DOCUMENTATION VERSUS ARTISTIC PHOTOGRAPHY

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The use of photography in dentistry is increasing rapidly due to the convenience and utility of digital images. Digital images are available instantly and are useful for diverse purposes. Even images captured with a film camera can be easily digitized with a scanner.

There are many ways to use digital images in dentistry. The ultimate use of an image determines how it is best composed. Every image conveys information, but not all images provide the same amount of diagnostic data. Clinicians need to learn to choreograph their photographs to increase value for each purpose.

The stylistic agenda of most images is generally either documentary or artistic. Documentation photography is dedicated to showing what is actually there. It provides an accurate rendering with no misrepresentations; there is a need to be true to your subject and tell the whole story. Artistic photography shows what is appealing or interesting; it focuses on what is attractive and has no responsibility to present the entire circumstance. Artistic photography is used for educating, creative expression, and marketing.

DOCUMENTATION PHOTOGRAPHY

Visual clinical examinations with charted notes, however thorough, do not provide a lasting detailed description of the display of the dentition as framed by the face and lips. It is helpful to have documentation images that clinicians can review long after the patient has left the examination room. Having photos in addition to other work-up information allows for better evaluation of clinical circumstances and will generate more informed efforts in diagnosis, treatment planning, interdisciplinary communication, laboratory communication and development, self-improvement, and dental education.

Clinicians should learn to tell as much of the patient's circumstance with as few images as possible, just as we do radiographically with a full-mouth series. Before each diagnostic photograph is snapped, the photographer must determine what information is to be conveyed and how best to display it in the image. Figures 1 to 15 show how to best choreograph images to maximize documentation value.

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Portraits (1:10 to 1:15 magnification factor)

Documentation portraits illustrate facial shape, symmetry, facial proportions, and display of the dentition beneath the drape of the lips (Figs 1 to 6).

Fig 1 High artistic value, low documentation value. Nikon D200, Nikkor 28–70 mm zoom lens, ISO 100, F4.5, 1/250 sec, strobe lighting.

Figure 1 is a preoperative portrait that introduces the personality of this patient (artistic goal). However, this image has limited diagnostic/documentation value because it was exposed slightly from the side of the patient and the subject's head is subtly tilted. Oftentimes, people—especially females—pose with a slight head tilt, which softens their look. Even a minor angulation does not allow for proper assessment of facial symmetries, and how the dentition appears relative to the facial midline (axially or horizontally).

Facial symmetry is best evaluated by drawing a line on a photograph down the middle of the subject's face (see Fig 2). Two points of reference can be used to orient this line: the bridge of the nose and the center of cupid's bow at the bottom of the philtrum.[1] Ideally, the occlusal plane will be perpendicular to the midline. Have your patient hold her head straight to the camera with the facial midline perpendicular to the floor. Some practitioners compare the occlusal plane with the interpupillary line, but rarely are a person's eyes exactly level with each other.

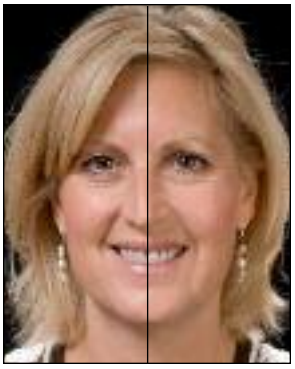


Fig 2 Medium artistic value, low documentation value. Nikon D200, Nikkor 28–70 mm zoom lens, ISO 100, f/4.5, 1/250 sec, strobe lighting.

The preoperative portrait in Fig 2 has documentation features that Fig 1 does not have. The image appears to have been exposed directly in front of the patient. If the individual's face were perfectly symmetrical, we would see exactly the same amount of cheek and temple on both sides of the face. It is important that hair be pulled behind the ears for an unobstructed view of the cheeks and temples. If the temples are exposed, any deviation to the right or left becomes visible. Fig 2 shows some asymmetry of the head, face, lips, and gingival display; horizontal midline discrepancies; and axial inclinations of the teeth. However, this photograph has been taken from too high an angle. When the image is taken from slightly above (high forehead/hairline), the occlusal plane can appear U-shaped and even minor occlusal plane cants become difficult to see. If the occlusal plane is flat, we want it to appear as such when photographed. In this photograph, the incisal edges are in contact with the lower lip, making it difficult to visualize the occlusal plane. Ideally, the mouth should be opened wider to expose the occlusal plane.

Fig 3 Low artistic value, medium documentation value. Nikon D200, Nikkor 28–70 mm zoom lens, ISO 100, f/3.2, 1/160 sec, strobe lighting.

