Case Report

Full Mouth Rehabilitation of a Patient with Immediate Extraction, Immediate Implant Placement, and Immediate Loading—A Case Report

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Abstract

In the present scenario, the most opted treatment plan for the replacement of missing teeth is by implants, which are designed to replicate the root and crown of the natural tooth. This procedure preserves the gingival mucosa and bone architecture with no damage to adjacent tooth. But the major disadvantage is the prolonged duration of time for osseointegration (4-6 months). Therefore, the aim of this case report is to overcome the time-consuming factor involved in the conventional technique using successful immediate implant placement and loading with a follow-up of 2 years. Accordingly, a comprehensive treatment involving the placement of six implant-supported porcelain bridges for maxilla and mandible was planned for the patient. This case report implies good patient cooperation and satisfaction because of less time consumption and esthetics. On semiannual evaluation, the retention and stability of the prosthesis was good.

Keywords: Full mouth rehabilitation; Immediate extraction; Immediate implant placement; immediate loading

Introduction

An implant-supported porcelain bridge is a contemporary restoration that has revolutionized the way surgeons and dentists think of replacing a full set of teeth. This type of treatment was initiated by the discovery that dental implants, made of commercially pure titanium, can achieve anchorage in the jaw bone with direct bone-to-implant contact (osseointegration) [1]. The mechanism of osseointegration has been well described by several authors. As per Branemark, the implant has to be inserted 4-6 months prior to loading [2-5]. But with recent advancements (implant surface coatings), implants are placed successfully into fresh extraction sockets in both anterior and molar regions [6].

Two different approaches for immediate loading of dental implants are currently known. Both have in common the implicational concept that splinting/stabilization of several implants is accomplished through the prosthetic superstructure. The first approach relies on the compression screw principle. Screw implants of this type can result in lateral condensation of spongy areas. Implant stability is greatly increased by a mechanism that could be regarded as “corticalization” of the spongy bone (KOS). The second approach is to establish cortical anchorage of thin screw implants [bicortical screw (BCS)] or basal implants. Excellent primary stability can be obtained along the vertical surfaces of these implants with no need for corticalization. Implants of this type are, therefore, well suited not only for immediate loading but also for immediate placement.

This case report highlights extraction and immediate implant placement of mandibular anterior teeth and maxillary posterior teeth followed by immediate loading in the management of missing edentulous spaces.

Case Presentation

A 45-year-old male patient reported to a private clinic with the chief complaint of missing upper front and lower back teeth for the past 5 years (Figure 1). On clinical examination, bleeding on probing, gingival recession, Grade III mobility in 15,16,24,25,26, and Grade II mobility in 33,32,31,41,42,43 were found. Radiographic investigation revealed generalized alveolar bone loss (Figure 2). A comprehensive treatment plan was made to extract all the teeth and place implant-supported porcelain bridge (Fp1prosthesis) in both the upper and lower arches. The treatment plan was discussed with the patient and an informed consent was obtained. The patient was then investigated to fulfill the following required criteria before undergoing the treatment: (1) no systemic diseases (e.g., diabetes), (2) no consumption of any prescribed medications or recreational drugs; (3) no use of nicotine.

Surgical Phase

Initially, an atraumatic extraction of mandibular anterior teeth under local anesthesia was performed. As per Branemark Novum’s concept, two implants were decided to be placed in the fresh extraction site of the canine region. Accordingly, the walls of the socket were thoroughly curetted to remove all the remnants of the PDL and irrigated with normal saline. Then two implants of 3.3 mm width and 13 mm length were placed in the 33 and 43 regions, and two implants of 4.75 mm width and 11.5 mm length were placed in the 36 and 46 regions after flap elevation and osteotomy procedure. Since it was one-stage implant placement, healing abutment was attached. Similarly, six implants were planned to be placed in the maxillary arch. Two implants of 4.75 mm width and 11.5 mm length were placed in the 16 and 26 regions immediately after extraction and osteotomy. Remaining four implants of 3.75 mm width and 13 mm length were placed in the 11 and 21 regions, and 4.2 mm width and 11.5 mm length implants were placed in the 14 and 24 regions after flap elevation and osteotomy procedure. Healing abutments were attached to the implants (Figures 3 and 4).

Next day, ortho pentomogram (OPG) was taken to visualize the implant position (Figure 5). Maxillary and mandibular arch impressions were made using alginate. A conventional special tray was fabricated for the maxillary and mandibular arches in acrylic resin. The healing abutments were removed and impression copings
were attached to them. The impression was made with a monophase polyvinyl siloxane impression material. The casts were poured. The abutments were evaluated in the cast for parallelism. After which the abutments were placed and prepared in the patient mouth and the jaw relation was recorded. A mock wax-up was done and using which a metal framework was fabricated. The metal framework was evaluated in the patient's mouth. Then the final porcelain bridge prosthesis was fabricated (Figure 6). The prosthesis was cemented on the abutments after evaluation (Figure 7). Occlusion was verified with an articulating paper. The patient was pleased with the esthetic and functional outcome of the prosthesis (Figure 8). The patient was advised on post-insertion care and oral hygiene maintenance. The patient was recalled every 6 months for review for a period of 2 years (Table 1).

**Discussion**

In the present scenario, immediate-loading dental implants are most preferred [7,8]. Immediate implant placement and early loading have a success rate of 66 to 95.5% in maxilla and 90 to 100% in
mandible [9]. In the case of extractions due to trauma, root perforation, root resorption, root fracture, unfavorable crown to root ratio, and when the bony walls of alveolus are still intact, immediate implant placements are recommended [10]. In this case, the bony walls of alveolus was intact and atraumatic extraction was performed, followed by immediate implant placement.

Implant-retained fixed prostheses have been shown to improve the quality of life for edentulous patients and to contribute to the well-being of the patients' psychology. They offer better satisfaction than conventional dentures. The implant-retained full fixed prosthesis offers several advantages, including less food entrapment, less maintenance, longevity, and similar overhead cost as a completely implant-supported conventional denture [11,12].

In their study Schroop et al. reported that the success of early loading implants is not compromised by placement in fresh extraction sockets unless the patient has a history of marginal periodontitis [13].

Dental implants that are immediately placed and loaded into a carefully selected extraction socket are highly successful than those placed in a healed site [14]. A study conducted by Ferrara et al. concluded that immediate placement and early loading of implants was found to be esthetically and functionally satisfactory by the patient [15].

**Conclusion**

In this case, the patient was pleased with the esthetics and functional outcome of the prosthesis. On semiannual evaluation, the stability, retention, and patient comfort were good.

**References**


