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## Improving Your Portrait Photography

### INTRODUCTION

Whether for documenting clinical circumstances, celebrating the completion of treatment, or marketing your skills to potential clients, improving your portrait photography skills has great value. The cameras typically used for capturing beautiful portraits (e.g., single-lens reflex [SLR] cameras) are becoming more commonplace in dental offices for intraoral use. Compared to point-and-shoot cameras (e.g., Yashica Dental Eye III [Kyocera; Somerset, NJ]), SLRs use an automatic moving mirror system that permits the photographer to see exactly what will be captured by the film or digital imaging system, whereas the view through a non-SLR camera viewfinder can be significantly different from what is captured on film. Using SLRs, interesting and emotion-generating portraits can be created with ease by simply changing the lighting, lens, and camera settings. This article provides details on how to set up professional-style lighting in the dental office and capturing better portraits.

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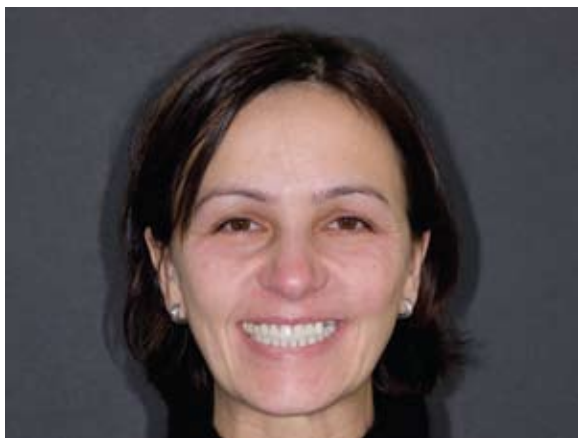
*If you do not use a hair light, use backgrounds that provide contrast to your subject's hair color.*

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### LIGHTING

#### FLASH SYSTEMS

Typical intraoral camera set-ups have a ring or dual-point flash system mounted to the lens. The ring flash positions the light very close to the lens, allowing any exposed surface to be fully illuminated. A dual-point flash has two separated light sources, making it slightly more difficult to get light into the back of the mouth with retracted shots, but the indirect lighting effect makes porcelain look nicer and less opaque. Both flash systems yield a high-



*Figure 1: Portrait taken using Canon 20, 100mm macro lens, Canon MR-24EX twin flash. The patient's proximity to the black background caused the shadow.*



*Figure 2: Postoperative portrait taken with two symmetrical strobes/softboxes as main lights, hair light strobe with parabolic and grid diffuser, Nikon D200 camera, Nikkor 28-70mm f/2.8D ED-IF zoom AF-S lens.*

contrast, detailed image good for documentation purposes; but they typically also produce a very flat, harsh, and less appealing quality when portraits are taken. They leave a single specular reflection in the center of the pupils, which gives a "beady eye" look (Fig 1).

Because these camera systems usually have a 100-mm macro lens, the patient should stand at least seven feet away from the camera so that his or her entire head can be photographed. The actual required distance depends on the camera's chip size. The seven-foot distance challenges the onboard flash system to throw sufficient light to your subject. Dental photography suppliers recommend setting the flash compensation at +1 to +1 2/3 to overcome this exposure deficiency, but this flash compensation may create a tendency to overexpose the intraoral images.

Better portraiture lighting can be achieved by removing the onboard macro flash. Macro flashes and lenses are specifically designed for taking close-up pictures of small

objects. Studio lighting may offer a less harsh and contrasted result, and the light can be directed from many different angles (Fig 2). With a shorter lens, the photographer can move closer to the subject, making it easier to expose images at different angles.

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*Be sure that your radio transceiver will synchronize at the shutter speed you select.*

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Natural lighting always produces the most artistic portrait photography, but time and logistic limitations make artificial lighting the most convenient for dentists. Studio lighting offers unlimited artistic opportunities when photographing your patients.

#### CONTINUOUS LIGHTING

Studio lights can be divided into two categories: continuous lights (spot lights) and non-continuous flash lights (strobes). It is easier to use continuous lighting (i.e., the studio lights are always on). With

continuous lighting, you can move the lights around the patient to see how the face and teeth are directionally illuminated and evaluate the exposure (i.e., level of lightness or darkness of the photograph) before the picture is taken. This kind of lighting creates the dependability of "what you see is what you get." However, there are drawbacks to using continuous lighting in the small confines of a dental office. These lights are hot and will heat the room. As a result, your subject will tire more quickly and begin to perspire, so you will not capture as many photographs; nor will you have a chance to experiment with as many poses, lighting set-ups, or wardrobe changes.

