Systems

Minimally invasive implant reconstruction

By **Dr Mark Haswell** and **Dr Carl Manhem**

Mark Haswell BDS (Lond), MSc Implant Dent, specialist in prosthodontics, qualified at Kings in 1987 and has worked at Stradbrook since 1990, becoming a partner in 1993. He is described by his nurse as an 'implant anorak' and has been carrying out implant-based treatment since 1991, being one of the first UK dentists to undertake an MSc in Implant Dentistry. He now lectures regularly on all aspects of implant based treatment.

Dr Carl G Manhem DDS, specialist in oral surgery, qualified from dental college, University of Gothenburg, Sweden in 1983. He completed his specialisation in oral surgery in 1994 at University of Linköping, Sweden. In 1998 he moved to London and worked at the Eastman Dental Institute, University College London. His main clinical interests are implantology, in which he has 20 years of experience and several thousand dental implants placed, reconstructive surgery and orthognathic surgery and teaching in the above mentioned areas.

Dr Richard Clarke-Irons BDS (carried out all restorative work), qualified at Birmingham Dental School in 1997, and really keen on 'preventative' or minimally invasive dentistry. He is currently the principal dentist of Warlingham Green Dental Clinic in Surrey.

Our patients desire healthy teeth. Healthy teeth with an aesthetic smile gradually becoming a sign of health, wealth and affluence (Malcolm Gladwell, 2013).

For many years, good teeth have been a sign of affluence in North America and this is now becoming increasingly so here in the UK and Europe. However, as members of the dental profession, we must understand that patients are excited about new white straight teeth and not remotely excited about the complex journey to get there. Therefore if we can provide our patients with teeth as quickly and simply as possible, they will be motivated to complete treatment.

Dental implants have been a revolution to reconstructive dentistry. However complex augmentation, both hard and soft tissue and prolonged prosthetic rehabilitations create, for many patients, a barrier to care.

As the science of implant dentistry has evolved, more is understood about healing, both short and long term, and also the ability of implants to withstand loading in the immediate aftermath of surgery.

We are now able to offer complex reconstructive outcomes previously undertaken with multi-stage surgeries in single stage procedures. This, by the very nature of the reduction in number of operative stages, becomes far more minimally invasive.

The aim of our advanced course (AIHM) run at Stradbrook Implants in conjunction with sponsors from the implant industry has been to highlight the possibilities of minimally invasive treatment planning and surgical and prosthetic procedures to enhance patient outcomes.

We have utilised the case detailed below to highlight the benefits to the patient while achieving the ultimate clinical outcome, and therefore the benefit to the patients' practitioners in terms of their professional pride with the final clinical result.


Figure 1


Figure 2

Case study – traumatised upper right central

The patient is a 42-year-old Caucasian lady who traumatised her central incisor during a skiing accident at age 16. The tooth had been discoloured throughout her life and was relatively intruded due to partial ankylosis. The tooth was experiencing a combination of external resorption and replacement resorption. The patient requested an aesthetic replacement.

She was referred by her practitioner, who is a member of the first cohort on the AIHM course. In discussion with the patient, a recommendation was made for the extraction of the tooth and its replacement with an immediately loaded implant, placed together with a hard tissue graft to repair the damaged buccal plate and a soft tissue graft to overcome the thin nature of the mucosal biotype (Figures 1 and 2).

Pre-operative planning involved a cone-beam scan to ascertain bone volume and pre-maxillary orientation, pre-operative study models and photographs (Figure 3).

The surgical procedure would be performed with a local anaesthetic and oral sedation. The local anaesthetic used was Septanest 1:100,000 and oral sedation was 20mg Temazepam. The patient was treated as part of the AIHM course and the images detailed are from the video transmission to the delegates.

Figure 3


Figure 4

The patient had a blood withdrawal of approximately 36mls of blood to create the PRGF Endoret to enhance healing of both hard and soft tissue augmentation. The tooth was atraumatically extracted (Figure 4), a flap was raised, the area was exposed and the socket was prepared for the NobelActive implant. The graft combination was then constructed placing Cerabone mixed with PRGF into the outer aspects of the socket, harvesting a connective tissue graft from the palate in

the region of the upper left premolars. This connective tissue graft was then sutured to the inner aspect of the buccal flap to enhance the soft tissue volume. The implant was installed and excellent primary stability was achieved. The buccal graft was placed in position and the wound was sutured back in position round the healing cap (Figure 5).

A screw-retained temporary restoration was then constructed using an engaging titanium cylinder from Nobel Biocare in conjunction with Luxatemp and flowable composite. This was steam cleaned and glazed prior to fitting. The occlusion was adjusted and the patient was then discharged (Figures 6, 7, 8, 9).


Figure 5


Figure 6


Figure 7

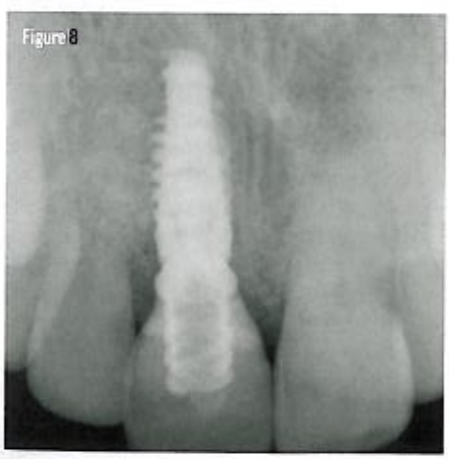
Figure 8


Figure 9

Two weeks later

The patient returned two weeks later for the suture removal after which she was discharged to her own dentist's care. The restorative stages were undertaken by Mr Clarke-Irons, one of the delegates on the AIHM course.

The initial presentation following hard and soft tissue healing (Figure 10) was of an excess of tissue creating a relatively short temporary crown in relationship to the left central incisor. The temporary crown was then removed, the composite resin of the temporary was roughened and additional composite was placed to mould the soft tissues. This was then refitted and reviewed two weeks later (Figure 11).


Figure 10


Figure 11

Once the soft tissue was at an acceptable position both to the dentist and to the patient, a custom impression procedure was undertaken using a NobelActive impression, which was customised to replicate the exact soft tissue profile of the temporary restoration (Figures 12 and 13). This was transferred to the laboratory where a single one-piece screw retained zirconia crown was constructed. This was screwed into position following the patient's acceptance. The screw access hole was sealed with PTFE tape and composite (Figure 14).

Restorative construction by Chris Parkman of C Parkman Dental Technology


Figure 12


Figure 13


Figure 14

Discussion

From the patient's perspective, although she had several stages of treatment including extraction, hard tissue graft, soft tissue graft and implant placement; she underwent only one procedure and then relatively minor prosthetic stages involving impressions and minor adjustments to the temporary (fiddling with the tooth). To the patient's mind, one procedure is far more minimal than multi-stage procedures. From the practitioner's point of view, the immediate extraction and implant placement provides advantages in hard and soft tissue healing as well as the ability to mould the soft tissue during the healing phase.

The literature is clear in pointing us to an excellent outcome for this type of procedure as long as each stage is carefully controlled and the practitioner is working within their competence at the most complex level of the procedure.

This type of procedure, by its very definition, would fall within the complex category of the SAC classification for the practitioner but would be minimally invasive for the patient.