CONTACT STEPHEN AT: stephen@dentalfx.co.uk

Stephen Jacobs, principal dentist at DentalFX in Bearsden, has taken on the challenge of documenting a course of implant treatment as it happens, and publishing his findings along the way

An implant restoration **in real time**

Over the last 30 years there has been increasing evidence supporting the provision of dental implant-supported restorations, as the predictable long-term treatment of choice in the replacement of missing teeth. During this period we have witnessed many changes in decision-making rationale and protocols of treatment, including many paradigm shifts of opinion as to the efficacy of different approaches to a variety of clinical situations.

A combination of evidence-based decision making, biologically-based techniques and experience-based complication management are vitally important in the treatment planning of our patients and their overall care.

The hierarchy of evidence is topped by randomised controlled trials (RCT), of which relatively few valid ones have been published – according to Marco Esposito, one of the most experienced researchers of systematic reviews and Cochrane type publications.

Below the RCTs, further down this list, are the published case series from which we can extract much information, but without the solid science that is demanded by our academic clinical colleagues, or 'academicians' as they are now descriptively known in the United States.

Below the case series, we have case reports, of which, over the years, there have been an abundance published in magazines, journals and industry-sponsored publications. The reports are often dismissed as anecdotal and lacking relevance when trying to apply information contained within these articles, to our own clinical practice.

One argument is that these case reports are usually written and published with the treatment completed and final result determined, irrespective as to whether the case produced a successful outcome or highlighted a complication; in other words, a retrospective view. Admirable though the latter may be, the case report still has the tendency to allow the author to write up the diagnosis, treatment plan, treatment details, together with all the thought processes involved, amidst the luxury of knowing the eventual outcome.

"The reader has my word that every relevant detail will be reported, warts and all!"

Over the next several issues of *Scottish Dental magazine*, I will be presenting a case report, but with a difference.

I was recently approached by an acquaintance and friend, with the proposition of carrying out a course of implant treatment, writing it up and publishing it in this magazine, in 'real time'. In other words, we shall take the reader through this course of treatment, describing every aspect of it, the planning, the delivery of the treatment itself, together with the after-care and follow-up, including any complications that may arise during and after treatment completion.

This naturally is a challenge, and while it may well have been done before, I have certainly never seen it presented in this way. Furthermore, the reader has my word that every relevant

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Fig 1
Photo showing the medium smile line

Fig 2
Teeth in occlusion. Note the pus around the gingival margin of 11

Fig 3
Close up of the central incisors highlighting the drifting and extruded 11

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detail will be reported, warts and all! All clinical photographs will be genuine and without alteration, enhancement or use of any photo-editing software, except for cropping and adjusting lighting and contrast.

In addition, the patient, who has a journalistic background, will write up his aspect of the treatment, thereby giving the treatment details from both the clinician and patient perspective; we shall also bring in the laboratory and technical viewpoint at the appropriate time.

Further, and as will be apparent when looking at this case, it is far from straightforward and I would expect us to have some issue that need to be resolved, and some decisions to be made along the way.

So, here goes...

First visit

Our patient, a male aged 54, who shall be known as NC, presented complaining of mobile and unstable upper central incisors, 11 and 21.

Medical history

His medical history revealed nothing untoward, with the exception of a mental illness that lasted for approximately a year and a half, but resolved approximately 18 months ago. All medication had now ceased, he was back at work and life had returned to normal.

There was a history of cigarette smoking for three years while NC was in his 20s.

Dental history

This revealed a history of periodontal disease that was essentially under control via regular plaque control from his dentist. However, NC did point out that it was during his illness that he noticed the deterioration of the central incisors. Prior to the illness, he attended his dentist on a routine basis.

Patient examination

On examination, there were no signs of submandibular lymphadenopathy, with an absence of TMJ symptoms and problems. Intra-orally, the soft tissues were healthy and no signs of pathology could be seen.

His oral hygiene was satisfactory, but with areas that required improvement. There was minimal bleeding on probing, these areas being associated with a small number of increased probing depths, restricted to a few molar teeth. The lower arch was largely unaffected.

The occlusal incisal relationship was class I, and no wear facets could be seen, indicating that parafunction was not a significant factor. There was a medium smile line with a normal gingival tissue biotype.

The two upper central incisors were grade III mobile, and upon probing and palpation, a significant amount of pus exuded from the gingival margins of both. Further, it could be seen that both had drifted with 11 being extruded from its socket.

"As I say when I am teaching, lecturing and mentoring, it's the discussion time where we all learn the most."

