

The socket-shield technique in aesthetic zone with immediate implant placement 2-years follow-up

Abstract

A Preservation of buccolingual dimension by atraumatic extraction, socket preservation technique, and immediate implant help to decrease buccal bone resorption. Presenting socket-shield technique by keeping a buccal fragment of the tooth to prevent the buccal cortical bone from resorption. This case report presents a 62-years-old male patient with non restorable maxillary left central incisor and 1st premolar, indicated for extraction replaced with an immediate implant.

Keywords: immediate implant, esthetic implant, socket preservation, socket-shield technique

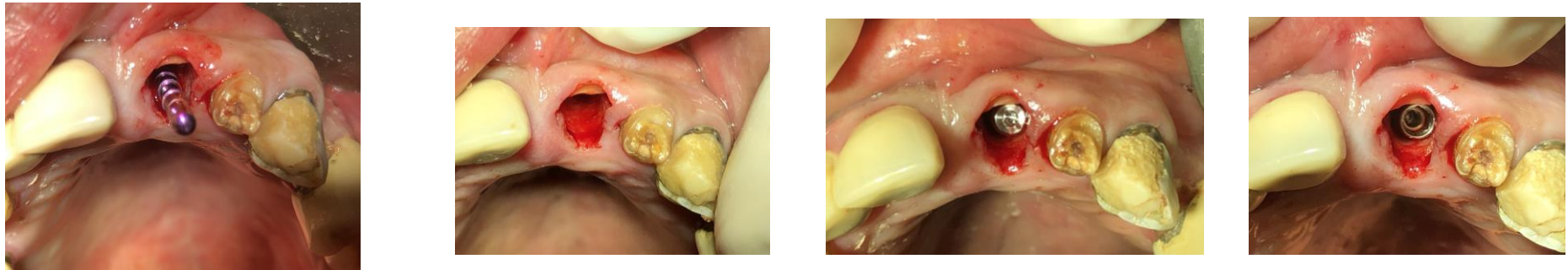
INTRODUCTION

Anterior teeth extraction leading to buccal bone resorption, which will cause esthetic defect, and effect implant durability, especially in small extraction socket even if it's followed by immediate implant. Traumatic extraction lead to breakdown periodontal ligament and further collapsing of buccal cortical thin bone; therefore, there's different techniques were introduced to prevent alveolar bone resorption. Socket shield technique, immediate implant, atraumatic extraction, and socket preservation prevent buccal bone resorption by keeping small root fragment attached to buccal plate of bone holding by periodontal ligament.

Figure 1. Clinical and radiograph examination



Figure 2. Labial fragment in place and removing palatal part



Case report

A 63-years-old, male medically free patient nonsmoking, came to clinic ask for esthetic restoration for 21 (tooth numbered by “FDI World Dental Federation notation”). After panoramic X-ray tooth seems non restorable badly decayed, and no ferrule enough for post-core and weak tooth structure(Fig. 1A, B, C). Decision has been taken to extract the remaining root and replacing by immediate implant, the remaining root is small cannot hold it by dental forceps which will cause damage for soft and hard tissue. Depending on socket shield technique, horizontal splitting was done, then the palatal fragment of the root has been removed and 2mm thickness of labial fragment was stable no significant sign of mobility was observed(Fig. 2A, B, C). Smooth debridement for the socket was done and irrigation with normal saline. Crestal part of labial fragment decreased 3mm under the level of gingival margin. Preparation for implant bed was drilled palatally for labial part of the root, implant (3.4x10.5mm) was placed in the socket(Fig. 3A, B, C). small piece of gelatin spongy was placed on top of the implant and then sutured the wound. Patient was monitoring one week postsurgery. Patient recalled every month for insure the health of gingival tissue, After 3 months clinical examination was obtained there's no sign of inflammation, then healing abutment was placed, open tray impression was taken 5 day after placed healing abutment, Screw retained zirconia crown was placed. Patient follow up after one years everything was perfect, then after 2 years follow up CBCT was obtained labial fragment of the root stable and there's no vertical resorption, new bone maturation around the implant and at the gap of socket shield space.(Fig. 4A, B)

view obtained great labial contour there is no recession from occlusal view or labial view of gingival contour and stable gingival margin symmetry with next tooth giving sanctified esthetic and normal look as natural tooth (Fig. 5A). maturation of connective tissue around the labial shield after unscrewing the crown observed perfect tissue quality of the emergence profile after 2 years of loading (Fig. 5B) . SST provide healthy gingival tissue around the implant for long time even elder people show no significant inflammation or swelling, symmetry of zenith level of both centrals and confidence smile again (Fig. 6A, B).

