

Clinical

Anterior restoration with tissue-level implants

Olivier Benhamou discusses a post-extraction implant restoration case, where he opted to use zirconia collar tissue-level implants to ensure a highly aesthetic result



Figure 1



Figure 2



Figure 3: Angulation and direction of cavity preparation



Figure 4: Zirconia emergence and soft tissue healing



Figure 6: Cover screw and soft tissue regeneration

Figures 1 and 2: Fracture of the maxillary incisor

A female patient presented with significant damage to her maxillary central incisors; she had tripped while alighting from a bus and hit the street, fracturing the teeth at their roots. The initial X-rays that were taken (Figures 1 and 2) show the extent and location of the trauma. Other than the damage to the teeth – and minimal injury to her lips and gum – the patient was of good dental health and an ideal candidate for implant restoration.

The proposed treatment was explained to her: that her maxillary central incisors would need to be extracted and replaced with separate implant-retained crowns. Given her public position at an Embassy, only a high-quality solution such as this was likely to provide a result that she would be satisfied with.

Impressions of the teeth were taken in order to create a temporary partial denture for the patient to wear throughout the necessary healing period. Surgery was then scheduled for two days after the initial assessment (four days after the original injury) and antibiotics and anti-inflammatories were prescribed to optimise the treatment site and prevent infection.

Extraction

The extraction of the patient's maxillary central incisors was incredibly straightforward and presented very little difficulty. Of course, due to the nature of the fracture that the patient had suffered, the apex of each tooth needed to be extracted separately, while preserving the integrity of the alveolar bone. This did not affect the success of the extraction overall.

Bone volume and density was found to be at an optimum level – at least D2 – which meant that bone grafts would not be necessary. Importantly, post extraction there was a good amount of blood flow at the extraction site that would help postoperative healing and recovery.

Preparation and implant placement

After extraction, the cavity was prepared for implant placement using drills and screw tap – necessary due to the shape of the implant and to guarantee good primary

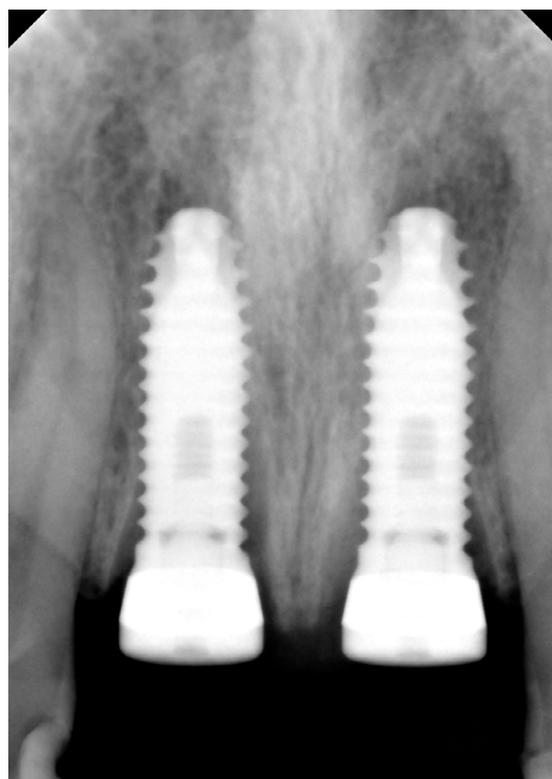


Figure 5: Z1 in situ with cover screw

anchorage. At this stage, another radiograph was taken (Figure 3) to ensure that the direction and angulation of the drill was correct.

The Z1 implant and soft tissue management

While this was not necessarily a straightforward case, many of the issues that might have occurred were avoided due to the use of the Z1 implant from TBR. In

many extraction cases there is a considerable cavity in the gingiva that must be taken into account and a significant amount of effort must be taken in order to satisfactorily manage the soft tissue.

