

Dental Photography

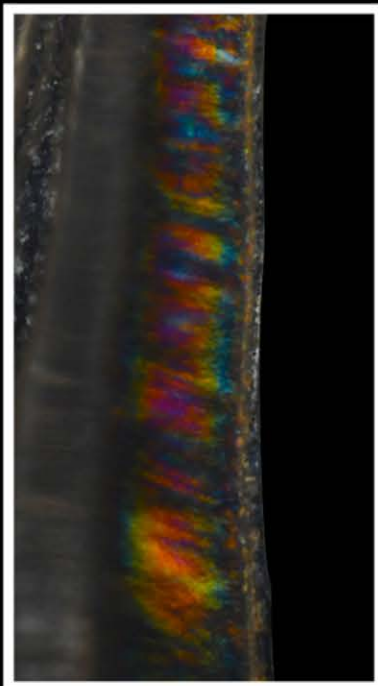
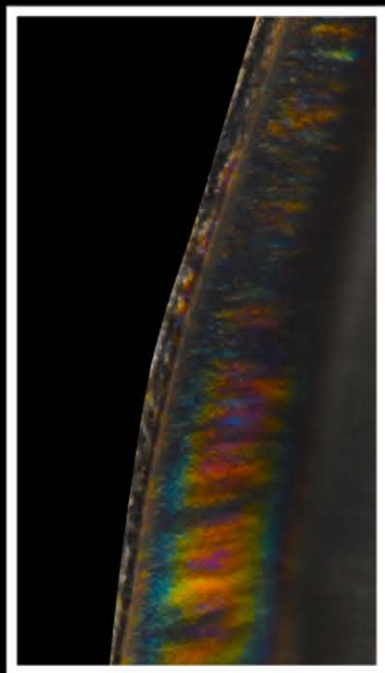
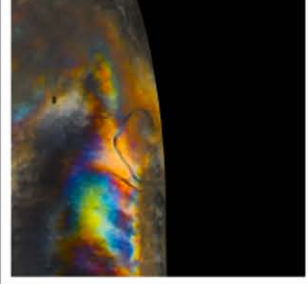
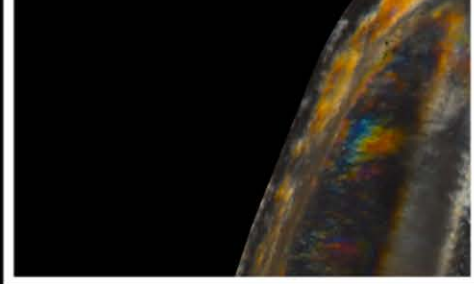
Tips to Help You Shoot Like a Pro

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Abstract

Navigating the world of dental photography can be a daunting exercise, with an overwhelming amount of information available on countless products. Every dentist needs to know exactly which camera, lens, lights, and accessories will achieve the best possible results for their specific needs. Absorbing expert information on the many different tools of the trade will save you time and money before making a purchase as well as help you gain the confidence needed in your own dental photography. This article offers equipment recommendations, information on settings for dental photography, ideal setups, and tips and tricks to achieve great photographs.

Key Words: dental photography, equipment recommendations, photography settings, ideal photo setups, photo editing

