

SOCKET SHIELD TECHNIQUE – A NEW APPROACH
TO IMMEDIATE IMPLANT PLACEMENT

ABSTRACT

With the aim of achieving an optimal esthetic result in implant dentistry, special care is being taken to focus on the details that would lead to this objective. These details may include imitating the natural teeth, by harmonizing the structures around the placed implant. The prosthetic and/or surgical parts of the procedure should be performed to reach an optimal outcome. In order to minimize the resorption of hard and soft tissue, that exists around the newly extracted tooth – to create a natural emergence profile of implant born prosthesis – socket preservation procedures were introduced, however, in case of ridge deficiencies, hard and soft tissue augmentation procedure are indicated. Several approaches have been described in the literature to overcome the complications of alveolar ridge resorption and to preserve the ridge like hard and soft tissue augmentation with GBR, bone substitutes with or without immediate implant placement. An ideal method should always be cost effective and minimally invasive. In this paper, we will present case report using a new approach in socket ridge preservation, which is the socket shield technique (partial root retention).

Keywords

Immediate implant; Socket-shield technique; alveolar ridge resorption

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INTRODUCTION

Healing of extraction sockets are characterized by bone formation within the socket and loss of alveolar ridge width and height externally (1). The alteration of ridge contour may compromise the restoration-oriented three-dimensional positioning of the implant which requires optimal support and stability of surrounding hard and soft tissues (2). In esthetic region, the height and thickness of facial and interproximal bone walls are the important factors for successful pink esthetic outcomes, which are made up by color, shape and character of the marginal peri-implant mucosa and presence of interdental papilla (3). Various techniques have been described in literature to overcome these negative consequences of tooth extraction such as hard and soft tissue augmentation with GBR, bone grafts following extraction with or without immediate implant placement (4). However, immediate implant placement still does not prevent buccal bone resorption as it is a biological phenomenon (5).

Araujo and Lindhe suggested that following tooth extraction, the blood vessels in periodontium to the thin bone walls are severed, thereby causing facial bone plate resorption(6). Thus it can be assumed that retaining a root may alter the occurrence of facial bone resorption.

The “socket shield technique” has demonstrated the potential to prevent buccal tissue from resorption in animal and clinical studies. It is assumed that retaining the root fragment attached to the buccal bone plate in this technique can avoid tissue alteration after tooth extraction. This article presents a 27 year-old healthy female with a fractured upper right lateral incisor which would be replaced by an implant supported single crown. Leaving a partial root fragment at buccal side in combination with immediate implant placement lingual to the retained fragment was performed. One year after implant placement, clinical examination showed healthy peri-implant soft tissue and ridge was preserved. A crown was fabricated and cemented on a titanium abutment. The prosthesis successfully restored

function of the patient. Applying socket shield technique and immediate implant placement may be a feasible treatment option in case with high esthetic concern.

THE PRINCIPLE OF SOCKET-SHIELD (SS) TECHNIQUE (7)

- a) Preparation of the root of a tooth indicated for extraction in such manner that the buccal/facial root section remains in-situ with its physiological relation to the buccal plate intact.
- b) The tooth root section's periodontal attachment apparatus (periodontal (PDL), attachment fibers, vascularization, root cementum, bundle bone, alveolar bone) remain vital and undamaged to prevent the expected

post-extraction socket remodeling and to support the buccal/facial tissues.

- c) The prepared tooth root section acts as a socket-shield and prevents the recession of tissues buccofacial to an immediately placed implant.

STEP BY STEP PROCEDURE

- a) Local anaesthesia should be administered. The crown of the tooth to be extracted is decoronated with a coarse-grained diamond bur.
- b) The root of the tooth is sectioned mesiodistally with a long tapered fissure diamond bur coupled to a hydrated high-



Pre-operative image of fractured lateral incisor



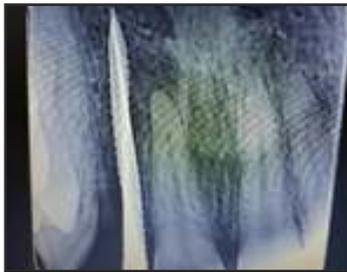
Pre-operative x-ray of fractured lateral incisor



Root sectioned and removed keeping just buccal shelf of root



Root grinded and kept below gingival margin



Position of pilot drill on x-ray



Intraoral position of pilot drill



X-ray of implant placed



Abutment blocked with tape



Putty index of patient



Putty index on model



Temporary crown made from Luxatemp



Temporary crown luted with zinc phosphate



Post operative x-ray after 1 year



Permanent crown after 1 year