



Dentistry: The Quiet Revolution

By Daniel Michael

There is a quiet revolution going on in dentistry. It's been happening for a number of years. Gone are the days of big metal fillings and destructive metal crowns.. The old style of dentistry is slowly phasing out. Teeth are no longer being “filled” but are being “restored”.

But what has changed? Partly, it is better materials and better research. But mostly it is a change of *ideology*. The idea that we are no longer plugging holes, but restoring teeth to their original strength and beauty. By definition, the restorations are *invisible*, and the amazing thing? Restoring the strength and beauty goes hand in hand. These are the days of **Minimally Invasive Dentistry** and **Biomimetics**.

Minimally Invasive

The old style of dentistry, filling every cavity, cutting teeth heavily in order to rebuild them, is a product of a bygone era. Do we need to make the cavity bigger in order to fill it? No. Do tiny cavities need be drilled and filled weakening an already small tooth? Not always. If the decay is getting close to the nerve do we need to remove it all and risk damaging the nerve resulting in root canal treatment? No. With the “old-style” fillings, all the decay is removed which can result in exposing the nerve and increasing the likelihood of root canal treatment. With this new ideology it can mostly be avoided, sealing the tooth and preventing further decay. It can be achieved with the right materials, evidence-based techniques and a great deal of care.



Minimally invasive composite bonding to close gaps - no drilling of teeth was involved.

We have materials in our armamentarium now that means we do much, much less of that. Fluoride, beautiful composite materials, strong porcelains, coupled with extremely good bonding techniques means we don't need to remove unnecessary, precious tooth tissue anymore. Why? Because your own tooth is the strongest part of your tooth. We'd like to keep it there. Instead of cutting huge swaths of tooth and the possibility of future damage to the tooth and the nerve, we use minimally invasive techniques, extremely fine instruments, high magnification, to accurately remove *only what is necessary* for the long term health of the tooth. You get to keep your tooth with as much strength as possible so it has a longer lifespan.

But the concept does not stop there.

Prevention is a very large part of minimally invasive dentistry. Preventing the formation of cavities and damage to the teeth is important. Reducing the acid levels in the mouth through diet and fluoride will prevent cavities forming the first place. But teeth can wear and break even if you are looking after them with a good diet and oral hygiene. Grinding at night time can cause this. Assessing the

extent of this and providing non-invasive treatments, like specialised night guards, is vitally important.

Minimal invasive dentistry is an all encompassing concept going from prevention all the way to a highly accurate micro-dentistry whose main aim is for you to keep your own teeth for far, far longer.

But what happens to the teeth that are already passed a small filling stage? Or the ones that have been restored with the “old-style” large metal filling and now have failed? Well, we still use the important principles of minimal invasion, and we add to it the principles of *biomimetics*.

Biomimetics

What is biomimetics in dentistry? Literally, it means to copy life. Why do we want to do this? Because the best tooth in your mouth is your own tooth. Structurally, functionally and aesthetically. We want to copy that when we restore teeth. The design is there. All the layers of the tooth are there for a reason, and by mimicking them, using materials that are similar to each layer, with the same kinds of bonds, we can rebuild the tooth to the same strength and shape (to provide function) *without* digging deeper and removing precious tooth. We are just replacing anything that is missing, and leaving the bulk of the tooth there. The very important side effect of this is that if the restoration were to ever break, while eating something too hard or other kinds severe trauma, the tooth will still be safe, and can be restored again. The “old-style” filling and crowns are more likely to irreversibly damage the tooth in such a way that it is much harder to save. With Biomimetic dentistry, only the damage and decay is removed from the teeth, and the final restoration is bonded to the remaining healthy natural tooth structure.

You can see that biomimetic dentistry goes hand in hand with minimal invasive dentistry. Both are derived from the same concept and ideology. The preservation of the natural tooth structure and where it needs restoring, to restore in the most natural way.

Carrying out Minimal Invasive Dentistry and Biomimetics is a highly rigorous undertaking. It has to follow the strictest protocols and use exactly the right materials and tools. Every step of the process is important. It is all evidence-based. None

is left to chance. Every treatment is predictable. These concepts dictate that leaving any step out can be detrimental.

The average tooth takes 10 years to fully develop from the initial tooth germ in the gum, and when it decays the hole is filled in twenty minutes. Is that really what it needs? Or should we restore it in the most accurate way possible mimicking its structure and layers to provide something that is more deserving?

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