

Dental photography

Documentation protocol

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Dental Photography & Documentation

Basic knowledge of digital photography in dentistry, focusing on the information that can help us obtain the best results limited to the photographic area that interests us, is what we all need without entering the realm of complex technicalities. It is of fundamental importance to master the basic elements of photographic equipment: Camera, lens and flash (or luminous sources).



I'm a dentist and there's no need to become a professional photographer. The first step of aesthetic treatment is the acquisition of data. This consists of careful analysis of the clinical case accompanied by essential photographic records of the patient.

Here I will recommend my option that I use in my practice giving me the best results. It's Nikon D7200 equipped with a 105-mm macro-lens and two directed lateral flashes "R1C1 twins flash system". Nikon camera body with its accessories is one of the most adequate equipment to do so.

Among the multitude of functions within the camera body, the most important ones for dental applications include ISO, f-stop or aperture, exposure time and white balance.

Note that the first three determine **EXPOSURE**, Exposure refers to the amount of light that enters the camera lens and reaches the sensor; the more light that reaches the sensor, the more luminous the resulting photo will be and vice versa. Correct regulation of the exposure levels ensures the avoidance of dark (underexposed) or light (overexposed) images. On this basis, it's crucial that one must always find a correct balance of exposure.

ISO

It controls the sensitivity of the sensor; the lower the ISO, the less sensitive the sensor. With insufficient brightness, a higher ISO setting will be required to increase the sensitivity of the sensor. However, there is a disadvantage of a high ISO figure: a high value implies the presence of “digital noise” lending a granular aspect to images and causing loss of details “ graininess “.

Recommended ISO value is 100 - 200 for intraoral and extraoral images such as full-face photos.

F-stop & photographic field depth

The smaller the value of the aperture (f-stop), the wider the diameter which means more light will be able to filter through and reach the sensor and vice versa. A very wide aperture lens is able to produce high-quality photos even in conditions of insufficient lighting; however, controlling the f-stop does not only calibrate correct amounts of light reaching the sensor, it also determines the depth of the photographic field. In order to increase the depth of a field, one must reduce the aperture (increase the f-stop value). The inferior amount of light filtering through could be compensated by more powerful light emission or through the longer exposure time.

Exposure time

Exposure time or shutter speed is the time interval when the digital sensor inside the camera is exposed to light. The faster the shutter speed, the less light enters the camera and vice versa. This is normally calculated in fractions of a second: 1/30, 1/60, 1/125 and so on.

White balance

It is the parameter that determines the temperature of the image. In simple terms white balance is the process by which all colors appear in the image exactly how the eye perceives them. The preferable option for dental purposes is the natural temperature for daily light: 5,500 k.

Finally, It is recommended that the photo is always acquired when the operating lamp is removed from the subject of the photograph.

The protocol of digital photography

Photographic documentation can be extremely useful in cases where dental treatment contributes to the esthetics of the patient's face.

The situations demanding photographic documentation can be divided into three main categories:

- Facial portraits
- Extraoral
- Intraoral photographs

In addition, laboratory photography is also considered part of this protocol.

Facial portraits

These photos provide necessary photographic evidence for a correct analysis of the preoperative situation and, later, of the provisional restorations and finally the definitive results.

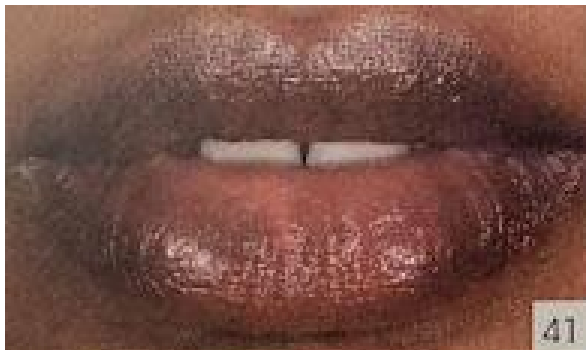
It is advisable to maintain the same background, preferably white, black or gray. The images must portray frontal and lateral smile views, each acquired when the patient is first at rest, then with a semi-smile, and finally with a full, open-mouth smile. (3 photos: front, left, right).



