

# Creative Uses of Dental Imaging



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In this exciting era of rapidly evolving technology, dentists are benefiting from advancements in lasers, computer-aided design/computer-aided manufacturing (CAD/CAM), air abrasion and cosmetic imaging, and many other tools to show their patients that their practices are state-of-the-art and can deliver superior services. Dental imaging software has been designed and is used to excite and elevate our patients' awareness of cosmetic dentistry. There are many dental imaging software products and smile libraries; they usually are based upon Adobe® Photoshop®, which has been adapted for dentistry. Are all the proposed computer-generated changes possible to produce, however, in a manner that is both in the interest of the patient's health; and will these proposed alterations be able to provide years of predictable function?

Many providers of cosmetic dental imaging place a disclaimer on their photos such as, "This image is for purposes of illustration only. It does not represent a guarantee of any kind." These providers realize that what they are proposing to the patient is not always possible.<sup>1</sup> Gingival levels, midlines, and root position have to be in alignment—they cannot just move by magic! This article will illustrate several ways to use cosmetic imaging to educate your patients about the correct manner in which to restore their teeth, as well as show them what is not possible and why.

We should not sell false hopes to our patients. New instrumentation, materials, and techniques make it easier for us to attain spectacular results, but the principles of dentistry remain the same. People should look like people, teeth should look like teeth, and muscle balance and occlusal stability should be maintained

and respected so that the entire masticatory system functions in balance and harmony. These principles have long been advocated by clinicians such as L.D. Pankey, Morton Amsterdam, D. Walter Cohen, and Peter Dawson. An article I coauthored described the "magic" combination of meticulous treatment-planning together with a special chemistry between patient, dental team, and lab technician.<sup>2</sup> These special patients and the energy created in treating them usually lead to our most successful cases.

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### USING DENTAL IMAGING

Cosmetic dental imaging programs are a wonderful tool to educate our patients toward electing

esthetic dental treatment. On how many occasions do patients come to you, the "cosmetic dental expert," for a miracle cure because they believe that you know "secret" techniques that their other dentists did not? They believe that you can move their teeth without orthodontics; whiten old, broken-down restorations to look like new; and restore their teeth to beauty and perfection despite the fact that they have advanced periodontal problems. They believe that you are a dental magician! Although you may have superior skills, years of experience, and a great eye for esthetics, the fact remains that the health of the patient is paramount. Their wishes may not be easily satisfied due to existing biological restrictions. Dentists must use computer imaging to show their patients the reality of their dental situation and how it can be correctly restored. The patient will usually understand and elect for ideal treatment. Your life

*Figure 1: Closing Gaps*



*1a: Natural teeth as they were.*



*1b: Imaging showing proposed esthetic change.*



*1c: Final result using porcelain veneers.*

*Figure 2: Cosmetic Upgrade*



*2a: Heavily restored anterior teeth.*



*2b: Imaging showing proposed esthetic change.*



*2c: Final result using porcelain veneers.*

will be easier, your problems will be fewer, and your patient will be happier. We have classified our dental imaging objectives into three categories, which we use for purposes of patient education and case presentation.

### 1. IT'S SO EASY—JUST DO IT!

Call it what you wish, the “slam-dunk,” “bread-and-butter case, etc., there are many situations where dental imaging simply shows the patient what they had not realized before—how their teeth appear and how easy they are to fix (Figs 1 & 2). If everything aligns in your imaging, all you have to do is “just do

the case.” These patients, whose lives you have changed in just two visits, become raving fans and usually refer many patients to you. The “rules” are simple:

- Find the “magic” patient.
- Make sure everything lines up in your imaging.
- Do it!

