

KISS – Keep It Simple Stupid

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Figure 1: Anterior Retracted View at Presentation



Figure 2: Right Retracted View at Presentation



Figure 3: Right Retracted View at Presentation



Figure 4: Periapical Radiograph at Presentation



Albert Einstein said “Make everything as simple as possible but no simpler”. The old adage goes that if ten dentists were to treatment plan a case you will get as many varying opinions. There is nothing wrong with this for simple general restorative cases, but when planning for implants it is wise to opt for the simpler option. The following case highlights the point that proceeding with a more complex option may have lead to a poor final result, as well as an unpredictable long term prognosis and outcome for a young patient.

History and presenting complaint

This young gentleman presented with his mum for a second opinion, after being recommended by a hygienist. She was concerned about, what she felt was a drastic treatment plan that was recommended to her son by another respected dental centre. Her son, a student on his gap year, had lost his upper right lateral incisor 10 months earlier through a skiing accident. A provisional acrylic crown was bonded to adjacent teeth as an emergency measure and the centrals were splinted at this visit (Figures 1-3). The upper centrals were also traumatised during the accident, with periapical radiographs exhibiting signs of horizontal fracture lines at various levels (Figure 4). The upper right lateral and central had also been root treated shortly after the accident and all teeth have been symptomless since.

Treatment plan by another dental centre

The initial suggested treatment plan included the extraction of the upper right lateral and central incisors and the upper left central incisor, with the provision of an immediate partial acrylic denture. This would have been followed by the placement of an implant supported bridge with implants in the upper right lateral incisor and upper left central incisor positions. Although this is a viable option, it would have lead to the extraction of three important teeth in the smile zone of this young gentleman. This treatment plan had been accepted by the patient and his parents but fortunately, due to a waiting list for the implant phase of treatment, this treatment plan had still not been carried out.

My proposed treatment plan

In view of the fact that the traumatised centrals had been asymptomatic, with no apical changes since the accident, I suggested leaving them alone with no treatment initially. I recommended the extraction of the upper right lateral incisor, with the immediate placement of an implant.^{1,2} A provisional tooth would have also been provided. A final abutment and porcelain crown would then be fitted after the healing phase. It is important to inform the patient that further treatment may well be required on the central incisors. Staging treatment in this way will minimise the risk of losing soft tissue architecture. This treatment plan was accepted.

Surgical phase

The patient attended for treatment and was given an Arnica 200c pillule (a small sucrose pill, coated with the remedy) to take preoperatively.

Arnica is a homeopathic remedy that I routinely use for all elective surgical procedures. It has been shown to help reduce bruising and swelling associated with surgery and I have noticed a marked difference in both patient reported symptoms, as well as clinical symptoms, including the speed of healing. A 30 second chlorhexidine pre-surgical rinse was carried out prior to administration of local infiltration anaesthesia.

A flapless surgical technique was utilised by using a size 15c micro-blade into the dento-gingival sulcus around the upper right lateral incisor root. The root was then gently and atraumatically elevated using periostomes, taking care not to stress or damage the fragile buccal plate. The resulting socket was inspected, especially for the integrity of the buccal plate. A good instrument to do this with is the AstraTech™ measurement gauge. It has a blunt, hemispherical end, which gives good tactile feedback and can also be



Figure 5: Right Retracted View With immediately placed implant and provisional Maryland Bridge in place. Note Minimal bleeding and bruising to surrounding tissues

used to measure the length of the socket as well as to give visual feedback on the direction of the imminent osteotomy site preparation. Socket curettage was carried out to ensure it is free from any granulation tissue. The buccal plate, although thin proved to be intact and ended approximately 3mm below the labial gingival level. The initial pilot drill used was positioned with a slight palatal inclination and position to the previous root apex, to avoid perforating labially.³

The site was prepared using a standard sequence and saline, with special attention to avoid the thin buccal plate of bone during preparation. A 3.5 x 16mm NobelReplace Tapered Groovy implant was torqued into position with an initial stability of 20Ncm and ensuring that a tri-channel internal lobe was positioned mid-buccally. The initial stability of 20Ncm is not enough to immediately restore an implant. If immediate loading had been planned there should always be a contingency plan if good primary stability of the implant is not achieved.

The implant head was placed 3mm apical from the anticipated final labial gingival margin (adjacent dentogingival levels can also be used as a guide if needed). There was a 2.5mm space between the buccal plate and the implant. A narrow healing abutment was placed and the void was filled with a mixture of BioOss™ (Geistlich) and autogenous bone harvested with an Astra™ Bone Trap. It is my usual protocol to fill voids that are

approximately 1.5mm or more. No sutures were needed.