#### STROBE LIGHTING

Strobe lighting is the most common studio lighting selection. Basically, a strobe light is a light system that synchronizes its flash with your camera's shutter opening or to other strobes. Just like the flash on your camera, strobes power up a charge and release a flash of light when the



**Figure 3:** The strobe light can be supported by a tripod for ease of positioning, and softboxes can be mounted on it to diffuse and soften its harsh flash.



**Figure 4:** Higher-contrast portrait taken with a beauty dish as the main light, two hair light strobes with parabolics and 300 grid diffusers, Nikon D200 camera, Nikkor 28-70mm f/2.8D ED-IF zoom AF-S lens.

camera demands it. Strobes have rheostats or digital exposure adjustments that allow you to adjust the amount of light that is thrown. You can set your ideal camera settings manually and then adjust the strobe light output to create an ideal exposure. Your subject stays fresh longer because he or she will not become tired due to heat. Also, because you can keep the lighting low between shots, the pupils stay dilated, which many in the professional portraiture industry believe produces a younger, healthier look. Strobe lights can be triggered by your camera via a wire, radio transmitter, or other strobes firing (i.e., "slave triggering"). Strobes typically are mounted on tripod light stands (Fig 3); or, in the small space of a dental office, sometimes on walls and ceilings. When they are wall-mounted, the ability to experiment with lighting is limited. Wall mounts (e.g., Mathews baby plates [Mathews Studio Equipment, Inc.; Burbank, CA]) cost an average of \$17.50 each, versus tripod light stands, which cost approximately \$40 each.

Many different diffusion devices that yield different light qualities can be attached to strobes. Umbrellas (e.g., reflective and trans-illumination variations) are inexpensive and easy to use, and they soften the harsh light of the strobe. Softboxes are used more often in studios, require less room, and offer the greatest softening effect. Softer light shows fewer visible wrinkles or skin imperfections<sup>1,2</sup> and yields very nice reflections off porcelain restorations. The closer the strobe with an attached softbox can be placed to your subject, the softer the light will be. The larger the softbox, the softer the light is.<sup>3</sup>

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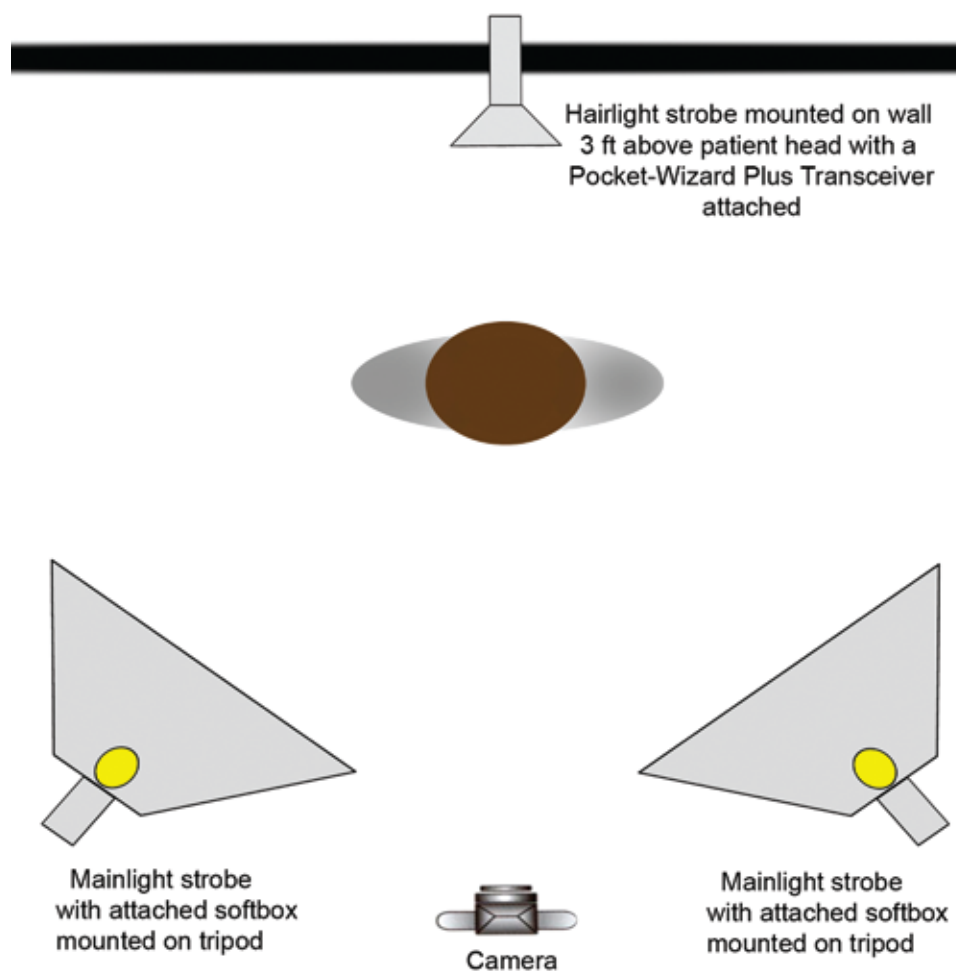
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Parabolics and beauty dishes are other common strobe diffusion attachments used in the modeling business, but these tend not to flatter older patients because they produce light that is high in con-

