An Expression of Your Vision

High-Quality Photography

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Dr. Goldstein will be speaking at the 29th Annual AACD Scientific Session in Seattle, Washington, on April 26, 2013. The title of his lecture is “Advanced Digital Photography and Digital Asset Management.” In this article, Dr. Goldstein gives an overview of the details he will discuss at his lecture.

Introduction

Digital photography is common in many of today’s dental practices, and high-quality dental images are paramount for laboratory communication and marketing dentistry. The purpose of this article is to define what a high-quality dental image is, and to give an overview of what these images are used for. During my presentation at the AACD meeting I will show all the steps involved in making these images and review in detail the equipment, camera settings, techniques, and post-production workflow using Adobe Photoshop Lightroom (San Jose, CA).

High-Quality Dental Images

The author believes that high-quality images are those that clearly depict the subject, are free from distracting backgrounds, are properly exposed and color-balanced, and are in focus. Unfortunately, many dental images do not meet these criteria. High-quality images are important, as they are an expression of your vision and are needed to represent the high quality of your dentistry.
Technical Aspects of Photography

Achieving high-quality images requires a full understanding of the camera settings (which, of course, will vary for each particular type of shot). These include the following parameters:

- white balance (WB)
- file format (RAW versus JPEG)
- color mode
- ISO
- aperture
- shutter speed.

These six f-stop images show how a higher f-stop number gives a greater depth of field.

These images show how the white balance setting affects the overall color of the image. It is critical to match the white balance setting on the camera with the appropriate light source.
Patient Education

Dental images can be used to show patients various treatment options and results; this also showcases our laboratory’s work. A high-quality image is powerful and often results in motivating a patient to start treatment immediately. The selection of dental images to show patients is critical and should be focused around a theme (e.g., implant dentistry, restorative dentistry).

An easy, portable way to show patients images is with an iPad. It is sharp, and simple to add or remove images.

When shooting intraoral images, this author’s camera settings are:

• WB: flash
• file format: RAW
• color mode: Adobe RGB
• ISO: 100 (the lowest setting for the particular camera)
• aperture: f/22
• shutter speed: 1/160th.

These settings consistently provide images that are color-balanced and sharp with good depth of field.

Patient Treatment Decisions

It is often difficult to explain technical dental procedures to patients. The saying, “a picture is worth a thousand words” is true when it comes to showing patients various treatment options. For example, trying to describe to a patient what a “hybrid denture” is without images or models is almost impossible. Using photography showing a beautiful natural smile allows patients to understand the proposed treatment and lets them decide if they want to proceed.

The case discussed here clearly demonstrates how attractive a smile can be with a full implant-supported hybrid restoration. The photographs will help to alleviate a patient’s initial esthetic concerns.

Patients often are hesitant to finalize treatment, especially when esthetics are concerned. Candid images allow patients to view themselves realistically. To the right is a candid image of a patient laughing with full upper and lower dentures inserted at the trial set-up appointment. The image allows the patient to evaluate the esthetics of the teeth with respect to her face during a normal conversation. The image was also e-mailed to the patient, allowing her to share it with friends and family members.
Mock-Ups and Provisionals

Mock-ups and provisionals are the key to successful dentistry. A mock-up (based on the diagnostic wax-up) gives the doctor and patient a preview of the final case. This can be photographed and the images given to the patient (via hard copy or e-mail). This is a very powerful tool that allows a patient to make an important emotional and financial decision based upon accurate information. It will also help the clinician and laboratory produce a predictable and beautiful final product.

Photographing the six-unit mock-up in this case helped this patient visualize what her final case would look like. Increasing the length of maxillary incisors is often difficult for a patient to initially accept, since they are used to seeing themselves with short teeth. The images were then e-mailed to the patient’s home, giving her time to evaluate the esthetics before committing to treatment. The mock-up is easily modified and photographed.

Portrait Photography

Beautiful portraits are another way to showcase your dental work to patients. Many patients are more likely to be influenced by a nice portrait with a beautiful smile versus viewing a close-up image of teeth. Understanding how light works is critical in making a beautiful portrait: hard and soft qualities, as well as the color and position of lights, make or break an image. Learning to use minimal photographic equipment in an efficient workflow will allow the clinician to easily take gorgeous portraits.

