

## Clinical dental photography: part II

The second of this two-part series will aim to cover framing in dental photography, the full clinical photographic series, and troubleshooting some common mishaps in order to capture reproducible clinical images of our dental patients.

### Introduction

As with any form of clinical record, it would be highly beneficial for photographs of patients to be standardised and reproducible. This would allow for accurate monitoring of the dentition over time, forming a baseline pretreatment record (i.e., orthodontics, teeth whitening, aesthetic rehabilitations) as well as aiding comprehensive treatment planning.

The first part of this series covered the required equipment as well as camera settings used to capture reproducible intra-oral images. In this second part, we will explore framing of dental images, what constitutes a full clinical photographic series, and troubleshooting in cases of incorrect exposures – all of which should enable the user to take images that are standardised, consistent and reproducible.

### Framing (Figures 1 and 2)

Framing your subject (i.e., the smile, full arch or individual teeth) is vital to ensure the point of focus and purpose of the image being captured. This is done primarily by looking into the viewfinder (the eyepiece on the body of your camera) and adjusting the distance between you and the patient. Being too far away will result in capturing more than you require and reducing the flash exposure on the subject, leading to underexposure (i.e., a darker image), and potentially losing macro detail. On the other hand, being too close can lead to overexposure (i.e., an image that is too bright) due to too much light, not capturing sufficient information, and again losing macro detail (see troubleshooting).

A systematic approach to taking these images is beneficial when starting out. With experience, these rules can be altered as required:

1. Determine the point of focus of the image (i.e., what structures do we need to capture – teeth, gingival margins, soft tissue lesions, etc.). This structure is placed in the middle of the frame.
2. Horizontally orientate the left and right borders of the frame accordingly to include the precise amount of detail you require for that image.
3. Vertically orientate the subject as close to the middle of the frame as possible.

The ‘rule of thirds’ is a guiding principle in photography. It helps the photographer to position their subject within lines in both the vertical and horizontal planes, dividing the frame into thirds. The focus of clinical images should be placed in, or as close as possible to, the middle third, thus ensuring well-composed images.



FIGURE 1: Framing your subject is vital to ensure the point of focus and purpose of the image being captured.



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FIGURE 2: A systematic approach to taking clinical dental images is beneficial when starting out.

These lines are also beneficial to ensure standardised angulation of the image, i.e., along the occlusal and incisal planes, as well as the left-right orientation. From the horizontal, keeping the barrel of the lens in line with the maxillary occlusal plane ensures that the occlusal plane is not too 'smiley' or 'frowny' (see troubleshooting).

The camera should also be level with the incisal plane horizontally, keeping the dental midline as close to the vertical orientation as possible.

**TIP:** It is useful to orientate anatomical landmarks (commissures of the mouth, gingival margins, incisal edges, occlusal planes, etc.) within the viewfinder of your camera, as well as ensuring the angulation between your camera and these landmarks (Figures 1 and 2).

### Full clinical photographic series

A full series of clinical photographs is extremely useful in the medicolegal documentation of a patient's records. It certainly captures much more detail than any graphical electronic dental recording system. These photographs act as a record of the dental status of our patients, as well as the progression or stabilisation of disease over the duration of their care. It is also valuable to

