Replacing a failing dentition with new technology

By Dr. Ara Nazarian, USA

Having the ability to take a patient from start to finish in a few amount of appointments within your practice allows you to position yourself as a provider that can fulfill your patient’s surgical and restorative needs. With the proper training, a dental provider may provide extraction, grafting, and implant placement within one appointment at one location. Not only does this allow you to reduce the amount of visits for the patient, but this type of service also helps maintain the cost to the patient since they are not seeing multiple dental providers. Most importantly, this enables the dental provider full control of the surgical and prosthetic outcome. Depending on the patient’s desires, the clinical conditions of the oral environment present and the skills of the provider, a dentist may choose to extract teeth, level bone, and graft with guided dental implant placement within his/her dental practice. A patient presented to my practice for a consultation wanting to return her smile (Fig. 9). She complained of generalised discolouration in her entire dentition, probably due to the rampant caries and infection that was already present (Figs. 2–5). Having already visited multiple providers for an evaluation, she was very frustrated with conflicting treatment options offered. Either the suggested treatment would require multiple surgical and restorative visits that would extend for a very long time or dental treatment would require a team approach where little coordination by dentist and specialist was commu- nicated to the patient. Since many of these options did not appeal to her, the patient decided to have me provide a comprehensive treatment that would include extractions, bone leveling, grafting, dental implant placement, and immediate provisionalization and prosthetic rehabilitation within my own practice.

When presenting cases like this to my patients, I will always use the Digital Solution (Dentistry’s more expensive and the patient may include but are not limited

Planning

A CBCT scan was taken to accurately treatment plan this case to make certain that no complications would arise from doing all the procedures (extract, graft and implant placement) within one visit. Since her entire dentition had rampant caries present, her treatment would require extracting teeth 22–29 and 32–38, as well as the impacted third molars (teeth 81, 16, 17, 52) to avoid any further complications in the future.

To further develop a treatment plan, virtual wax-up was performed by an experienced technician at the Lending Club (San Francisco, CA) for their treatment. Lending Club Patient Solutions provides patients great funding flexibility with very low rates and high approvals. Most of all, the support from their staff has been very professional.

With the combination of their cork screw thread, built-in platform switching and apical design, the ET III SA (Hosken) implant system was utilized in this particular case. According to the manufacturer, the enhanced SA (sand blasted and acid etched) surface of this implant has shown a substantial quickening of gene expression, cell differentiation and proliferation that are essential to osseointegration meaning faster bone healing and earlier loading times. Other dental implant systems in the market with high initial stability may include but are not limited to; Biomedical Engage (IOC), Nobel Active (Nobel Biocare), Seven (MIS), I5 (AB Dental USA), Conus 12 (Blue Sky Bio) and Any-Ridge (Megagen).

Not only was the size and type of the implant selected because of CBCT planning, but also its relationship to the planned restoration and its proximity to vital structures determined before performing the surgery. Guided bone leveling, as well as immediate implant placement, would be accomplished as the surgical app- ointment by using CT-based bone leveling and implant drilling guides. Additionally, prefabricated screw-retained fixed provisional restorations would be directly picked up with acrylic over dental implants in the maxilla and mandible in the key implant positions if adequate fixa- tion was acquired.

When performing this many procedures in one visit, I will utilize IV sedation to make the procedure more efficient and comfortable for the patient as well as for myself. Since the patient is sedated, a mouth prop, Logibloc (Common Sense Dental Products), is used to keep her mouth open. Logibloc’s unique design stabilizes and comfortably supports the jaw while allowing unrestricted visual and physical access to the working area for the provider.

Once the patient was completely sedated and anaesthetized, the teeth were extracted in a systematic man- ner, working in sections at a time starting from the anterior maxillary teeth. Acting like a modified class I lever, the Physiocosper (Golden Dental Solutions) were used toatraumatically extract the teeth with the goal of trying not to disturb the un- derlying bone. The beak of the for- ceps was placed on the lingual cervical portion of each tooth, where the soft bunion portion was placed on the buccal alveolar ridge at the ap- proximate location of the mucogingival junction. During the extraction process, the beak grasps the tooth and the bumer and the fulmen open. Logibloc’s unique design stabi- lizes and comfortably supports the jaw while allowing unrestricted visual and physical access to the working area for the provider.

