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Technical Note
Dental Implants

Use of osseointegrated implants in the intermaxillary suture: a new possibility for the prosthetic rehabilitation of atrophic maxillae

E. Januzzi, F. M. Gonçalves Leite, B. T. Primo, E. Grossmann
Department of Morphological Sciences of the Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil

Abstract. Patients with atrophy of the maxillae, generally the elderly, are usually difficult to handle clinically, mainly due to the lack of retention, stability, and masticatory effectiveness of the total removable prosthesis. A new technique involving osseointegrated implants that are parallel to each other and arranged in the intermaxillary suture seems to provide great advantages over the current options for oral rehabilitation. This technique is quick and effective, being performed with local anesthesia and without a bone graft, and still presents low morbidity and cost.

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Atrophy of the maxillae, both in height and thickness, in edentulous patients is a major clinical problem for dentists who need to treat patients with surgery and prostheses. Simplified surgical techniques allow a more comfortable postoperative period, minimizing possible complications. The intermaxillary suture may be a viable option for the placement of osseointegrated implants, as this seems to facilitate the rehabilitation of the patient.

Case report

A 74-year-old patient sought treatment for oral rehabilitation. The following clinical and imaging studies were performed: panoramic radiographs, profile teleradiography (PR) (Fig. 1A), and computerized tomography (CT) (Fig. 1B and C).

The patient presented with atrophic maxillae but refused to be submitted to reconstructive surgery (iliac crest bone graft, maxillary sinus lift, and zygomatic implant). The use of an overdenture prosthesis supported by osseointegrated implants was recommended.

Local anesthesia along with a vasoconstrictor was used during the surgical procedure, and was applied to the area that received the implants (intermaxillary suture). Drilling was performed with a lance-type drill, without incision, at the planned depth, with further progressive widening; this was performed conventionally (Fig. 1D). Following this, three SIN implants (Sistema de Implantes Nacionais®, São Paulo, SP, Brazil), 3.25 mm in diameter, 4.1 mm platform, and 6.0 mm in length, were inserted in the intermaxillary suture at the following sites (Fig. 1E): an anterior implant (near the incisive foramen), a median implant, and a more posterior one (Fig. 1F). Cicatrizers were then placed and kept near the mucosa to avoid them being displaced by either the placement or removal of the temporary total removable prosthesis. The temporary prosthesis was worn in the area of the implants and filled with tissue conditioner Coe-soft (GC America Inc., Alsip, IL,

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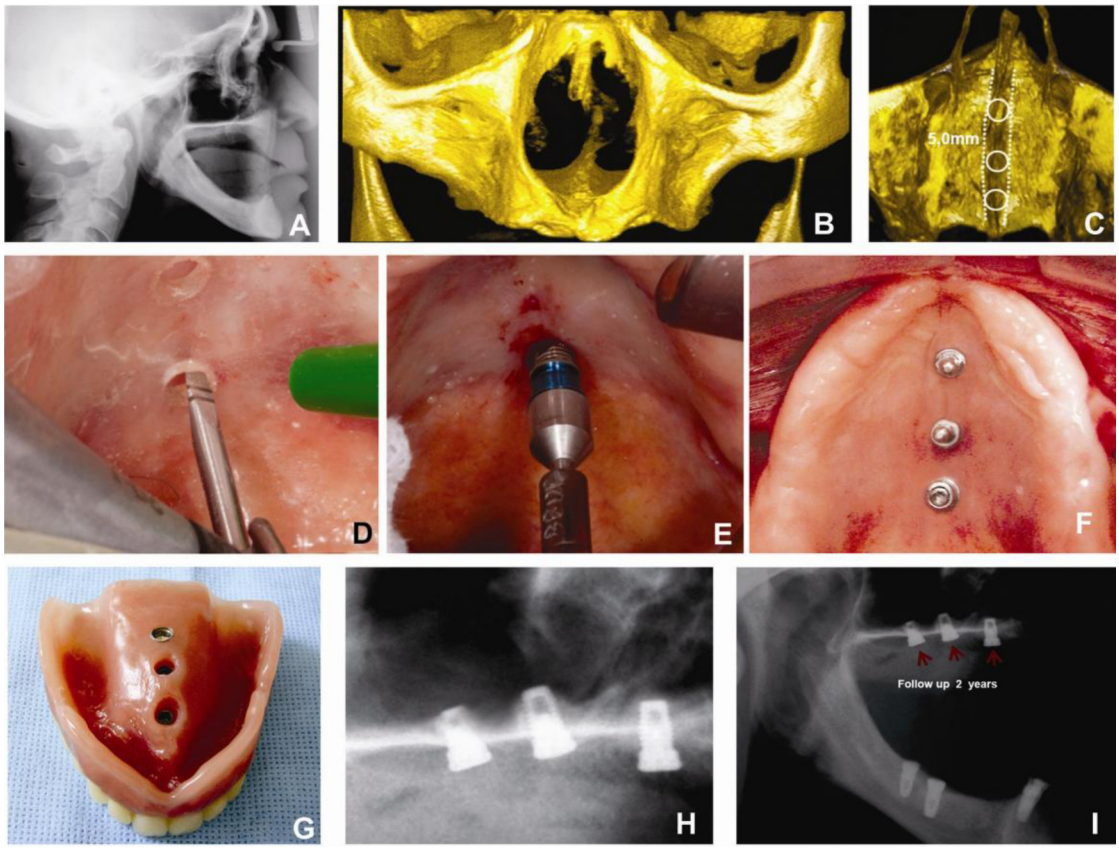