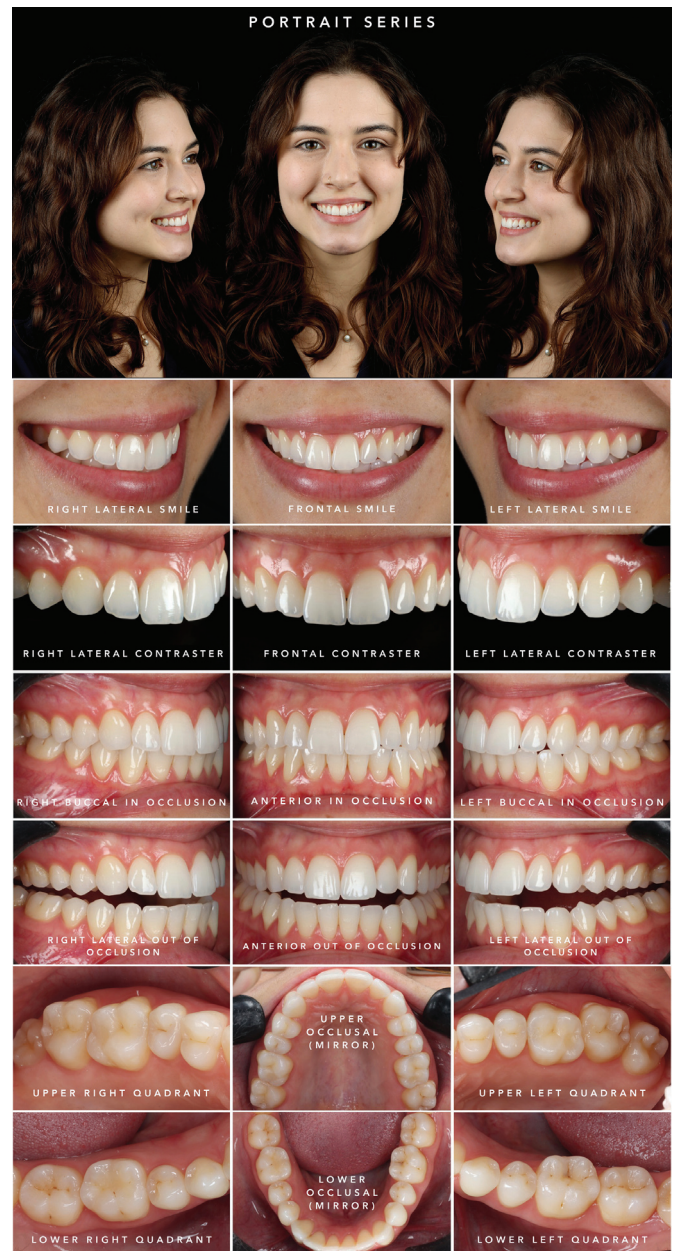


FIGURE 3: Example of a full clinical photographic series.

be able to share these photographs with other dental professionals should a patient need to attend a new practice or clinic.

While there is no list of standard images required by any regulatory or indemnity body, the photographs shown in **Figure 3** form a comprehensive set. The rationale for each view includes the following:

1. Smile line (frontal and lateral): lip line, dental and gingival display, aesthetics.
2. Retracted intraoral in occlusion (frontal and lateral): caries or restorations, gingival margins, occlusal relationship.
3. Intraoral out of occlusion (frontal and lateral): caries, cracks or restorations, incisal edge and cuspal integrity (or tooth substance loss).

4. Occlusal surfaces: caries, cracks or restorations.
5. Profile: facially driven smile profile.
6. Contrasted images: macro details, i.e., incisal translucency and surface character.

**TIP:** Get patients' help to hold their own cheek retractors while you hold the occlusal mirror. Pre-heat the occlusal mirror in hot tap water, dry it with paper towel, and then take the occlusal shots – this helps to prevent fogging of the mirror.

### Troubleshooting (Figure 4)

At times, we might find ourselves in a position where an image captured is inadequate. It may be too dark (underexposed) or too bright (overexposed), too yellow (warm) or too blue (cool), out of focus, or perhaps framed incorrectly. In any event, it is useful to know how to rectify these in the hope of obtaining standardised and reproducible images.

There are multiple ways in which these common errors can be corrected, but here are some guiding steps to consider:

1. Exposure discrepancy (i.e., image being too bright or too dark).
  - Check that all the settings are correct first (see part one of this series);
  - for direct images (i.e., no mirror use), once all camera settings are correct, adjust the flash exposure (increase if images are dark and vice versa); and,
  - for indirect images (i.e., using a mirror), once direct images are correctly exposed, increase the 'ISO', as the mirror tends to absorb some light.

2. Colour discrepancy (i.e., image looking too warm (yellow) or cool (blue)).

- Check the white balance compensation on the camera body (custom 5,000K to 5,500K or 'flash');
- if image is too cool, i.e., blue – increase white balance value; and,
- if image is too warm, i.e., yellow – decrease white balance value.

