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A Lighting Approach for Clinical Photographs of the Face

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Abstract

This article describes an alternative approach of lighting setup for taking clinical photographs of the face. The lighting techniques presented in this article will help the clinician obtain good-quality clinical photographs.

Keywords: Clinical photographs, lighting, red eye

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Introduction

It is becoming increasingly important to maintain high quality clinical records during the course of medical and dental treatment and research. Photographs of a patient's face provide a significant amount of information to aid diagnosis and treatment planning as well as to document preoperative and postoperative conditions. Clinical photographs, therefore, can offer at least as much, if not more, information provided care is taken when obtaining these photographs.

As with all areas of photography, lighting is one of the key factors. Conventional lighting approaches using ring-flash or two studio flashes shining 45 degrees on each side of the face (Figure 1) could result in the flattening of the depth of facial structures.[1]

The ring-flash does not have the power to evenly illuminate the subject, necessitating the use of large apertures and resulting in a shallow depth of field. Moreover the ring-flash might, from time to time, create a "red-eye" effect in the photograph (Figure 2).

This article presents an alternative approach of lighting setup for taking clinical photographs of the face. The equipment and techniques described in this article will help the clinician obtain good-quality photographs.

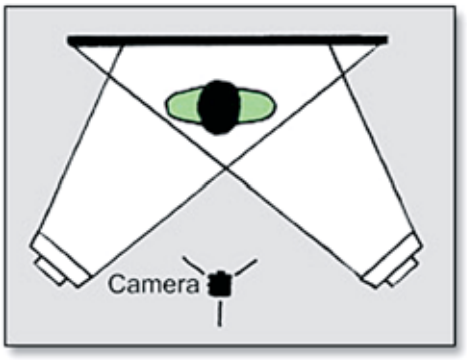

Figure 1. Diagram demonstrating conventional lighting approaches using two studio flashes shining 45 degrees on each side of the face.

Figure 2. Clinical photograph taken with ring-flash showing "red-eye" effect.

Equipment and Materials

Backgrounds

A non-reflective light blue background is recommended. A white background does not provide sufficient contrast with the subject.[1] A black background could be used to minimize shadows, but it does not provide sufficient contrast for subjects with dark hair, causing part of the image to be lost in the background. A piece of light blue cloth or cardboard attached to the wall with thumbtacks provides a suitable background for photographs of the face.

Lighting Equipment

The primary factor in this technique is the use of umbrellas or a small "softbox" to modify the light source. A softbox is simply a box placed over the flash head that guides the light through a translucent panel in the front which functions as a diffuser. When light is shone through the softbox, a large diffuse light results. Softboxes come in several shapes and sizes, ranging from about 30x30 cm to 120x180 cm. Some are rigid; others are made of fabric stiffened with poles resembling fiberglass fishing rods.[2] Commercially available softboxes are usually lightweight, easy to attach to the flash head, and are often collapsible for transport and storage. Their sides are usually black on the outside and either matte silver or black on the inside.[3]

Umbrellas for photography come in different sizes and colors and are used to diffuse or reflect the light. They usually attach to the studio flash unit with a bracket through which the umbrella is threaded to its straight handle. One of the most

common photography umbrella styles is black on the outside and white on the inside. This type is designed to be positioned so the concave side of the umbrella points at the subject. As a result, the flash head is pointed away from the subject so it shines on the inside of the umbrella and soft, reflected light is bounced onto the subject (Figure 3). Other umbrellas have a silver or gold interior, which affects the color and reflectivity of their inside surfaces. These umbrellas are not designed to be shone through but rather to reflect light from the flash onto the subject.[2].

Another common type of umbrella is all white and translucent and is used to either reflect light or allow light to shine through to the subject. However, the translucency of the umbrella will lead to some reflecting light being lost. More commonly, photographers orient this umbrella so the convex side points at the subject (Figure 4). The flash head then shines through the umbrella, creating more of a softbox effect.[2] The most obvious difference between a softbox and an umbrella used in this fashion is the shape of the highlight in the subject's eyes. Since eyes are reflective surfaces, the round umbrella or the square softbox will be clearly visible in them, unless it is retouched out during the processing of the photograph.[4]

A fill light is a separate flash unit at a lower power attached to an umbrella, and it is used to counteract the shadow resulted from the main light source.

