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Journal of Surgery

Filho PM, et al. J Surg 4: 1251.

Case Report

DOI: 10.29011/2575-9760.001251

Use of Autograft in the Immediate Implant Temporization in Aesthetic Area: Case Report

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Citation: Moerbeck-Filho P, Barreto MA, Moerbeck L (2019) Use of Autograft in the Immediate Implant Temporization in Aesthetic Area: Case Report. J Surg 4: 1251. DOI: 10.29011/2575-9760.001251

Received Date: 24 August, 2019; **Accepted Date:** 03 September, 2019 ; **Published Date:** 09 September, 2019

Abstract

This work aims to promote a literature review parameters for the use of autograft in the immediate implant temporization in the aesthetic area, presenting a case report. With the technical, scientific and industrial advancement, the ranges of rehabilitation with implants have declined. This technique, known as implant with immediate Temporization (TIPP) is one of the issues discussed today, as the search for aesthetic excellence is growing. The fact of the bone atrophy in the anterior be progressive bone size and nutrition in this area are quite limited endanger this aesthetic. There are several factors that can influence the use of TIPP, such as: type of implant, bone quality and quantity, primary stability, occlusion, gingival biotype, bony walls of the gap, the gap filling material, prosthetic platform used, type of prosthesis used, among others. The patient to be evaluated unit 22, it realized was that it had persistent endodontic injury, bone loss in adjacent walls and with a shift pin. It was concluded that, in the short term, the proposed treatment presents satisfactory results. According to the literature, the recession is something imminent technique. In patients compared to that present thin biotype should be associated connective graft. This appears to influence prosperous way gingival architecture in order to achieve an aesthetically pleasing rehabilitation. However, a longer study and follow-up in the search for ways to minimize the buccal recession is necessary. prosthetic platform used, the prosthesis type used, among others. The patient to be evaluated unit 22, it realized was that it had persistent endodontic injury, bone loss in adjacent walls and with a shift pin. It was concluded that, in the short term, the proposed treatment presents satisfactory results. According to the literature, the recession is something imminent technique. In patients compared to that present thin biotype should be associated connective graft. This appears to influence prosperous way gingival architecture in order to achieve an aesthetically pleasing rehabilitation.

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Introduction

When it established the concept of osseointegration by Professor Branemark and his team from the 80s, was considered essential for success in implant therapy in two surgical stages, maintaining a very solid concept and almost unchanged for years. With the evolution of technical, scientific and industrial, the implant allows us to have smaller intervals between the surgical stage and rehabilitation sessions [1]. The immediate loading has emerged in the decade of 80 as a restorative option for patients considered oral invalid, the edentulous. With the attained technical experience and clinical outcomes, it has been enhanced and is now also used in cases of unit regions [2,3]. The realization of immediate implants described pioneered by Schutle W, et al. 1978 [4] are implants installed in the same session in which the teeth are extracted due to a history of trauma or persistent endodontic lesion and associated provisional prosthetic rehabilitation favored the greater stability of the bone structure and maintenance of previous gingival architecture, in addition to factors psychological and functional [5]. Several are the morphological changes that suffer the post-extraction socket, and more abruptly in the anterior maxilla, which has some peculiar characteristics such as less blood supply and this supply mostly from the periodontal ligament and lower bone size vestibule-lingual , developing an aesthetic risk and maintaining the previous architecture.

In the areas between the implant and vestibular wall of post-extraction alveolar filling this gap is recommended for defects greater than 2mm. For this filling can be used autogenous grafts and xenogenous, or a combination thereof. [6]. The autograft is considered the gold standard in research, because besides being the only one with no risk of rejection, has three main characteristics favorable to the healing process that are osteoconductive, osteoinductive and osteogenic potential high. Your biological makeup is in a skeletal fraction subdivided into mineral portion, organic and spinal fraction subdivided into hematopoietic and stromal fraction [7]. According to the Third ITI Consensus Conference in 2006, immediate implants are classified as: 1 implant installation at the time of extraction; 2 after implant installation end of the soft tissue healing, before presenting a significant bone filling; 3 Installation of an implant after the alveolus present clinical or radiographically significant bone fill; 4 Installation of an implant in a fully healed well. For use of the immediate implants, there are several criteria that must first be analyzed to opt for this approach such as disease history, implant type, absence of severe parafunctional habits, posterior occlusal stability, bone quality and quantity, gingival biotype, evaluation the gap walls, gap filling, primary stability, prosthetic platform, type of prosthesis and aesthetic risk.