trast and shadows that exaggerate skin imperfections.<sup>2</sup> An example of a high-contrast image taken with a beauty dish as the main light is seen in Figure 4.

#### LIGHTING SET-UP

Setting up a studio light system in a dental office requires very little room. I use a small area adjoining a narrow hallway previously used as a Panorex nook. It provides a rectangular space of 6' x 4' (Fig 5), in which there are two main strobe lights with 24" x 32" softboxes attached, each supported by moveable tripods. Having them on tripods enables me to move them around easily and quickly. For documentation photography, I keep them equidistant from the patient and the camera. The general rule is that a softbox should be placed no further from the subject's face than the sum of its dimensions (i.e., 24" + 32" = 56 inches). I tend to keep them less than 36" from, and at the same height as, the face. Often you can tell what lighting was used in a portrait by looking at the specular reflections in the eyes.



*Figure 5: Ideal portraiture set-up for dental office. Background has hooks to hold black velvet curtain. Set-up requires a minimum space of 6' x 4'.*

Figure 6 was exposed with closely placed symmetrical softboxes. This lighting set-up fully illuminates the buccal corridors (Fig 7).

A third strobe, the hair light, is mounted 2' (3 to 4' would be better) above the patient's head on the back wall. The height is limited by my ceiling. This hair light strobe is synchronized to the camera shutter via a radio transmitter (e.g., Pocket Wizard Plus transceivers, Pocket Wizard; Elmsford, NY) that is mounted on the hot shoe of the camera. The two main light strobes are slave-triggered (i.e., they will fire

when the hair light strobe fires for the exact same length of time).

The hair light is a light pointed from above that illuminates the hair and/or shoulders. Hair lights are used to create a visual separation between your subject and the background. If your subject's hair or clothing has little contrast from the background, the distinction between the two is lost (Fig 8). The illumination that the hair light produces without the main light(s) firing is demonstrated in Figure 9. The individual in Figure 9 also was

photographed with the main lights firing, as seen in Figure 10.

The hair light has a parabolic diffuser with a 20° grid. The grid collimates the light into a small circle, illuminating only the subject's head and shoulders. This keeps direct light from coming back into the camera lens, which would cause lens flare. Using a lens hood also helps to reduce lens flare from a hair light that cannot be placed high enough above the patient's head due to ceiling height limitations. I have a small rectangular area on the floor, demarcated with duct tape where the pa-



*Figure 6: Portrait taken with two symmetrical strobes with 24" x 32" softboxes as main lights, hair light strobe with parabolic reflector and 200 grid, Nikon D200 camera, Nikkor 28-70mm f/2.8D ED-IF zoom AF-S lens.*



*Figure 7: Note the symmetrical illumination of the buccal corridors obtained using a Canon 5D camera and Canon EF 100mm F/2.8 macro prime lens.*

tient should stand so that the hair light will hit its target. If the patient stands outside of the rectangle, his or her hair will not be illuminated well.

#### LENS

A fast close-up zoom lens (e.g., Canon EF 24-70mm F2.8L USM [Canon USA; Lake Success, NY]; Nikkor 28-70mm f/2.8D ED-IF AF-S lens [Nikon Inc.; Melville, NY]; or equivalent) is best for dental portraiture.<sup>4</sup> Space is always limited in the dental office, so select a lens that allows you to get closer to your subject but still enables visual capture of more than chin to hairline. The closer you can get to your subject, the more acute the angles from which you can take images. The shorter lens also will allow your patient to stand further away from the background so that the flash shadow does not appear on the background (e.g., Fig 1). Be careful not to cause image distortion by coming too close to the face with your lens; set at 30 mm or below.<sup>4,5</sup> Using a shorter lens can create

a "fish eye" look. I tend to keep my zoom lens setting between 45 mm and 70 mm (Figure 11).