Extraoral photos

Photos of the dentolabial area are of primary importance focusing on the anterior teeth and lips. The smile is analyzed beginning from its rest position, with a gradual shift toward a full smile. Like facial portraits, frontal and lateral profile views should be included (3 photos: front, left, right).

It is important that the lens remains perpendicular to the nose-mouth-chin angle. So the dentist will be able to correctly evaluate the curve created during a smile and the relationship between the incisal edges of the teeth and the lower lip.





Intraoral photos

Frontal view of dental arches is the simplest intraoral photograph a dentist takes. Using retractors, the patient remains seated with the teeth in intercuspation and the operator is positioned directly in front of the patient. Within the frame of the image, all teeth should be visible. The focus should be manually adjusted on the canines to ensure a greater depth of field “ greater details “.



Transition from lips at rest to full smile (Twins flash or ring flash)

Lateral views: a mirror is required with the help of an assistant. The mirror is placed on the side to be photographed and positioned to move the cheek away from the teeth; at the same time the lip retractor is inserted in the opposite side of the mouth to ensure that the lips do not obstruct the view of the dental arch. The lens is aimed perpendicular to the mirror focusing on the premolars. (3 photos: front, left, right)



Frontal & lateral images of the smile (Twins flash or ring flash)



Frontal views of maxillary & mandibular teeth (Twins flash)

Frontal and lateral intraoral photos using black contrastors are important to emphasize the chromatic characteristics of the teeth. (3 photos: front, left, right)



Frontal & lateral views of functional movements of anterior & lateral guidances

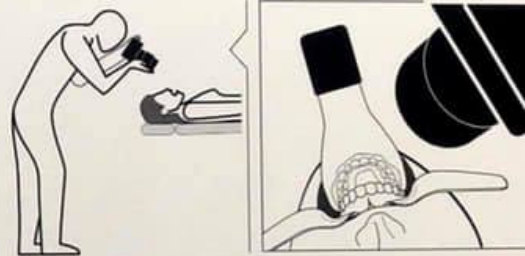


Frontal labial as well as maxillary & mandibular views

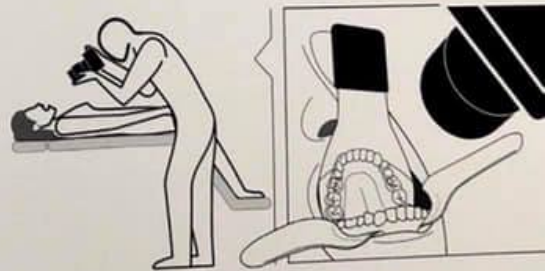


Frontal & lateral intraoral images

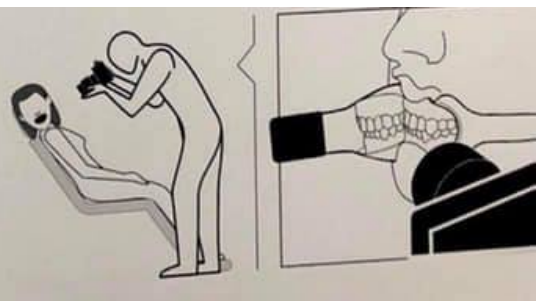
Maxillary occlusal view



Mandibular occlusal view



Overjet and overbite: the patient is seated with teeth in intercuspation, and the operator is positioned to the side of the patient. Retractors are gently pulled back and the lens is manually focused on the central incisors.



Finally, you can get at least about 14 essential photos of your patient acting like you have the patient in the office all the time.

Reference:

- Modern Esthetic Dentistry, Vincenzo Musella

www.dentalestheticszak.com