*Figure 3: Need for Orthodontic Intervention*



*3a: Natural teeth as they were. Orthodontic intervention is clearly needed.*



*3b: Imaging showing proposed esthetic change and natural root position.*



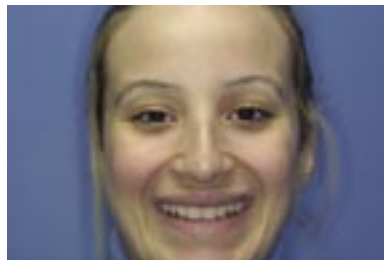
*3c: Orthodontics used for root alignment.*



*3d: A natural, healthy result.*



*3e: Natural teeth as they were.*



*3f: Proposed esthetic imaging.*



*3g: Final result.*

**Figure 4: Need for Periodontal Intervention**

**4a: Existing gummy smile.  
Periodontal intervention is clearly needed.**



**4b: Imaging showing proposed esthetic change.**



**4c: Illustration of necessary gingival changes.**



**4d: A natural, healthy result.**

## 2. SHOW THEM THE RIGHT WAY

Sometimes the difference between an acceptable and a spectacular result is a matter of recognizing the situation and bringing the patient to a complete understanding of the steps necessary to rectify it. Cosmetic imaging can be an indispensable tool to illustrate to the patient the need for orthodontics<sup>3-5</sup> or periodontal<sup>6-8</sup> changes to get the result they desire (Figs 3 & 4). The “rules” are simple:

- Find the “magic” patient.
- Make sure everything lines up in your imaging.
- Show the patient and educate them as to how everything aligns
- Do it!

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*Although you may have superior skills, years of experience, and a great eye for esthetics, the fact remains that the health of the patient is paramount.*

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## 3. PROCEED WITH CAUTION

Many people have false expectations as to the type of cosmetic changes that are possible. (There is no way in the world, for example, that any plastic surgeon can make me look like Tom Cruise!) People are sold on and commence treatments thinking they will be getting exactly what they desire, but often they walk away disappointed. No one needs this type of pressure and stress. We

use imaging to show our patients the reality of their situation, give them restorative options, and make sure they understand the best result possible (providing that all steps taken are successful). It is extremely important to have the patient sign a detailed consent form to be sure they have understood everything that was explained, what to expect, and what type of future maintenance their restoration will require.

A dentist promised his patient that he could restore her teeth with implants so that her teeth would appear to emerge from the gumline for a completely natural look (Figs 5). No consideration was given to nor mention was made of the amount of bone loss, gingival loss, lack of

**Figure 5: Imaging Leading to False Promises and Expectations****5a: Upper teeth that will be lost.****5b: Cosmetic imaging of new smile.**

lip support, or even if implants were possible without extensive bone grafting. How could this patient's high expectations of restoring her dentition to perfection possibly be realized? The computer imaging and case presentation made it seem all too easy. But was it? We believe that computer imaging is one of dentistry's finest tools to educate patients. Figure 6 depicts the imminent loss of all the maxillary teeth due to advanced periodontal disease, as well as the fact that this patient does not clean under the month-old lower implant-supported prosthesis placed by her previous dentist.

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It is crucial to understand that this patient was severely disappointed that her lower teeth did not emerge from the gingiva and that she was restored using pink acrylic and a bar. She refuses to clean under the bridge, wants it removed, and wishes to redo her implants so that they can simulate natural teeth. This is clearly a red flag—false expectations! A

computer-generated simulation of the edentulous maxillary ridge clearly illustrates the amount of destruction that has taken place and the lack of supporting bone and gingiva. Figure 6c simulates the placement teeth and the amount of bone and tissue that would have to be grafted in order to get the desired result. It is now up to the patient, the talent of the surgeon, and the reality of what is biologically possible to determine whether treatment in this direction should be followed. If not, an alternate path should be taken, with the patient's complete understanding of

**Figure 6: Imaging Used to Illustrate Reality****6a: Upper teeth are periodontally weak. The situation is hopeless; all must be extracted.****6b: Simulation of remaining ridge after simulated extraction.****6c: Simulation of negative space. Missing vertical height of ridge, papilla, and lack of bone for lip support.**

why this option was followed. The "rules" here are as follows:

- Listen to your patient's desires.
- Are these wishes biologically possible to satisfy?
- Use imaging to illustrate reality.
- Can you give the patient what they desire?
- Explain the necessary steps or alternatives.
- Proceed or do not take the case.

## CONCLUSION

The possibilities in dentistry are getting more exciting on a daily basis. Dentists are thinking outside the box and performing services that were unimaginable just a few short

years ago. Imaging software is just one of a number of tools that dentists now have at their disposal to help them provide superior services. This article has illustrated just some of the potential creative applications of imaging. Using your imagination and talent, the possibilities are endless. Have fun! *AEP*

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