Once all the maxillary teeth were extracted, the alveolar crest was lev- eled 2–3 mm apically following the parameters set by the bone leveling guide with the A&U-7000 surgical motor/handpiece (Aseptico), so that the patient’s transition line from the ridge to the prosthesis would not be visible when the patient smiled. Once completed, the surgical drill- ing guide was inserted and the site for the implants were initiated with the Hosken Ostim Guided kit (Fig. 6). In the upper arch, six 4.0 mm diameter ET III SA dental implants were placed in the areas of teeth 84, 6, 8, 9, 11 and 13 to support an All on Six restoration. The most distal im- plants were angled in order to avoid the maxillary sinus cavities and any augmentation in that area.

In the lower arch, several different
Fig. 12: Postoperative retracted view biting

Fig. 13: Postoperative retracted view

Fig. 14: Postoperative maxillary occlusal view

Fig. 15: Postoperative mandibular occlusal view

Fig. 16: Postoperative full face view.

Approximately 16 weeks after implant placement, the patient returned for the prothetic phase of her treatment. The gingival tissue turned for the prosthetic phase of implant placement, the patient re-entered treatment. The gingival tissue around the implants looked healthy, so the healing caps were removed and the implants evaluated. Each implant was tested with the Osstell ISQ (Ostell, Linthicum, Md.) implant stability meter. Since the ISQ readings were all very high (above 75), impression posts (Hiossen) were inserted on the multi-unit abutments.

Since all the dental implants were well integrated, impressions were taken for the definitive restorations. For both arches, impressions were taken using Instant Custom C&B Trays (3M Espe) with a heavy and light body vinyl polysiloxane impression material (Take 1 Advanced, Kerr).

Bite relations was accomplished by picking up clear duplicates of the provisional restorations (Fig. 9). Instructions for size, shape, and color for the definitive restorations was forwarded to the dental laboratory and any changes indicated easily communicated to the dental laboratory technician.

A PPS prosthesis would be fabricated for the patient’s upper and lower restorations. The pink gingival areas of this prosthetic type were needed to reconstitute the maxillary and mandibular tissue contours, as substantial bone leveling was required to even out the patient’s smile.

The immediate provisional restoration was tried in to insure a passive fit over the temporary abutments (Fig. 7). Once confirmed, block-out material was placed to avoid the restoration from locking on and chair-side hard denture base material (Rebase II, Tokuyama) placed within recesses around the temporary abutments to pick up the restoration. After the material completely set, the immediate provisional restoration was removed and any access material trimmed and polished with the Torque Plus (Aseptico) lab handpiece and acrylic bur (Komet). A similar series of steps was utilised for the mandibular arch. In fact, the ISQ values were even higher due to the type and quality of bone present in the patient’s mandible. At this point, a Panorex was taken to confirm the placement and position of the dental implants with their corresponding multi-unit abutments and temporary cylinders.

Seven days postoperatively the patient returned with very little discomfort, swelling, or bruising. She was very pleased with her fixed provisional restorations (Fig. 8). Now that the patient was no longer anaesthetised, the occlusion was checked again to confirm there were no interferences in lateral and protrusive movements. The next step in her treatment would consist of impressions for the definitive upper and lower restorations approximately 4 to 5 months postoperatively.

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Within three weeks, the definitive maxillary and mandibular restorations were delivered from the dental lab (Fig. 11). Utilizing a right angled proesthetic driver, both provisional restorations were removed and the definitive restorations inserted (Figs. 12 & 13). Care was given to torque the retention screws according to the manufacturer’s recommendations. A Panorex X-ray was taken to verify the restorations were completely seated. Once confirmed, a piece of Teflon tape was placed followed by composite material (Figs. 14 & 15).

The occlusion was checked and verified with the T-Scan (Tekscan) to make sure that all the proper points of contact were in their ideal positions to ensure longevity of the reconstruction. The patient no longer experienced pain and was very pleased with her new enhanced ‘white smile’ (Fig. 16).

Once satisfied with the adjustments, the manufacturing unit processed each restoration at a time (Figs. 7, 8). Each restoration was manufactured in less than 7 minutes (Figs. 9, 10). Having tried the restorations in and polishing off the remnants of the ceramic spew, the restorations were ready for cementation.