#### BACKGROUNDS

I prefer non-patterned and non-distracting backgrounds and suggest black, gray, or white. My Panorex nook has been painted a glossy white that appears gray in photographs when unlighted (Fig 12) or bright white when illuminated by another slave strobe on a tripod hidden behind the patient (Fig 13). We also have hooks in the walls that support a large black velvet curtain. Ideal backgrounds of different colors can be purchased in the form of rolled paper on a rod that can be held up by wall "J" hooks or tripods.<sup>6</sup> If you do not use a hair light, use backgrounds that provide contrast to your subject's hair color.

#### SET-UP VARIATION

The set-up described above (Figs 5 & 6) is the most ideal set-up for taking dental portrait photography. It is important to illuminate

the buccal corridors evenly to avoid a distorted or even an asymmetric appearance of the teeth. When you are capturing facial images, you may want to experiment with uneven lighting. Professional portrait photographers prefer the more sophisticated, artistic effect they achieve by placing the two softboxes at different angles and setting the strobes with different F-stop exposure settings.<sup>1</sup> By adjusting the tripod placement to different angles and distances, one strobe becomes the "main" or "key" light and the other becomes the "fill" light, creating interesting effects (Fig 14).

#### SETTINGS

While there are no "rules" for settings in portraiture, the lens aperture setting for photographing one person generally is wide open (2.8 to 8). This yields a shallow depth of field that softens the silhouette of the hair and makes the background less defined. The lens is set on center-weighted autofocus; always center your lens on the teeth. The





*Figure 8: No hair light was used to distinguish the patient's hair from the background, and the distinction between the two is partially lost.*



*Figure 9: Portrait taken with only hair lights aimed at the top of the head and shoulders to distinguish the subject from the background.*



*Figure 10: Portrait taken with a hair light and two asymmetrical strobes with softboxes. The main light is to the right and the fill light is just left of the camera.*

camera is set to manual mode (e.g., ISO 100, RGB color space [Adobe Systems]), image-quality RAW + large JPEG, with the shutter speed anywhere from 1/125th to 1/250th of a second. Be sure that your radio transceiver will synchronize at the shutter speed you select. By setting the shutter speed faster than 1/160th of a second, the influence of ambient light becomes negligible.<sup>3</sup> Note, however, that even when I am working at a shutter speed of 1/250th of a second, I keep the room lighting subdued in order to dilate my subject's pupils.

### IMAGE FILES

The newest cameras capture two types of image files: RAW and JPEG. RAW files offer the best and fullest digital rendering of the image captured and are preferred over JPEG files, which are already processed and compressed, with most of the data having been thrown away.<sup>7</sup>

RAW files actually are considered to be the digital "negative" but are not in a useable format; they must be converted to a file format such as JPEG, TIFF, PSD, or PNG to be used in visual presentations or printed.

### IMAGE FILE CONVERSION

There are many software purveyors that have written software for RAW file conversion or development, but currently the most popular one is Photoshop Elements (Adobe Systems Inc.; San Jose, CA) RAW converter. The conversion process allows much of the same latitude that developing real film allows, such as adjusting exposure, saturation, and contrast, depending on the software. Anyone with minimal computer knowledge can learn to develop a RAW image in minutes. It is not possible to make a change to a RAW file and resave it—it can only be saved as a new file type; RAW files are digital proof that an image has not

been retouched or "interpreted" by software. No photographer throws away their negatives before they see the prints, and no dental educator should ever delete their RAW files, which have potential educational use.

Once the RAW converter "develops" your image, save a downsized and compressed version called "copy" so that you do not overwrite your original JPEG. A 500 KB to 1 MB JPEG file is a suitable file size for placing into a PowerPoint (Microsoft Corp.; Redmond, WA) or Keynote (Apple Computer Inc.; Cupertino, CA) presentation, or for e-mailing to your specialists and laboratory. The image later can be cropped, rotated, and perhaps turned into a grayscale image to fit your needs.

