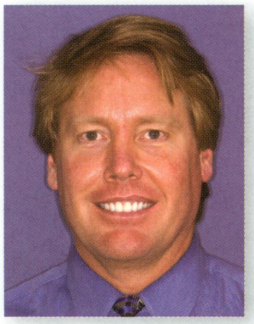
The Digital Patient Consultation: *Completely Digital and Crystal-Clear*



by
Gregory M. Lutke, D.D.S.

Dr. Gregory M. Lutke graduated from Baylor College of Dentistry in 1985. His practice in Plano, Texas, is limited to cosmetic dentistry. Dr. Lutke is founder and CEO of Dallas Dental Solutions, a company that assists cosmetic practices with imaging technology. As a member of the AACD, Dr. Lutke's course centers on "film-quality digital photography" and the simple user skills necessary to prosper with this exciting communication technology.

THE PREMISE

Converting all of our patient treatment opportunities into patients who are willing to pay for their treatment in advance was once just a dream. The digital patient consultation (DPC) is the path to making this dream a reality. Historically, dental consultants have taught dentists and their staffs to use verbal skills to sell their cases. This approach leads to a certain level of success, especially in non-cosmetic dental treatment. The DPC is completely visual, however, exactly like the treatment we provide to our patients. If our product is visual, it should be presented visually.

Stunning digital photography clearly presented with Microsoft® PowerPoint® is the whole premise. A potential patient actually seeing a presentation of slides completely about them—their present condition, as well as accurate imaging of their potential cosmetic result, is *the* communication necessary for case acceptance. With words we can communicate only so much, but with photographs we communicate *results*. Regardless of how we think patients buy cosmetics, they are results-focused. Give them an accurate result, based upon the wonderful advancements in cosmetic care, and they will commit their funds, time, and energy to achieve the result. It is said that "a picture paints a thousand words." Save the thousand words and, instead, communicate clearly with pictures!

If our product is visual, it should be presented visually.

THE PATH

The game is *user skills*. The skills necessary for a DPC are non-clinical, and new to most dentists. These communication skills are not taught in dental schools, but must be mastered to effectively illustrate our *clinical expertise*. The new skills are:

- capturing images of patients with a professional-grade digital camera
- making these images film quality in Adobe® PhotoShop®
- presenting these images in Microsoft PowerPoint.

These presentations must be displayed on appropriate computer hardware. Most dental practices have adequate computer systems in place and shouldn't need an additional investment.

We must strive to upgrade our user skills to the level of our dentistry; excellence is mandatory for results.

The development of user skills is critical. Remember, the presentation is stunning digital photography. Our computer monitor must be able to display these pictures effectively. Only after we perfect our user skills should we consider upgrading our hardware. We must strive to upgrade our user skills to the level of our dentistry; excellence is mandatory for results.

THE RESULT

Patients who are clear about their cosmetic results will accept treatment. Simply put, the quantity of your patient acceptance will equal the quality of your communication. In the process of preparing our presentation, we study all of the patient's digital photographs; we believe this is the major component of the diagnostic process. Sometimes we see the cosmetic answer for the first time during preparation—the pictures show us the result, just as it will show our patients.

It takes just a moment to understand the premise of digital case presentation. The path to learning the user skills, however, requires several months. The results will transform your practice.

Imagine the opportunity to practice in a manner that concentrates on the patient and not on the business of selling dentistry. Congratulations in advance—your digital success will excite you and make your dream possible!

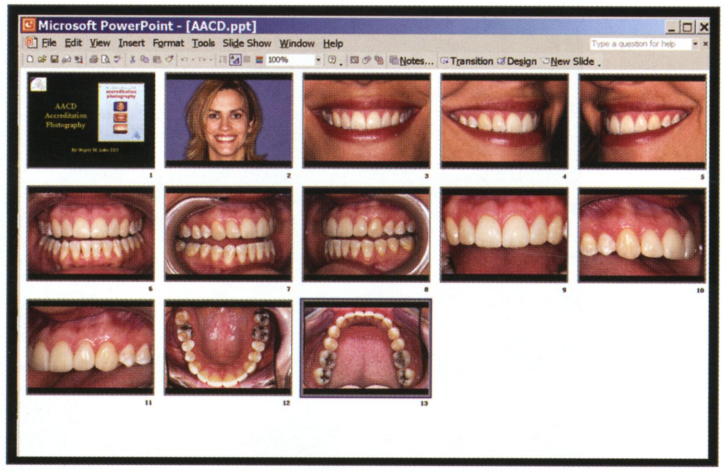


Figure 1: 12 AACD Accreditation Series, Dentist-to-Dentist or Dentist-to Lab views.

