

Focus_{on} Photography

Common Mistakes in Clinical Photography and How to Prevent Them

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This article elaborates on frequently encountered errors in clinical photography and provides recommendations on how to avoid them.

Introduction

When captured correctly, dental photographs will provide more accurate evidence about malocclusion and possible treatment options than any other clinical record. In the first article in this series, “Excellence in Dental Photography” (AAO Journal, Winter 2016), we acknowledged the importance of dental photography in developing a patient’s record, documenting treatments, and monitoring the progress of selected modalities, and as a medicolegal aid in complying with insurance requirements or preventing legal actions.

However, errors committed while obtaining these invaluable records can compromise or even negate their usefulness. Furthermore, photographs of a substandard quality may misrepresent anomalies and defects in a patient’s oral environment, or inaccurately reflect the progress of a treatment. Furthermore, when featured on the dental practice’s website or social media platforms, less-than-perfect clinical photographs may discourage office visits from prospective patients, and therefore lead to a loss of revenue for a practice.

The errors most often encountered in clinical photographs can be divided into two categories. The first category consists of errors that result from an inappropriate selection of photographic gear—the camera, lens, flash, backdrop, and auxiliary equipment such as mirrors and retractors. The second category of errors involves incorrect patient-operator positioning.

Comparative clinical photographs

To mitigate the problem of an appropriate selection of equipment, investing in a quality retractors and mirrors as well as in a digital camera capable of capturing images with accurate human color, full tonal range and adequate depth of field, and providing the ability to produce photographs with good light control, is essential.

With the proliferation of innovative, high-quality photographic apparatus, there is a vast array of dental cameras appropriate for an orthodontic practice. One such option is the staff-friendly digital dental camera from Shofu Dental Corporation, the EyeSpecial C-II. This universal camera features preset dental shooting modes and a variety of other smart attributes. (**Figures 1a-b**).

To allow direct comparison of photographs taken at different times, it is fundamental to maintain a standardized environment with congruent settings, a dental camera set to a consistent calibration, corresponding retractors, and correct patient-operator positioning. A dental practice that is noncompliant with these prerequisites will produce unpredictable and inconsistent photographs (**Figures 2a-c, 3a-e**).

Standardization

Admittedly, it may be challenging to standardize the process of clinical photography when images can be taken during different stages of a treatment, by different team members, in different operatory rooms, using different equipment, settings,



Figure 1a: the EyeSpecial C-II dental camera.



Figure 1b: incorporating appropriate mirrors and retractors in both Before and After images will help the dental team capture excellent photographs.



Figure 2a-c: inconsistent clinical photographs make the clinical evaluation more difficult and create unconvincing evidence.

and more. Still, when comparing photographs to demonstrate the treatment's progress, the only variable component should be the captured development. Everything else should remain constant. Although the implementation of photographic procedures and protocols does require a team effort, the ability for every staff member to achieve predictable and consistent records will help diminish the probability of an error and the need for a retake.

Common errors in extraoral photographs

The American Board of Orthodontics (ABO) reports that the most prevalent errors observed in extraoral clinical photographs are

- The absence of a plain, nondistractive backdrop (**Figures 2b, c**)
- An incongruous, asymmetrical frame with too much background, or overtrimmed areas of interest, including cropped head or smile (**Figures 2a, b, c**)
- An incorrect distance between the patient and operator (**Figure 2c**)

- Capturing images that are too bright or too dark (**Figure 2c**)
- Portraying patients wearing excessive jewelry and accessories; hair disguising the patient's face; ears with no visible landmarks (**Figure 2a**)
- Allowing patients to tilt the head, or to look away, up, or to the side of the camera (**Figure 2b**)

To minimize these errors, place a plain, nonreflective backdrop behind each patient for pre-, mid-, and post-treatment photo sessions. The ideal framing for full-face photographs should include the whole of the patient's face, neck, and shoulders, with reasonable margins around the areas of interest. Furthermore, to achieve a symmetrical portrait, the clinician should be positioned at the same height as the patient, with the camera level with the patient's interpupillary line and centered on the tip of his or her nose. The patient's eyes should be open and looking straight into the camera. Obtrusive jewelry, distractive accessories, and oversized eyewear should be removed. Hair should be gathered together and pulled back to expose ears for the purpose of orientation. The same consistent staging, framing, and patient-operator positioning



Figure 3a-e: photographs of inadequate quality may misrepresent the patient's malocclusion or inaccurately reflect the treatment's progress.

should be maintained when recording all stages of an orthodontic treatment.

Common errors in intraoral photographs

When evaluating intraoral photographs, it is common to observe

- Inadequately retracted soft tissue (**Figures 3a, b, c, e**)
- A lack of focus or an inappropriate depth of field (**Figures 3a, b, c**)
- An asymmetrical frame with a canted plane (**Figure 3d**)
- Obscured or overcropped mandible or maxilla (**Figure 3b**)
- Over- or underexposed images (**Figures 3c, e**)

To minimize these mistakes, proper operator-patient positioning is mandatory, notably when capturing the occlusion. Optimally, intraoral photographs should be taken in the operatory, with the patient and the clinician positioned on the same level to avoid producing images in an asymmetrical plane. To achieve an ideal mandibular occlusal view, the operator should be standing in front of the patient, while leaning the mirror perpendicularly to the maxilla. Maxillary photos should be executed with the clinician standing behind the patient, operating the camera from above and leaning the mirror against the mandible.

A set of the largest retractors that the patient can comfortably tolerate should be used to prevent the tissue from collapsing and thus obstructing the images. C-shaped retractors should be used to capture anterior photos, while V-shaped retractors are ideal for photographing buccal images. A set of metal retractors and high-quality mirrors is indispensable to record the occlusion.

Closing comments

Many of the aforementioned errors can be prevented by compliance with standardized photographic procedures. Furthermore, using the tips discussed herein and being

aware of the prevalent types of errors in intra- and extraoral clinical photographs will help increase the likelihood of obtaining quality images. Although some errors can potentially be compensated for by retouching or correcting using digital applications such as Photoshop, such manipulation can lead to a distortion of the original images or the need for a retake. An open question would be whether such manipulation, if performed on photographs posted on websites or social media, could also lead to accusations of fraud.

Disclosures

The author is an employee of Shofu Dental Corporation. Figures 1a, 2b, 2c, 3a, 3b, 3c, 3e courtesy Shofu Dental Corporation. Figures 1b, 2a, 3d courtesy Shannon Pace Brinker. ■

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