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Immediate implant placement with xenograft: Case Report

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Abstract

Immediate implants have the advantage of avoiding a post-extraction healing period of 6 months or more, and the risk of alterations and atrophy of the crest; in addition to avoiding a second surgical intervention. **Case Report:** A 62-year-old female patient diagnosed with 1.4-year-old root caries without the possibility of prosthetic reconstruction, so an immediate post-extraction implant was placed to replace 1.4 with simultaneous xenograft placement in the remaining space of the alveolus with satisfactory results at 3 months. **Conclusion:** Placing immediate implants in cases where possible avoids having to do more than one surgical intervention, avoiding three-dimensional modifications in soft and hard tissues, and shortening rehabilitation and healing times.

Keywords: Immediate implant, bone filling, emergency profile

Introduction

After tooth removal or loss, there are significant alterations of the alveolar crest that compromise the three-dimensionality, stability, function, and aesthetics of the area when planning the placement of a dental implant^[1]. At the Consensus Conference, the ITI indicated that, if possible, implants should be placed immediately after tooth extraction^[2]; thus, avoiding a 6 months or more healing period after extraction, as well as the risk of alterations and atrophy of the alveolar crest^[3].

An immediate implant is defined, as the one that is placed within the first 24 hours after the removal of a dental organ^[2]. The ideal post extraction site for immediate implant placement is one without periodontal support bone loss or minimum attachment loss of the tooth to be extracted^[4].

A classification system for the most opportune moment for implant placement after tooth loss was proposed, based on the desired clinical results during site healing, as well as suggestions to be applied during implant placement surgery^[5]. In addition, the quality and quantity of available bone should be considered during surgical planning, to facilitate the implant insertion guide and predict whether a simultaneous regenerative procedure to implant placement will be necessary^[6].

The aim of this study is to report the case of a 62-years-old female patient, diagnosed with root caries without the possibility of restoration, and its clinical management by placing an immediate implant.

Case Report

A 62-year-old female patient attended the Periodontics Department of the School of Dentistry of Autonomous University of Nuevo León due to problems related to the dental organ (DO) 1.4. At medical history and interrogation, she presented osteopenia and surveillance for malignant bladder injury, so she was classified as a type II ASA patient^[7].

Diagnosis

At dental history, she reported good oral hygiene habits, did not present harmful habits, and reported sensitivity in DO 1.1 and 2.1.

The patient presented multiple restorations with amalgam in the posterior sector, unitary crowns in DO 1.4 (Fig. 1B), 1.5, 4.6 and 4.7; a 2mm overbite, a 3mm overjet, ill-fitting and filtered restorations, malposition, dental pigmentation and physiological salivation. Intraoral periodontal examination revealed papillary inflammation (in DO 1.4 and 1.5), and mucogingival defects in the anteroinferior sector. It was diagnosed as healthy periodontium, with root caries of DO 1.4 without the possibility of prosthetic reconstruction, and as etiological factors dent bacterial plaque and poorly adjusted restoration.

The radiographic analysis identified DO 1.4, 1.5, 2.4, 4.6 and 4.7 with root canal treatment, mild horizontal bone loss in posterior inferior DO and widening of the periodontal ligament in DO 1.4, 2.6, 3.7, 3.6, 3.1, 4.6 and 4.7. Root caries of DO 1.4 (Fig. 1A) and periapical lesion were observed in DO 4.6.

Procedure

As treatment, a systemic phase was indicated to monitor osteopenia and his urological condition; followed by the hygienic phase of treatment, which consisted of oral physiotherapy, dental plaque control, prophylaxis, as well as consultation with prosthodontics and endodontics; in the corrective phase, the placement of an immediate post extraction implant was planned to replace the OD 1.4, and a maintenance phase every 3 months.

