# Immediate implant placement in esthetic zone

Ronaldo José da **SILVA***
Fabrício Petersen Quintino da **SILVA****
Jessica Pires de **CARVALHO*****
Camilo **FERREIRA FILHO*****

**Abstract**

Immediate implant placement is considered a viable technique due to its reduced surgical time. However, many factors such as quality and position of the attached gingiva, alveolar process integrity, gingival height and shape must be taken into consideration in order to yield excellent final esthetic results. The characteristics of an ideal surgery include tooth extraction with low trauma, placement of a temporary smooth crown as well as a polished and emergence profile that keeps the gingival contour. As a requirement for the use of immediate loading, we should analyze, immediately after implant placement, primary stability (existence of bone for the initial stabilization of the implant), integrity of the alveolar walls, gingival phenotype as well as integrity and amount of soft tissue. Although it is considered a predictable procedure, its indication depends on careful planning.

**Introduction:** Dental implants. Single tooth. Dental prosthesis. Implant supported. Dental implantation.

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**Contact address**

**Jessica Pires de Carvalho**
Av. Independência, 3587
CEP: 14.026-150 – Ribeirão Preto/SP
E-mail: jessica.piresdecarvalho@gmail.com

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* PhD in Oral Rehabilitation, School of Dentistry — University of São Paulo/ Ribeirão Preto.
** Associate professor, IN PLANT CENTER — Institute of Science in Implantology and Oral Rehabilitation.
*** Specialist in Periodontology, Ribeirão Preto Dentistry Foundation (FUNORP).

» The patient displayed in this article previously approved the use of her facial and intraoral photographs.

## Introduction

In the early stages of dental implant usage, Branemark[1] proposed a protocol in which implants should be submerged during a period of time that varied according to the quality of bone without masticatory load.[2] This happened because it was believed that micro movements interfered in the process of implant loss.[3] However, some researches have shown that under conditions such as primary stability it is possible to successfully apply immediate load to recently installed implants.[4,5,6]

Immediate implant placement after extraction has been a reality for single-tooth implants since 1994, when Becker et al[7] claimed that, whenever possible, an implant should replace a tooth root during the same procedure when the latter is removed in order to avoid additional bone loss that may occur in the horizontal and vertical directions.

The use of implants with immediate load is common in the esthetic zone, given that intercurrences such as sports accident, iatrogenesis, traumas and fracture of old prosthesis may occur without prior warning in the oral arch, in which case it is recommended that alveolar resorption be avoided, as it may hinder esthetics.[8]

Clinical studies have demonstrated the possibility of performing osseointegration followed by one single surgical stage and immediate load placement on titanium implants in edentulous maxilla provided that the final implant placement torque exceed 35N/cm. According to Salama et al,[10] the key to successful immediate implant placement is assessing the prognosis of adjacent soft tissues, of which satisfactory result depends on untraumatic extraction and absence of damages caused by the placement appliance. Extraction in esthetic zones must be carefully carried out, given that the vestibular bone wall may be thin and subject to fracture. For this reason, any bone loss may be compromising.

Implant selection is also important. Therefore, it is advisable that cone-shaped or cylindrical/cone-shaped implants (hybrid) be chosen, since they present a larger contact surface in relation to the bone and are better adapted to the receiver bed. Additionally, primary stability should also be considered to achieve success in osseointegration. The former accomplished when the implant is placed in a bone site and direct mechanical adaptation occurs between the bone and the implant surface.[11] However, successful adaptation depends on several factors, including the amount and quality of bone, implant geometry (length, diameter and shape, i.e., its macrostructure) as well as the surgical technique for implant bed preparation.[11-16] Immediate placement presents several advantages for tissue cicatrization. Based on that, we herein describe a case report.

## Case report

A 42-year-old female patient presented root fracture of #11 tooth. After clinical and radiographic analysis (Figs 1 and 2), the tooth was untraumatically extracted. We began with an open-flap debridement procedure around the tooth. The crown was removed with the aid of a forceps and removal of the molten metallic core 3) as well as minimally invasive root extraction were carried out (Fig 4). The alveolus was examined and alveolar curettage was performed (Fig 5). Subsequently, we began the perforations with the Neodent kit. GenMix® composite bovine bone graft (Figs 7 and 8) was used in the vestibular bone wall and after placement of 4.3 x 13 mm Alvim CM implant with 60N torque (Figs 9 and 10) and 4.5 x 6 x 1.5 mm post with 20N torque (Fig 11), suture and placement of the temporary crown (Fig 12). One week later, the control of the site was carried out. The patient returned after three weeks for site control during which a radiographic examination, photos and ceramic planning were carried out (Figs 13 and 14).