3. Inadequate focus, i.e., centrals in focus but premolars back are out of focus.

- Increase the f-stop to a minimum of f22 (higher if required) to reduce the size of the aperture and increase the depth of field.

4. Angulation of camera to the subject is incorrect (see **Figure 4**).

**TIP:** Practice your clinical photographic sequence and the camera settings with family or colleagues – practice makes perfect.

### Conclusion

Dental photography is a fantastic tool in helping us to communicate with our patients, as well as dental colleagues. In addition, it can also make our careers more rewarding, helping to develop our skills by reflecting on our work and providing a higher level of care for our patients. Reflecting on patients' whose dental diseases have been managed, mouths rehabilitated, and lives improved because of the oral care provided, gives us as dental practitioners satisfaction too, in the knowledge that we have contributed towards that. We cannot treat what we cannot see, and photography helps both patient and practitioner in the recognition and management of disease concurrently.

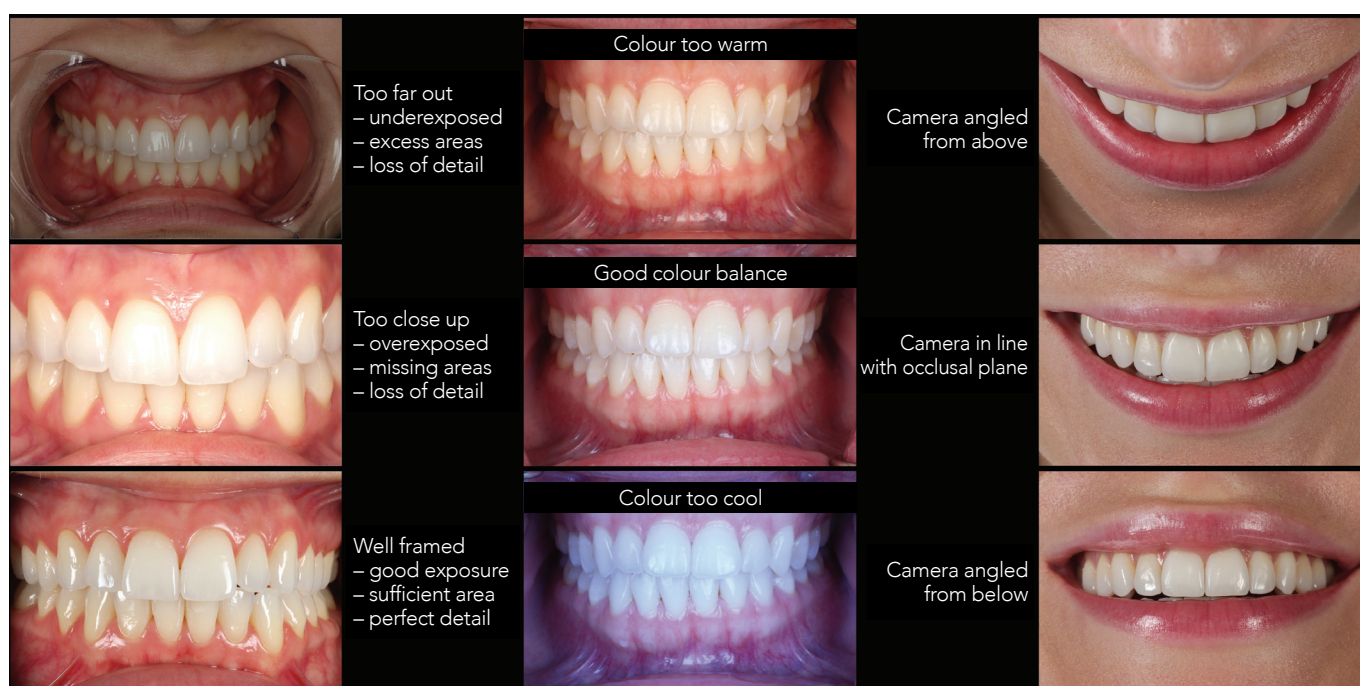


FIGURE 4: Examples of correct and incorrect images.