1. Surgical planning

At CBCT a type III bone quality was found, adequate for implant placement, and the use of bone xenograft was planned simultaneously at the placement of the implant to fill in the gap between the implant and alveolar socket. Measurements were taken in a sagittal section of the OD 1.4 obtaining a vertical measurement of 14.05 mm and vestibule-palatal measurement of 8.68 mm, 8.12 mm, and 7.38 mm at apical, medial, and coronal level respectively (Fig. 1C); therefore, a JD evolution implant of 4.3x11.5 mm was selected.

2. Atraumatic extraction

The area was locally anesthetized with local blocking techniques of the middle superior dental and posterior palatine nerves, with papillary reinforcement. The atraumatic extraction of the OD 1.4 was performed using periotomes and atraumatic forceps, the integrity of the alveolar socket was corroborated (Fig. 2).

3. Implant placement

The drilling protocol for implant placement was executed from the pilot drill up to the 3.6 diameter drill, exceeding the socket depth by 2 mm to create primary stability (Fig. 3), the implant was manually placed, with a final torque of 30Ncm, for good primary stability (Fig. 4).

Once the implant was placed, the gap was filled with InterOss, particulate xenograft of natural hydroxyapatite derived from bovine bone (Fig. 5A), up to the level of the alveolar crest and implant neck (Fig. 5C); gradually packed until the desired filling was obtained.

4. Emergence profile

A customized emergence profile elaborated with composite was placed taking care of a perfect seal (Fig. 5D), for soft tissue management, for the definitive restoration to have a more natural and esthetic appearance (Fig. 5E). After three months, the composite profile was modified to continue with

the emergence profile creation (Fig. 6C).

As postoperative pharmacological indications amoxicillin 500 mg was prescribed, every 8 hours for 7 days; ibuprofen 400 mg, every 6 hours for 5 days and 0.12% chlorhexidine gluconate rinses, twice a day for 15 days. She was also instructed not to brush the treated area for the first 7 days and after that time to resume brushing with an extra soft brush.

Results

At 7 days the tissue was slightly inflamed, and a control periapical radiograph was taken (Fig. 6A); at 21 days the soft tissue was observed with no signs of inflammation, pink and firm (Fig. 6B). At three months postop the gingival tissues were found to be in excellent condition and radiographically bone loss was not found beyond what was expected due to bone remodeling (Fig. 6C).

Figure format



Fig 1: Initial auxiliary studies A) Periapical x-ray, B) Intraoral photography, C) CBCT sagittal section.



Fig 2: Atraumatic extraction DO 1.4 A) Pre-op, B) DO 1.4 without crown, C) Fragments of DO 1.4.

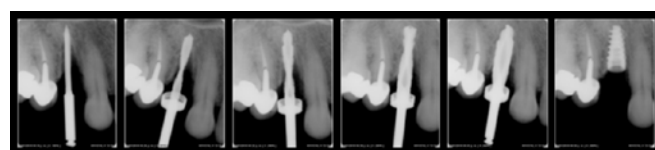


Fig 3: Drilling protocole.

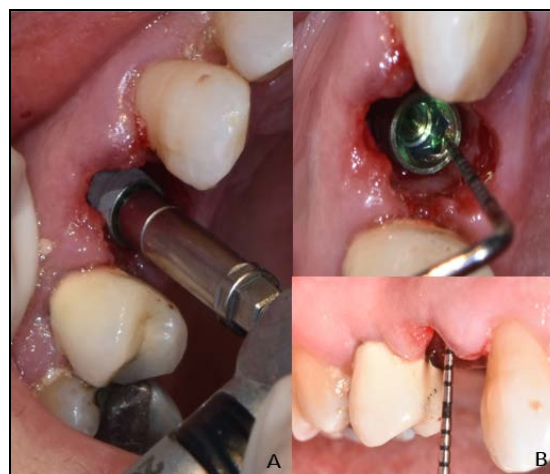


Fig 4: Implant placement.



Fig 5: Bone graft placement, A) GAP, B) Bone filling, C) Filling to bone crest, D) Emercy profile, E) Profile placed sealing the socket.



