

## A New Approach For Ridge Preservation: Socket Shield Technique: A Review

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**Abstract:** Tooth loss and subsequent ridge collapse continue to burden restorative implant treatment. Careful management of the post-extraction tissues is needed to preserve the alveolar ridge. In-lieu of surgical augmentation to correct a ridge defect, the socket-shield technique offers a promising solution. As the root submergence technique retains the periodontal attachment and maintains the alveolar ridge for pontic site development, this review article demonstrates the hypothesis that retention of a prepared tooth root section as a socket-shield prevents the recession of tissues buccofacial to an immediately placed implant.

**keywords:** Alveolar bone preservation, buccal bone, esthetic zone, extraction socket, immediate implant, socket shield

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### I. Introduction

Hurzeler et al was the first to present the Socket shield technique in the year 2010. If the implant is positioned such that it is touching the natural tooth fragment or the shield, the resorption of the labial and buccal bone structures could be prevented by the coronal buccal root portion. Animal and clinical studies have shown that the root fragment that is affiliated with the buccal plate, if retained prior to implant then it may prevent tissue alterations thereon.[1] Additionally new cementum defined the surface of the implant. It was a marvelous display of buccal tissue preservation as well as a prosperous implant's osseointegration clinically. The socket shield technique is the most practical and feasible answer to resolve all the complications that come along after extraction ridge and immediate placed implants.[2]

The healing of a root extraction socket often results in ingrown bone within the socket and loss of alveolar ridge horizontal and vertical bone. [3] The three dimensional alignment of the implant requires suitable amount of support and stability of the tissues around it. However, this may be impacted negatively by the alveolar ridge atrophy..[4] Especially those affecting the buccal lamina. The bundle bone that is vascularised, is traded to a level that the buccal lamina is not nourished up to the mark. A resultant partial or complete resorption harms any further implant as well as the aesthetics of this fragment.[5] Hard and soft tissue augmentation with guided bone regeneration, ridge preservation procedures, bone grafts with or without immediate implant post extraction were various solutions offered.[6] Nevertheless, the partial or total resorption was not avoidable in either cases. [7] Other hindering factors were in-feasibility in terms of invasiveness, minimalism and expenses.

### Characteristics Of Socket Shield Technique

Retaining the root of the tooth such that buccal root fragment's positioning with the buccal plate remains unaltered.

1. Ensuring critical safety of the periodontal attachment setup of the tooth root such that it remains unharmed. This is what ensures protection from any resorption of buccal or facial tissues as well as a successful osseointegration of the implant .
2. Tissue alteration and any negative impact on future implant is safeguarded by the tooth root section so made.[8]

### Clinical Concept

Histological and radio-graphic evidences have thrown light on the fact that very minor inflammatory alterations or bone growth is observed around roots submerged for alveolar bone preservation. Bowers et al. observed no root resorption, ankylosis or pulp death even after six months of submerging critical teeth with infrabony defects. [9] Salama et al. reported that the alveolar bone frame finds a natural attachment setup of the tooth in the Root Submergence Technique (RST). The avenues to completely prevent decay of the alveolar bone frame is opened. Thereby leading to aesthetic outcomes in tooth implants in future. [10]

Submucosal root retention is capable to do away with bone resorption completely as per the root submergence technique (RST). Moreover, the preservation and steadiness of the alveolar bone frame as well as the periodontal membrane is achievable. The idea behind this is to create a natural apparatus by retaining a coronal tooth fragment and involving blood supply sufficiently.[11] Whether there must be immediate implant or there should be a waiting period differs as per a patient's treatment plan. The waiting period may range from two to six months to ensure formation of new bone preceding implantation. If it is deemed fit, the site may be left without any procedure following. The goal is to ascertain a hassle free healing with a great of importance given to wound stabilization. [11]

#### Indications And Contraindications

Where the tissue preservation and aesthetics are to be focused upon, there may be upended fractures of tooth minus the pulpal pathologies. Their utilization being a part of late implantation or improvement of pontic support in crown bridge reconstruction or bettering the prosthesis base for removable dentures are counted amongst the potential indications. There are general and local contraindications. General include all the regular restrictions of any oral surgery such as radiation therapy, biphosponate medication etc. Whereas local contraindications are as absent buccal lamina that comes up post upended root fractures. [11]

#### PROCEDURE

Step by step procedure is as follows

- 1) Local anesthesia must be administered
- 2) The tooth that is to be extracted is split supragingivally
- 3) The crown is then disjuncted using appropriate instrument
- 4) The root is split vertically in ratio of 1:3 and 2:3 into facial and palatal halves using long tapered fissure diamond bur along with other suitable instruments a hydrated high-speed hand piece
- 5) Careful orthodox extraction of palatal half, retaining the facial half as it is. Bone and soft tissue to be unaltered as much as possible
- 6) Buccal socket shield's height aligned with bone
- 7) Gingiva super-adjacent to the buccal root section is tunneled to let in the collagen cone into the socket as well as membrane of collagen cone under the buccal mucosa
- 8) Collagen secured with crisscross structure using suitable instruments. [1] [11]

#### II. Conclusion

The socket shield technique not only helps preserve the labial and buccal bone structures but also prevents bone resorptions post extraction. This has been a major challenge in this field so far. The buccal shield gives an outline as to placing the implants rightly. Any damage that is seen by other techniques such as tissue alteration, fibrous tissue formations etc. can be avoided at its best. An absolute integration of bones is possible to achieve. Additionally, it is cost effective and least invasive. The tools required as optimum and lastly, it gives a very aesthetic outcome.

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