An understanding of the principles of light will help clinicians to take professional quality portraits with a minimal amount of equipment. The author does not have a lot of office space for a full professional photography studio, nor does he want to set up large lights on tripods every time a professional portrait is needed.

Using small wireless strobes (Nikon SB-800s [Melville, NY] and the IR controller SU-800) allows the author to create a makeshift studio anywhere in the office in minutes. The dramatic portrait on the left was made by placing the patient far from the background, removing the light source from the camera, choosing an f/stop that forced the background to turn black, and using the existing macro lens (Telephoto AF Micro-Nikkor 105mm f/2.8G ED-IF AF-S VR) as a telephoto. This image is straight from the camera with no modifications whatsoever (1/160 sec at f/22). (Please note that written permission from the patient is required in order to show their full face publicly.)

A good image of a well-done mock-up is powerful and motivating to patients who are undecided about cosmetic dentistry, allowing them to see exactly what is possible.

This small custom lighting setup produces stunning images that rival images made with larger and more expensive gear.
Laboratory Communication
Digital photography is a wonderful communication tool between the dentist and the laboratory. Being able to show the laboratory technician clinical images helps them produce a better product. This includes, but is not limited to, pre- and postoperative images, shade selections, in-progress casework, and impressions.

Here, the technician sent images of a veneer case that was completed. The mesial-incisal edge of the right maxillary lateral incisor needed to be lengthened. The technician added porcelain and the case was inserted uneventfully. Having “multiple sets of eyes” looking at a case increases its quality and the likelihood of being accepted.

Dental Education
Dental images viewed from a projector controlled by a laptop computer are commonly used to present casework at meetings or educational institutions. Describing various techniques, materials, or procedures is simple when the images are clearly depicted. High-quality images help keep the audience engaged and interested in the subject being presented.

Post-Production
Digital asset management (DAM) refers to the organization and workflow of digital images (called “assets”). DAM involves importing images into a computer, organizing them so they are easily found, and outputting selected images to various media in order to share them with a particular audience.

Clinicians must have an efficient DAM system in place to download, organize, and share digital assets easily and effectively. Software bundled with many digital cameras is limited in features offered, and most do not allow for precise image organization and editing. Most are considered “browsers” that allow the user to browse the captured images and have limited output potential as well.

The author’s software of choice is Adobe Photoshop Lightroom. Lightroom works on both Apple and PC platforms, is relatively inexpensive, and has a moderate learning curve.

From: Rick Durkee, AAACD
Date: January 19, 2011
Subject:
To: Steven Goldstein, DDS
9 Attachments, 695 KB

E-mailed images from and to the dental laboratory make the final case results more predictable for the doctor, laboratory technician, and patient.

Images detailing specific dental techniques, instrumentation, and procedures.
Sending an e-mail image today is simple with most professional software packages. The software will create JPEG copies from the original RAW images (leaving the original intact) with an ideal file size for e-mail. This process takes minutes and is easily implemented into a dentist's workflow.

A key point to understand about Lightroom is that it is cataloging software. It does not physically import (move) images into the software. Images are downloaded from the compact flash card onto the user's hard drive to a predetermined location (e.g., a folder named Dental Images). Lightroom recognizes where the images are and builds a data catalog. The software never moves or alters the original images. The user can store them physically anywhere (internal or external hard drive). However, if the images are moved from their original location, Lightroom will not be able to find them until the user tells Lightroom the new location. This is a wonderful feature since the images are protected and preserved in their original state.

This software allows the doctor to do the following:
- find images easily
- browse through unlimited images, selecting desired images for sharing
- edit images non-destructively
- output images easily to a multitude of devices and books
- automate backups effortlessly.

Summary
Digital dental photography is no longer merely an "option" for the progressive dental practitioner. Creating high-quality images is paramount for multiple uses in dentistry today. All of the above techniques and equipment will be reviewed in detail during the author’s presentation at the AACD meeting in Seattle.

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Dr. Goldstein practices in Scottsdale, Arizona.

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