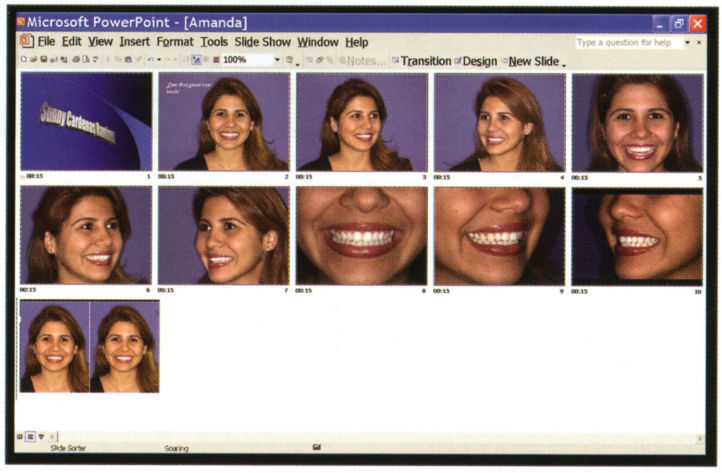


Figure 2: 10 Digital Patient Consultation Series, Dentist-to Patient views.

THE PHOTOGRAPHIC SERIES

AACD Accreditation Series

The choice of which standard series of patient photographs to use depends upon the audience viewing the images. The 12 AACD Accreditation views are clearly the series choice if other dentists or lab technicians are your intended audience (Fig 1). These views clearly outline the cases from a dental professional's point of view. The retracted and occlusal views add valuable information necessary to fully understand these cases.

Digital Patient Consultation Series

On the other hand, if your intended audience is a potential cosmetic patient, then the standard series is completely different. These views are chosen to relate to how patients see themselves in everyday life. No retract-

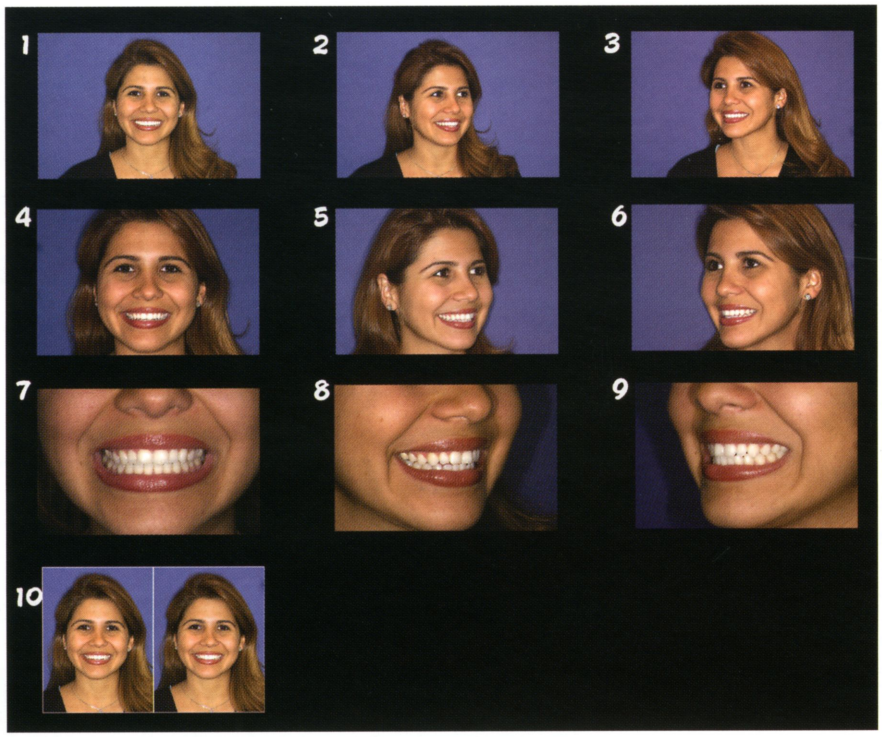


Figure 3: The 10 Doctor-to-Patient Views.

ed or occlusal views are used. The standard views of the DPC concentrate upon how patients see their own face, especially their smile (Figs 2 & 3).

