

Simple ⊕ Digital Smile Design

by Coachman & Yoshinaga

The basic DSD photo/video protocol

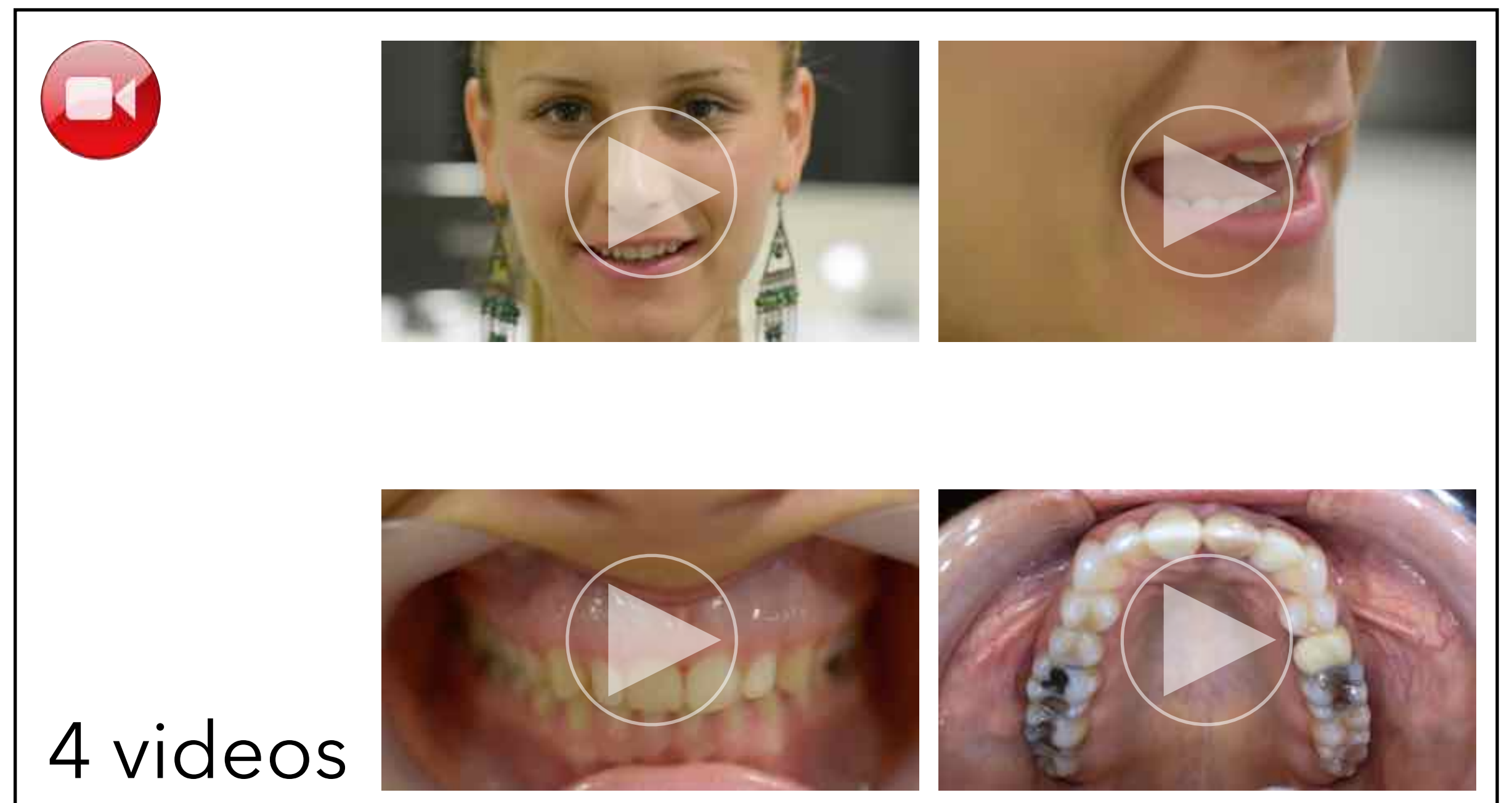
Besides the regular documentation for treatment planning, the suggestion is to take additional 6 photos and 4 videos.