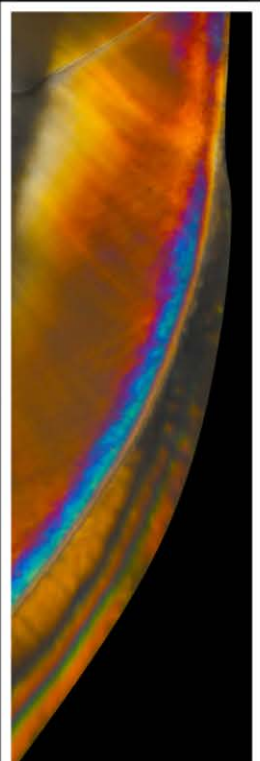
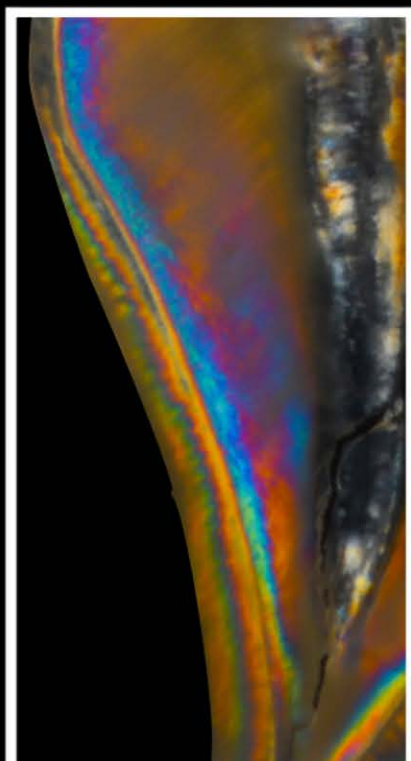
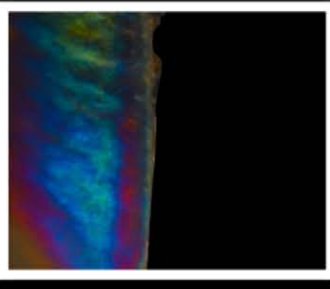
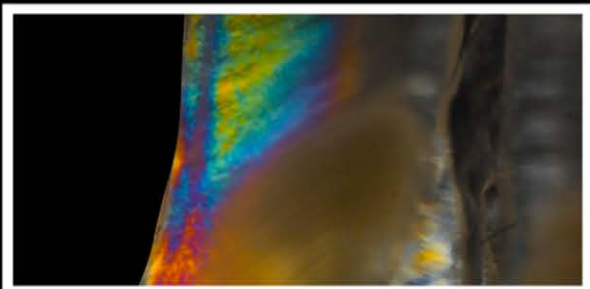


Introduction

Dental photography has become a standard in high-end dentistry, and more and more dentists are mastering the art and taking steps to further improve the field. Since beginning my dental photography journey in 2013, I have taken thousands of photographs and have developed the following streamlined protocol:

To make dental photography more accessible, I developed the following protocol:

- Use one digital single-lens reflex (DSLR) camera body plus a macro lens and lights (ring flash, twin flash, or studio lights).
- Practice “minimally invasive” photo editing, focusing instead on achieving the best possible image directly from the camera.
- Employ one setting for all photo types to simplify the photographic protocol, changing only the f-number according to the type of photo desired.



Camera Body and Lens

Every component of our equipment is important if we want to shoot like a professional. I used to use a Nikon D750 (Melville, NY), which has a full-frame camera body and takes incredible photographs. However, I switched to the Nikon D850 because not only does it capture great images, but it also films slow-motion videos (**Fig 1a**). Video is an emerging trend in dentistry that yields a high impact in marketing and social media. Every dentist should consider leveraging video for social media and marketing; this may influence your decision when purchasing a camera.

Tokina's AT-X 100-mm f/2.8 AF Macro lens (Kenko Tokina; Huntington Beach, CA) is a useful choice due to its lightweight body, extremely sharp photographs, fast autofocus speed in low light, and competitive price. Tokina now also offers a 100-mm Macro ATX-I DSE, which is the first lens to have a brochure detailing settings for dental photography. For those who prefer Canon (Melville, NY), the 90D body with a Tokina ATX-i 100-mm F2.8 FF Macro lens is a good choice (**Fig 1b**).

"Painting" with Lights

Studio lights are a must for many reasons. They enable the capture of high-quality photographs of your beautiful restorations for lectures, books, educational purposes, marketing, branding, websites, and all other forms of media that have high visual standards and in-depth protocols. I use SLP Studio lights (Dental Pro Master; Timișoara, Romania) with a flash with a 60-cm

by 90-cm rectangular soft box for the patient's background, and an octagonal soft box with an 80-cm diameter as the main flash for special cases to be published in print and online (**Fig 2**).

