

Socket-shield Technique for Immediate Implant Placement

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Loss of tooth results in dimensional alterations of hard and soft tissues at the postextraction site, a process which is usually inevitable and causes problems in immediate implant placement. Clinicians many a times choose another approach and after extraction of tooth prefer to augment, wait and then go for delayed implant placement. Replacement of a missing/compromised tooth in esthetic zone with a dental implant is always a very challenging treatment modality for the clinician. Every effort should be placed to plan the treatment starting from the extraction of tooth to the restoration with definitive implant retained prosthesis, so that proper esthetics can be achieved.

A clinical technique called as the "socket-shield technique" was developed by Hurzeler et al. in which the buccal portion of the root is retained to preserve the periodontal ligament and bundle bone followed by immediate implant placement in close proximity of the root. This technique avoids the negative outcome of the extraction with partial root retention, which functioned like a shield that preserved the buccal bone from resorption and enhances the contour of the tissues and increase the esthetic outcomes.¹

Bäumer et al. did a retrospective study on patients treated with socket shield technique for immediate implant placement and found that all implants healed without any adverse events. Volumetric analysis showed a low degree of contour changes and mucosal recession at the implant restoration during follow-up which was

comparable to that of the neighboring teeth.² Zhu et al. in their study with 12–48 months follow-up evaluated the clinical result of socket shield technique in anterior region of maxilla in nine patients treated with immediate implant placement and found that no implants were lost during the observation period and found good esthetic results.³ Gluckman et al. in their study evaluated 120 immediate implants placed with socket-shields technique in maxilla and mandible and found a survival rate of 96.1% with osseointegration of 123 implants in 1-4 years of follow-up.⁴

Bramanti et al. did a randomized controlled trial to evaluate the marginal bone level, survival rate and the esthetic outcome of dental implants placed into a high-esthetic zone. Implants placed with the socket shield technique showed better values of both marginal bone level and pink esthetic score when compared to conventional insertion technique.⁵ Hinze et al. in their study found that immediate implantation and provisionalization along with the socket-shield technique resulted in stability of the volume of mucosa adherent to the implant. Gingival width, apical height of the bone and buccal mucosa was not influenced in any case.⁶

Han et al. gave a "modified" socket shield technique by retaining the 1.5 mm thick buccal portion of the root with the most coronal portion at the bone crest level. Patients underwent immediate implants placement with for a survival rate of 100%.⁷ There is lack of human histologic evidence, and clinician's uncertainty always remains regarding the tissues that may form between the socket-shield and dental implant. Schwimer et al. provided the first human histologic evidence and found that the space between an osseointegrated implant surface and root dentin was filled entirely by bone.⁸

Socket shield technique seems to be a good treatment option to stabilize the facial gingival and osseous architecture, but it is a challenging task to prepare the root fragment during procedure. There is very limited long-term follow-up and rare human histological evidence in literature to support this technique. More randomized clinical trials on humans are required to fully establish the biologic plausibility and clinical success of this technique.

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