Fig. 1. (A) Preoperative teleradiography; (B) and (C) preoperative computerized tomography; (D) perforation to allow fitting of the implants; (E) fitting of the implants; (F) implants in place; (G) implant–mucosa-supported prosthesis; (H) and (I) follow-up radiography at 2 years.

USA). After 6 months, a total prosthesis was manufactured to fit the anterior and median implants (O-ring; Signo Vinces, Campo Largo, Paraná, Brazil) (Fig. 1G), while the posterior implant received a milled superstructure due to the high retention of the system, allowing better placement and removal of the prosthesis (overdenture).

The patient has been followed up for 5 years, during which no complaints have been made; the implants and prosthesis have remained stable (Fig. 1H and I).

Discussion

The size of the implant required for each patient can be determined from lateral cephalograms. It has been demonstrated in a previous study[1] that the vertical bone support in the mid-sagittal area of the palate is at least 2 mm higher than what is apparent on the lateral cephalogram. According to some authors,[1] the mid-sagittal area of the palate lends sufficient bone support for the implantation of small implants (4–6 mm endosseous length, 3.3 mm diameter), thus allowing the implantation of the implants without the need for grafting.

The viable bone (bone height) at the anatomic sites of the patient described in this study measured 6.0 mm, hence the use of short implants (5.0–6.0 mm in length) was indicated. The diameter of the body of the implants and their respective platforms were selected according to the width of the viable bone (width of the intermaxillary suture), which was also evaluated by CT and clinical examination of the surgical site by digital palpation. The patient presented 5.0 mm of viable bone, which allowed the use of implants 3.25 mm in width, with a prosthetic platform of 4.1 mm (regular platform) and 6 mm in length. The use of such platforms is an advantage, as they are compatible with most prosthetic components, mainly those with an external hexagon geometry.

The planning stage described above proved to be versatile, easy to execute, effective, and safe – both in the laboratory and clinically – which allowed the manufacture of a conventional removable overdenture that covered most of the area of the alveolar ridge and palate. The whole structure was made more stable by use of the O-ring fitting system (Signo Vinces) for the implant–mucosa-supported prosthesis.

The main advantages of this technique are: it has low morbidity, it is not expensive, and the prosthesis (overdenture) is easy to clean. However, new studies are necessary to test the prosthetic stability, functional effectiveness, masticatory efficacy, comfort, quality of life, and safety for the patient.

In conclusion, bone integrated implants in the intermaxillary suture are an option for atrophic maxillae, presenting low morbidity and costs. The aspects of this technique that are particularly relevant for clinical practice are the good stability of the implants and prosthesis and the possibility of effective hygiene allowed by the use of the overdenture.

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Conflict of interest

None declared.

Ethical approval

Not required.

Reference

1. Wehrbein H, Merz BR, Diedrich P. Palatal bone support for orthodontic implant anchorage—a clinical and radiological study. *Eur J Orthod* 1999;**21**:65–70.

Address:
Eduardo Januzzi
Av. Prudente de Morais 287/703
Cidade Jardim
Belo Horizonte
CEP 30380-000
Minas Gerais
Brazil
Tel: +55 51 32072137
E-mail: ejanuzzi@uai.com.br