

PLACEMENT OF IMMEDIATE DENTAL IMPLANTS IN  
THE ESTHETIC ZONE: A CASE REPORT

## ABSTRACT

Immediate dental implants have greatly reduced the treatment time and the number of surgical interventions. Present case report describes the management of 17 year old female patient with mobile upper front teeth. After careful examination and treatment planning immediate implant treatment was initiated. The teeth were extracted atraumatically and two implants were placed into the extraction sockets followed by temporary prosthesis after a week interval. It was found that the immediate implant therapy reduced treatment length, preserved soft and hard tissues surrounding implant and minimum number of surgical procedures.

Keywords: Immediate implants, atraumatic, extraction sockets, temporary prosthesis.

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## INTRODUCTION

The loss of maxillary anterior teeth has major detrimental social implications, and it also causes serious functional, esthetic disabilities, in addition to compromising the patients' quality of life.<sup>1</sup> The anterior region of the maxillary jaw is frequently termed the "esthetic zone," due to its high visibility and influence on facial appearance.<sup>2</sup> The tooth loss can occur due to the several reasons such as diseases of dentition, congenital absence, trauma, various systemic diseases, and even as a mechanical failure.<sup>1</sup>

Tooth replacement in this region can present a number of clinical challenges, depending on the selected mode of restoration. Conventional, fixed partial dentures, for example, may optimize function, but compromise esthetics and hygiene due to short pontics and ridge laps, respectively. In contrast, removable partial dentures may provide an acceptable esthetic appearance, but compromise masticatory function and survival of the adjacent supporting

teeth. Implant-supported, single-tooth replacement is a treatment option that can replicate the missing dental anatomy and restore full function without altering or damaging the adjacent teeth.<sup>2</sup>

The traditional method of implant placement takes almost 1 year, which is quite a lengthy waiting period for the patients. To shorten this time period, immediate implant placement in fresh extraction site has been considered promising and also has several advantages.<sup>1</sup> These benefits include reduction of morbidity, reduction of alveolar bone resorption, preservation of gingival tissues and preservation of the papilla in the esthetic zone. With the extraction socket as a guide, the surgeon can also more easily determine the appropriate parallelism and alignment relative to the adjacent and opposing residual dentition.<sup>3</sup>

Immediate implant placement is most commonly indicated when tooth extraction is due to trauma, endodontic failure, root fracture, internal or external resorption, or extensive



**Figure 1: Pre Operative View**



**Figure 2: Pre Operative IOPA**



**Figure 3: Extracted Teeth**



**Figure 4: Socket Debrided And Irrigated With Saline And Osteotomy Site Prepared**



**Figure 5: Guide Pins To Demonstrate The Proposed Placement Of Implant In The Prepared Socket**



**Figure 6: Implants Placed**



**Figure 7: Interrupted Sutures Placed**



**Figure 8: Post Operative Iopa**



**Figure 9: Temporary Prosthesis Given**

decay and the bony walls of the alveolus are still intact and is contraindicated in the presence of active infection; when there is insufficient bone beyond the tooth socket apex for initial implant stability; when there is a wide and/or long gingival recession.<sup>4</sup>

The goal of implant therapy is to provide patients with a predictable and esthetically and functionally satisfying treatment outcome with a low risk of esthetic complications. For obvious reasons, it is desirable to achieve this goal with a minimum number of surgical procedures and in the shortest possible treatment time from tooth extraction to implant restoration.

We are hereby presenting a case of trauma in the maxillary anterior region of teeth and its management with the use of immediate implants for esthetic rehabilitation.

#### CASE REPORT

A 17 year old female patient reported to the Department of Periodontology and Oral Implantology, Sri Guru Ram Das Institute Of Dental Sciences And Research, Sri Amritsar with the chief complaint of mobile upper front teeth. The patient presented with a history of an accidental fall two years back for which endodontic treatment w.r.t maxillary central incisors was done. Past medical and drug history were non-contributory.

Extraoral examination was non-significant.

Intraoral examination revealed restored and grade II mobile maxillary central incisors. Periodontal probing showed no presence of periodontal lesions around the central incisors or the adjacent teeth. Patient also exhibited good oral hygiene (FIGURE 1).

Radiographic examination: IOPA revealed periapical radiolucency and root resorption and horizontal bone loss w.r.t maxillary central incisors (FIGURE 2).

Treatment: Unfavourable prognosis for the teeth was explained to the patient. Since she was conscious about esthetics and wanted early rehabilitation, immediate implant placement was the recommended line of treatment. Due to the sound medical history, the case was prepared for surgery on the basis of the clinical and radiographic evidence. Treatment plan was explained to the patient and written consent was obtained.