For day-to-day case documentation, I use a Meike (Yuen Long, Hong Kong) twin flash for Nikon with a MOLARIS bracket (Dental Pro Master) (**Fig 3**). It is compact, can achieve any kind of dental photograph, and is easy to use. With changes in dentistry due to COVID-19, it is best to keep up with current guidelines to diminish the possibility of infection spread through cross-contamination (Note: extraoral dental radiographs, such as panoramic or cone beam CT, are preferred over intraoral dental radiographs during the outbreak).¹

Ring flashes are acceptable for use in the posterior areas or for surgical photos. For esthetic dentistry, twin flash or studio lights will enable a higher-quality photograph. It is very helpful for the patient to be positioned standing in front of you or seated on a normal chair, rather than lying on the dental chair, for portrait, close-up, or intraoral frontal and lateral photographs. Further, the MOLARIS bracket allows you to position the twin flashes at a 45-degree angle but at different distances from the lens, enabling you to control where the light lands. For close-up photographs, the bracket should be folded fully in, and for portraits, it should be fully extended.

If possible, have a dedicated room in your practice for photography since high-end photography sessions take time and are not advised in operatory rooms under new guidelines related to COVID-19 cross-contamination.¹



a



b

Figures 1a & 1b: The Nikon D850 and the Tokina 100-mm Macro ATX-I.



Figure 2: Studio lights help to capture high-quality photographs for all forms of media that have high visual standards.

Settings

To create an easy way of shooting like a professional photographer, I developed a protocol in full manual mode for the highest-quality photographs. All you need to remember is which f-number is needed for each type of photo, because the rest of the settings will always be the same (**Figs 4a & 4b**). The f-number value refers to the size of the lens aperture's opening and also the depth of the field. The bigger the f-number, the smaller the aperture size, meaning a deeper depth of field and less light. Inversely, a smaller f-number means a larger aperture, a shorter depth of field, and more light. For example, if you take an intraoral shot using f22 but the image is too bright, you can go to f25 and make it a bit darker. Only the f-number will change with each type of shot. Your other settings should remain on M for manual mode, ISO 100, exposure time 1/125 second, single auto focus, "standard" mode for Nikon and "fine detail" for Canon, center-weighted metering, dual RAW and JPEG (fine), and white balance on flash. When shooting in JPEG mode, setting the white balance to flash will ensure accurate white balance and color in the resulting image.



a

F18
F22

Portrait black background

F14
F18

Close-up white background

F9
F11

Portrait white background

F18
F22

Close-up black background

F22
F29

Intraoral & Laboratory

F32
F54

Cross-polarized

b



Figure 3: This compact bracket allows you to position the twin flashes at a 45-degree angle.

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Figures 4a & 4b: Dental photography settings for f-number/f-stop.



Figure 5: Intraoral image using retractors with a highly detailed outcome.

Intraoral

Metallic retractors with a special autoclavable black coating (Intraoral Kit, Dental Pro Master) can be used for lip or cheek retraction without mirrors for lateral shots. The included black contrastors are rubberized for patient comfort, and are bendable and autoclavable. A tip for intraoral photos is to dry the gums completely, then use studio lights or a twin flash with mini softboxes to diffuse the light. In this way, you will achieve highly detailed images (Fig 5).

Close-Ups

Close-up photographs are, of course, the most important type of image for showing our work in detail and for use in marketing and on social media and websites (Fig 6). I usually shoot close-ups on a white or black background using only one studio light and a close-up reflector (Figs 7 & 8). The f-number should be set to f18 for a white background and f22 for a black background. The patient should be seated between the photographer and the softbox. One of the best accessories to take close-up macro shots of the anterior region is a latex-free lip and cheek retractor, such as the Optragate (Ivoclar Vivadent; Amherst, NY) (Fig 9). I use one studio light on 200 watts, a close-up reflector, and f18–f20. Optragate is extremely useful when cementing the veneers and taking lateral close-ups of the anterior region.



Figure 6: Close-up photographs show our work in detail and are good for marketing and websites.

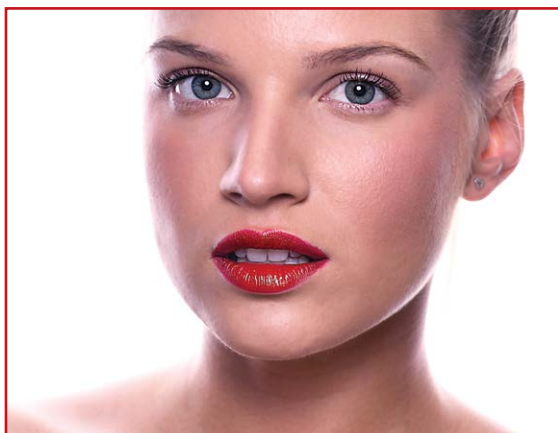
“Every dentist should consider leveraging video for social media and marketing.”