Literature Revision

Immediate Load

The immediate loading had their first cases in the late 80 inter-chin region in patients considered invalid oral, using about 04 or 05 implants for rehabilitation, becoming consolidated in the 90s and been refined to unit regions and having with key factor to primary stability [8]. With the technical, scientific and technological evolution in 1990 Schnitman pioneered immediate loading on unit, demonstrating its effectiveness and use. Early loads came demonstrating over time that trigger biological reactions favoring the process of bone repair and maintenance gingival. Primary stability, major factor in immediate loading, is associated with the design of the implant, the bone quantity and quality and the surgical technique used. [1] a literature review of immediate loading, evaluated several factors such as the surgical technique, the patient, and the type of implant occlusion. As documented in the 80's the first successful implants lower protocol with immediate loading. After success in mandibular region, began the studies for use in the jaw has a most peculiar anatomy, phonetic and aesthetic needs thus requiring further study. Concluding that the immediate loading technique has achieved similar success rate compared to 2 surgical stages; being the primary stability of the implant is an important factor for its realization.

According to consensus ITI Esposito and Employees in 2007 concluded that:

- The standard load is defined as the load applied to more than two months after placement of the implants
- The early load, load applied from one week to two months after implant installation
- The immediate loading, the load applied within a week after placement of the implant. Thus, it makes denescessário a specific definition for late charge.

The literature of the current implantology, makes immediate loading a reality pointing several advantages when properly indicated, among them: horizontal atrophy prevention of bone

after extraction, release of bone growth factors, the repair process acceleration and giving function to the underlying bone , with a very consolidated reality in the current implant.

Alveolus and GAP

After extraction of a tooth during the healing process, various events lead to bone regeneration within the socket and an external bone resorption process is more evident on the buccal aspect of the alveolar ridge (Lindhe 2005). Lindhe and coworkers in 2004 in a clinical follow-up, where after tooth extraction and measurement of the vestibular walls, mesial, distal and palate, was held installed an implants without graft association, and after 4 months were carried out new measurements, and found the buccal wall was higher resorption rate (56%) and (30%) in the lingual wall than other areas. Studies also show, histomorphometric analyzes carried out 6 months after the installation of implants with immediate load after extraction, showing a bone adjacent to the matured implant in the peri-implant regions, while in late implants remains a thin cancellous bone [9]. Within the cavity, it forms a clot which slowly converts to a tissue matrix in a few days. The bundle bone lining the alveolar extraction suffers resorption and loss of the original structure, which allows blood vessels invade the medullary space surrounding the provisional matrix. With the alveolar remodeling input is corticaliza with adjacent bone, becoming one in the center and the bone is remodeled to form the trabecular bone [10]. Advocate always possible simultaneous approach, namely to use the immediate implants time of extraction associated with ROG (Guided bone regeneration) with biomaterials, to minimize the number of interventions, patient morbidity and ease the financial cost. In conclusion is common immediate implants placed in extraction sites are associated with two or three bone defects only can expect a predictable result if the bone defect is at most two walls because the wall bone and bone marrow provide the osteogenic elements needed to neoformation. In the healed sites present flattening buccal flange, defects of two walls are less frequent and results in regenerative sites bone defect with only one wall is much less predictable.

Implants with Immediate Temporization

In 2006 the ITI consensus established the following classification of the immediate implant:

- Implant installed at the time of extraction.
- Installation of the implant after the end of soft tissue healing before presenting a significant bone fill.
- Installation of an implant after the alveolus present clinical or radiographically significant bone fill.
- Installation on a fully healed alveolus.

In 2010 several studies were reviewed, and noting that the recession 1mm or more ranged from 8 to 40.5% in long-term work. The causes were Biotype thin gingival 3D position of unfavorable implantation, buccal wall bone defect; More palatinizada position when the three-dimensional position of the implant, the implant displacement occurs buccally, which is often overlooked.

Concluding that it is a complex and delicate procedure the immediate implants, having as its biggest challenge the highest risk of long-term labial tissue recession. It is reported that there is a greater chance the most successful healthy patients, not smoking, low smile line, gingival biotype thick, vestibular wall intact and thick, the absence of infection and good adjacent bony crest [11,12] concluded in a review of the literature that there is no evidence sufficient to determine advantages and disadvantages of immediate implants (implants immediately after extraction) and early implantation (installed implants after 8 weeks of extractions) or late (implants installed two months after the extractions). There is a need for more randomized clinical trials to prove its efficacy [13] in a prospective study with 70 patients, which were made the implant with immediate temporization, concluding that the thicker tissue biotype is predominant factor in increased stability of the vestibular margins.

