

Immediate Implant Placement with Socket Shield Technique and Root Submergence of the Adjacent Tooth - A Case Report

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Abstract

This is a case of immediate implant placement with socket shield technique and root submergence in anterior maxilla. Submergence of tooth is useful to maintain the attachment complex of the tooth which will prevent the alveolar bone resorption and will maintain the emergence profile for pontic of implant supported prosthesis. Socket shield technique is used to prevent the resorption of buccal cortical plate by keeping buccal fragment intact with viable periodontal ligament. This is a case report of 23-year-old male with a chief complaint of fractured tooth in anterior maxilla due to an accident. There was no history of unconsciousness and vomiting after the accident. Implant placement in 11 and root submergence with 21 was performed for prosthetic rehabilitation. Socket shield technique is specifically done in tooth with thin buccal plate of bone which might fracture while extracting tooth in immediate implant placement. Root submergence technique has been reported to maintain the emergence of soft tissue profile for the pontic area in the maxillary anterior region. These techniques prevent resorption of periodontal attachment complex and alveolar ridge.

Keywords – Immediate Implant, Socket Shield Technique, Root Submergence, Aesthetic.

Introduction

Socket shield technique is amongst the partial extraction technique. This technique comprises of extraction of tooth leaving behind the labial portion of enamel and dentin. It is a very thin section of tooth, which remains attached to the buccal plate of socket with the viable periodontal ligament (PDL) attachment. Aesthetic rehabilitation of missing tooth in maxillary anterior region has challenges such as inconsistent tooth recovery and gingiva.¹⁻² Alveolar ridge resorption following extraction of tooth is inevitable and continuous³⁻⁴ resulting in compromised aesthetics. To overcome this, socket shield technique and pink porcelain restoration were suggested².

The root submergence is a technique which maintains natural periodontal attachment complex resulting in preservation of the alveolar bone and aesthetics in adjacent multiple replacement cases.⁵

Recently, several techniques have been introduced like scalloped implant⁶ and platform switching⁷ to control the resorption of bone and to preserve the crestal bone height around the adjacent implant.

Gingival Zenith (GZ), which is defined as the most apical point of marginal gingiva scalloped and orientation in apico-coronal and mesio-distal directions.⁸ GZ plays an important role in maintaining the gingival morphology and beautiful smile line. Implant placement by socket shield technique preserves

the gingival zenith and the gingival morphology by maintaining the contour and scalloping of the gingiva resulting in good aesthetic appearance. So, the aim of this case report is to present a case of immediate implant placement by socket shield technique and root submergence.

Case Report

A 23- year-old male patient reported to the Department of Oral and Maxillofacial Surgery, with the chief complaint of broken tooth in the upper front region of jaw. Patient had given history of road traffic accident 3 months back and fractured tooth.

Extraoral examination showed no unusual findings. Intraoral examination revealed root piece with 11 and fractured tooth with 21.

An Orthopantomogram (OPG) was advised. Radiograph showed root piece with 11 and fractured tooth 21 with fracture line 1.5mm above the CEJ. There were no periapical or other pathologies associated with 11 and 21.

Treatment was planned with immediate implant placement at 11 and root submergence with 21.

Immediate implant placement at 11 was done with socket shield technique (Figure .1) and root submergence of tooth (RST) with 21 (Figure. 2).

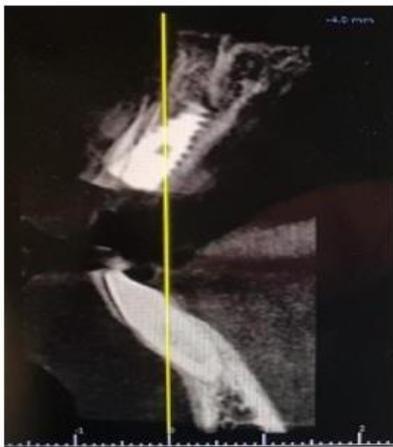


Figure 1. CBCT Section



Figure 2. Intraoral Periapical Radiograph

Discussion

Socket shield technique (SST) minimizes the resorption of the buccal bone after tooth extraction and plays a vital role in replacement of missing tooth in the aesthetic zone.⁹ Root fragment in SST does not come in contact with external environment resulting in decreased infection and problems related to aesthetics which is its advantage.⁹ RST restores normal form and soft tissue attachment for the implant supported prosthesis.¹⁰

The periodontium of natural tooth maintains the ridge height, gingiva and alveolus.¹¹ It also improves the interproximal height of bone subsequently to achieve the normal height of interdental papillae.¹² Extraction triggers the resorption of alveolar ridge to almost 50% in a year¹³. As soon as the tooth is extracted, inflammation occurs and the remodelling of the bone around the extraction socket takes place for several months and thus resorption occurs¹⁴. RST prevents the risk of dental caries, periodontitis and preservation of the periodontal attachment complex. RST prevents the alveolar ridge resorption and epithelial down growth during the process of regeneration of the periodontal attachment complex.⁵ RST in this case, helped in maintaining the crestal bone around the retained residual root thus maintaining the gingival appearance. Some studies have shown that the periapical pathologies have been decreased by the use of RST. Hence, there is decrease in the cases of infections around the implant giving a better

prognosis.¹⁴ Socket preservation technique controls ridge resorption to a certain level and maintains the height of ridge¹⁵ facilitating the implant placement.

Conclusion

Socket Shield Technique and Root submergence of tooth prevents the resorption of periodontal attachment complex and alveolar ridge.

Socket Shield Technique and Root submergence of tooth also plays a vital role in the aesthetic zone as it allows to restore the normal form and attachment complex by preventing bone resorption.

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