Figure 7: (left) A colorful close-up for social media.
Figure 8: (below) Use a close-up reflector to shoot close-ups.

Figure 9: (above) Retracting the lips and cheeks evenly around the mouth is useful when taking macro shots of the anterior region.





Figures 10a-10d: Headshots showing a “no need to edit” background.

Portraits/Headshots

For headshots, I use two studio lights with the main light set at 200 watts and the background one at 100 watts (**Figs 10a-10d**). This will create the perfect white background, with no editing required. To make patients look more youthful, a portrait reflector positioned below the patient’s neck at shoulder level will cause the light to bounce up and eliminate shadows from any wrinkles, making the skin appear smooth and bright. You can also use a sheet of paper with a hole cut out of it with the same amount of success in terms of quality, but it will not look very professional to the patient.

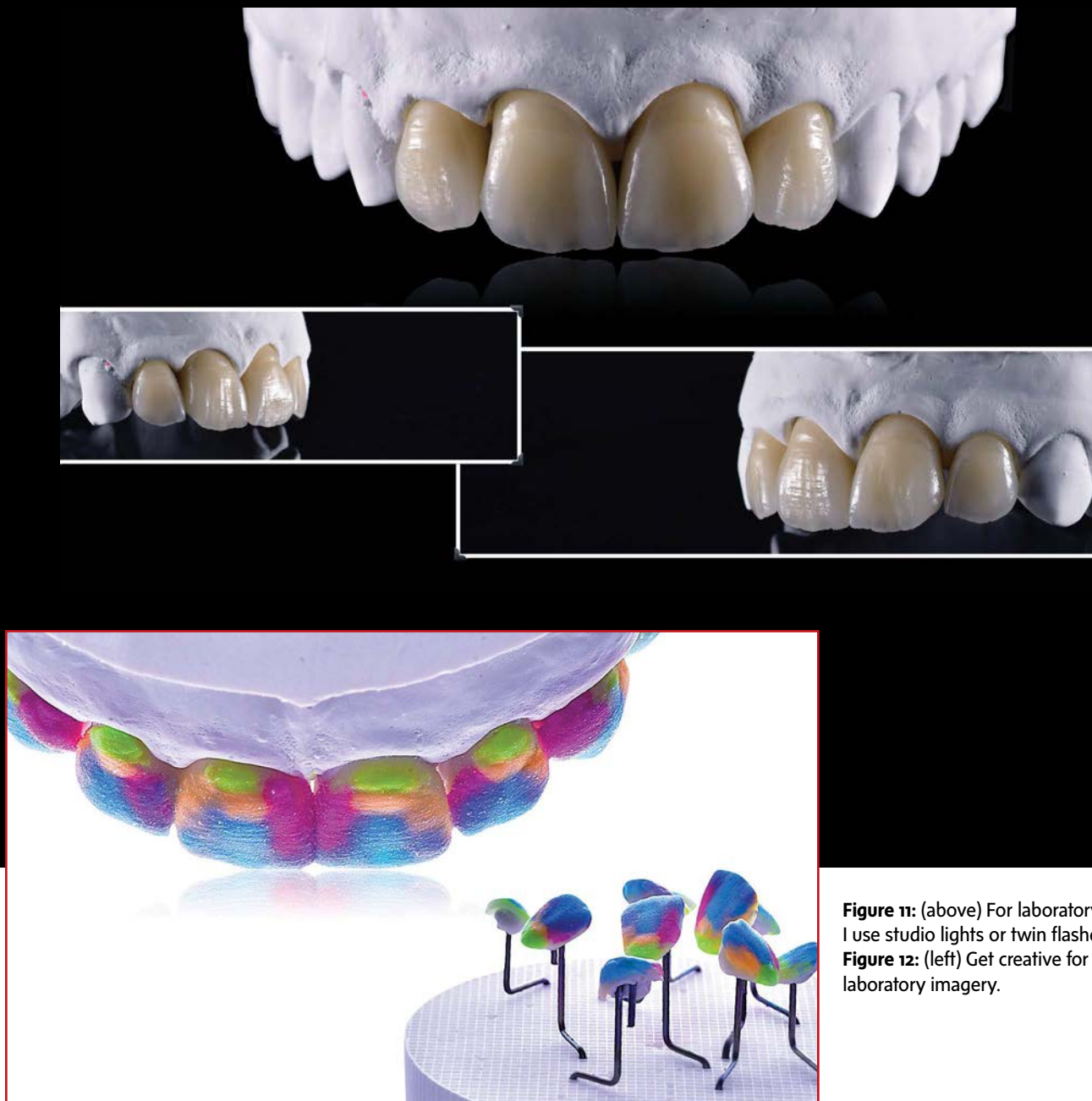


Figure 11: (above) For laboratory photos, I use studio lights or twin flashes.

Figure 12: (left) Get creative for fun laboratory imagery.

Laboratory and Product Photos

For laboratory or product photos, I use studio lights or twin flashes, with acrylic tables (white or black), a close-up reflector, and a photo cube (Photo Cube Kit, Dental Pro Master). Position the wireless twin flash into the cube and orient the flashes to hit the white walls of the cube. The reflected light will generate an amazing-quality image. Keep the product you are shooting at eye level. I usually use a black background and f22–f25 for clinical documentation (**Fig 11**) and white backgrounds for artistic shots (**Fig 12**). All other settings remain untouched. Photograph all stages from the laboratory aspect for full documentation of a case (e.g., preparation guides, wax-ups, CAD/CAM, glazing, etc.). This is important for many reasons, including treatment planning, communication, education, publishing, and self-improvement.

Cross-Polarized Images

Cross-polarization allows us to see the shape of the enamel and dentin so we can better reproduce it in our direct or indirect restorations, mimicking nature as closely as possible. For these types of photographs, I use one source of light, such as studio lights or a twin flash and two circular polarization filters. Place the slice of the tooth 0.5 mm or less in between the filters, and make sure there is a source of light behind the filters. Use f32 to take these shots. The light will travel through the filters and enter the camera polarized, providing you with invaluable information about the teeth (Fig 13).

High-Key Portraits