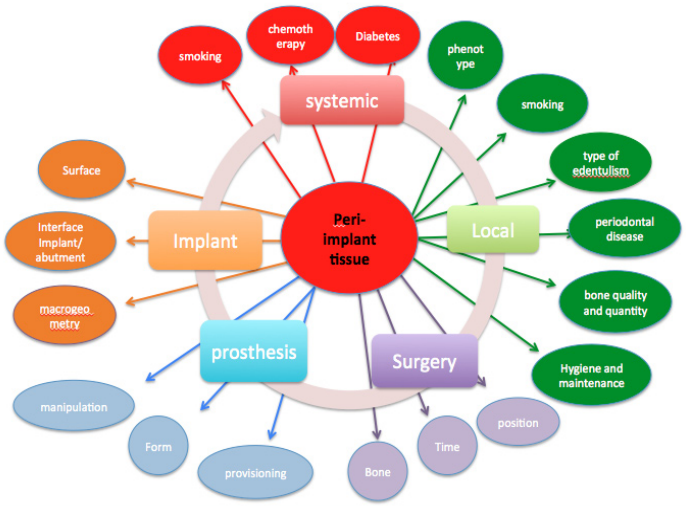
Chaar et al, 2011, conducted a study in 69 patients, installing implants 162, which held the implant installation and temporization graft without watching in a retrospective study, a survival rate comparable to those reported classically implant and late charge. Chan et al 2014 in a computed tomographic study examined to assess the incidence of fenestration and risk factors associated with the installation of implants in the anterior region proteticamente being guided surgery (the implant cingulate region) in region of upper incisors and lateral incisors and performed 48 CT scans. As a result, nine cases had fenestration. In conclusion the author reports that occurs fenestration in approximately 20% of cases.

Biotype GINGIVAL

Kan et al in 2010, conducted a clinical and radiographic follow-up survey in 8 years in 35 patients evaluating the success rate of tissue response in patients who have made immediate implant temporization area in aesthetics. With the aid of a probe peridodontal, the profile was determined in light (21 cases) and espresso (14 cases). The gap is not filled with graft material, after follow-up of 4 years, all implants were in function, 4 patients had gingival recession, the distal bone crest and the mesial and gingival tissue had marked changes. Patients with thick biotype had less change. The same author in 2011, in a prospective study of 35 cases evaluated the peri-implant response and the effects of gingival biotypes after immediate implant temporization, evaluating radiographically pre, trans and post operative and follow-up of 4 years. They observed that regions with thick gingival biotype showed significantly smaller changes in the vestibular margins. Currently some studies suggest the use of soft tissue graft associated with the treatment of immediate implantation in order

to fix and restore adequate volume of soft tissue, especially in the aesthetic region and unit cases in order to prevent further gum recession, being held previously during or after the installation of the implant [11].

The biotype is predominant element in the success of previous treatments as the need for a minimally noticeable rehabilitation, bringing harmony in the natural and artificial aesthetics. The thin biotype, is related to the risk of failures and recessions in vestibular areas, as the remaining bone has a nutrition mostly by periodontal ligament, difficulty in filling papillary, translucency in trans- metal perception and increased susceptibility to bone loss. The thick biotype has higher success rates, as its handling and its pattern of healing, as well as accommodation of peri-implant tissues have greater power of predictability and longevity in the rehabilitation treatment [14]. The literature is still not as conclusive for not having great collection.



Types of Graft

Graft Autogenous

Ferrara in 2006, made a number of cases with clinical and radiographic of 04 years, using mandibular autograft, with a questionnaire to patients about their satisfaction and obtaining positive results in 93.93% of cases. In 2007 the clinical JC.M.ROSA, and his team made the first report using autograft having the maxillary tuberosity as a donor region [15]. It was carried out the extraction without gingival and retail detachment with periótomos aid, then settled up the implant favorable 3D position accommodated is a graft blade from the tuberosity region in intimacy with buccal mucosa and small debris from also tuberosity also they were compressed in the gap, and made temporary with concave profile in order to accommodate the blade of graft and fill the entire emergence profile region without the need for sutures. It is known that the medullary bone releases growth factors the recipient bed, and has high capacity resvacularização. NOELKEN, R in 2011 assessed tooth loss in the esthetic zone (IS and PMS) after a root fracture along shaft and loss of vestibular wall. Inclusion criteria: primary stability and temporization. 18 implants placed in 16 patients (13 IS and 5 PMS). Using the adapted branch graft gap and as a result had improvement was observed in the PES 8 implant sites. In five sites did not change, while sites 5 experienced a slight decline to moderate. Conclusion: Dental plaque increases the gingival recession.

Biomaterials

Whrole in 1998 proposed beyond the immediate implant temporization associated with gap filling with biomaterials, which provided beyond patient satisfaction, the tissue architecture maintenance and peri-implant getting in their study of 100% success rate between 9 and 36 months monitoring, concluding that in addition to releasing growth factors temporization, maintains a more mature bone structure in a subsequent analysis. HASSAN et al 2008 in a clinical trial, evaluated the gap fill after immediate implant placement and dividing into 2 groups: group 1 and group 2 autograft synthetic biomaterials. Being evaluated and analyzed in 3,6,9 and 12 months. According to the results, there was no difference in pocket depth and attachment level. Tabling the data found in the pixel density over 2 months was slightly higher in autologous and there was a small marginal bone loss in the group of biomaterials [16] in a clinical trial, 16 patients pre molars region and gap filling with autogenous group and other synthetic and autogenous group. As a result the two had significant gains, but the group autogenous and synthetic had a slight superiority. Spinato et al, 2012, in a comparative and retrospective study, 6-year follow-up, being installed 22 implants with bone grafts (autologous, xenogeneic, allogeneic, autologous association and xenogeneic and autologous with allograft) and 23 cases of implants without graft none . Conclusion There was no significant difference between grafts, since it is the presence of a thick gum biotype.

