

Immediate Implant Placement: Report of Case Series

SUMMARY

Objective: The aim of this study was to evaluate the outcome of immediate postextraction implant placement. Immediate placement of dental implants have been claimed of the potential advantages such as reductions in the number of surgical interventions, a shorter treatment time, an ideal 3-dimensional implant positioning, the presumptive preservation of alveolar bone at the site of the tooth extraction and soft tissue aesthetics.

Method: In this case series we reported to extract 15 teeth in 12 patients (8 males; 4 females, mean age: 46.08 years) and replace the teeth with implants immediately.

Results: There were no signs of inflammation or infection and none of the patients had complaints subsequently. All implants were osseointegrated at the time of abutment connection. Postoperative healing was uneventful in all of the patients. No complications were observed.

Conclusion: Within the limits of the present study, immediate implant placement was a predictable treatment.

Keywords: immediate implant placement

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CASE REPORT (CR)

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Introduction

Immediate postextraction implant placement is a well accepted protocol due to the preservation of aesthetics, shorter total treatment time, maintenance of socket walls, reduced surgical time, and better actual implant placement⁸. Advanced periodontitis, non-restorable caries, fractures, and traumatic injuries are the most common reasons for missing anterior teeth. Nowadays, patients and clinicians expect shortening the overall treatment period and minimizing the number of surgical interventions in implant dentistry. Simultaneous guided bone regeneration procedures, using bone grafts and barrier membranes, are usually necessary in such a situation to correct peri-implant defects and/or to augment surrounding tissues. This approach can also achieve successful treatment outcomes with high predictability and a low risk of complications, both from functional and aesthetic points of view^{3,4}.

Teeth replacement using dental implants has proven to be a successful and predictable treatment procedure; different placement and loading protocols have evolved

from the first protocols in order to achieve quicker and easier treatment time. The original protocol of a dental implant was to place the implant into a healed alveolar socket. However, that protocol requires time to allow healing of the extraction socket¹⁴. Schulte and Heimke initially described immediate placement of a dental implant in an extraction socket more than 30 years ago, in 1976¹. Reduction in number of surgical interventions, a shorter treatment time, an ideal 3-dimensional implant positioning, the presumptive preservation of alveolar bone at the site of the tooth extraction and soft tissue aesthetics have been claimed as potential advantages of this treatment approach³. Additional benefit, which is also valued by patients, is the avoidance of a second surgical intervention². On the other hand, the morphology of the site, the presence of periapical pathology, the absence of keratinized tissue, thin tissue biotype and lack of complete soft tissue closure over the extraction socket have been reported to adversely affect the immediately placed implants³. The purpose of this paper was to evaluate the outcome of immediate postextraction implant placement.

Material and Methods

The present study was performed within the guidelines of the Helsinki Declaration for Biomedical research involving human subjects. The study was conducted at the Department of Oral Surgery and Oral Medicine, Faculty of Dentistry, Istanbul University.

All patients were given emphasis-placed detailed explanations of the study protocol and were asked to sign surgical consent forms. 15 teeth in 12 patients (8 males; 4 females, mean age: 46.08) were evaluated for this case series and were scheduled for tooth extraction and immediate implant placement. Patients with ongoing inflammatory, exacerbating processes were excluded from the study. A 2-stage surgical procedure was planned to optimize marginal bone healing. The patients were initiated on a daily dose of 1.5 g amoxicillin, or 0.9 g clindamycin in penicillin-sensitive patients, 3 days prior to the surgical procedure and maintained on it for 2 days postoperatively.

Under local anaesthesia, a full-thickness mucoperiosteal flap was reflected at the surgical site and the involved teeth were extracted with minimal trauma to the cortical plates, and implant placement was made into the tooth extraction sites. The resultant sockets were then prepared by the standard implant placement protocol, and were extended apically 3 to 4 mm to achieve primary stability for the implants. In 6 of the cases, membranes and bovine bone graft materials were used. The flaps were subsequently replaced and secured with sutures in such a way that the healing cap of the implant was exposed to the oral environment. The implants were evaluated clinically and radiographically, and the follow-up period was 8-72 month (mean: 20.75 months).

