

Immediate Implant Placement and Provisionalization of a Single Anterior Tooth

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The patient was a 47-year-old building contractor with crowns on both his central maxillary incisors that had been placed after a childhood injury. He currently experienced another traumatic injury that fractured the crown on tooth No. 9 at the gum line (Figure 1). As he had no other facial lacerations, he presented for dental treatment immediately after the accident. His medical and dental histories were otherwise unremarkable.

Clinical and radiographic evaluation (Figure 2) revealed that the root was also fractured, with stress cracks traversing down the length of it. Although the patient was offered the option of having a root canal, post, and crown, he was advised that the long-term prognosis for such treatment was poor. He instead chose to have the tooth extracted, followed by immediate implant placement and temporization.

The tooth was extracted, and the extraction site was found to be intact, with all four walls fully formed. No trauma was noted on the buccal plate, nor were any signs of infection noted.

A 5-mm x 16-mm NobelReplace™ Select Tapered Groovy™ Implant was selected for placement; the anatomy of the extraction site closely matched the shape of this implant. The implant was placed (Figure 3) and tightened to at least 45 Ncm, exhibiting excellent primary stability.

A prefabricated polycarbonate provisional crown was relined with liquid acrylic and placed on an engaging non-rotational Nobel Biocare™ Temporary Abutment. This abutment has grooves to help retain acrylic material when constructing a temporary restoration. (Figure 4). Once seated onto the

implant and hand-tightened, it was assessed to ensure that it was completely out of function (Figure 5). After being instructed to avoid biting into anything hard or rigid for 5 weeks, the patient was discharged.

Seventy-two hours later, he returned, and the occlusion was rechecked to confirm that no contact was present. Excellent initial healing was noted.

The patient returned 4 months after implant placement, and osseointegration was evaluated. The temporary abutment and crown were removed, and a color-coded (blue) 5-mm Nobel Biocare impression coping was placed on the implant. A fixture-level impression was made with polyvinylsiloxane impression material in a custom tray. A counter model with a bite registration also was taken, and the case was sent to the in-house laboratory. The model of the tooth was scanned with a Piccolo Procera™ scanner, and a custom Procera zirconia abutment was fabricated, along with an all-ceramic zirconia crown.

Approximately 2 weeks after the impression was made, the patient returned to try in the final zirconia abutment and crown. At this time, the laboratory technician selected a custom shade for the crown and also custom-stained the portion of the zirconia abutment that emerged from the gingival cuff, to more closely match the color of the crown (Figure 6).

The temporary abutment and restoration were once again seated onto the implant, and the patient was instructed to return in 2 weeks. The temporary abutment and crown were then removed, and the custom zirconia abutment was delivered



Figure 1 The patient had suffered a traumatic injury that fractured his crowned left central maxillary incisor at the gum line.



Figure 2 A radiograph of the damaged tooth showed that the tooth root was also fractured, with stress cracks traversing down along it.



Figure 3 Immediately after extraction of the incisor, a NobelReplace Select Tapered Groovy Implant was placed and tightened to at least 45 Ncm.



Figure 4 A temporary crown was created by securing a prefabricated polycarbonate provisional crown to a Nobel Biocare engaging temporary abutment with liquid acrylic.

onto the implant. The final zirconia crown was secured to the abutment with temporary cement. After another month, the patient returned, the crown was removed, and excellent healing of the soft tissue around the abutment was noted, demonstrating the biocompatibility of the zirconia (Figure 7). The abutment was then secured using a torque (350 Nm) driver and ImProv® long-term implant temporary cement (Figure 8).

Conclusion

The asymptomatic status of this patient's fractured tooth and the excellent status of the extraction site made this an ideal situation for immediate implant placement and temporization. Using the Procera zirconia custom CAD/CAM abutment and crown enabled achievement of a highly esthetic and natural anterior restoration. This technique provided a complete solution for the patient with an exceptional result.



Figure 5 The temporary abutment and crown were seated on the implant.



Figure 6 Approximately 2 weeks after a fixture level impression was made, the zirconia Procera abutment was tried in, and the color was adjusted.



Figure 7 After wearing the definitive abutment and crown (secured with temporary cement) for a month, the patient returned. The crown was removed and vibrant, healthy gingival tissue was noted to have healed in close proximity to the zirconia abutment.



Figure 8 The completed abutment and crown, 1 month after placement and 6 months after implant surgery.