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Case Report

Socket Shield Concept, a Unusual Approach for the Esthetic Rehabilitation of Maxillary Anterior: A Special Case File

Waqar Imam[1], Priya Singh[2], Malkhan Singh[3], Ashutosh Kumar Gupta[4], Satya Prakash Gupta[2], Pranshu Kumar Pathak[5], Saif[6] and Dipti Singh[7]*

[1]*M.D.S, Oral and Maxillofacial Surgery, Carrier Post Graduate Institute of Dental Sciences and Hospital, Lucknow, India*

[2]*Assistant Professor, Department of Oral and Maxillofacial Surgery, Chandra Dental College and Hospital, Barabanki, India*

[3]*M.D.S Student, Department of Prosthodontics Crown and Bridge, Chandra Dental College and Hospital, Barabanki, India*

[4]*M.D.S, Department of Oral and Maxillofacial Surgery, Chandra Dental College and Hospital, Barabanki, India*

[5]*Senior Resident, Department of Dental Surgery, BDR Medical College and Hospital, Gorakhpur, India*

[6]*B.D.S, Daltonganj, Jharkhand, India*

[7]*Associate Professor, Department of Oral Medicine and Radiology, Chandra Dental College and Hospital, Barabanki, India*

***Corresponding Author:** Dipti Singh, Associate Professor, Department of Oral Medicine and Radiology, Chandra Dental College and Hospital, Barabanki, India.

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Abstract

A case of convalescence of the upper front esthetic region is presented. To prevent bone loss following extractions and regaining esthetics, a socket shield technique on fractured and restored root was performed. Following the combination of extraction of roots of central incisors, the socket shield technique, implant placement then provisional restorations then final PFM crowns maintains the esthetic demand in every steps of procedure which is the main achievement in the presented case file.

Keywords: *Socket Shield; Implant; Preservation*

Introduction

Instant implant placement after extraction is considered as outstanding treatment option of tooth in the esthetic and anterior region for any patient [1]. Following the extraction of the roots of teeth, the surrounding bone and gums may recede resulting in bone defects which are esthetically not accepted by the patient. Which may also progressed into bone loss. These defects are esthetically unaccepted in restorative dentistry whether the treatment involves dental implants, fixed or removable partial dentures. Different techniques have been followed to maintain the bone density and ridge dimension to a certain amount but immediate implant placement reduces treatment time, number of surgeries and bone loss after extraction, and out of which socket shield technique shows best results.

Socket preservation procedure begins with a painless tooth extraction with maximum ridge conservation in anterior jaw region. Every effort is made to preserve the buccal and surrounding bone and soft tissue. The socket-shield (SS) technique is a good treatment option for conservation the post-extraction structures in challenging cases [4,5].

The socket-shield technique (SST) was first illustrated by Hürzeler., *et al* [6]. Joseph., *et al.* [7] and several other scientists have done different pilot study on the alveolar ridge and implant after applying this technique [8,9].

In this case we have aimed to prepare the root of a tooth indicated for extraction in such a way that the buccal/facial root section remains with its anatomical relation to the buccal cortical plate intact which is the procedure of socket shield technique.

Case Report

A 29-year-old patient reported with the chief complaint of loose crown/cap of PFM in upper front right central incisor and mobile cap in left central incisor teeth region and wanted to get it rehabilitate. Extraction of the roots of teeth 11, 12 using SST and rehabilitation, by placing implants in the same region was planned. No significant medical history was reported (Figure 1).

Figure 1: *Pre-operative clinical photograph.*

On clinical examination, remnant of tooth was found in right central incisor (11) and fractured crown root in left central incisor (12). Radiographic examination showed root fragments embedded in the socket with root canal in right central incisor (11) and fractured crown root in left central incisor (12) with periapical infection which has not been RCT treated (Figure 2).

Figure 2: *Preoperative radiographic examination.*

Treatment plan suggested to the patient and implant-supported two crowns with socket shield technique will followed by replacing 11 and 12.

After thorough oral prophylaxis crown in 21 teeth has been removed then initially a long and straight bur was used to perform an pilot drill and starting split of about 6 to8 mm, then bur was extended to the length of the root, and the large palatal root fragment was removed, whereas the smaller buccal root fragment was retained. The height of the buccal socket shield was reduced to the level of bone so the crestal part of the root fragment on the gingival part descends 3 mm below the tip of the gingiva. Osteotomy was performed and implant was placed without touching the remaining buccal root fragment (Figure 3 and 4).