Factors Prosthetic

The literature presents several cases resolved with cemented and screwed prosthesis, with the consideration the specific characteristics of each system and preferably work by the authors, but there are basic factors of success in rehabilitation treatment as gingival papilla with height and width suitable, mucosal level balance with adjacent teeth, zenith positions in established position, emergence profile, the next point of contact with the tooth or restoration and adjacent factors related to color, texture and shape [17]. In the anterior region, the screw retention will be easier if the position of the screw access hole is planned below the incisal position in lingual region.

The advantages of cemented prosthesis: good passive adaptation, improved aesthetics, easier control of occlusion, using standard pillars, cement's ability to absorb shocks and reduced cost

(Araujo MG, Lindhe J.) and its main disadvantages, the removal of difficulty excess material which could compromise the treatment if not far removed recommended to keep the same level of the mucosa or even 2mm below this level to facilitate its removal [18]. The prosthesis screwed, are recommended as a method of choice in the aesthetic areas by eliminating the risk of mucositis or peri-implantitis due to absence of the cement, and ease of removal and reinstallation in situations of limited space prosthetic SHERIF et al (2010) conducted long-term study of implant-supported restorations removed by bolted connection and cemented in the anterior maxillary and second patients showed no perceptible differences between the types of retention, and survival of 96% of instances, however , the authors concluded that the health of surrounding gingival tissue is better with screwed restorations than with cemented considering the plaque index and bleeding sucular.

Case Report

Patient male IABA 45, melanoderma, ASA I, without systemic change, sought oral rehabilitation. Upon imaging, it was realized that the unit had persistent 2.2 endodontic lesion with pin insertion deviation of the conduit line and opted for the technique of immediate dentoalveolar restoration.

Figures 1-5: Photos Front, Right side, left side and occlusal. Early to study the case.

Figure 6: Close Smile.

Figure 7: In the top Panoramic radiography initial.

Figure 8: Periapical Radiography Home.