Radiographic examination

Intra-oral radiographs revealed some generalised vertical bone loss, the anterior periapical view revealing that 11 and 21 were the worst affected with approximately 80 per cent bone loss.

Diagnosis

NC was diagnosed as suffering from chronic periodontitis as a result of having a susceptibility to the disease, that may be genetically written, coupled with periods where the oral hygiene measures were not as effective as they could or should have been.

In the absence of general tooth mobility, most areas of the mouth could probably be brought under control and stabilised by a course of hygiene phase therapy. However, the prognosis of the upper central incisors was very poor and their extraction was the only treatment option that could be considered.

Bruce Hogan, the patient's dentist, had stabilised the periodontal condition with such success that the upper central incisors were really the only truly active areas within the mouth, that required radical treatment at this stage.

Treatment options

NC was anxious to avoid the provision of a partial denture, especially as a long-term solution. Even the thought of wearing one as a provisional restoration was not to be relished, although he accepted it to be the provisional restoration of choice.

Conventional fixed bridgework was discussed, but in view of the amount of tooth preparation required to sound tooth structure, coupled with the susceptibility to periodontal disease, we decided that this was probably not the best approach.

Adhesive bridgework was also discussed, but its lack of predictability in a case like this being the excluding factor.

Two implant-supported crowns were discussed and decided to be the optimum method of replacing the two upper centrals. However, it was explained that it was important to ensure that there was no active periodontal disease in other areas of the mouth, and that this must be treated prior to the provision of dental implants.

With this in mind, the following provisional treatment plan was devised:

- Hygiene phase therapy, eliminate periodontal pockets and reinforce oral hygiene. This would require an initial four visits, each of one hour duration followed by a period of monitoring and assessment of the stability and success of this phase.
- Extract 11 and 21, fitting an immediate partial acrylic denture.
- Cone beam CT scan to determine bone volume, four weeks post-extraction.
- Two months after extraction, place two dental implants, carrying out simultaneous guided bone regeneration, to increase palato-labial bone thickness.
- Following a suitable healing period, a sub-mucosal connective tissue graft, if deemed necessary. This has the effect of boosting the tissue biotype.
- Second stage surgery to uncover implants, confirm osseointegration and connect temporary healing abutments.
- Fabrication of screw-retained composite provisional crowns, to shape the marginal tissue and develop the interdental papillae.
- Final ceramic or zirconium crowns, cemented on CAD/CAM zirconium abutments.
- Regular reviews and maintenance, ensuring good oral hygiene measures.

Discussion with patient

At this stage, it is important to discuss the following;

- Treatment options
- Rationale behind the treatment and all the proposed stages of the treatment plan
- Sequencing of treatment, highlighting the likely number of visits and the length of time of treatment
- Procedures involved, including the surgical phases and aftercare
- The bone augmentation aspect, including the use of bovine and/or porcine biomaterials, if these are planned
- The importance of attending routine follow-up visits for monitoring the implant and peri-implant health
- The link of previous periodontal disease with future peri-implant disease, and the known risk factors
- This has to be backed up by contemporaneous notes and informed consent obtained.

Conclusion

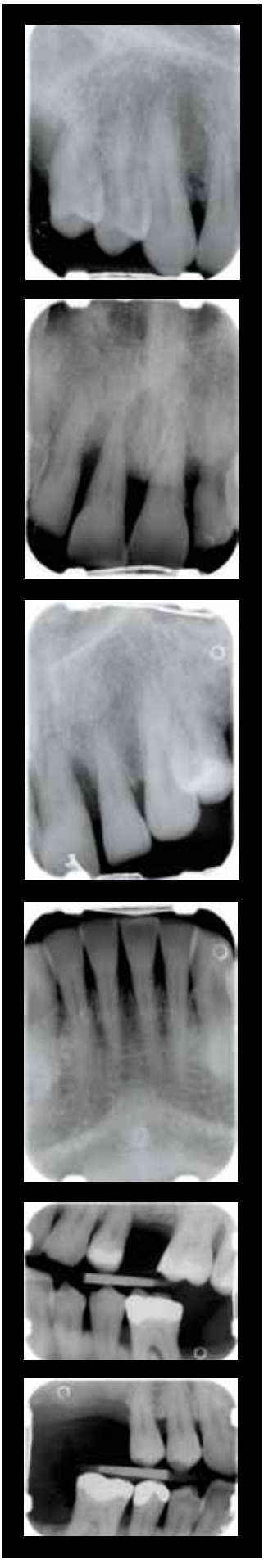
At the time of writing, the intensive hygiene phase therapy was nearing completion, with encouraging results, and impressions had been taken for the provisional denture.

