



Microscope enhanced dentistry

BY DR RICK SPENCER

Three years ago I wrote an article about microscope enhanced dentistry in this magazine. I've continued to have a tremendous response and the editor informs me that copies are often requested. My passion too continues unabated.

Now, with over 15,000 hours of experience (and 20,000 digital images), microscope usage has become straightforward and indispensable - this was highlighted to me recently when my light box broke down and I worked with loupes for 2 days! I almost called in sick on the third day as my back and neck were so painful! Fortunately INLINE Systems lent me a light.

Worldwide, the Academy of Microscope Enhanced Dentistry continues to grow exponentially and held its 4th annual meeting in Arizona, USA, with 25 speakers from around the world presenting in all disciplines during a 4 day seminar. See www.microscopedentistry.com for more information.

Here are a few additional observations from daily practice.

Visual information

In 2003, Dr Assad Mora presented some interesting data he researched from Ophthalmic Literature on visual information (See table 1).

The resolution of the human eye is quite high however the microscope greatly enhances this. The table shows that at 10x magnification we have 100x the information or in other words, the human eye only sees 1% of what can be seen at 10x magnification.

In my practice

With time, quite naturally, one finds it easy to work at higher magnification. I now routinely drill, scale, etc, at 9x and occasionally go up to 12x for fine finishing. Generally though, I am forever changing between 2x and 9x as I progress through procedures.

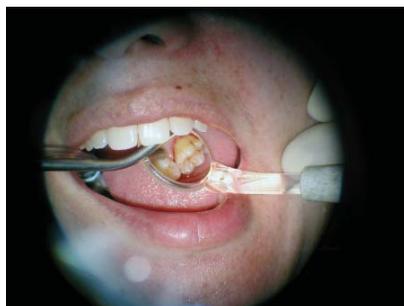


Figure 1. Same vision at 2x before scaling.



Figure 2. Visible calculus at 9x.



Figure 3. Small amount residual calculus seen at 9x.



Figure 4. Clean root surface.



Figure 5. Before bonding.



Figure 6. After bonding. Note detail possible with microscope.

Table 1. Magnification and visual information

Magnification	1x	2x	4x	10x	16x	25x
Information content	1x	4x	16x	100x	256x	625x
Picture element	660	2,640	10,560	66,000	168,960	412,500

Root planning

While working at the lower magnifications one might think the root is clean (Figure 1), but then go up to 9x (Figure 2) or 12x and dry the root surface - it is amazing how much is left behind!

At a course in 2001 run by the ADA, Drs Melnick and Camargo from UCLA

stated that the last piece of calculus removed was the most important piece (Figures 3 and 4).

In September 2004, I had the joy of hearing Anna Pattison, a leading hygienist from the USA present the United Dental Hospital in Sydney. She was scaling at 40x magnification using a periodontal



Figure 7. Pi r² - a small difference in diameter but a great area difference. This is why 2x magnification is so much bigger than 3x magnification.



Figure 8. Fissure before seal.

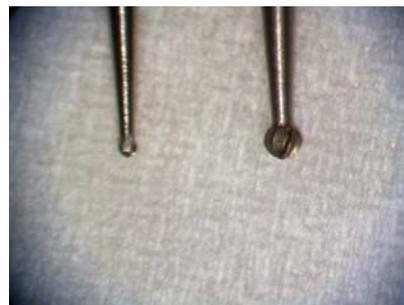


Figure 9. Small bur used to clean fissure seal compared to size one.



Figure 10. Fissure clean.



Figure 11. Completed fissure seal.



Figure 12. Global Micro surgeon's chair.

endoscope. Obviously 40x is much better than 12x and the endoscope can go deep subgingivally. This could be ideal for refractory cases but at present is very expensive and slow to use.

Cosmetic work

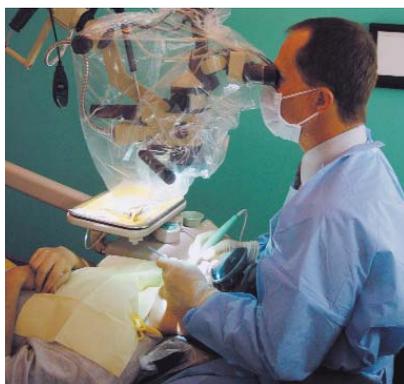
My cosmetic bonding suffers from less staining now and patients are happier with the aesthetics due to my much greater vision and hence greater detail. Small bubbles or defects are detected before they stain.

Reasons for not getting a microscope

There are many reasons for not getting a microscope but the main ones are:

- (a) Dentists worry that their previous work will look poor under high magnification! I have experienced this and I simply refinish or repair restorations - which the patient is happy with since they can easily understand that now we can provide better care. Backing this up with good digital photography is important.
- (b) It will slow us down. Yes, for 6 months I went slower but one can increase ones fees and slowly speed comes back - some procedures are quicker and more accurate with a microscope - more accurate placement of composite means less finishing.
- (c) Cost of microscope. How much is your health (back and neck) worth? Health is

your best investment. My friends and I who have a microscope are busier than ever due to patient satisfaction and fees can be increased due to the increased quality of treatment.



Tricks of the trade

- My 1cm mirror (supplier Crown Dental - crown-dent-med.co.nz) (code ghsm8, cost AU\$12) remains invaluable to me - especially for the lower left (Figure 7);
- Small high speed handpieces - I like Lares; and
- Small burs - Halas H1314004 Komet is great for cleaning out fissures before fissure sealing (Figures 8-11).
- The Global Micro surgeon's chair with arm rest allows for finer movements and great back support. Our local physiothera-

pist came to watch us work and adjusted our chair beautifully (Figure 12).

Open invitation - seeing is believing

There are many challenges facing modern dentistry today and if we all work together, success is assured. The divide and conquer philosophy can be overcome with mutual respect and co-operation. If you want to come and see how much microscopes make a difference to your work and your next and back, then please come and visit. I've had 4 dentists visit me in Strathfield and three have bought a microscope and have had success and the fourth is getting one soon. Please come and visit or if you have any questions, please phone or email.

By the way, when dentists have visited us, we have learned from them also!

Dr Spencer's original article from Jan/Feb 2003 is available to subscribers online at www.dentalpractice.com.au

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For more information on Global Surgical microscopes, contact Inline Systems on (02) 9999-2696.