It would appear that Fig 3 is a good documentation image that represents the reality of this patient's full preoperative smile. Actually it does not tell the entire story. Many people learn to smile with the correct tooth display or to show their good side while being photographed. This patient smiles with some restraint to show a relatively small amount of gingiva.

The maximum forced smile in Fig 4 gives a true representation of gingival display of this patient's smile. Often, the photographer has to catch the patient off guard to capture the true height of the smile (highest limit of lip mobility). Here the teeth are resting on the lower lip, thereby obscuring the incisal edges and occlusal plane.

Fig 4 Low artistic value, medium-high documentation value. Nikon D200, Nikkor 28–70 mm zoom lens, ISO 100, f/4.0, 1/160 sec, strobe lighting.

Figure 5 is an intraoperative photograph (midtreatment documentation of provisionals) taken at the proper vertical and horizontal vectors. The same amount of cheek and temple on each side of the face is visible, and the height of the camera is at the same level as the occlusal plane. The mouth is open wide enough to display the occlusal plane. Ask the patient to open his mouth halfway and then smile while leaving his mouth open to prevent the incisal edges of the maxillary teeth from resting on the lower lip. It is often helpful for the photographer to model the pose for the patient.

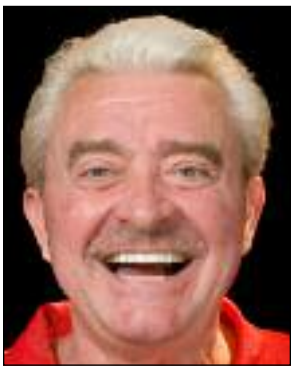


Fig 5 Low-medium artistic value, high documentation value. Nikon D70s, Nikkor 28–70 mm zoom lens, ISO 200, f/8.0, 1/80 sec, strobe lighting.

The profile portrait has diagnostic value. Common soft tissue profile documentation goals are to evaluate mandibular angle, facial plane, midface convexity, Ricketts' E-plane or Steiner's S-plane, nasolabial angle, and mentolabial angle.[2] Variations from norms can suggest orthodontic, orthognathic, plastic surgery, and restorative dental treatment. Orthodontists commonly orient the head so that the Frankfort plane is parallel to the horizon or a natural head posture.[2–7] Because the Frankfort plane is determined radiographically and the comfortable rest position is too variable and arbitrary, clinicians should consider using visible soft tissue landmarks to create consistency with their images. Try using the mid-ala of the nose to the midtragus of the ear (ala-tragus line), shown in Fig 6, or the Camper's plane.

To take a profile portrait, have the patient face the camera at a 90-degree angle. The patient should be relaxed and not smile. Make sure hair is pulled back to expose the ear. The camera height should be between the nose and mouth and centered in the face. The ala-tragus line should be parallel to the floor.

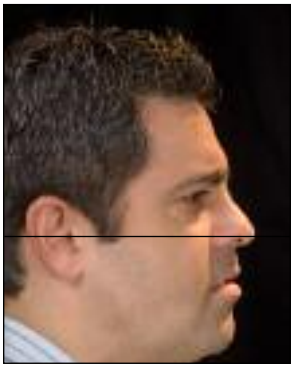


Fig 6 Low artistic value, high documentation value. Nikon D200, Nikkor 28–70 mm zoom lens, ISO 100, f/4.5, 1/160 sec, strobe lighting.

Extraoral Close-ups (1:2 to 1:3 magnification factor)

Gingival display and incisal edge position are parameters often taken into account while planning restorative dentistry. Although portraits render this information, the extraoral close-ups (commissure-to-commissure shots), as in Figs 7 to 10, show this better.

The postoperative lips-at-rest pose in Fig 7 and forced-smile pose in Fig 8 show lip mobility and the dentogingival display beneath the lips. (It helps to ask the patient to mouth breathe when this photograph is being taken.) This pair of images has significant influence on placement of incisal edge position in the final restorations.[8–10]

Do not orient the camera to the interpupillary line, intercommisure line, or the occlusal plane, as these are often canted. The horizontal plane of the camera should remain perpendicular to the facial midline. If the images are shared with the interdisciplinary team, draw an orientation line over the images, as in Fig 8, to confirm orientation.

Fig 7 Low artistic value, high documentation value. Nikon N2000 35mm, Nikkor 105 mm macro lens, f/22, 1/100 sec, Nikon SB-29 flash.