### INVESTMENT

With a minimum investment in equipment and office space, you

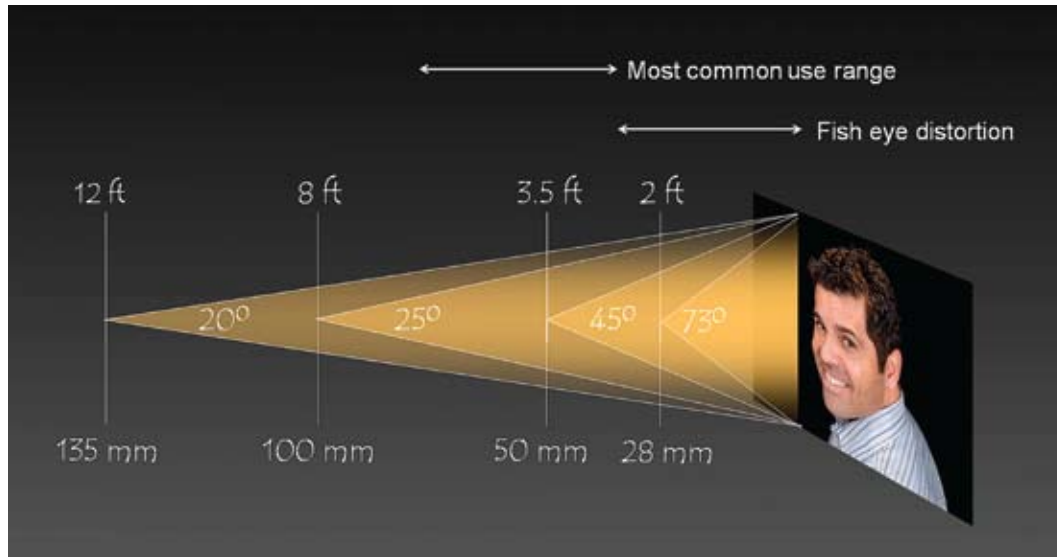


Figure 11: The angle of view varies with lens length (the shorter the lens, the wider the angle of view).

can make major improvements in your ability to communicate clinical circumstances to your patients and those with whom you work. You will find that creating a quality portraiture area in your office is well worth the investment, and it will enable you to better share the beautiful dentistry you create with others. Either of the following strobe lighting set-ups will facilitate quality portraiture photography in the dental office.

### 1. Budget Version (approximately \$900):

Elinchrom D-Lite 4 compact monolight Flash Kit (Adorama Camera, Inc.; New York, NY), includes:

- two Elinchrom D-Lite 400 Ws monolights (strobe lights with flash strength of 400 watt seconds)
- two Manfrotto 9' light stands to support strobes with attached softboxes
- one 25.5 x 25.5" softbox
- one 21 x 21" softbox

- two sync cables (this connection from the camera to strobes fires the lights synchronized to the shutter)
- lighting guide DVD/user booklet.

### Optional additions:

- one or two Mathews baby plates with 5/8" studs (wall-mounting arms if space is too limited for light stands)
- Microsync ([www.microsync-digital.com](http://www.microsync-digital.com)) strobe sync radio transmitter.

### 2. Professional-Quality Version (approximately \$3,700):

- three Elinchrom 300RX digital style monolite strobes (used as key / main lights)
- three Chimera (Boulder, CO) quick-release speed rings for Elinchrom digital style monolites (connectors between strobe and softbox)
- two or three light stands to support strobes (if two, then order the wall-mounting arm)

- one Mathews baby plate with 5/8" stud (wall mount for hair-light)
- two Chimera 24" x 32" shallow throw softboxes with baffle and two diffusers
- one Elinchrom reflector and grid set, includes: 8.25" reflector; 8°, 12°, 20°, 30° degree round honeycomb grids (attached to the hair or background monolites; collimate the light)
- two Pocket Wizard Plus transceivers (sits on camera hot shoe; syncs camera with strobes)
- Savage Port-A-Stand kit; seamless backgrounds (recommend black, white, or gray) with support.

## CONCLUSION

An image's ultimate use is the best determinant of how it should be composed. If the images are to be used for treatment planning, communication, or educational pur-



*Figure 12: The lighting used here consisted of two symmetrically placed strobes with 24" x 32" boxes, a hair light strobe with parabolic, and 200 grid.*



*Figure 14: Artistic portrait taken with asymmetrically placed and lit main light and fill light, both with 24" x 32" softboxes attached; and a background strobe with a bare parabolic diffuser.*



*Figure 13: The glossy white background wall is illuminated with a strobe, with a 12" x 36" softbox behind the patient shooting up from the floor.*

poses, then the images are enhanced when taken with specific patient positioning, focus points, and exposures while simultaneously providing symmetrical illumination.<sup>8</sup> Other dentists may appreciate a straight-on documentation-style photograph, but if your intention is to show your successful treatment results or artistic flare, then it is not as critical to follow documentation guidelines. Telling prospective cosmetic clients that the beautiful images they are viewing of your other patients were taken in your office can have a powerful positive impact. Most of these patients will understand that quality esthetic dentistry requires artistic ap-

titude. Good portraiture showcases your artistic talent.

Capture your viewer's imagination. The better artistic images elicit an emotional and/or intellectual response from the viewer. Try to make the viewer wonder about your other patients' journeys from beginning to end, as well as to speculate about what is beneath the surface.

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