Over the ensuing months, I will describe the treatment in detail, including my personal thoughts on how it is progressing, together with as much background information and references as I can provide.

As I have said, this case is far from straightforward, with some vertical bone loss at the time of presentation. We also have the history of periodontal disease, so we may have some ongoing peri-implant issues to deal with, but I would regard these problems as part and parcel with a busy implant practice, where a multitude of cases with a variety of presenting problems and complicating factors are treated.

I hope that the reader enjoys this journey with me, hopefully learning plenty and being able to apply some of this knowledge to their own clinical practice. I welcome any questions or queries by email to me. As I say when I am teaching, lecturing and mentoring, it's the discussion time where we all learn the most.

In the next issue, I will report on the early stages of treatment, together with some of the details of the treatment planning process.



As he embarks on his restorative journey, patient NC gives us an intriguing insight to the hopes, and fears, of an implant patient

The patient's perspective

About ten years ago, I read an interview by a – then – famous politician who was discussing his sense of his own mortality. It had only just struck him, at 52, that his life was actually going to end at some point. And it might be soon, how would he know?

The rather pleasant, if self-deceiving, notion that most of us have for most of our lives that, basically, it'll never end, is usually brought to a juddering, alarming halt by an event of cataclysmic proportions close to our own lives. Everyone over a certain age will, in truth, be able to tell you his or hers, if you press hard enough.

Now, if you find it too depressing to have someone bring the ultimate and inevitable shedding of the mortal coil into sharp relief, then there is a lighter side. It lies in the fact that my own moment of realisation burst through the morass of my indifference in a rather more mundane form: tooth loss!

It went something like this: "Oh Lord, does that really mean another one has to come out? There won't be many left soon.

"Is this actually the beginning of the end? The end itself?"

I would like to say that I lingered on that thought for a long time, debating endlessly with myself what, at 54, I would do with the rest of my life. If it all were about to end – because of my inherent and almost certainly hereditary periodontal problems – what would I do to truly enjoy my last days on the planet: golf, golf, more golf and perhaps, if I was lucky, a tiny bit of sex?

But I didn't. I panicked about what I would look like without my two front teeth – another Joe Jordan in the making (for those of you who know your football). How would I ever again bite into a really crusty French baguette, or explain to my long-suffering and particularly elegant wife that she was going to have to sleep with someone who put his teeth in a glass at the bedside every night. There goes the tiny bit of sex I might still have held out some hope of!

So, when the possibility arrived that there might be a solution to the problem, it came as an outrageous relief. I wasn't going to die after all! A miracle. Please understand that that is the extent of the emotion that can be generated when your dentist says: "I think I can fix this." Even if it's only a qualified "think", it's enough. There's hope.

All the excellent work that my own dentist – the talented and unrivalled gentleman that is Dr Bruce Hogan – did to stabalise the periodontal issues, could actually be followed up with implants that would maintain my limited appearance and, much more importantly, my dignity.

Now, I didn't present my dentists with the easiest challenge. Both my parents had lost virtually all their teeth at a fairly early age.

Much of this had been put down to gum disease. This, I have almost certainly inherited.

Then there were the years of taking a particularly cavalier approach to oral hygiene (there we go, back to the "it'll never happen to me" thought process) and then, of course there was the small matter of a rather distressing – as they tend to be – nervous breakdown and the 18 months of very heavy duty anti-depressants and anti-psychotic drugs that were being shoveled down by the handful. I'm told that this can have an exacerbating effect on the problematic and significant periodontal and bone loss issues I have experienced. But I'm no scientist.

So, when DentalFX's Stephen Jacobs tells you that he thinks – but can't guarantee – he can replace the your two upper front teeth with implants, there is a tendency to forget your discussion with God about your future and replace the Almighty in your affections with this calm and assured surgeon.

Somehow, at the first consultation, the good doctor was able to gently relate the extent of the problem without it resulting in a return to ten milligrams of diazepam. He eases you through the process, giving this layman just enough technical information to feel 'included' in the process. It is my mouth after all.

It cannot be over-stated that for me, his well-balanced level of communication at the start of the journey was a vitally important factor in giving me the confidence that this relatively invasive procedure would work. After that, you relax – relatively speaking when someone's going to 'yank' out your two front teeth – and accept that there is a solution and it's here in the light and airy surroundings of this Bearsden surgery.

"How would I explain to my particularly elegant wife that she was going to have to sleep with someone who put his teeth in a glass at the bedside every night"

This is just the start but there is a sensation returning that I just might have few good years left in me. I'll report back after my next visit, at which I will have the teeth removed and a temporary plate fitted – which I dread... oh, Lord, where's that medicine cabinet? ■