Fig 8 Medium artistic value, high documentation value. Nikon N2000 35mm, Nikkor 105 mm macro lens, f/22, 1/100 sec, Nikon SB-29 flash.

Extraoral lateral images such as those shown in Figs 9 and 10 are also taken as a pair. These preoperative forced-smile shots centered on the lateral incisor allow documentation of tooth and gingival display from the side view. These photos are taken at the height of the occlusal plane or the midbuccal of the lateral incisors, with the camera oriented so it is parallel to the horizon and perpendicular to the facial midline.

Fig 9 Medium-high artistic value, high documentation value. Canon 5D, Canon 100 mm macro lens, ISO 100, f/32, 1/125 sec, Canon MT-24EX Twin Lite Macro Flash.

Fig 10 Medium-high artistic value, high documentation value. Canon 5D, Canon 100 mm macro lens, ISO 100, f/32, 1/125 sec, Canon MT-24EX Twin Lite Macro Flash.

Intraoral Close-ups (1:2 to 1:3 magnification factor)

Intraoral close-ups such as in Figs 11 and 12 document the full dentition as it appears, unrestricted by the lips. Images such as those shown in Figs 13 to 15 are especially good for communicating with laboratory partners. Shade information is improved by such choreography of your images.[11–12]

Figures 11and 12 are intraoral close-ups also usually taken as a pair. Figure 11 shows the overbite relationship of the incisors. In Fig 12, the teeth are fully retracted and discluded and the incisors are 2 to 3 mm apart so a clinician can assess the occlusal plane. Take these images with the camera perpendicular to the facial midline. This allows discovery of occlusal plane cants. If restorative dentistry is to be completed, Fig 12 allows selection of landmarks when planning the eventual occlusal plane. Allowing for the subtle curves of Wilson and Spee, the occlusal plane normally is fairly flat. Taking the image from above would give the incorrect impression that the occlusal plane is U-shaped.

Fig 11 Low artistic value, high documentation value. Canon 5D, Canon 100 mm macro lens, ISO 100, f/28, 1/125 sec, Canon MT-24EX Twin Lite Macro Flash.

Fig 12 Low artistic value, high documentation value. Canon 5D, Canon 100 mm macro lens, ISO 100, f/28, 1/125 sec, Canon MT-24EX Twin Lite Macro Flash.

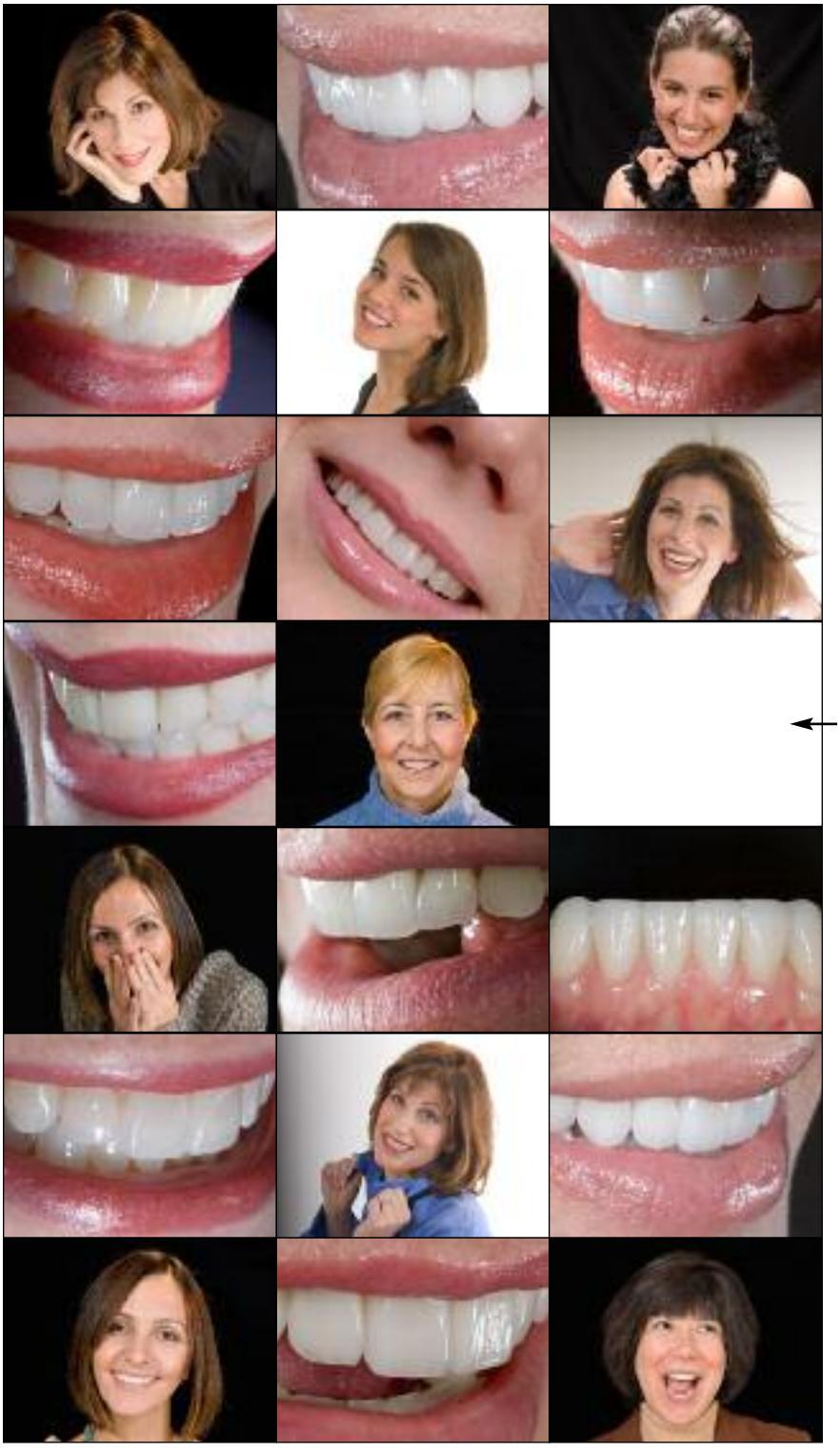
When documenting translucency as in Fig 13, use a black background, minimize reflections by vectoring your shot from above at 60 degrees, and underexposure the image.