The user skills necessary for film photography are altogether different from the skills a dentist uses for digital photography.

The 10 views of the DPC are both simple and calculated. A simple progression from far to close with front and lateral views, 7 of the 10 views show the patient's whole face and eyes; these views are calculated in that they display the important information regarding cosmetic decisions. These include sloping smiles, canting midlines, and proportional tooth size from the front views (the lateral views are necessary in calculating the number of total teeth that show in the patient's natural smile). Six-unit cases turn into 10–12-unit complete cases when patients are involved in this diagnostic procedure.

As powerful as they are, the 10 standard views of the DPC are simply a starting point. Each patient has, of course, individual facial aspects that require additional photos to communicate their case.

COSMETIC IMAGING

The final view in the slideshow can be a cosmetically imaged photograph. The imaging is independent of any commercially available product, as any brand will work. Advanced users of Adobe PhotoShop can do all the cosmetic imaging without purchasing costly dental imaging software. Cosmetic imaging must show the dentist's clinical skills. We do not recommend pasting other people's smiles on your patients during imaging (commercial smile libraries), as these pasted smiles can easily mislead patients about their own possible result.

You can easily turn 30 pictures into 30 individual slides, ready to present.

Simply show patients your cosmetic dental skills. Care should be exercised in showing exactly what can be delivered with veneers, porcelain crowns, and other clinical tools. Special care must be taken with the buccal corridor, as some imagers can show a result that would require a surgical solution. The same care also should be applied to gingival height corrections that might require surgical solutions. Remember that ethical cosmetic imaging is a powerful tool, possibly the single most important tool in communicating results.

Figure 4: An example of a point-and-shoot camera.

Figure 5: A popular Prosumer grade SLR camera from Olmpus.

THE TOOLS

Digital Camera

Digital cameras are like any other piece of dental equipment; you can buy a camera at the price point that fits your needs. Digital photography has to be divided into two distinct groups.

- **Typical digital photography**—Use any grade of digital camera to instantly put images on your computer screen; it's fast and fun. These images vary in quality because of the many "mysteries" surrounding this new technology. Digital photography creates a certain level of patient trust because patients feel their doctor is keeping up with the times!
- **Film-quality digital photography**—Use a professional-grade digital camera to systematically create a patient database of film-quality images. These images, which are primary in the cosmetic professional's diagnostic process, show consistency between patients and capture dates. The system is completely predictable with exposure, color balance, and image sharpness. Film-quality digital photography creates an astounding level of patient trust.

Figure 6: A second popular Prosumer grade SLR camera from Olmpus.

Let's also divide the digital cameras into three main groups based upon cost and capability:

- consumer "point-and-shoot" (Fig 4)
- prosumer single lens reflex (SLR)
- professional SLR.

An example of a consumer "point-and-shoot" is the Sony Mavica. This camera is simple to operate, fun for beginners, and the digital image is copied onto a floppy disk or mini CD. The camera processes the image to automatically improve the exposure and sharpness. However, this in-the-camera processing is based upon an average digital image, which rarely is ideal for dental images that are captured indoors on human subjects. This camera group therefore is unacceptable for dental professionals.

Cameras in the second group, the Prosumer SLRs, are the overwhelming choice in most dental offices (Figs 5 & 6). This group, which includes Olympus models C-2500-L, E-10, and E-20, also has in-the-camera processing to improve the exposure and image sharpness; their good-to-excellent image quality makes for great digital patient consultations. Cameras in this group, however, lack the capability to capture macro images in the 2:1 and 1:1 range consistently. Although a great choice for dentists, this group will never replace film-based dental cameras.

Figure 7: Nikon D1 family.

Figure 8: Fuji S1 camera.