**Figure 1** - Frontal view of patient's smile.

**Figure 2** - Initial radiograph.

**Figure 3** - Removed crown and molten metallic core.

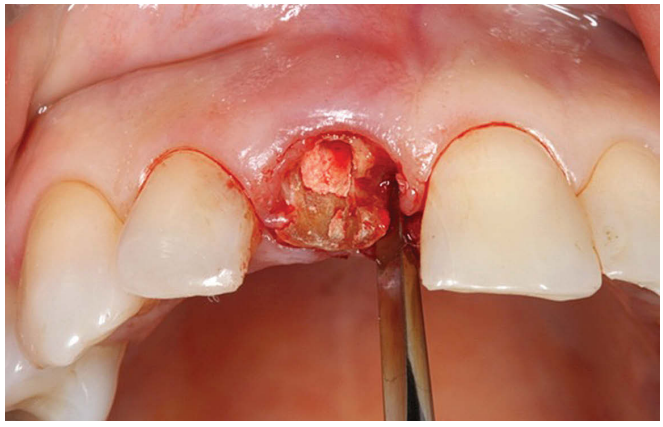

**Figure 4** - Minimally invasive extraction.

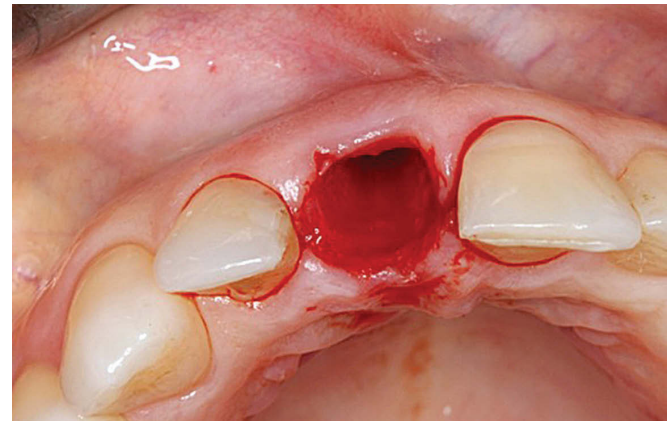

**Figure 5** - Alveolus after examination and curettage.

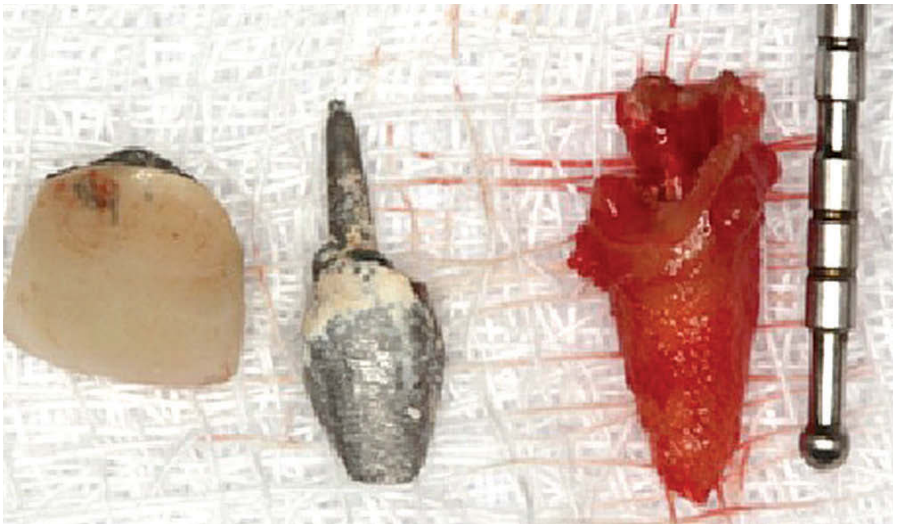

**Figure 6** - Removed elements.

**Figure 7** - Graft insertion in the vestibular wall.

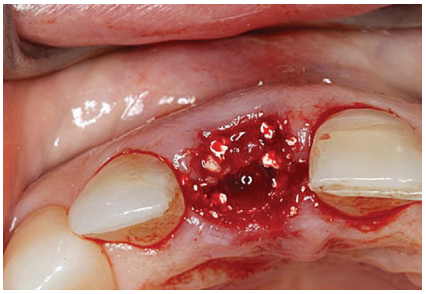

**Figure 8** - Alveolus after graft insertion.

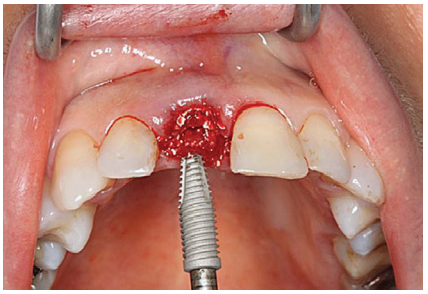

**Figure 9** - Insertion of 4.3 x 13 mm graft with 60N torque.

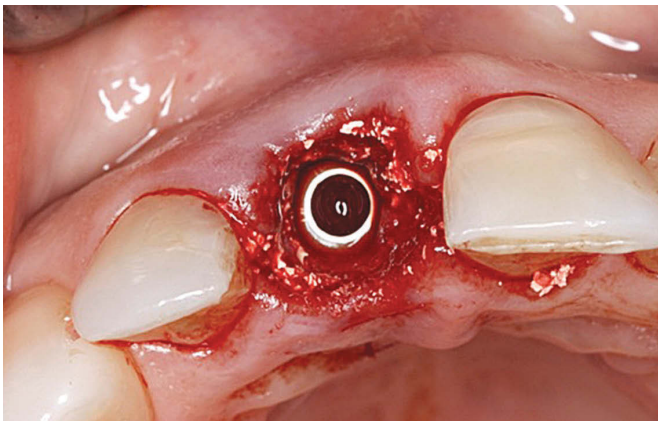

**Figure 10** - Alveolus after placement of 4.3 x 13 mm Alvim CM implant with 60N torque.

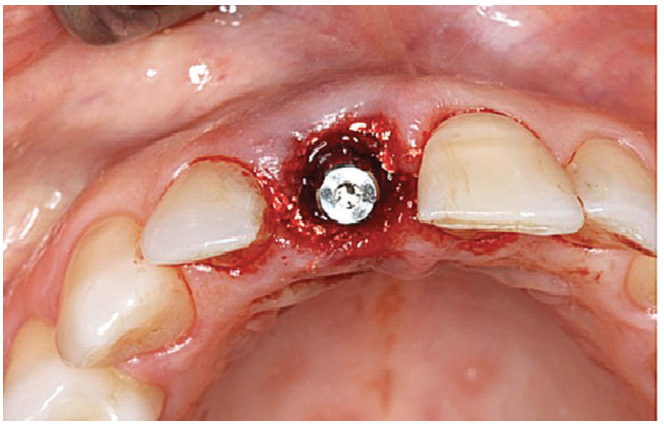

**Figure 11** - Placement of 4.5 x 1.5mm universal post with 32N torque.

**Figure 12** - Frontal view after placement of temporary crown. Note the developing papilla.

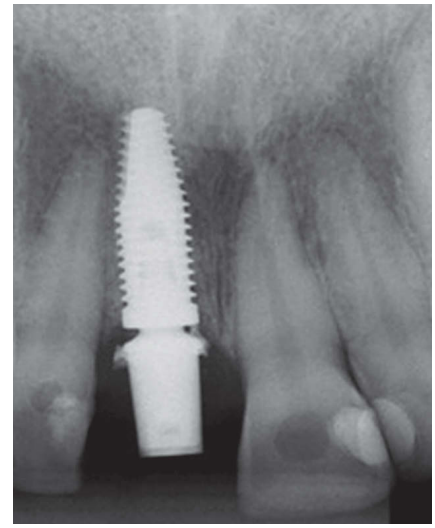

**Figure 13** - Control radiograph after three weeks. Well-positioned 1-2 millimeter infraosseous implant.

## Discussion

The immediate implant of single teeth in esthetic zone is recommended mainly to tooth loss cases caused by resorption, root perforation and recent fractures. Clinical studies demonstrate that the survival rates for implants immediately placed, early or late, are similar and range between 93 and 100%.

Extraction must be performed as carefully as possible in order to avoid bone loss. Additionally, choosing the appropriate instruments optimizes the final outcome. The most frequently used instruments are as follows: surgical mini-blades for the open-flap debridement procedure, periotome, mini levers, surgical burs/high speed, curettes, forceps for residual roots and anterior crowns.