When documenting silhouette and surface morphology (Fig 14), use a black background, maximize reflections by vectoring your shot perpendicular to the surface you are documenting, and clean and dry the teeth.

When documenting the chroma and hue as in Fig 15, use a neutral gray background, minimize reflections by vectoring your shots from above at 60 degrees, keep the shade tabs parallel to the teeth and equidistant from the camera, and underexposure your image.

Figs 13 to 15 Medium artistic value, high documentation value. Nikon N2000 35 mm, Nikkor 105 mm macro lens, f/28, 1/100 sec, Nikon SB-29 flash.

Artistic images that are universally pleasing are extraoral, not retracted. Portrait or commissure-to-commissure photos are best.



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Portraits: High artistic value, low-medium documentation value. Nikon D200, Nikkor 28–70 mm zoom lens, f/4.5, 1/250 sec, strobe lighting.

Postoperative close-ups: High artistic value, low-medium documentation value. Canon 5D, Canon 100 mm macro lens, ISO 100, f/12-28, 1/100 sec, Canon MT-24EX Twin Lite Macro Flash.

ARTISTIC PHOTOGRAPHY

Artistic portraits of a patient introduce and portray personality, emotional status, sophistication, and mannerisms. Images of happy patients, smiles, and beautiful dentistry can display many artistic qualities and be influential to the viewer. The best artistic images elicit an emotional and/or intellectual response. Rather than having to be responsible, logical, and accurate, artistic photography allows the photographer the latitude to capture the viewer's imagination. Unlike the documentation shots, there are few rules as to camera angle or exposure level.

In dental education, a case report with photographic documentation of each step helps the audience see how procedures are performed and garner a better depth of knowledge of what can be done in particular clinical circumstances. When artistic images are included, the emotional and intellectual response they create can hold the audience's attention better and be more motivational.

Ansel Adams used his camera to share the breathtaking and tremendous beauty of our nation's national parks. Quality artistic photography can also show the awesome beauty that nature has created in the mouth and what talented ceramists can produce in porcelain.

CONCLUSION

By properly staging your photograph and keeping your audience in mind, the resulting image will have captured the information necessary for its intended use. An image to be used for treatment planning or communication purposes can be improved when taken with specific angulations, focus points, and exposures while providing good illumination, retraction, isolation, and/or aspiration. If a photographer intends to use an image to show a successful treatment, the various steps of a procedure, or what a specific type of restoration looks like, any image that is pleasing to the eyes will do.

Always consider who your audience is. Whereas dentists will appreciate retracted intraoral images of detailed dental procedures, most nondentists prefer extraoral images and portraits. Because different audiences won't always find the same images esthetically pleasing, it is important to choose views common to the intended viewer.

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