Figure 9: Canon 1D camera.

The third group of cameras is the professional-grade SLR (Figs 7-9). These cameras capture excellent-to-remarkable images that are potentially film-quality. Examples of this group include the Nikon D1X, Fuji S2 Pro, and Canon 1D, as well as many new entries. Professional-grade SLRs replace dentists' need for film-based models (the notable exception is a dentist going through the AACD Accreditation process, in which slide film is mandatory). The single most important feature in this group is the capability to capture images using *aperture-priority*. Remember that with digital cameras, the game is exposure control. Aperture priority allows the dentist to rotate a simple wheel to change to f-stop on the fly. Close (macro) photography on patients typically will reflect too much light back to the camera, resulting in overexposure, the "kiss of death" for digital images. The aperture wheel allows for instant adjustments as follows:

- The dentist previews the image on the camera's liquid crystal display (LCD) screen, notes the overexposure, spins the f-stop higher (thus closing the diaphragm), and reduces the amount of light entering the lens. The dentist can then capture the perfect final shot.

These cameras produce very fast, perfect exposures every time. Consistent images and reproducible results mean happy dentists and patients! These images are stunning!

The professional-grade cameras also allow images to be captured in TIFF format at 300 dpi (dots per inch), which generally is regarded as film quality. They do not have in-the-camera processing; this is an important distinction from the other two camera groups. The raw (unprocessed) image allows the digital-experienced dentist to fully control the correction process in Adobe PhotoShop, which is the road to film-quality or better-than-film-quality images.

Computer Monitor

Due to their resolution limit, typical monitors can display only 25% of the digital image information that a Nikon D1 captures. As digital dentists develop their user skills, the need for better display hardware becomes a reality—great images require great monitors (Fig 10).

Figure 10: This monitor has a native resolution of 1600 X 1024. This is a relatively high screen resolution. In general, the higher the resolution, the more true-to-life the digital photographs appear.

In general, the best display monitors are those that have:

- LCD flat-panel monitors (as opposed to the TV-shaped CRT monitors)
- digital connections (DVI) to the computer instead of analog connections (VGA)
- native resolution of 1280 X 1024 or better.

USER SKILLS

ADOBE PHOTOSHOP, "THE SECRET TO GREAT IMAGES"

Adobe PhotoShop is image-editing software. The tools in PhotoShop allow us to see the stunning brilliance of our digital photographs that, in their raw state, would be hidden. *Film-quality* digital photography requires the use of Adobe PhotoShop. Digital cameras, even those of professional-grade, need image correction quality to equal the quality we achieve with film. The user skills necessary for film photography are altogether different from the skills a dentist uses for digital photography. Film is very forgiving of the quality of the exposure; it therefore can be slightly over- or underexposed and still produce good results. Digital cameras need a perfect exposure for good results. Even the perfectly exposed images captured by our professional-grade digital cameras are still not as good, when they are straight from the camera, as they can be—we need to correct the images with PhotoShop. This process is referred to as the "digital dark room." The tools in PhotoShop bring alive the quality of our images. Although Adobe PhotoShop is one of the largest and most complex software programs ever written, we luckily need to do only three simple things to improve our dental images:

1. ***correct the exposure*** to give the image a full tonal range
2. ***correct the color*** to improve the flesh tone
3. ***correct the image softness*** to give the image film-quality sharpness.

It's as simple as that!

Digital photos taken indoors with flash support rarely have a full tonal range; that is, they look a little dull. Our human subjects are flesh-toned and their teeth are variations of white—not exactly the most colorful and contrasting subject matter. We can overcome this handicap by understanding how PhotoShop can make the image appear as our eyes believe that this subject matter should look.

With regular use, Adobe PhotoShop is easy-to-use software. Its power in the communication process should not be underestimated. Its power is film-quality.

The images in Figures 11 and 13 are a classic example of exposure control and correction with PhotoShop. The detail of digital images is captured on the darker side of the digital camera's CCD chip. The lighter side of the CCD chip tends to "blow out" the whites. The game in digital photography is exposure control. In this example, the image is deliberately captured slightly dark. Then the image is "stretched" across the visible spectrum to achieve a "full tonal range." This is followed by both color and softness correction. The final image (Fig 13) appears completely lifelike. The skin tone is perfect and the teeth show all the detail we see with our eyes in patients in our office. Adobe PhotoShop uncovers the quality hidden in our raw images.

