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Placement and temporization with a Straumann® Bone Level Implant after a horizontal tooth fracture in the esthetic zone

Patient history

A 38 year-old non-smoking woman, in good general health and with high esthetic demands, presented at our dental office with mobility of tooth # 12 (**Fig. 1**). After clinical and radiological examination a horizontal fracture near CEJ (cement enamel junction) was detected (**Figs. 1–4**). Clinical examination showed class III mobility of the crown of # 12. Esthetic parameters were not altered. The buccal bone plate was not affected (**Fig. 2**). The patient's plaque control was adequate and no periodontal disease or periapical infection was detected (**Fig. 4**).

Treatment planning

It was not possible to prepare the tooth for restoration with a single crown due to the absence of ferrule. The short length of the root would lead to an unsatisfactory crown-root ratio in case of orthodontic extrusion, and crown lengthening was not indicated in this case because of esthetic concerns. For these reasons tooth # 12 was considered hopeless. According to the options proposed by the ITI group in terms of implant placement timing after tooth extraction, the present situation would correspond to the "Type I" classification. Though the lip line is high, a medium-thick biotype, the lack of infection and a width of 1 mm or more of the buccal bone wall (as



Fig. 1



Fig. 2

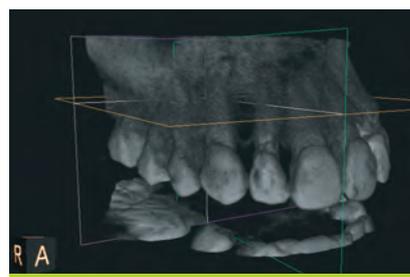


Fig. 3



Fig. 4



Fig. 5



Fig. 6

revealed by computerized tomography) permits placing the implant immediately after tooth extraction.

Surgical procedure

A very accurate root extraction was performed to keep the buccal plate intact (Fig. 5). After verifying the integrity of the socket walls, the implant bed was prepared without flap elevation (Fig. 6). We know that this approach – leaving the periostium attached to the bone – minimizes the remodeling of the alveolar ridge. A Straumann® Bone Level Implant with SLActive® surface (Fig. 7) was palatally positioned. The filling of the vestibular gap was done with Straumann® BoneCeramic

which helps to preserve the horizontal dimension of the ridge and, to some degree, the vertical dimension (Fig. 8).

Immediate temporary restoration

An immediate provisionalization was done by an adhesive-fixed provisional with the crown of the recently extracted tooth # 12 used as a Maryland bridge. 7 days after the extraction and immediate implant placement the tissues around the zone look completely healthy (Fig. 9). This not only permitted providing the patient with an immediate esthetic fixed provisional but also to maintain the adequate gingival architecture during the osseointegration period.



Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12

Final restoration

After a healing period of 6–7 weeks an adequate gingival architecture was already achieved by the adhesive immediate provisionalization (Figs. 10, 11). At this time a Straumann® NC Cementable Abutment with a minimally invasive approach is connected and screwed in at 20 Ncm torque (Figs. 12, 13). By applying this protocol the abutment will not be disconnected, allowing the soft tissue to accommodate to the ideal apico-coronal position and minimizing its possible future recession. With a periapical radiograph we checked the adequate fit of the abutment to the implant connection and confirmed maintaining of the mesial and distal bone around the implant (Fig. 14). The preparation of the definitive abutment was done intraorally (Fig. 15) and after this the de-

finitive impression was taken. A new provisional was cemented to the definitive abutment to maintain adequate soft tissue esthetics (Figs. 16, 17). A metal-ceramic crown was prepared by the laboratory (Figs. 18, 19) and adapted to the mouth. Immediately after cementation, the interproximal areas were not fully filled by soft tissue (Fig. 20).

After some weeks, the integration of the implant restoration to the neighboring teeth and the soft tissue was optimal (Fig. 21). Esthetic parameters were achieved for medium and pronounced smiling of the patient (Figs. 22, 23). The CBCT taken two years after rehabilitation shows the maintenance of an adequate buccal bone width which will ensure the correct position of the soft tissues over time (Fig. 24).



Fig. 13



Fig. 14



Fig. 15



Fig. 16



Fig. 17



Fig. 18

Conclusion

Patients nowadays demand less invasive surgery, the shortest healing time possible and optimal esthetic results. Clinicians, on the other hand, are not only looking to satisfy their patients' expectations, but also to obtain predictable long-term results. Both needs can only be satisfied by performing accurate planning followed by an adequate execution and by using implant designs and biomaterials that minimize the remodeling of the surrounding tissues.



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Fig. 19



Fig. 20



Fig. 21



Fig. 22



Fig. 23



Fig. 24