One step backwards, two steps forwards
The use of microscopy to enhance general dentistry by Mark Howe

Dentistry used to be simple; treatment choices were limited and prior to the “celebrity smile” cosmetic dentistry did not exist. Over the past decade there have been massive technological advances in dentistry and medicine that have forever changed the treatment options for our patients. Included in these advances are implants, guided bone regeneration, milled ceramics and advanced radiographic imaging. Furthermore the public’s expectations have increased dramatically in this time, with many patients now seeking a brighter, whiter more youthful smile.

Personally I think the biggest advancement in recent years has been in visualisation: the better I can see what I am doing the better the clinical results achievable for the patient. The arrival of the operating microscope into dentistry has launched a new era in dental care by improving magnification and illumination. The dentist can now see every detail of the teeth from micro-cracks to hidden decay and infection. In the past these factors may have possibly meant having to lose the tooth, but no more. With the dental operating microscope we can dramatically reduce the “guesswork” involved when trying to save teeth.

The operating microscope has now moved from the ophthalmic and vascular surgeon to the dentist, bringing all the techniques and advantages of microsurgery into the dental practice. We are now able to magnify the tooth by up to 20 times, and using special lighting can eliminate the shadows where decay and infection previously lurked.

So what do I mean by “one step backwards, two steps forward”? Previously, a lot of conventional treatments were limited by the dentist’s ability to be able to precisely see where the infection was hiding. The patient’s lips, cheeks, tongue, saliva and shadows hampered the dentist from clearly seeing the teeth almost to the point where he/she was working by feel alone. This was especially true of root fillings where we had to accurately clean, shape and seal up to four root canals (each the thickness of a human hair) through a tiny 5mm hole.

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'We are now able to magnify the tooth by up to 20 times, and using special lighting can eliminate the shadows where decay and infection previously lurked'
Improved vision and precision equals:

• Better composite (white) fillings with an improved seal and more natural appearance.
• More precise edges on crowns and veneers.
• Higher quality root fillings and the ability to retreat previously root filled teeth that have failed.
• Cleaner root surfaces when treating gum disease.

It is interesting to note the root-filling can be completed in a few hours while the implant may take up to a year before it is finally completed at three times the cost. This is not an ‘anti-implant’ stance but it makes sense to exhaust all practical restorative options and try and preserve the implant option as our ‘ace in the pack’ to be pulled out when there is no better choice. In addition where possible the use of a surgical microscope, microsurgical techniques and implants all complement each other to produce improved outcomes for our patients.

I and many in the profession strongly believe that if we can go back and improve some of our older restorative techniques we can not only reduce the need for more costly and complicated treatments. The ten-year success rate on a root-filled front tooth and a similar front tooth restored with an implant are both around the 90 per cent mark. It makes sense to exhaust all practical restorative options and try and preserve the implant option as our ‘ace in the pack’ to be pulled out when there is no better choice. In addition where possible the use of a surgical microscope, microsurgical techniques and implants all complement each other to produce improved outcomes for our patients.

Most importantly we are now able to save teeth that previously had to be extracted and I think I am right in saying that patients generally would like to keep their own teeth rather than have extractions. If we can keep hold of our teeth longer and improve their looks by enhancing the precision of our restorative and conservative treatments the patient can avoid or at least defer the more expensive and complicated treatments such as implants.

By combining the improved magnification and precision of the surgical microscope and conventional dental techniques we can get the best possible success rates. As a footnote if you keep on top of your check-ups and keep the idea that “prevention is better than cure” you won’t have to worry too much about advanced surgery, implants, bone grafts etc, etc.

About the author
Mark Howe qualified from Birmingham University in 1988. After four years in general practice he joined the Royal Air Force Dental Branch on a Short Service Commission. He served both in the UK and overseas and gained experience in oral surgery and advanced dental treatments. Additionally he gained his Diploma and Membership exams in general dental surgery. On leaving the RAF, Mark completed his Fellowship in the Faculty of General Dental Practice (FGDP) in their highest qualification. To keep up-to-date he attends many conferences both in the UK and abroad. Mark also lectures on restorative dentistry and provides a referral service for other dentists. Mark is an Assessor for the Royal College of Surgeons (FRS) for fellowship and is a member of the British Society for General Dental Surgery (BSSGD), the British Society of Prosthodontics (BSSPD), and the European Association for Osseointegration (EAO).