Figure 3: *Osteotomy done.*

Figure 4: *Implant was placed without touching the remaining buccal root fragment.*

The root was then sectioned in a mesiodistal direction along its long axis as far apical as was possible using a long shank root resection bur coupled to a hydrated high speed hand piece. Sectioning divided the tooth root into facial and palatal halves with the intention of preserving the facial root section manipulated and attached to the tooth socket.

The remaining root section was then reduced coronally to 1 mm above the alveolar crest, and thinned slightly to a concave contour by careful application in an apico-coronal and mesiodistal direction with a long shanked round diamond bur. The tooth socket's palatal wall

and apex were then curetted to remove any tissue or infective remnants and the root section was checked for immobility with a sharp probe. With the preparation steps complete, the tooth root hereafter was known as the socket-shield (SS).

The bone osteotomy was then sequentially prepared and a 4 x 13 mm internal conical connection implant (Adin, ADIN Dental Implant Systems, INDIA) was inserted palatal to the SS with the implant 2 mm below the crestal bone. The implant retained the primary stability from bone apical and palatal sufficient to immediately restore with a provisional restoration (Figure 5).

Figure 5: *Provisional restoration.*

Healing was uneventful with no signs of infection or other complication at the 10 days and 30 days follow up visits (Figure 6). The patient was convinced with the aesthetic and functional outcomes achieved. After 90 days of recall visits RVG X-ray (Figure 7) was taken and tooth preparation was done. Implant was then restored in relation to 11 and 12 with metal porcelain crown (Figure 8).

Figure 6: *Healing.*

Figure 7: *Crown preparation with implants placed.*

Figure 8: *PFM crowns.*

Discussion

In this case report suspected outcome was that retaining a tooth root fragment adjacent to the crestal bone of buccal side and placing an immediate implant engaged to the palatal socket wall immediately are able to maintain the contour of the crestal bone. The clinical outcome demonstrated the potential of socket shield technique to avoid noticeable alteration of ridge shape after tooth extraction [8,9]. Instant implant placement in the missing esthetic region is a good treatment procedure to accomplish all demands and outcomes [10].

Socket shield technique can be applied for maintaining bone conservation of an edentulous ridge. In the presented case file, the socket shield technique is applied combined with immediate implant placement maintains the ridge and tissue preservation.

Conclusion

The Socket Shield technique shows extraordinary outcomes with relation to circumferential bone and tissue conservation in cases of post extraction implant cases.

Bibliography

1. Lang NP., *et al.* "A systematic review on survival and success rates of implants placed immediately into fresh extraction sockets after at least 1 year". *Clinical Oral Implants Research* 23 (2012): 39-66.

2. Botticelli D., *et al.* "Bone tissue formation adjacent to implants placed in fresh extraction sockets: An experimental study in dogs". *Clinical Oral Implants Research* 17 (2006): 351-358.

3. Fickl S., *et al.* "Hard tissue alterations after socket preservation: An experimental study in the beagle dog". *Clinical Oral Implants Research* 19 (2008): 1111-1118.

4. Filippi A., *et al.* "Decoronation of an ankylosed tooth for preservation of alveolar bone prior to implant placement". *Dental Traumatology* 17 (2001): 93-95.

5. Salama M., *et al.* "Advantages of the root submergence technique for pontic site development in esthetic implant therapy". *International Journal of Periodontics and Restorative Dentistry* 27 (2007): 521-527.

6. Hurzeler MB., *et al.* "Esocketshield technique: A proof-of-principle report". *Journal of Clinical Periodontology* 37 (2010): 855-862.

7. Kan JY and Rungcharassaeng K. "Proximal socket shield for interimplant papilla preservation in the esthetic zone". *International Journal of Periodontics and Restorative Dentistry* 33 (2013): 24-31.

8. Bäumer D., *et al.* "The socket-shield technique: first histological, clinical, and volumetrical observations after separation of the buccal tooth segment–A pilot study". *Clinical Implant Dentistry and Related Research* 17 (2015): 71-82.

9. Gluckman H., *et al.* "The socket-shield technique to support the buccofacial tissues at immediate implant placement". *International Dental Journal Afr Ed* 5 (2015): 6-14.

10. Den Hartog L., *et al.* "Treatment outcome of immediate, early and conventional singletooth implants in the aesthetic zone: a systematic review to survival, bone level, soft tissue, aesthetics and patient satisfaction". *Journal of Clinical Periodontology* 35 (2008): 1073-1086.

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