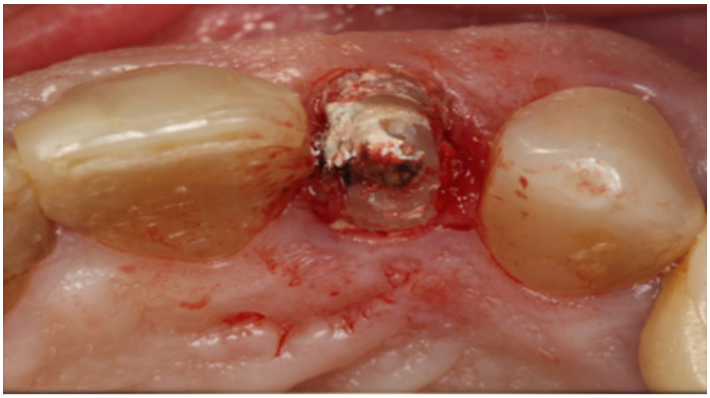
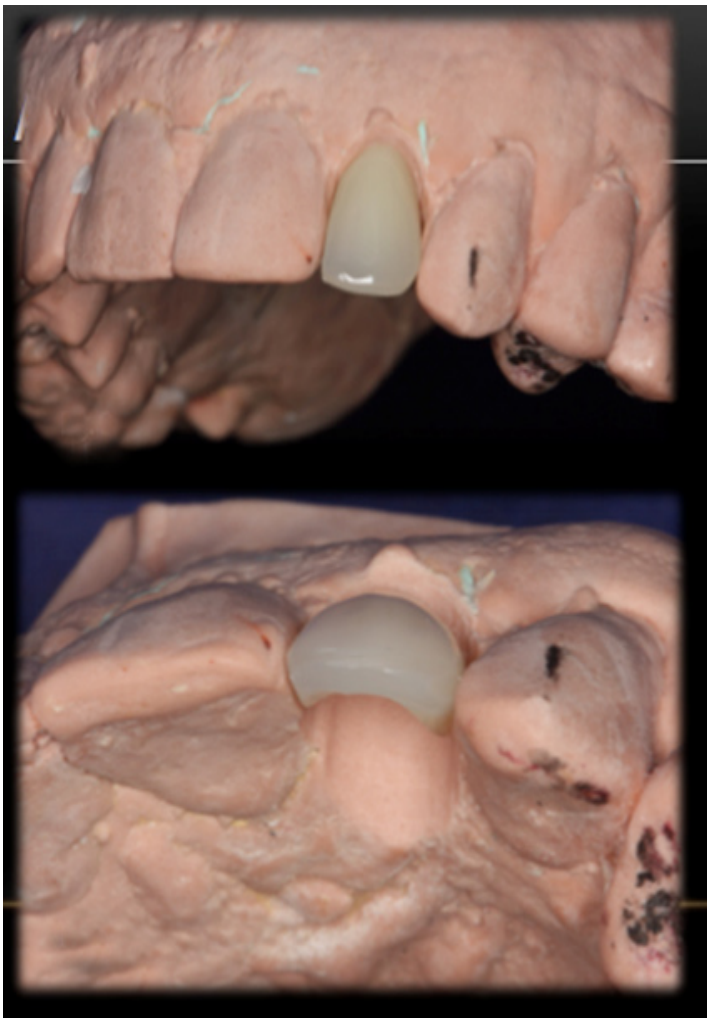
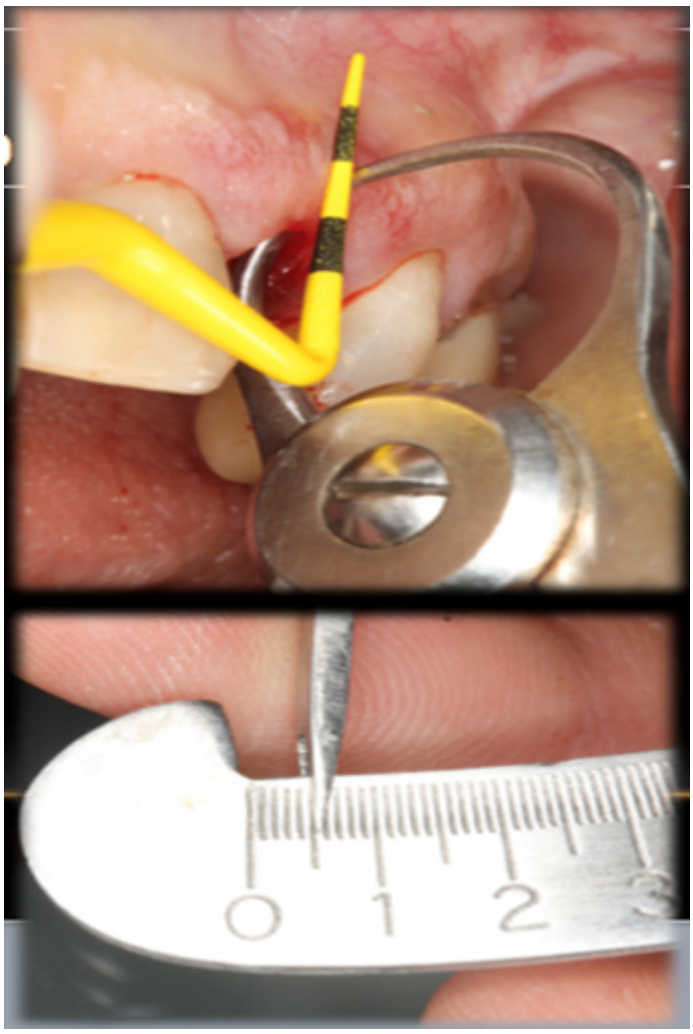


Figure 9a: Start of diaeresis atraumatic by the surgical team.



Figures 9b,10: Interim Preparing the model for the prosthetic team.

Figure 11: Dislocation of the dental unit, without damaging adjacent bone walls.



Figures 12,13: Measurement of the fabric with especímetro Iwason the golgran mark (www.golgran.com.br) With the aid of probe colorvue® Hufriedy (www.Hufriedy.com.br).

Figures 14,15: Exodontia performed, preserving the bone plate and the gum tissue.

Figures 16,17: Milling bed for preparation position in cingulum and confirmation with guide pin.

Figures 18-20: Implant installation Straumann SLActive®3.3 x 14mm.

Figures 21,22: Implant installed in cingulum position.

