implant. (Figure 2. A and Figure 2. B)

Once the healing cap of the implant was removed, a new subepithelial connective graft (also obtained from the palate area) was positioned to further improve the gingival biotype. To achieve the harmonization of the whole anterior superior gingival sector, an external bevel gingivectomy of the incisors was performed one month

with a ceramic crown two months postoperatively showed good aesthetic results. (Figure 2. D)

DISCUSSION.

The prevention of complications in oral implantology can be achieved through a correct diagnosis of the case and a prosthetically guided surgery. The virtual planning of the treatment allows the evaluation of bone density, type of implant selection, the verification of its location, level of depth in relation to the bone, and its three-dimensional inclination, especially in the maxillary anterior area, where esthetics are highly important.¹³

There are certain criteria that need to be met in order to achieve aesthetic success that influence the outcome after the placement of a dental implant: the three-dimensional position of the implant, emergence profile of the soft tissue, papillary height determined by the position of the adjacent implants, balance of the gingival line, symmetry of the inter-implant papilla, as well as other factors associated with the patient.^{14,15}

In spite of this, many implants may develop complications, especially due to the incorrect evaluation of the patient's risk factors, and the poor three-dimensional positioning of the implant. Implants with excessive vestibular inclination negatively affect esthetics, especially if a thin biotype and limited amount of keratinized tissue are involved, as these can contribute to the development of tissue dehiscence, implant exposure and problems during prosthetic rehabilitation.

The presented case shows a bad prosthetic planning at the moment of placing the dental implant, which was evidenced in the excessive vestibularization, possibly due to an inadequate decision in the three-dimensional position of the implant. This led to aesthetic problems, especially in a patient with a gummy smile profile.

This complication may have been prevented by ensuring the stability of the peri-implant tissue, either controlling the risk factors or and through a correct positioning of the implant in the mesiodistal, buccolingual and apico-coronal directions.

The prosthetically guided surgical planning is essential as it allows dental surgeons to monitor the relationship between the implant axis and the future prosthetic rehabilitation, thus avoiding the use of angled abutments

that compensate for unfavorable implant inclinations.¹⁶

The patient was treated with a connective tissue graft after the healing abutment was removed, in order to achieve a better emergence profile of the area.

Ovoid pontics are a valid treatment option to further improve the esthetics of soft tissue. In the two-month follow-up evaluation, the ovoid pontic of the patient showed a good aesthetic result of the soft tissue margins. The use of provisionals also allowed to redirect the volume of the mucosa by establishing optimal papillary and sulcular profiles.¹⁷

The clinical case showed good aesthetic results with the provisional crowns; however, prognosis is still reserved with respect to the stability of the connective graft in thickness and height; it is possible that graft atrophy may occur resulting in an exposure of the implant or prosthetic abutment.

This clinical case could have been handled with other therapeutic options such as the removal of the implant

and the placement of a new one in an appropriate position. However, the choice was to preserve the implant because the aim was not to cause excessive trauma to the alveolus and soft tissues and avoid possible recessions of the peri-implant mucosa.

CONCLUSION.

When complications include excessive vestibular inclination of the dental implant and the result is not aesthetically acceptable, it is not always necessary to remove the implant. Predictable and prosthetic surgical techniques can be used, such as connective subepithelial grafts plus ovoid pontics, which in this case contributed to achieve an aesthetically acceptable outcome, and solved the vestibularized position of the implant.

The final aesthetic result improved the perception of the patient regarding her appearance. The latter confirms the importance of planning a rehabilitative treatment with the needs of the patient in mind.

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