A Maryland acrylic provisional bridge was bonded in place with a wing on the adjacent canine. The pontic was adjusted and polished to fit around the healing abutment. Note the good marginal adaptation and minimal bleeding (*Figure 5*).

Restorative phase

Twelve weeks later, open tray impressions were taken and custom shade matching was carried out. It is important to take a photo of the contralateral tooth for comparison (*Figure 6*) and a discussion with the patient about whether to copy this tooth needs to be communicated with the lab, especially if there are any unusual characteristics. In this case the upper left lateral had a mesio-buccal rotation and the patient wanted a slight element of rotation with his new tooth.

Due to the depth of the implant head it was decided best to use a goldadapt abutment. This was covered with a layer of opaque porcelain to help mask any possible metal shine through as much as



Figure 6: Left Retracted View Communication with the lab should include a photo of the contralateral tooth

Figure 8: Right Retracted View during trial insertion of Lava crown prior to bonding mesial composite to 13 to reduce embrasure



Figure 7: Left Retracted View Communication with the lab should include a photo of the contralateral tooth



Figure 10: Right Retracted View After composite bonding on 13 to lengthen contact area and reduce embrasure



possible. This was torqued down to 25Ncm and the access filled with GP and Systemp provisional composite. It was also decided to make a Lava crown with an opaque core (3M, Espe). The Lava crown was tried in and approved by the patient for shade and form before being cemented with temporary cement.

It is often the case that the embrasure between a canine and a new crown is increased, as it was here (Figure 8). This can easily be remedied by bonding some composite to the mesial of the canine, as was done in this case, which reduces the embrasure giving a more aesthetic result, which was to the patient's satisfaction (Figure 9).

It is always advisable in aesthetic situations such as this to condition



Figure 9: Left Retracted View Communication with the lab should include a photo of the contralateral tooth

the tissues by providing a prototype restoration. In situations where tissue conditioning has not been carried out, the final crown will most likely have a different emergence profile to the healing abutment. In these cases the final crown needs to be tried in and seated with constant force to overcome the pressure from the circumferential tissues. As this is done blanching will be evident (Figure 7). It is important to wait for the blanched tissues to return to their normal colour before final cementation. Failure to do this may result in ischemia of the surrounding tissues, pain and may even lead to an element of necrosis, if the patient is allowed to leave in this way.

Occlusion was checked with articulating paper in centric relation, as well as in excursive movements until shimstock foil glided through with light contacts. A post-restorative baseline radiograph was taken showing good bone levels.

A three month review and one year follow up were carried out (Figures 10-12). The centrals were still symptom free with no radiographic changes at both appointments. Bone levels were also as they were at baseline.

Figure 11: Anterior 1:2 Retracted View at 1 year



Figure 12: Right 1:1 Retracted View at 1 year Note good papillary infill and stippling of gingival tissues above implant crown.



Conclusion

Implant treatment involves many variables and as clinicians we must consider all these parameters to provide the best outcomes for our patients. If we aim to keep treatment as simple as possible, then the success of the final case will be greatly increased. Careful consideration needs to be given to the proximity of the implant surface to the labial bone, as well as the position of the implant head to adjacent teeth, as there is a horizontal, as well as vertical component to the biologic width⁴ (sometimes now termed the biologic doughnut).

No matter how talented your ceramist, if the final restoration is not framed by the surrounding tissues in the correct way, the outcome may be compromised. A key aesthetic concern in implants is to maintain the gingival architecture and harmony, especially the interdental papillae.⁵ The immediate implant protocol, in combination with a flapless, single stage technique, seems effective at maintaining the gingival architecture and when combined with a good ceramist, gives the clinician every chance of replicating nature.

With our current level of knowledge and understanding of implants as well as having the services of the most talented master ceramists, we have no excuse not to deliver the very best for our patients.

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Disclosure

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References

1. Garber DA, Salama MA, Salama H. Immediate total tooth replacement. *Compend Contin Educ Dent* 2001 **22**: 210-218.
2. Gelb DA. Immediate implant surgery: three year retrospective evaluation of 50 consecutive cases. *Int J Oral Maxillofac Implants* 1993 **8**: 388-399.
3. Schwartz-Arad D, Chaushu G. The ways and wherefores of immediate placement of implants into fresh extraction sites: a literature review. *J Periodontol* 1997 **68**: 915-923.
4. Hermann JS, Buser D, Schenk RK, Higginbottom FL, Cochran DL. Biologic width around titanium implants. A physiologically formed and stable dimension over time. *Clin Oral Implants Res* 2000 **11**: 1-11.
5. Schroeder HE, Listgarten MA. The gingival tissues: the architecture of periodontal protection. *Periodontology* 2000 1997 **13**: 91-120.