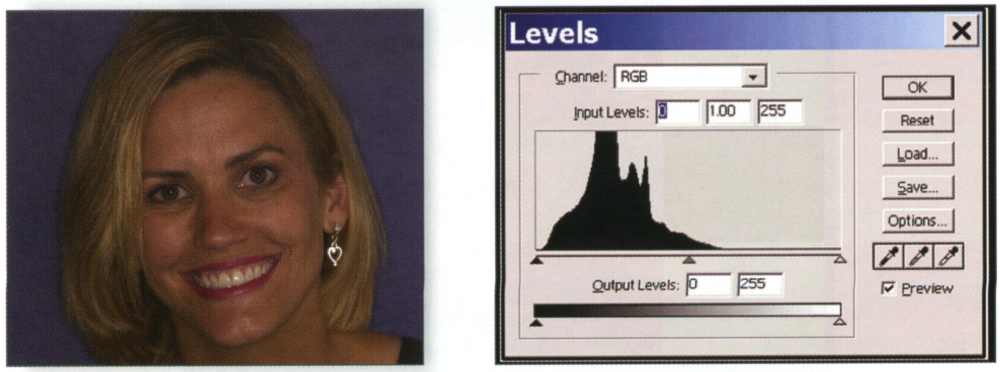


Figure 11 & 12: Raw image and raw histogram.

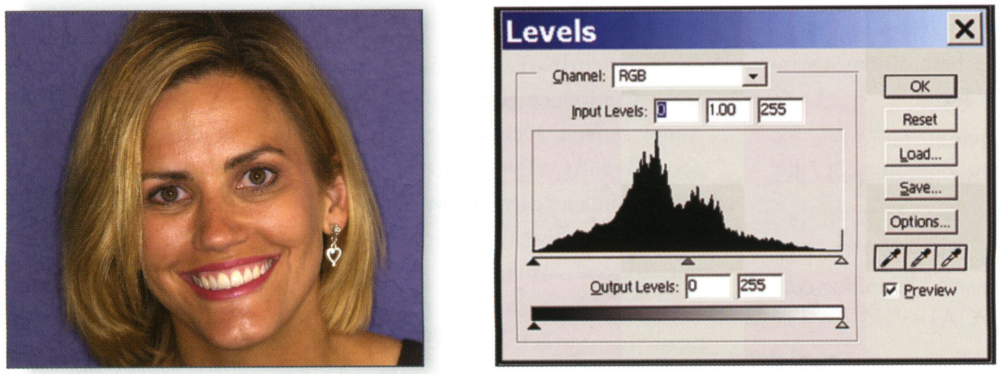


Figure 13 & 14: Corrected image and corrected histogram.

Figure 15: Corrected image brought into Microsoft PowerPoint.

Microsoft PowerPoint, "Let the Pictures Tell Their Story"

Microsoft PowerPoint is simply slideshow presentation software. After we have captured and corrected our patient picture series, we then import the whole group into Microsoft PowerPoint (Fig 15), which allows us to import a folder full of images with a single fast command. You can easily turn 30 pictures into 30 individual slides, ready to present. A single mouse click will forward you through the presentation, one slide per click.

Our patients know all too well their cosmetic smile problems, but stunning photographs speak for themselves; when your patients intently watch a slideshow completely about them it is a powerful experience! Like Adobe PhotoShop, PowerPoint has the power to create complex, broadcast-quality presentations for professional speakers. Luckily for us, the simple tools we use to create patient slideshows can be mastered in just 2 days.

It's not necessary to point out their cosmetic problems—they will do a more-than-adequate job themselves.

Custom animation: Sometimes we must demonstrate to patients a point on the photograph that is not otherwise apparent. PowerPoint allows us to add lines, arrows, circles, and text to help make points that are missed by viewing the pictures alone (Figs 16-22). Such custom animation brings the slides alive—it is your tool to communicate any point you feel is missed with the photograph alone. Too much custom animation should be avoided, however, or perhaps should not be used at all for straightforward cases.