Pre surgical radiographic evaluation was carried out with IOPA for appropriate treatment planning. After measuring the socket lengths, implants (MYRIAD PLUS) of sizes 3.8 X 11 mm and 3.8 X9.5 mm were selected. After injecting 2% lignocaine (1:80,000 conc.), maxillary central incisors were atraumatically extracted using a periosteal elevator (FIGURE 3). The extraction sockets were evaluated for any osseous defects, infection or granulomatous tissue. The sockets were thoroughly debrided with curettes followed by irrigation with normal saline solution. Osteotomy sites were prepared with sequential drilling and copious irrigation (FIGURE 4). Surgical guide pins were inserted to demonstrate the proposed placement of the implant in the prepared socket (FIGURE 5). Implants were inserted in the prepared osteotomy sites with the insertion torque of 45 Ncm and adequate primary stability was obtained (FIGURE 6). The cover screw was placed and site was closed with 3-0 silk interrupted sutures (FIGURE 7). Postoperative instructions were given to the patient, and was asked to report after 1 week. The sutures were removed after 7 days IOPA was taken (FIGURE 8) and the patient received temporary acrylic crown bonded to the adjacent teeth with fiber-reinforced composite on the same day (FIGURE 9). The patient will be recalled after 4 months for the prosthetic procedures.

## DISCUSSION

In the modern era, immediate implant concept is gaining popularity for replacing missing teeth, especially when anterior teeth are missing<sup>5</sup>. Krump and Barnett reported high success rates with dental implants placed at the time of extraction.<sup>6</sup>

Evidence has shown that immediate implant placement presents more advantages as compared to delayed implant insertion, such as implants in fresh extraction sites can be placed in the same location as the extracted tooth thereby minimizing the need for angled abutments, osseointegration is more favorable, the bony receptors are preserved by preventing atrophy of the alveolar ridge thereby preventing recession of the mucosal and gingival tissues. Additionally, immediate placement of implants keeps contaminants away from the extraction socket, waiting times for primary healing of the soft tissues and regeneration of the osseous structure are eliminated and immediate restorations can be provided for better esthetics.<sup>5</sup>

The paradigm of immediate implant placement has been widely described in the dental literature, and includes tooth removal that does not compromise the extraction site, flattening of crestal irregularities, debriding of the socket with curettes and files to remove any residual infection, inflammatory tissue or periodontal ligament, and socket shaping and deepening with appropriate drills so that lateral contact can be achieved with the implant body.<sup>7</sup> The diameter of the implant head must also match the mesiodistal width of the socket's coronal aspect, or guided tissue regeneration techniques with or without osseous grafting must be employed to address the resulting interfacial gap.<sup>2</sup>

Careful patient screening and selection are required when an immediate implant placement with immediate loading procedure is a treatment consideration.<sup>5</sup>

Tischler has proposed guidelines for implant placement and restoration in the esthetic zone. According to these guidelines, the surgeon should:

- Employ a conservative flap design;
- Evaluate the existing bone and soft tissue;
- Visualize the three-dimensional position of the implant;
- Consider healing time before implant loading;
- Consider the determinants of emergence profile; and
- Select a proper abutment and final restoration design.<sup>8</sup>

Osseous integration of a dental implant occurs gradually over time, and can be destroyed if excessive early loading damages the immature woven bone that initially forms at the bone-implant interface.<sup>9</sup> Progressive loading, or the gradual increase in applied occlusal forces to a dental implant, has been advocated to allow bone to remodel and organize in accordance with Wolff's law, which states that trabecular bone will place and displace itself in relationship to the forces around it. Progressive prosthetic transference has been cited as the clinical application of the progressive loading concept, and involves the gradual functional loading of dental implants through the use of acrylic resin transitional prostheses that minimally disturb the integration process and avoid shock and stress to the implant-bone interface.<sup>2</sup>

The esthetic treatment in present case report, based on the concept of early implant placement, led to the pleasing treatment outcome and patient acceptance.

## CONCLUSION

Immediate extraction, immediate implant placement and provisionalization with progressive loading may improve the prognosis relative to the final esthetic result. Immediate implant placement may be a viable treatment option for cases requiring earliest restoration of teeth to be extracted. However, this approach is considered highly technique sensitive and requires expert dental implant team for its execution. Careful selection of the cases, proper treatment

plan and follow up of surgical and prosthetic protocols are key to success.

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