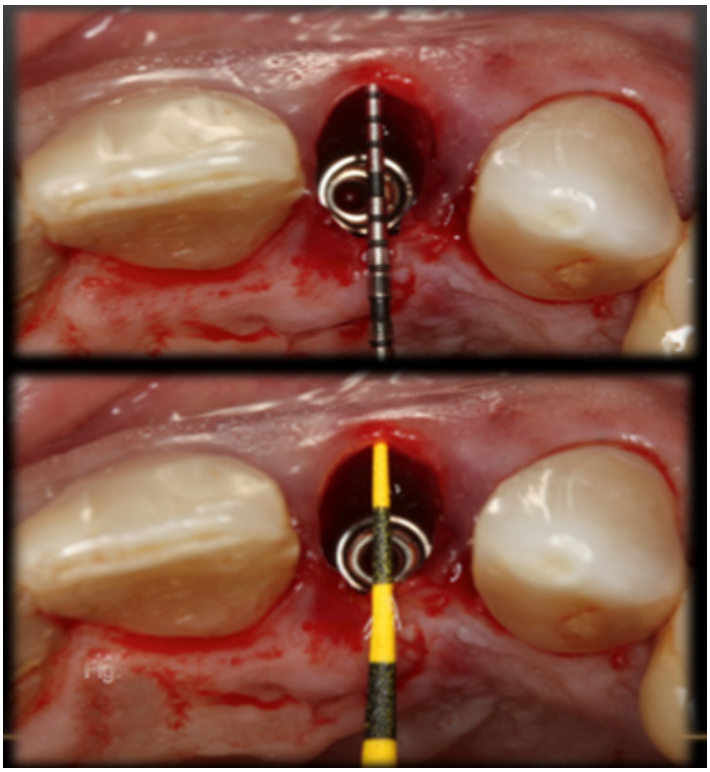
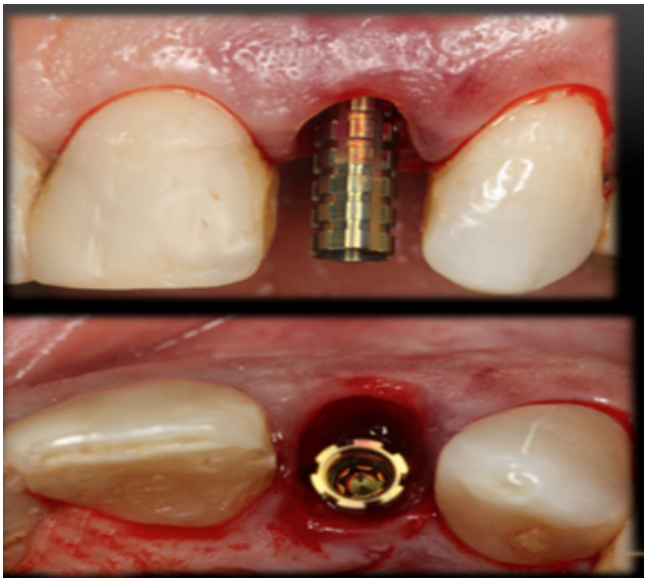


Figure 23: Measurement of the bone gap with North Carolina Hufriedy probe # 15 (3mm gap).

Figure 24: Gap measurement probe with Colorvue®Hufriedy (www.hufriedy.com.br) (3mm gap).



Figures 25,26: Component Proof prosthetic NCStraumann11mm x 3.5mm ® determiner for the region will be cut off from the same.

Figures 27-29: Machining prosthetic component using knob Straumann®after test in the same mouth.

Figure 30: Opacification of the vestibular face with opaque prosthetic component flowable Monopaque® (http://www.ivoclarvivadent.com.br).

Figures 31,32: The provisional Support and stabilization thereof, photopolymerization for 1 minute (Radii-Cal Curing http://www.sdi.com.au/pt/radii-cal/).

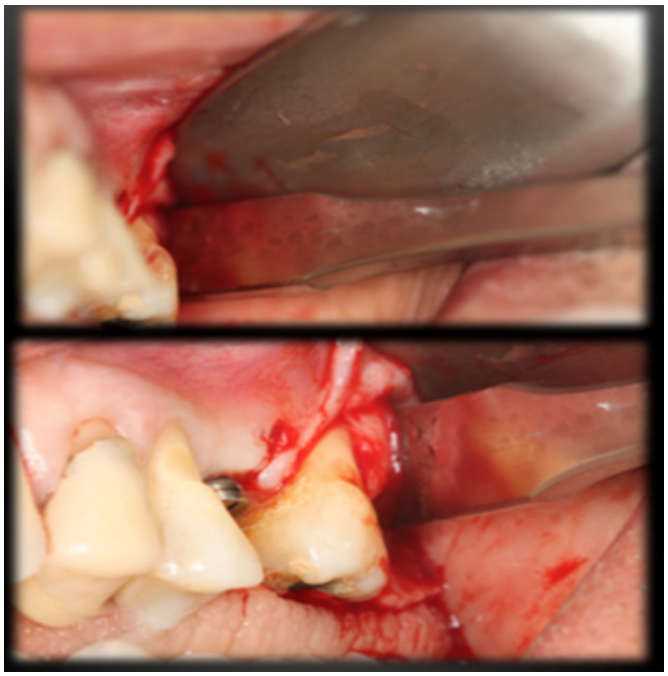


Figure 33,34: Corticomedullar blade removal maxillary tuberosity region using straight chisels and Gillyflowers (Rose chisels kit JCM Welfare®**).**

