

Original Research

Assessment of outcome of Single Tooth Implant placed in Immediate Extraction Site: An observational study

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ABSTRACT:

Background: Implant surgery is the second oldest discipline in dentistry after exodontia. The primary requirement of implant insertion is initial implant stability with immediate implant placement and adequately maintained bone volume. The implant placement with accurate angulation is moreover achievable. Hence, the present study was undertaken for assessing the outcome of single tooth implant placed in immediate extraction site. **Materials & methods:** In the present study a total of 20 patients who were scheduled to undergo extraction for mobile mandibular first molar were included. Local anaesthesia was administered and hemodynamic parameters were continuously monitored. This was followed by extraction, immediate placement of dental implant and soft tissue closer. All the patients were recalled after three months. The radiographic and clinical evaluation of all the patients was done to assess the prognosis. **Results:** Out of 20 patients, dental implant therapy was successful in 85 percent of the patients while it was a failure in 15 percent. **Conclusion:** By doing adequate case selection, dental implants in immediate extraction sites have excellent prognosis.

Key words: Implant, dental, Immediate

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Introduction

Implant surgery is the second oldest discipline in dentistry after exodontia. Mayan population in 600 AD used carved ivory and gold ligature wire to stabilize teeth as fixed bridge. Over the time, research and development churned out innumerable materials, but titanium alloys have become the best choice as dental implant material. Implant design plays an important role in functional load generation at the implant-bone interface, which may influence the degree and strength of osseointegration.¹⁻³

A single tooth implant is a better option for providing an immediate option for tooth replacement. The question still baffles all as to what should be the appropriate time for implant placement in a missing tooth scenario. Immediate implant placement requires less surgical procedure, the dental implant and alveolus of extraction socket lack congruence. The

primary requirement of implant insertion is initial implant stability with immediate implant placement, adequately maintained bone volume. Implant placement with accurate angulation is moreover achievable. Even after immediate placement and restoration of an edentulous space using implants, bone resorption is inevitable.⁴⁻⁶ Hence, the present study was undertaken for assessing the outcome of single tooth implant placed in immediate extraction site.

MATERIALS & METHODS

The present study was conducted with the aim of evaluating the outcome of single tooth implant placed in immediate extraction site. A total of 20 patients who were scheduled to undergo extraction for mobile mandibular first molar were included in the present study. Data in relation to demographic and clinical

details was recorded. Pre-operative assessment was done and radiographic examination was carried out in all the patients. Patients were recalled on the day of procedure in the morning time. The local anaesthesia was administered and hemodynamic parameters were continuously monitored. The mobile mandibular first molar was extracted followed by immediate placement of dental implant and soft tissue closer. All the patients were recalled after three months and radiographic and clinical evaluation of all the patients was done to assess the prognosis. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

Results

A total of 20 patients who were scheduled to undergo dental extraction for mobile mandibular first molar were included in the present study. Mean age of the patients was 46.5 years. There were 15 males and 5 females. Mean BMI was 24.8 kg/m². Out of 20 patients dental implant therapy was successful in 85 percent of the patients while it was a failure in 15 percent of the patients.

Table 1: Demographic details

| Parameter | Number of patients | Percentage |
|-------------------------------|--------------------|------------|
| Mean age (years) | 46.5 | |
| Males | 15 | 75 |
| Females | 5 | 25 |
| Mean BMI (Kg/m ²) | 24.8 | |

Table 2: Prognosis

| Prognosis | Number of patients | Percentage |
|-----------|--------------------|------------|
| Success | 17 | 85 |
| Failure | 3 | 15 |
| Total | 20 | 100 |

DISCUSSION

Dental implants are the preferred choice for missing tooth/teeth replacement either in case of fully or partially edentulous jaw or single tooth. The modern implant dentistry is based on the Branemark's concept of osseointegration. Before 1980, implant dentistry focus over implant placement in the healed region. The pioneer phase of immediate implant placement (1975-1989) started with the evaluation of immediate implant placement by Professor Wilfried Schulte who introduced the Tubinger immediate implant in 1978. The material used was ceramic implant made of Al₂O₃. With the increased frequency of implant fracture, titanium became the choice as dental implant material over Al₂O₃. Immediate implant placement gained popularity after the use of guided bone regeneration technique and barrier membrane.⁶⁻⁹

A total of 20 patients who were scheduled to undergo extraction for mobile mandibular first molar were

included in the present study. Mean age of the patients was 46.5 years. There were 15 males and 5 females. Mean BMI was 24.8 kg/m². den Hartog L et al compared the outcome of immediate non-occlusal loading with conventional loading for single implants in the maxillary aesthetic zone. Sixty-two patients were randomly assigned for immediate and delayed implant placement. No significant difference were found between both study groups regarding marginal bone loss (immediate group 0.91 ±0.61mm, conventional group 0.90 ±0.57 mm), survival (immediate group 96.8%); one implant lost, (conventional group 100%), soft tissue aspects, aesthetic outcome and patient satisfaction.¹⁰ Clementini M et al compared success rates in immediate and delayed dental implant placement following guided bone regeneration or onlay bone block ridge augmentation. From 287 studies identified, 79 were screened and 13 were included in the analysis. The study concluded the delayed positioning of implants should be considered more predictable than the immediate positioning of the implant.¹¹

In the present study out of 20 patients dental implant therapy was successful in 85 percent of the patients while it was a failure in 15 percent of the patients. Felice P et al study compared the effectiveness of immediate post-extractive single implants with delayed implants placed in preserved sockets after 4 months of healing. There were more complications at immediate post-extractive implants when compared to delayed implants. The aesthetic outcome appears to be similar for both the groups.¹² Steigenga JT et al evaluated the effects of the biomechanical aspects of dental implant design on the quality and strength of osseointegration, the bone-implant interface, and their relationships to the long-term success of dental implants.¹³

CONCLUSION

From the above results, the authors concluded that by doing adequate case selection, dental implants in immediate extraction sites can have excellent prognosis.

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