Results

Immediate implant placement demonstrated acceptable clinical and radiographic outcome over a 8 months period in all 12 patients with 15 implants.

There were no signs of inflammation or infection and none of the patients had subsequent complaints. All implants were osseointegrated at the time of abutment connection. Postoperative healing was uneventful in all of the patients. No complications were observed. None of the implants were lost or demonstrated progressive bone loss beyond acceptable levels.

Discussion

Immediate implantation has predictable results, with several advantages over delayed implant placement.

Dental implants have become a predictable treatment option for the completely or partially edentulous patient. A 3- to 6-month healing period is usually recommended to achieve osseointegration before loading implants with prosthesis^{10,11}. The first reported case was described by Schulte and Heimke in 1976 using a polycrystalline aluminium surface. Since then, numerous clinical case reports have been published, and, at various times, review papers have appeared to update this surgical technique with contemporary findings^{1,7,11,13}. Clinical indications for replacing teeth with immediate implants include retained deciduous teeth, vertically and horizontally fractured teeth, teeth lost due to non-restorable dental caries, periodontal disease, endodontic failure, and poor aesthetics¹³. Primary stability, defined as the biometric stability immediately after implant insertion, is a critical factor that determines the long-term success of dental implants¹². In our case series, all implants had primer stability.

Lindeboom et al⁹ reported the cumulative implant survival rate for immediate- placed implants 92% versus 100% in the delay-placed implants for replacement of teeth with periapical lesions. They concluded that immediate implant placement may be indicated. Corbella⁶ also reported a high survival rate for the delay-placed implants for replacement of teeth with periapical lesions, in the literature review that included 10 studies. Although Chen S et al³ reported the presence of periapical pathology to be a criterion to affect immediately placed implants adversely, findings of Casap et al² reported that 29 of 30 immediately placed implants were osseointegrated in debrided infected dentoalveolar sockets in 20 patients, and they were functional when followed up from 12 to 72 months. 1 implant was mobile after its immediate restoration and was removed. They concluded that successful immediate implantation in debrided infected alveolar sockets depends on the complete removal of all contaminated tissue and the controlled regeneration of the alveolar defect. This treatment may be considered in patients presenting dentoalveolar infections by experienced clinicians³. Our results were also successful because we excluded inflammatory teeth from our study and prescribed prophylactic antibiotic before the surgery.

A statement of Chrcanovic et al⁵ was high survival rate obtained in several studies supports the hypothesis that implants may be successfully osseointegrated when placed immediately after extraction of teeth presenting endodontic and periodontal lesions. It provided that appropriate clinical procedures were performed before the implant surgical procedure, such as meticulous cleaning, socket curettage/debridement and chlorhexidine 0.12% rinse⁵.

The difference between our study and those studies is that we excluded any patients with endodontic or periodontal lesions and prescribed prophylactic antibiotic

before the surgery. We confirmed that immediate implant placement is a treatment with multiple benefits, as reduction in the number of surgical interventions, a shorter treatment time, an ideal 3-dimensional implant positioning, the presumptive preservation of alveolar bone at the site of the tooth extraction and soft tissue aesthetics were potential advantages of this treatment approach. Additional benefit, which is also valued by patients, is the avoidance of a second surgical intervention.

In patients with endodontic or periodontal lesions we presume more controlled clinical trials and it requires longer follow-up period to confirm this procedure as a safe treatment.

In conclusion, the results of this study were satisfying and showed that immediate implant placement could be an alternative choice to delayed implant placement. When compared to other studies, we had a high survival rate of 100%. Within the limits of this approach, we suggest that immediate implant placement is a choice of treatment in patients with a healthy alveolar bone.

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