Figure 3. Osteotomy and implant installation

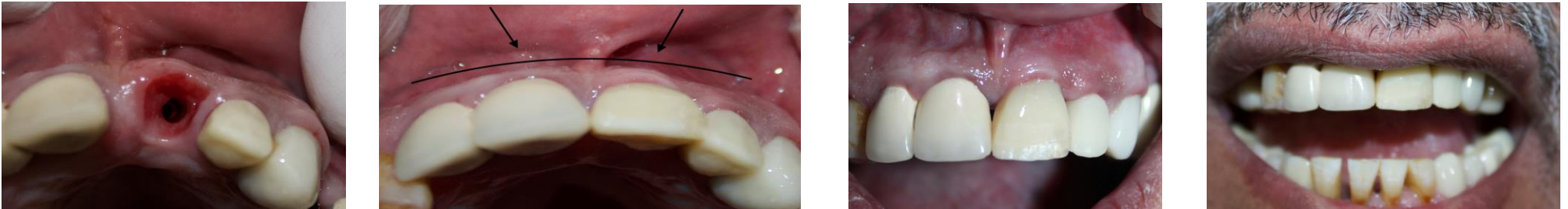


Figure 4. CBCT follow up after 2 years shield stable

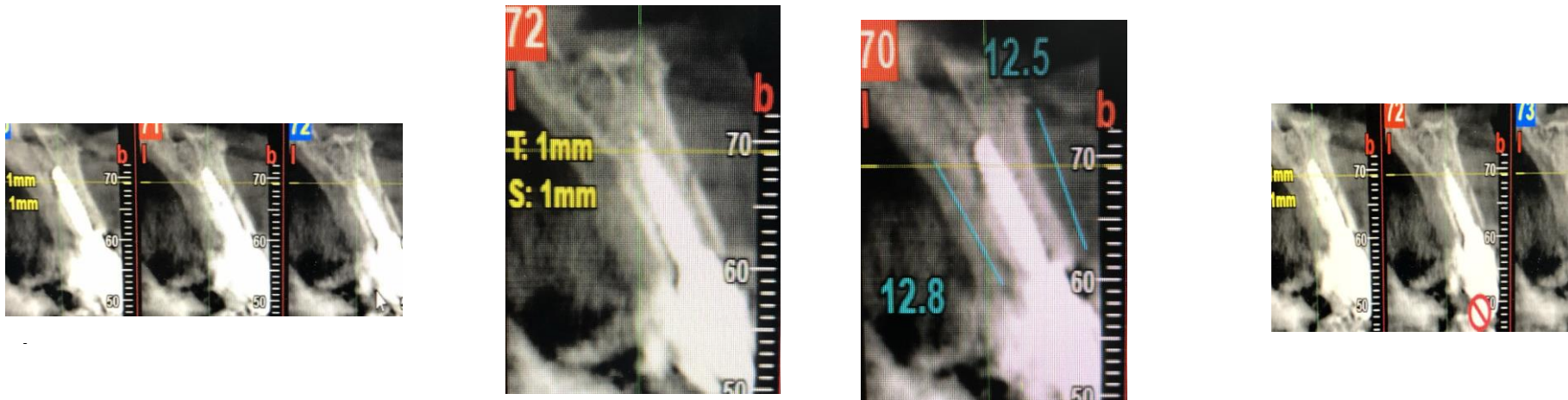


Figure 5. Emergence profile after 2 year show maturation of CT and stable gingival margin

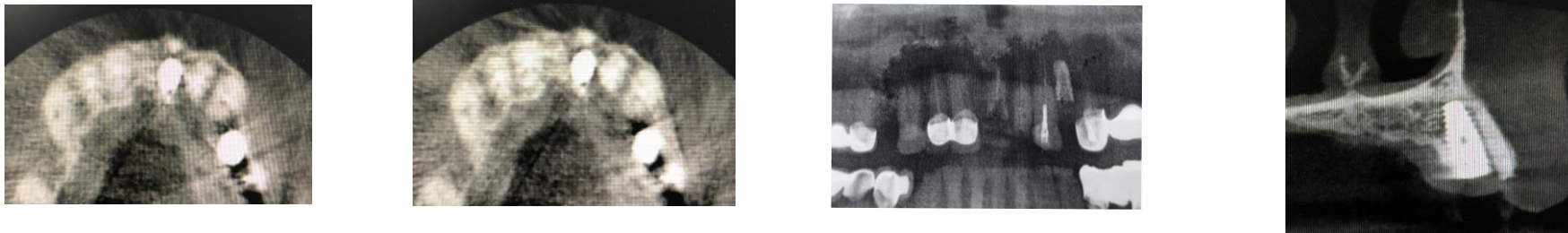


Figure 6. Healthy Gingival margin and stable gingival zenith level of centrals

Fig 7. CBCT cross section and axial view show shield fragment and no vertical resorption

Discussion

Esthetic zone with immediate implant has been always challenging procedure, aggressive extraction could lead to further bone resorption which cause many problems, reduce blood supply, changing buccal contour even sometime maybe lead to implant failure. Socket shield technique improving atraumatic extraction for remaining tooth part which reduce risk of bone resorption and tissue damage even give the natural tooth look without esthetic discrepancy of facial symmetry during patient smiling and avoiding dark shadow underneath gingival margin cause bone remodeling. However there's many surgical technique corporate with immediate implant for compensate bone resorption various types GBR failed to give perfect esthetic result reflecting on soft tissue or even on prothesis adding pink porcelain to hide dark shadow at marginal area cause of future bone remodeling, lacking of blood supply and tendency of osteoclast at crestal bone area after extraction whole tooth and applying pressure on all tissue, so SST with minimally invasive and atraumatic extraction we could decrease labial contour change over time giving best esthetic outcome, low coast instead using bone substitution material and reduce post surgery discomfort and swelling,

however maybe we should sometimes combine CTG (connective tissue graft) for best gum contour which also painful for the patient, and avoid second surgery intervention.

Conclusion

Socket shield technique with immediate implant in esthetic zone anterior and premolar area could give patient very high satisfied result and natural tooth look and feeling with normal labial contour without second surgery intervention give more comfortable patient experience and minimal invasive procedure less harmful for hard and soft tissue to avoid further recession giving best esthetic outcome

