A Five-year Follow-up of Immediate Loaded Implant: A Case Report

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ABSTRACT

Aim and objective: To evaluate the prognosis of an immediate loaded endosseous implant.

Background: Immediate loaded implants have become the need of the hour owing to the increasing esthetic demand and have overcome the disadvantages of traditional loading by reducing the treatment time, reducing the period of edentulism, and reducing the need of a second stage of surgery and patient discomfort.

Case description: A patient reported to us for prosthetic rehabilitation of his missing teeth with respect to the upper right back tooth region. An immediately loaded endosseous implant of the dimension 4.2 × 13 mm was placed and prosthesis was restored. The patient was followed up for a period of 5 years.

Conclusion: After a period of 5 years, the area around the implant showed negligible amount of crestal bone loss. Immediate loaded implants can be considered as a reliable treatment protocol owing to the high success rate.

Clinical significance: Careful case selection, thorough treatment planning with an expert implant team, and follow-up of surgical and prosthetic protocols are essential for the success of an implant.

Keywords: Immediate dental implant loading, Osseointegration, Survival rate.

BACKGROUND

Implants offer an alternative to the traditional methods to replace missing teeth with dentures or bridges. Implants may be placed at the time of tooth removal (immediate placement), at about 6–8 weeks later when the soft tissues have healed (delayed immediate placement), or at some later time point.1 The healing of dental implants in the jawbone is based on the principle of osseointegration, which includes a healing period of several months and was based on acquiring direct bone-to-implant contact (BIC). Osseointegration can be achieved using both one- and two-stage approaches.2,3 High survival rates for endosseous dental implants loaded either immediately after implant placement or within weeks after implant placement has been reported.4

Immediate loading (IL) implant has been defined as an implant that carries a prosthetic superstructure that makes occlusal contact within the first 1 or 2 days after placement or no later than 72 hours after surgery. This not only comprises of a nonsubmerged one-stage surgery, it also involves loading the implant without compromising osseointegration.5

Osseointegration and IL depend on the following biologic factors such as: (1) factors affecting interfacial bone formation (osteogenesis); (2) peri-implant bone resorption (osteolysis); and (3) micromotion effects on peri-implant osteogenesis. Success further depends on maintaining implant stability during healing as the nature of osteogenesis is time-dependent. Achieving primary stability and abundant interfacial bone to compensate cortical bone resorption that results from implant placement will further improve the success rate. Approaches made for successful IL may be focused at enhancing osteogenesis, limiting functional loads and micromotion, and controlling the resorption that reduces stability during the healing period.4

Eliminating micromovements between implants and osteotomies also helps in successful immediate loaded implants.
an endosseous implant (Hi-Tec Implants Ltd, USA) of 4.2 × 13 mm dimension was planned. The implant was made of commercially available pure titanium, sand-blasted and acid-etched.

After anesthetizing the area, crestal incision was made along the ridge, which extended as sulcular incision to one tooth mesially and distally adjacent to the edentulous area. Buccal and lingual flaps were reflected. Sequences of drills were used according to manufacturer’s instructions. The implant was placed in the osteotomy site using the implant carrier and was driven up to 13 mm using the wrench. After placing the implant in position, the torque was ascertained not less than 35 N cm for primary stability to be eligible for IL.

Suitable abutment was placed and sutures were placed. Temporary crown was restored and the area was left to heal and postsurgical instructions were given. After 1 week, the patient was recalled and sutures were removed and soft tissue around the implant was evaluated. Impression was made with additional silicon for fabrication of permanent crown. A screw-retained porcelain fused to metal crown was prepared and fixed with the help of a hand wrench. Clinical and radiographic photographs were taken (Figs 1 and 2).

The patient was followed up, and after 5 years the following were the observations:

- No patient discomfort was reported.
- Radiographs revealed very negligible crestal bone loss (Fig. 3).
- No signs of gingival inflammation were seen (Fig. 3).

**Discussion**

High success rates from immediate loaded implants in humans were first documented in the middle 1980s, when the one-stage implant protocol gained popularity. In a systematic review of survival rates for immediate loaded dental implants, it was concluded that the overall implant survival rate for the included studies was 96.39%. The database included 10,491 immediate implants placed in 2,977 patients, with a maximum follow-up of 13 years.6

Babbush et al., reported a cumulative success rate of 88% on 1,739 IL titanium plasma-sprayed (TPS) implants. It is widely accepted that IL is a desirable procedure, if the outcome in terms of implant survival and success is comparable with that of conventional loading.7

Attard et al., in a prospective longitudinal study investigated IL protocols in terms of clinician-related and patient-based outcomes. The authors reported a significant improvement in satisfaction and quality of life following treatment with implants when the IL treatment protocol was used.8

Balshi et al., showed a cumulative survival rate of 98.6% for full-arch maxillary immediately loaded implants in 55 patients over an average of 3 years.9

Glauser et al., in a 4 year prospective clinical study on 38 patients evaluated the survival rate of implants for single-tooth replacement and fixed partial prostheses placed predominantly in bones of poor quality. Their results showed a cumulative implant success rate (ISR) of 97.1% after 4 years of prosthetic loading. It was concluded that the applied IL protocol, in combination with a slightly tapered implant design and a modified implant surface texture, was shown to be a successful treatment alternative in regions exhibiting bone of poor quality.10

The nonsubmerged approach offers several clinical advantages,11 such as it avoids the need of a second surgical procedure, absence of microgap at the bone crest level, it simplifies the prosthetic procedure, and also helps in splinting of the implants during initial healing.

The disadvantages of IL are11 that it causes greater micromovement of the implant, it may cause trauma and crestal

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**Fig. 1:** Intraoral radiograph after implant placement

**Fig. 2:** Clinical photograph postoperatively

**Fig. 3:** Clinical photograph after 5-year follow-up
bone loss due to parafunctional habits, tissue reflection is less likely than in the second stage, and impression material or acrylic may get trapped under tissue or between the implant and crestal bone.

Our present case report emphasizes on the high survival rate of immediate loaded implants.

**Conclusion**

Owing to the high success rates of immediate implants, they can be considered as a reliable treatment modality in terms of fulfillment of the esthetic need of the hour. However, their success depends on absence of an active disease, controlled peri-implant inflammation, establishing a stable interocclusal relationship, and regular follow-up soft tissue and occlusal relationship.

**Clinical Significance**

Careful case selection, proper treatment planning, and follow-up of surgical and prosthetic protocols are very essential for the success of immediate loaded implants.

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