Immediate implant placement and conventional loading of a maxillary central incisor

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This 30-year-old caucasian female presented to the office, having been referred for the treatment of tooth #8. The patient’s chief concern at the initial visit related to the tooth’s pink discoloration.

Upon clinical examination, it was discovered that tooth #8 had a previous history of trauma, and it was surmised that the clinical crown had become noticeably pink in color as a result of internal resorption (Fig. 1). This diagnosis was confirmed radiographically, indicating a large radiolucency involving the central and distal portions of the clinical crown (Fig. 2). It was determined that restoration of this tooth was not possible, and therefore extraction was indicated. The presence of a mid-line diastema, which the patient wanted to reproduce, directed the treatment plan for tooth replacement utilizing a dental implant.

Her medical and dental health, including a periodontal and occlusal analysis, identified her as a good candidate for dental implant surgery and restoration. Although she presented with a high lip line and a thin-gingival phenotype, an immediate placement technique with a conventional

Fig. 1. 30 year old Caucasian female presents with internal resorption of tooth #8. A highly scalloped, thin type I gingival phenotype is clinically evident.

Fig. 2. Periapical radiograph of teeth #8 and #9 illustrating the resorption defect associated with tooth #8.
restorative loading protocol was recommended to accelerate her rehabilitation.

The clinical and radiological findings, in combination with the patient’s treatment expectations, led to an esthetic risk profile summing up to a medium esthetic risk, as per the specifications delineated by Martin et al 2007.

Prior to the initiation of the dental implant surgery, mounted diagnostic study casts were obtained and a surgical guide was fabricated. The immediate implant surgical procedure for tooth #8 was carried out as described by Beagle 2006 (Figs. 3–7).

Excellent primary stability was obtained using a 12mm 3.3-4.8 Regular Neck TE Straumann dental implant (Figs. 8, 9).

Grafting of the horizontal defect dimension and thin labial plate was performed using autogenous bone and a resorbable collagen membrane (Figs. 10, 11).

A semi-submerged flap closure was chosen to enhance the final positioning of the peri-implant soft tissues, and a periapical radiograph was tak-
en immediately following surgery (Figs. 12-14). Ten weeks following implant surgery, a small gingivectomy was performed to gain access to the beveled healing cap (Figs. 15, 16). A synOcta provisionalization coping was attached to the implant (Figs. 17, 18) and a self-curing acrylic resin provisional
restoration was fabricated and marginated using a synOcta laboratory analog as described by Higginbottom and coworkers 2004 (Figs. 19, 20). The peri-implant soft tissues were allowed to mature around the provisional restoration for four weeks prior to final impression (Figs. 21-23). Following connection of the analog to the impression coping, a master cast was fabricated to reproduce the implant location three-dimensionally. The master cast was then utilized to aid in the creation of a screw-retained cast-metal crown framework using a non-rotational synOcta gold coping. Follow-
Fig. 27. Buccal view of cast gold framework coping.

Fig. 28. Occlusal view of cast gold framework coping.

Fig. 29. Impression of framework coping to verify soft tissue profiles.

Fig. 30. Close-up occlusal view of impression of framework coping to verify soft tissue profiles.

Fig. 31. Buccal view of final restoration delivered four months from initial surgery date.

Fig. 32. Occlusal view of final screw-retained restoration.

Fig. 33. Extended buccal view of final restoration delivered four months from initial surgery date.

Fig. 34. Periapical radiograph of final restoration delivered four months following initial surgery.
ing the insertion of a 1.5 synOcta abutment (Fig. 26), which was hand tightened, the crown framework was attached to the implant with an SCS occlusal screw and a second definitive impression using a closed tray technique was made to verify the peri-implant soft tissue profiles (Figs. 27-30). The ceramic work was completed at the laboratory using this accurate master cast.

The 1.5 synOcta abutment was torqued to 35 n/cm² and the final crown was seated and checked for marginal fit, occlusal and interproximal contacts and emergence profile (Fig. 31). Final glazing of the ceramics was then performed, and the SCS occlusal screw was tightened to 15 n/cm². The screw access was obturated with a cotton pledget and re-stored with a light cured composite (Fig. 32).

A periapical radiograph was obtained to establish a baseline marginal bone level with maintenance visits scheduled every 6 months with the dental hygienist (Figs. 33, 34). The one-year follow-up showed an excellent result clinically and radiographically with very stable peri-implant soft tissues and optimal crestal bone heights (Fig. 35).

The article was published for the first time on Implants C.E. #3 2013.

References


About the Author

Dr. Jay R. Beagle is a Fellow of the ITI, and a leader in the fields of periodontics and dental implant surgery. Trained at the Indiana University School of Dentistry, Dr. Beagle received his Periodontal Certificate and Masters Degree from the University of Kentucky. He remains at the forefront of implant dentistry research, development, and education, most notably in the areas of immediate placement and anterior esthetics. Dr. Beagle has lectured extensively both nationally and internationally, including presentations at ITI World Symposia, the American Academy of Periodontology, the Academy of Osseointegration, and the European Academy of Osseointegration. Devoted to education, Dr. Beagle has published and co-authored numerous articles and a surgical training CD-ROM, participates in numerous national and international committees and consensus conferences, and is actively involved with clinical dental research, with several clinical research projects continually in progress.

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