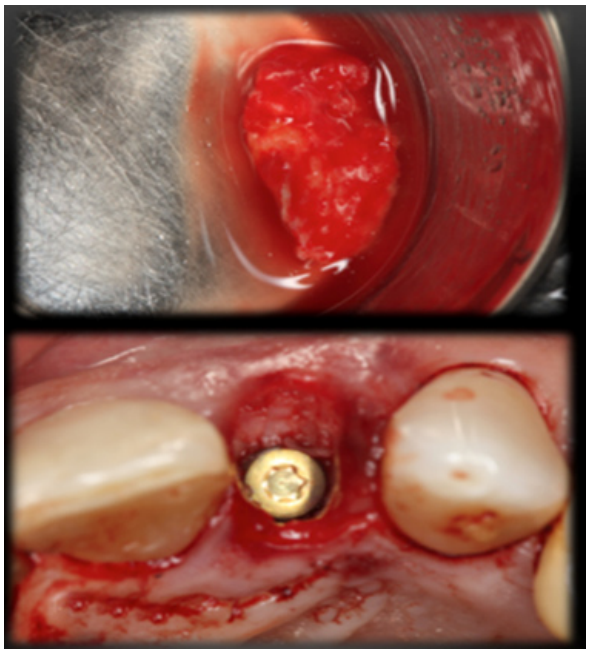


Figure 35: Corticomedullar blade adapted to be crushed and the vestibular gap.

Figure 36: Implant with no cover for filling bone into the implant, bone particles completely adapted.

Figure 37: Interim finished and polished, showing the desired concave profile for maintenance of bone particles in the gap region determiner and the profile of the peri-implant tissues.

Figure 38: Removal of the cover.

Figure 39,40: Interim positioned and finalized.

Figure 41: Occlusal view of the provisional position in favor proteticamente.

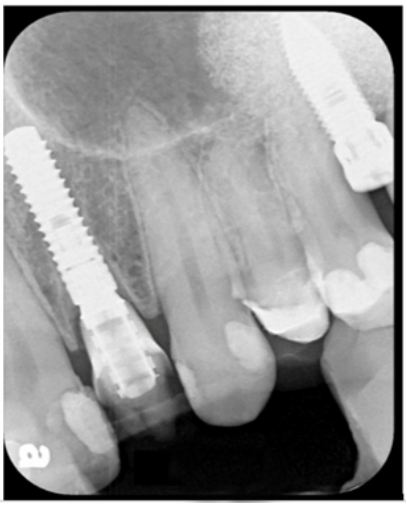
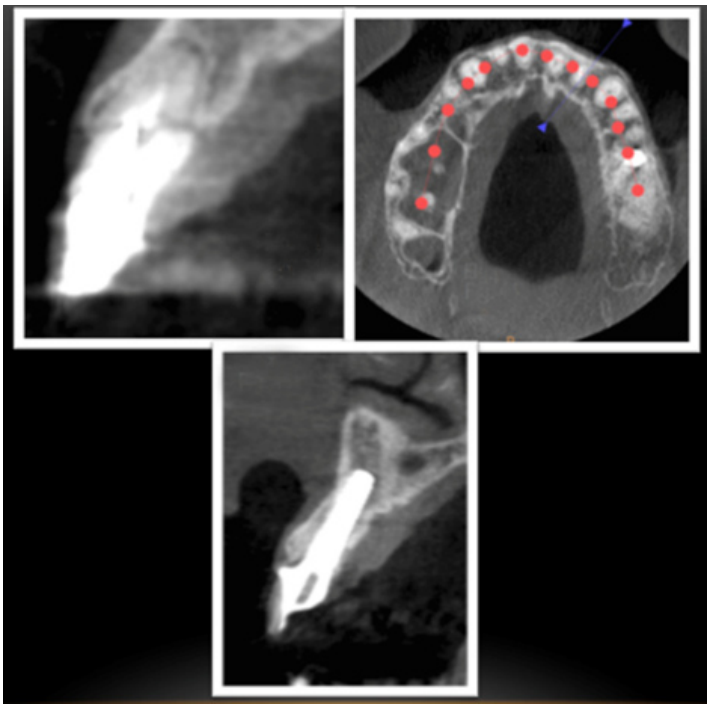


Figure 42: Final periapical radiograph.



Figures 43a,43b,44: Initial and final tomographic analysis.

Discussion

The immediate loading in implant dentistry, is already a very established procedure and grounded in the literature, which allows the implant installation in edentulous patients immediately after extraction, reducing the treatment time. When applied to dental units loss in the anterior region, brings several advantages in the treatment as increased stability of the gum and bone structure, functional and psychological factors. However, several authors have reported their biggest risk in fully healed alveolus. To have greater predictability in the treatment of immediate loading some previous favors should be considered: cause of tooth loss, gingival biotype, bone quantity and quality, posterior occlusal stability and aesthetic risk [11,14,19,20]. Primary stability is an essential factor for immediate loading, and varies by the authors of the 30N cm 50N cm [8,21]. The occlusion, the treatment becomes more predictable for patients without bruxism history, occlusion subsequent stable, being mutually protected and without contact with antagonistic teeth and lateral movements [18,19], .