Fig 6: Postop control A-C) 7 days, D-E) 21 days, F-H) 3 months

Discussion

Araujo *et al.*^[8] mention that immediate implant placement, when possible, avoids having to perform more than one surgical intervention, and therefore three-dimensional changes in both soft and hard tissues after the loss or extraction of a tooth; shortening restoration and healing times, which makes it an attractive option for patients.

Zuffetti *et al.*^[9] in their study evidenced that immediate implants have high survival rates not significantly different from those placed in 2-stage protocols, even in infected sites, therefore, delayed implant placement should only be used for specific cases.

In this case it was decided to place a bone graft simultaneously at the implant placement avoid tissue collapse and obtain better results. An emergence profile that mimics that of the extracted tooth supports an esthetic and harmonious gingival architecture and mimics the surrounding natural dentition from a morphological point of view.

Even in well placed implants and in conjunction with possible bone and soft tissue grafting procedures, biological changes will be generated that alternate peri-implant gingival dynamics (gingival thickness; horizontal and vertical contour), therefore, to achieve an esthetic peri implant gingival architecture that emulates the contralateral tooth, the emergence profile requires modifications during the healing process, as mentioned by Chu *et al.*^[10].

Conclusion

The clinical case of this 62-year-old female patient, diagnosed with root caries with no possibility of restoration, to whom an immediate implant was placed with simultaneous bone filling of the remaining space of the alveolus, primary stability and three-dimensionality were obtained when the dental implant was placed, as well as a total seal with the customized

emergence profile that was placed; and with stability at 3 months postoperatively. It is important to perform clinical and radiographic control and periodontal maintenance every 3 months without interruption during the whole process.

Acknowledgments

To CONACYT.

The authors report no conflicts of interest related to this study.

References

1. Buser D, Chappuis V, Belser UC, Chen S. Implant placement post extraction in esthetic single tooth sites: when immediate, when early, when late? *Periodontol.* 2000-2017;73(1):84-102.
2. Chen S, Buser D. ITI treatment guide. Implants in extraction sockets. 1a ed. Quintessence Publishing Co., Inc. 2008;3:173-175.
3. Araujo MG, Lindhe J. Dimensional ridge alterations following tooth extraction. An experimental study in the dog. *J Clin Periodontol.* 2005;32(2):212-8.
4. Bhola M, Neely AL, Kolhatkar S. Immediate Implant Placement: Clinical Decisions, Advantages, and Disadvantages. *Journal of Prosthodontics.* 2008;17(7):576-81.
5. Chen ST, Beagle J, Jensen SS, Chiapasco M, Darby I. Consensus statements and recommended clinical procedures regarding surgical techniques. *The International Journal of Oral & Maxillofacial Implants.* 2009;24 Suppl:272-8.
6. Kan JYK, Roe P, Rungcharassaeng K, Patel RD, Waki T, Lozada JL, *et al.* Classification of sagittal root position in relation to the anterior maxillary osseous housing for immediate implant placement: A Cone Beam Computed Tomography Study. *The International journal of oral & maxillofacial implants.* 2011;26(4):873-6.
7. Abouleish A, Hurwitz M, Leib M. ASA Physical Status Classification System. *ASA monitor.* 2020;1:4.
8. Araujo MG, Sukekava F, Wennstrom JL, Lindhe J. Ridge alterations following implant placement in fresh extraction sockets: An experimental study in the dog. *J Clin Periodontol.* 2005;32(6):645-52.
9. Zuffetti F, Capelli M, Galli F, Del Fabbro M, Testori T. Post-extraction implant placement into infected versus non-infected sites: A multicenter retrospective clinical study. *Clin Implant Dent Relat Res.* 2017;19(5):833-40.
10. Chu S, Kan J, Lee E, Lin GH, Jahangiri L, Nevins M, *et al.* Restorative emergence profile for single-tooth implants in healthy periodontal patients: Clinical guidelines and decision-making strategies. *Int J Periodontics Restorative Dent.* 2020;40(1):19-29.

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