The receiver site must be carefully examined with regard to the amount of bone available for the initial mechanical stabilization, integrity of alveolar walls, gingival phenotype (amount and integrity of soft tissues) and presence of contaminated zones.

Implant positioning must be slightly lingual in order to achieve greater bone anchorage. When implant is palatally positioned we keep the vestibular cortical integrity and increase primary stability. Should a gap be created due to such positioning, it will be filled up, given that implants in the center of the alveolus or nearer the vestibular wall may cause gingival recession.

Extraction associated with implant and crown placement presents many esthetic, psychological and func-

tional advantages which minimize treatment time. Cicatrization of soft tissues concomitantly occurs with osseointegration, promoting stability in the gingival level.

## Conclusions

Using immediate load in single implants, when carefully recommended and planned, presents satisfactory results due to the fact that when vestibular bone support and the architecture of mucogingival tissues are preserved, natural prostheses and their peri-implantar tissues will emerge more naturally.[17] According to Lazarra,[18] immediate implant placement may favor the fabrication and final esthetic results of the implant-supported prosthesis, since the implant is in the same position and similar inclination in relation to the natural tooth.

Immediate implant placement presents advantages such as: reduction in the number of surgical procedures and treatment time, ideal implant orientation, preservation of bone in the extraction zone, great esthetics of soft tissues and maintenance of the gingival contour, in addition to the fact that patient's appearance immediately recovered.

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