Dental implantology: Evolution or the road to ruin?

by Aws Alani, UK

Teeth are highly evolved structures that have developed progressively over millions of years in attempts to protect themselves from caries and periodontal diseases. Over the years, many advances have been made that can treat these various diseases predictably. Various strategies have been developed to prevent or slow down these problems given adequate patient compliance and appropriate personal and professional maintenance. Despite these very significant improvements, there are still instances when patients are advised to lose one or more teeth to be extracted. It is the obvious sadness, heartache or despair that patients are caused by this bad news that has driven, caring clinicians to find ways to replace teeth with various devices, including dentures, bridges and implant-retained prostheses.

P-I Brånemark, now sadly deceased, famously quipped “No one should have to die with their teeth in a glass of water beside their bed.” His original concept coupled with determination, intuition, passion and an ability to surround himself with a great team of individuals with differing skills made osseointegration much more predictable. Brånemark’s landmark studies changed prosthetic dentistry dramatically, but a careful look at the design of these protocols and the implants themselves reveal that they were hugely different to the patient selection protocols and the types of implants being placed today.

Part of the key issue probably lies in the surface exposed to the susceptible patient’s oral environment, as most microbiologists will allege. The bacterial content and make-up of the biofilm is a reflection of the surface on which it resides. Implant surfaces have become progressively rougher in order to hasten the early osseointegration processes and to try to provide patients with their restoration quicker in an ever more competitive financial environment.

However, speed is not always helpful. Experience shows that some things are better achieved gradually. Once exposed to the environment of a susceptible patient, the macro-topography of the threads provides an ideal ecological niche for bacterial proliferation. Further podontia and those who have suffered trauma. Usually both cohorts are likely to present with well-maintained, minimally restored denition or with scope for oral health improvement prior to consideration for any restoration, let alone an implant. Unfortunately, we are unable to provide this treatment for smokers.

This is in stark contrast to the patients who may be provided with implants in general and specialist practice, such as patients who are likely to have lost teeth as a result of plaque-associated diseases. Indeed, it could be considered a paradox by many interested observers that some clinicians are providing patients with implant-retained restorations when they have shown that they are highly prone to plaque-associated disease via tooth loss and have not demonstrated any real capacity for changing that. Patients who smoke, those with a history of periodontitis and those with poor oral hygiene are well known to be at a very significantly higher risk of peri-implantitis.

Patient selection issues

We need to consider the types of patients whom we are now accepting for implant provision. At King’s College Hospital, the criteria for state-sponsored implant provision largely involve patients with history of a susceptible patient, the macro-topography of the threads provides an ideal ecological niche for bacterial proliferation. Further podontia and those who have suffered trauma. Usually both cohorts are likely to present with well-maintained, minimally restored denition or with scope for oral health improvement prior to consideration for any restoration, let alone an implant. Unfortunately, we are unable to provide this treatment for smokers.

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Biological versus mechanical problems

If we are being frank, the pathogenic bacteria-induced diseases are not the only long-term problem that we are now seeing. The reported frequency of mechanical complications has risen over the years, but the reported problems are probably only the tip of the iceberg of problems or research that can provide a predictable cure for what now is now a new breed of disease. Peri-implantitis is relentlessly established within fine threads of the implant, and the bone resorption and soft-tissue problems that follow can result in spectacular problems.

Why and where?

Where this technological change has taken implantology and what the real reasons are that this was and is happening need to be examined. Increasingly, the shadow of peri-implantitis looms like a spectre over the provision of implants. Unlike caries or periodontal disease, there is very little consensus or research that can provide a predictable cure for what now is now a new breed of disease. Peri-implantitis is relentlessly established within fine threads of the implant, and the bone resorption and soft-tissue problems that follow can result in spectacular problems.

These problems become much more worrying when viewed from ethical, valid consent and medical/legal perspectives. This is particularly so in cases where patients are to undergo elective extractions of teeth that often seem reasonably intact or treatment with conventional proven treatment strategies.

It appears that there is a worrying drift towards aggressive treatment with extractions in order to provide a supposed full-mouth rehabilitation with multiple implants. The increasingly dubious practice of sacrificing teeth for the sake of implants appears to many concerned clinicians to be quite unethical. As ethical oral health practitioners, deliberately removing saveable teeth for prosthetic replacement usually as support appears to be consciously flying in the face of increasingly apparent evidence of various complications with implants and many would consider that approach to be foolish. How many ‘implantologists’ doing that to others would genuinely have it done to themselves or done to some close family member?

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Planned obsolescence

A state-of-the-art implant today is likely to be obsolete tomorrow. Electively removing teeth is irreversibly and replacing teeth with implant-retained devices means that patients are trapped in the era of implantology in which they were placed and restored, that means issues of machining, surface blasting, roughness, platform switching, design and attempts at bone augmentation by cow, coral or Californian substances. The list goes on and on and responsibilities to continue to expand with what many might consider human experimentation without licence.

Now comes the time for implant manufacturers to take stock of their many ‘market-driven’ mistakes, including fast initial integration with the roughest possible surfaces. Instead they need now to produce proven (i.e. not speculative) designs that can better prevent these well-known problems of infection and breakage.

A wiser, pragmatic approach appears to be to concentrate every- one’s efforts on saving teeth and turning them into useful assets for the patient’s lifetime. Recently, the legendary Prof. Jan Lindhe, inter- viewed in the British Dental Journal, summarised the state of play as

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