However, when compared to the extraction with gap fill with provisionalization, increases the number of criteria to indicate its use, as requires a closer study clinically and radiographically the case, you need a technically well-trained professional, satisfactory gingival phenotype selection the appropriate implant, suitable bone quantity and quality, 3D position of the implant primary stability (> 35N.cm) and stable posterior occlusion. The installation of immediate implant with gap fill brings numerous benefits, reducing the number of interventions; the presence of the dental implant, accelerating bone formation and bone resorption minimizing; prevents bone atrophy; maintaining the gingival architecture and promotes a more mature bone structure, compared to 2 surgical stages. The gap fill indication between the implant and the bone buccal wall is much discussion and controversy in the literature. Hammerle, Chen and Wilson (2004) [6,10] suggested that when there is less than 2mm horizontal defect is expected spontaneous healing and osseointegration of the implants. And sites with areas greater than 2mm should use the technique of GBR (guided bone regeneration) [11,22] suggest the gap being filled with xenogeneic materials (Bio-Oss) when it is greater than 3 mm. Some authors in their research, they found loss crest mesial and distal in studies with immediate implants without using graft [13,23],. However, Cooper, et al. (2010) [23-25] reported an increase in bone without the use of gap filling graft. Authors who made gap fill, have yielded mixed results.

Ferrara et al (2006) using autograft obtained particulate papilla no loss after 4 years. Tsuda et al. [26] bone augmentation relates to the use of xenogeneic graft (Bio-Oss) associated with the subepithelial connective tissue. However [27,28]; FDBA using graft or biphasic calcium phosphate and Bio-Oss, respectively, found resorption of bone crest [26] used Bio-Oss associated with connective tissue and gingival recession obtained (0.5 mm), the same result found in Cornelini et al 2005, which adopted the collagen membrane. They have yielded mixed results. Ferrara et al (2006) using autograft obtained particulate papilla no loss after 4 years. Tsuda et al. bone augmentation relates to the use of xenogeneic graft (Bio-Oss) associated with the subepithelial connective tissue. However [27,28]; FDBA using graft or biphasic calcium phosphate and Bio-Oss, respectively, found resorption of bone crest [26] used Bio-Oss associated with connective tissue

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Regarding the gingival biotype, its preliminary assessment, and manipulation during treatment is a major factor in an aesthetic immediate results and long-term, several authors [29]; Kan et al (2011); [23]; Becker et al (2011); Cosyn et al (2011) and (2012) [30]; Spinato (2012), report that the thin biotype has a more dubious prognosis when compared to thick biotype [31-76]. According Cornelini, et al. (2005); Kan et al (2011) and Chaar E. et al (2011) of the interproximal papillae was reduced in their studies. However [26,25] observed an increase of buds.

Chen 2014 A systematic review of the literature aimed to (1) estimate quantitatively the aesthetic results of the implants placed in post-extraction sites and (2) evaluate the simultaneous use of bone augmentation. For inclusion articles of implants placed after extraction of anterior teeth, all levels of evidence were accepted (case series with at least 5 cases). 50 results found and how articles Conclusion: 1) acceptable cosmetic results can be obtained with implants placed after extraction of anterior teeth and premolars in the cosmetic field; 2) Recession mucosa is a risk with immediate implant; 3) The remodeling and bone resorption after the extraction is physiologically quite consolidated in the literature, what is sought are ways to reduce this process, especially in anterior regions, where the zenith of teeth is heavily influenced by this progress, and have anatomically one tissue nutrition limited. In view of the researched methodologies, there is plenty of disagreements with regard to the criteria for analysis, standardization, methods, measures, measurement of reference and follow-up, requiring higher in research details of operating parameters to seek a consensus.

Conclusion

Due to the revision of the articles can come to some conclusions

- There is no consensus regarding the use of the technique, its indications, use of autologous or xenogeneic graft and prosthetic rehabilitation.
- Clinical experience and professional skill are relevant because of the delicacy of the procedure and different nuances.
- Patients who have a expesso gingival biotype present a more favorable prognosis. Those with thin or intermediate biotype, should probably be associated with connective graft, because it seems to influence prosperous way gingival architecture in order to achieve an aesthetically pleasing rehabilitation and prevent possible gum recession.
- The method applied was effective in the short term; But according to recent studies, there is a tendency in the vestibular recession in the TIPP in the medium and long term, the need for greater monitoring in seeking factors that stabilize the buccal mucosa.
- Further studies are needed for analysis.

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