On the other hand, great custom animation finishes your case presentation. You can highlight key diagnostic points, or even teach classic smile design with this powerful tool. You also may want to add stock "before and after" slides of previous cases. You can make slick presentations, almost music

Figures 16-22: PowerPoint allows you to add lines, circles, text boxes, and other educational objects. You introduce these objects with custom animation. This feature can add an organized flow to the presentation.

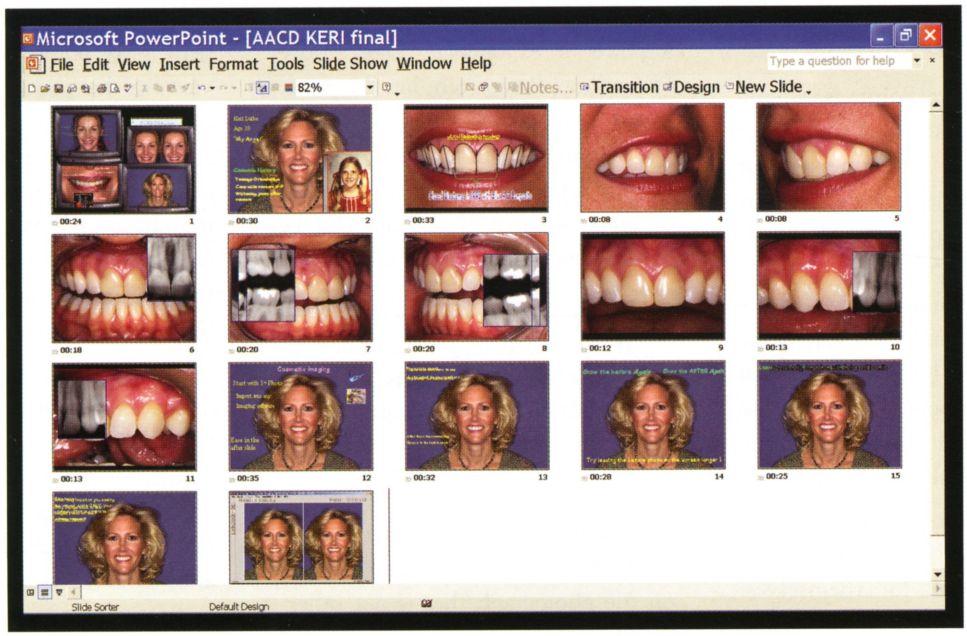


Figure 23: Completed presentation in Microsoft PowerPoint.

videos, if you feel this perspective is right for a particular patient. Personal taste and experience will guide your direction, either way—playing with all the easy options is fun! PowerPoint XP (2002) version has powerful custom animation tools, while PowerPoint 2000 has a more limited array.

Adding custom animation to your patient slideshow is the final step!

SHOWTIME!

The work is complete, the patient has arrived, and now the show begins (Fig 23). Sit back and enjoy your masterpiece! Your only job at this point is to click the presentation forward, one slide at a time. Slowly. Watch your patient display powerful emotions, even blush or become uncomfortable with their current image. It's not necessary to point out their cosmetic problems—they will do a more-than-adequate job themselves. No more words are needed.

The final slide can be a *cosmetically imaged* slide of the potential aftercase. After showing the imaged smile, go back one slide to the "before" view, without cosmetic imaging. You can slowly flip back and forth between these two slides. When your patient insists on seeing the cosmetic imaged view only, your communication is complete. Congratulations—job well done!

Dallas Dental Solutions is a company that assists dentists in attaining the user skills necessary for the "digital dental office." Dallas Dental Solutions does not sell any dental hardware or dental software. We have no relationship, nor do we accept any financial incentives from dental companies. Our only product is the user skills, for both dentist and staff, as they relate to the digital dental office.

Dr. Lutke offers hands-on courses for dentists about film-quality digital photography as used in the digital patient consultation.

"Digital dentistry" is personal, emotional, and spiritual. Our clients consistently remark how these non-clinical skills have recharged their minds and energized their practices. To achieve the user skills for your digital transformation, call 972-801-9733 or e-mail Dr. Lutke at gregl@dental-solutions.com.