For striking, high-key portrait photography, use monochrome mode and ISO 800 to “burn” the skin, making it melt into the white background and leaving only high-contrast elements like the hair, eyes, and lips visible. These artistic images can be used in social media and on your website (Fig 14).

“Minimally Invasive” Editing

To simplify my editing protocol after the photograph is taken, I designed a photo editing application that uses only JPEG files (Dentroom, Dental Pro Master). The protocols described above should create high-quality images directly from the camera that require only minimal editing. The most used buttons are “retouch” for small defects, “sharpness” for details, and “skin smoothing” since macro lenses show all the defects in the skin (Fig 15). Other photo editing applications have more buttons and settings than most dentists need or will use. If you use the RAW format rather than JPEG, then Adobe Photoshop or Lightroom are a must (San Jose, California). [Editor’s note: All images taken for AACD Accreditation and Fellowship must be in unedited RAW format.]

Summary

Building in a photo session for all your documented cases will help to enhance your communication, education, and social media marketing. It is also ideal to have equipment to create videos for these same purposes. Educate yourself, practice, and never stop learning. Once you make this happen you will enjoy the benefits of becoming better at what you are already good at—creating amazing esthetic dentistry!



Figure 13: Cross-polarization provides us with invaluable information about teeth.



Tips for Dental Photographers

Beginner

- Read a beginner-level book/take a beginner course to help ensure a fast, successful start to doing dental photography.
- Try to find practical articles, books, and courses that provide “recipes” for great experiences; avoid technical, science-based photography courses and books.
- Keep your learning experience and clinical protocol simple and quick—we are dentists and technicians, not professional photographers.

Intermediate

- Once you master the basics, play more with your equipment and accessories and improvise.
- Learn by doing things differently and find new ways to be more creative and efficient.

Advanced

- Find ways to make taking complicated photographs easier.

Figure 14: For striking, high-key portrait photography, use monochrome mode.



Figure 15: Minimal editing to help sharpen details.

Reference

1. ADA Interim Guidance for Minimizing Risk of COVID-19 Transmission. ADA Center for Professional Success, American Dental Association, 1 Apr. 2020. Available from: https://www.ada.org/~media/CPS/Files/COVID/ADA_COVID_Int_Guidance_Treat_Pts.pdf



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