Using ceramic etch of 9% Hydrofluoric acid the fitting surface of the restoration if desired. The restorations have color coding where contacts in the occlusion are too heavy, which can be very traumatic to an occlusion in the sensitive patient.

Using proper etch and silane bonding the porcelain was well bonded to the core with an argon Arc Curing Unit for 30 seconds. The tooth was etched and bonded with Scotchbond, and the restorations were bonded into place with Beyln System.

Conclusion

Computer generated 3D virtual treatment plans allow the dental provider to seamlessly place dental implants efficiently and effectively. With a variety of different software and associated surgical instrumentation available, dental implant diagnosis and treatment has become more simplified. This development has created an inter-disciplinary environment in which better communication and precise execution leads to better patient care and outcomes.

Removal of leaking amalgam restorations and placement of ceramic CAD/CAM inlays in one-hour appointment

By Dr. Richard WH Pollock  B.D.S.

Case characteristics

Age: 39 years old
Gender: Female
Area of restoration: Upper and lower first molars
Teeth numbers: 16, 46

Reason for treatment: Patient wanted a long lasting aesthetic restoration in one visit due to busy work schedule. (Fig. 1.1)

Introduction

With the information now available to the general public through internet access, many patients often come to visit a dentist already armed with some facts they have researched. This also fuels the attitude of “I’m too busy to keep coming to the dentist - I need it all done in one visit.”

This study shows how to achieve high quality long lasting aesthetically pleasing restorations by using MyCrown technology.

Patient first contact

A 39 year-old woman attended our clinic complaining of increased discomfort coming from her two first molar teeth when biting. This had been increasing in intensity over the last few months but her busy work schedule had caused her to continue putting off making an appointment. Although the pain she was experiencing was not severe enough to put her off making an appointment, it was sufficient to spur her on to make the appointment.

On examination, teeth 16 and 46 had amalgam restorations, with defective margins and signs of corrosion of the metal into the surrounding dentinal tubules. Tooth 46 had a vertical fracture running from occlusal surface into the gingiva on the palatal aspect. Neither tooth was tender to percussion and both scored positively with electric pulp testing. However, 46ful did have pain on percussion. When the palatal cusps of the crack finder the patient confirmed this was the sensation she had been experiencing over the last few months. Two periapical radiographs confirmed caries under each amalgam restoration but no evidence of periapical pathology.

I suggested removing each amalgam restoration and any stained dentine and fractures and restoring the teeth with Inlays fabricated by CAD/CAM.

Choosing one prepared tooth first, the software asked me to create the restoration margin line. This is the yellow line, seen in the next two images. Then, moving to the other prepared tooth doing the same. Then moving to the next stage, the software gives an initial proposal for the

Having sprayed, then scanned each arch, then a burs were used with the patient in eccentric occlusion, the MyCrown software correlated all the information and gave images of the upper lateral and buccal cusp. (Figs. 3.4, 5)

Conclusion

This clinical case demonstrates the ease and efficiency of providing high quality aesthetically superior restorations with minimal inconvenience to the patient. The patient was given the option of having composite resin placed instead of using MyCrown technology and this would have taken longer to provide a poorer quality restoration. It’s a no-brainer for the patient and for the dentist! 

5 simple steps to ultimate quality

Dr. Richard WH Pollock  B.D.S.

He works in three practices in London practising cosmetic dentistry, implant surgery and soft removal of amalgam and dentification- he has had a special interest in CAD/CAM technology over the last 15 years. Having successfully placed over 10,000 restorations in many satisfied patients, using earlier versions of CAD/CAM technology, he is delighted to now be a proud user of MyCrown Technology which he finds to be superior in every aspect of use, design and manufacture. He qualified from the University of Dundee in 1999.

Dr. Nazarian maintains a private practice in Troy Michigan with an emphasis on comprehensive and restorative care. Dr. Nazarian is the director of the Reconstruc- tive Dentistry Institute. He has conducted lectures and hands-on workshops on aesthetic materials and dental implants throughout the United States, Europe, New Zealand and Australia. Dr. Nazarian is also the creator of the DemoDent pa- tient education model system. He can be reached at www짜나 감피.코나드.