Professional flash heads usually come with a small reflector and an umbrella bracket, through which the arm of the umbrella is threaded and attached. Alternately, a collapsible softbox can be attached to most flash heads with an accessory bracket. The biggest difference is the shape of the highlight in the eyes.[3]

Separate hair lights (key lights) are indicated when the main light illuminates the face but does not bring out the texture or shine of the hair. Often the hair light can be fitted with a "snoot" flash. Unlike a regular flash, a snoot flash has a cone shaped shield which directs a cone of light over a small area and ensures light cannot go sideways. A commercial snoot flash has the benefit of being sturdy, well made, and heat

Figure 3. Diagram of a reflective umbrella positioned with the concave side of the umbrella pointed at the subject and the flash is shone on the inside of the umbrella.

Figure 4. Diagram of a white umbrella positioned with the convex side pointed at the subject and the flash is shone through the umbrella imitating a softbox effect.

resistant. They are usually sold with brackets that mate with the individual flash-head system.

Technique

Position the subject about five feet in front of the background and directly in front of the camera. This will avoid any undesirable shadows from the subject onto the background. There are a few variations in the lighting setup, but most start with a single, large diffused light source; it can be either a softbox or a white umbrella. First, mount a powerful flash head on a sturdy light stand and attach a reflector and umbrella (or softbox) to it. The light stand is positioned at a high angle directly off to the side about 20-40 degrees,

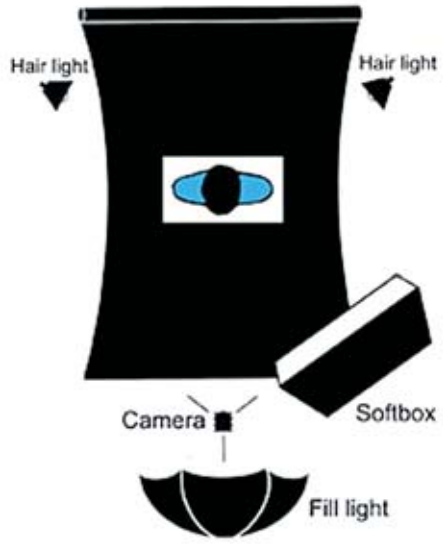

Figure 5. Diagram of lighting setup for clinical photography.

depending on which angle flatters the subject more (Figure 5). To judge the angles, turn on the flash head's modeling light and look at the scene from the camera angle. If a reflective umbrella is used to reflect the main light source, such as one that is black on the outside and white on the inside, the flash needs to be reflected into the umbrella and let it bounce back onto the subject.

Once the lighting angle for the subject is selected, look closely at the shadows on the subject's face. If they appear too dark, they can be lightened with a reflector or a fill light on the opposite side of the subject as the flash. Preferably the shadow on the face should be no more than two stops darker than the highlight on the face. The fill light should be placed just slightly above the eye level of the subject (Figure 5).

At this point, it is time to pay attention to the subject's hair. Hair that has a similar tone to the background can seem to disappear, making it hard to define its shape in the final photograph. Also, the main light might illuminate the face well but might not bring out the texture or shine of the hair. Therefore, a separate hair light is often necessary. This light should be more directional than the main light since its sole purpose is to add a highlight to the hair (Figure 5).

Figures 6-8 are examples of the proposed lighting approach. This lighting is an alternative approach that could be used routinely for taking clinical photographs. This approach is particularly useful when the depth of the facial structures is considered to be important for the records.

Summary

Lighting plays a significant role in the quality of clinical photography. The article describes an alternative lighting setup involving the use of a white umbrella, softbox, and snoot flashes. Where detailed facial features are important for the clinical record, such a lighting arrangement could ensure satisfactory quality.

Figure 6. Frontal view of subject taken with the described lighting setup.

Figure 7. Profile view of subject taken with the described lighting setup.

Figure 8. Facial profile taken at 45 degrees with the described lighting setup.

References

1. Vargas MA. Photographs of the face for publication and presentations. J Prosthodont 2003;12:47-50.
2. Hicks R, Schultz F, Larg A, et al. Photographing people. Singapore: Rotovision; 2001:8-111.
3. Bidner J. The lighting cookbook: foolproof recipes for perfect glamour, portrait, still life, and corporate photographs. New York: Amphoto books; 1997: 22-69.
4. Lee Z. 40 digital photo retouching techniques. Seoul, Korea: Youngjing; 2003, 75-120.

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