Due to the biocompatibility of the Z1's zirconia emergence, however, the soft tissue attachment is immediate and very strong, making it possible to close the wound quickly without the use of sutures. The implant's emergence diameter also ensures that gingival volume is maintained, the crestal bone is protected and the risk of bacterial infection during the healing process is eliminated.

In this case, it was possible to place the Z1 implant a little lower into the gum (Figure 4) to help encourage better soft tissue healing, maintain the interdental papilla and improve final aesthetics. A cover screw was used, rather than a healing screw – thanks to the design of the implant itself (Figures 5 and 6).

Temporary denture and final restoration

Due to the nature of the initial injury, it was decided to allow the bone and implant site a full three months to heal. This meant that the patient would need to be fitted with a temporary denture (Figure 7) for the duration of the recovery time. This was carefully attached so as not to touch the implants' cover screws, giving the implant as much time as possible to heal and osseointegrate.

After the three months, the patient returned to surgery for the final restoration (no need for a second surgery). Thanks to the Z1 implant, the level of soft tissue regeneration and healing was exceptional. A probe was inserted between the zirconia emergence and the gingiva and presented with bleeding, confirming a strong epithelial attachment. This would not have been the case with a bone level implant and a titanium abutment.

Another X-ray was taken to assess the level of osseointegration and the implants were sound-tested to confirm that they had achieved a strong anchorage. Both examinations confirmed that the implants had been successful and final restoration could commence. ▶

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Figure 7: Temporary partial denture

An indirect transfer impression was used for the crowns (Figures 8 and 9). In this case, it was decided that each implant would be fitted with a separate crown rather than one conjoined restoration, regarding long-term maintenance and assurance. Indeed, should something happen to the implant 15-20 years into the future, it would be easier to manage just one tooth rather than a fused crown.

Each of the two crowns (Figure 10) were a composite of

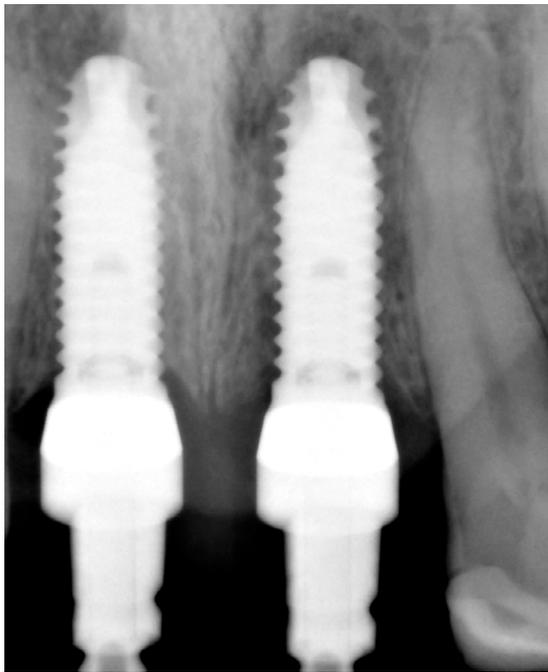


Figure 8: Pop-in transfers in situ

metal and ceramic materials, which provided a great deal of mechanical functionality as well as a highly aesthetic outcome. They were also cement retained – a process that is made significantly safer, more aesthetic and easier due to the Z1's zirconia ring. Since the presence of excess cement can contribute to inflammation, infection and even implant failure in the long term, the removal of excess cement is imperative and easier thanks to the zirconia shield.



Figure 9: Pop-in transfers in situ



Figure 10: Final restorations



Dr Olivier Benhamou is a doctor of dental surgery and specialist in periodontology, with an interest in implant dentistry. He practices in Brussels and is part of TBR's expert training team.

FOR MORE INFORMATION call 01246 267 500 or learn more about the Z1 implant at www.z1implants.co.uk.

Conclusion

I am very happy with the outcome of this treatment; the patient's role at the Embassy necessitated a high level of aesthetic success and, naturally, it was important to restore a natural standard of function as well.

The patient was very pleased with the result. **D**