Photos:

1. Facial frontal smile with teeth apart
2. Facial frontal retracted with teeth apart
3. Facial profile at rest
4. Facial profile smile
5. Occlusal without mirror or from the model
6. 12 o'clock view smile

Video:

1. Face casual interview
2. Close up. Counting, smiling and phonetics
3. Intra oral. Functional movements
4. Structural Oclusal view



Taking Photos from the videos

To facilitate the process, the 6 photos can also be taken from videos, so that no photos are necessary, just videos. 4 videos are necessary to create the 6 DSD photos.

The suggestion is to make the videos and allow the smile designer to make the 6 DSD photos from the video on the computer.

4 DSD Videos:

1. Facial frontal video. With retractors and smiling



2. Profile at rest and smiling



3. Occlusal



4. 12 O'clock



8 VIDEOS for the FULL DSD Documentation

frontal facial



profile facial



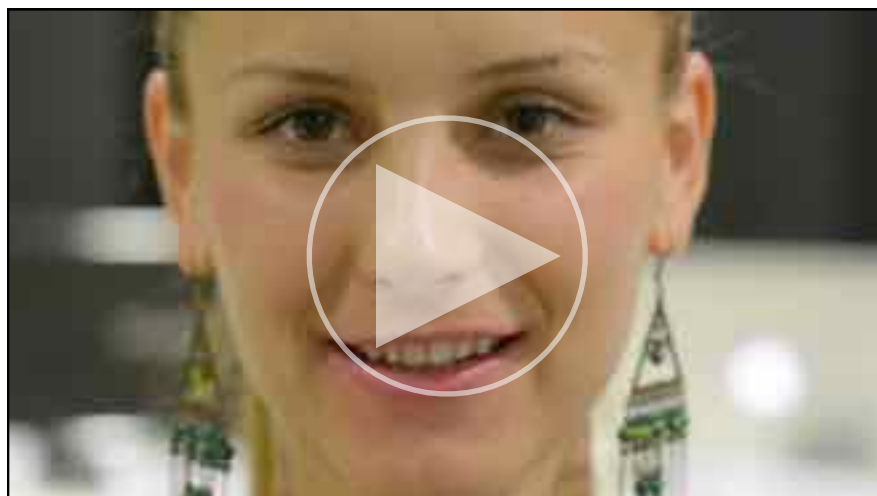
occlusal



12 o'clock



casual interview



close-up phonetics



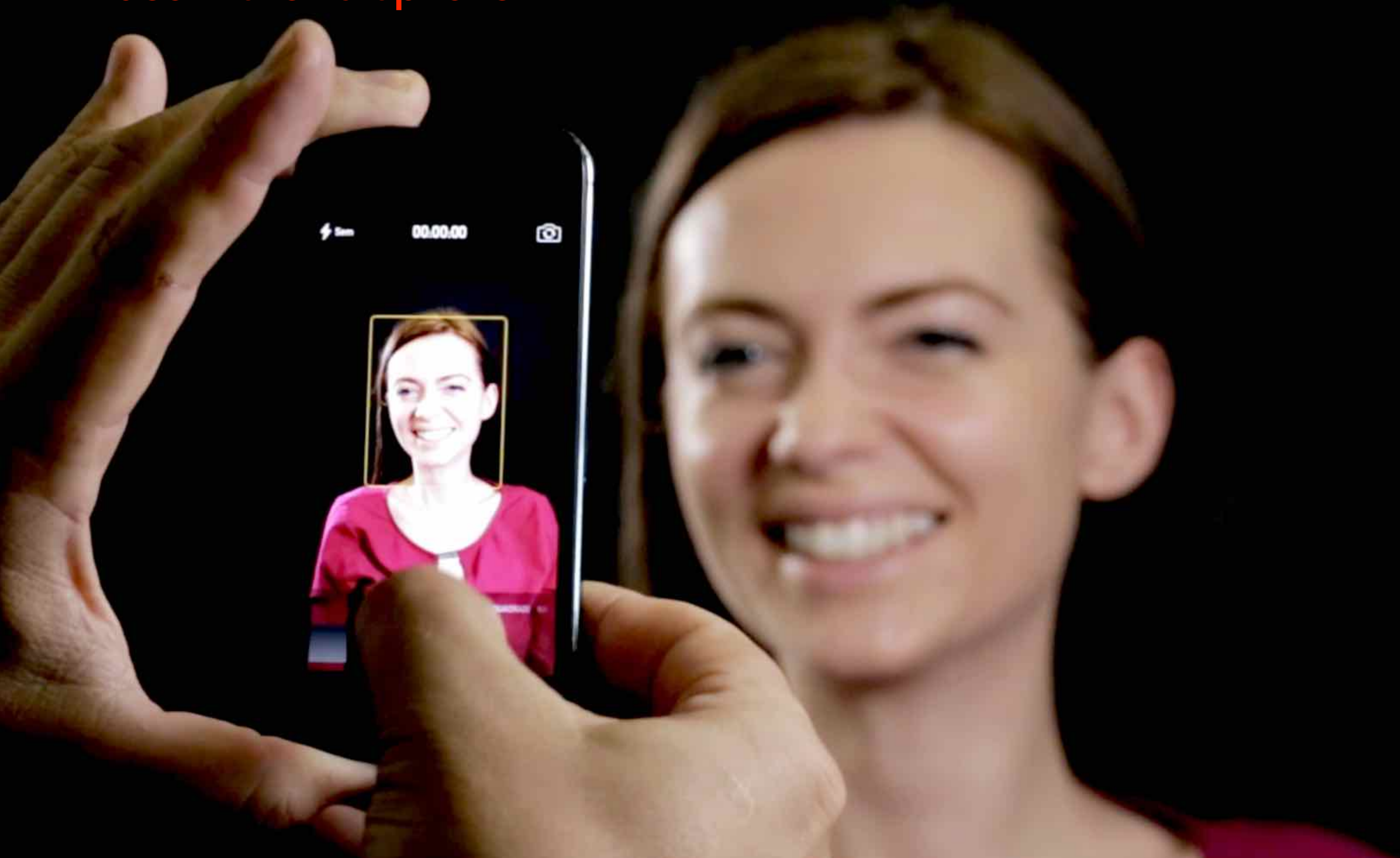
intra oral function



intra oral function



Video with smart phone



Video with smart phone



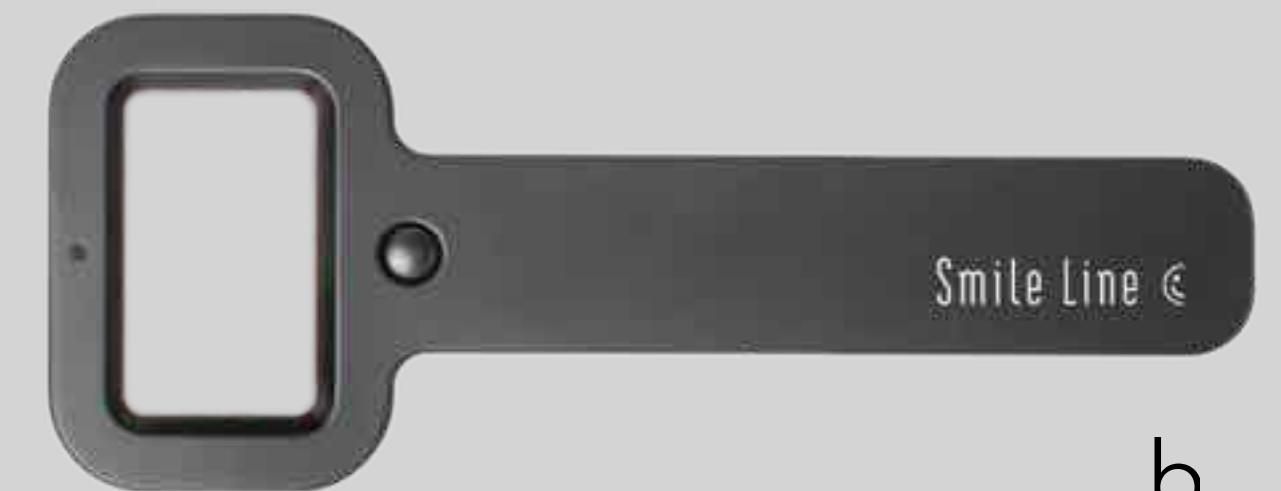
The suggestion is to make the videos with a smart phone. The key for good quality videos with smart phone is the amount lighting.

For the facial videos/images we need LED panels (a).

For the close up and intra oral videos we suggest a small LED light attached to the phone (b).



a



b

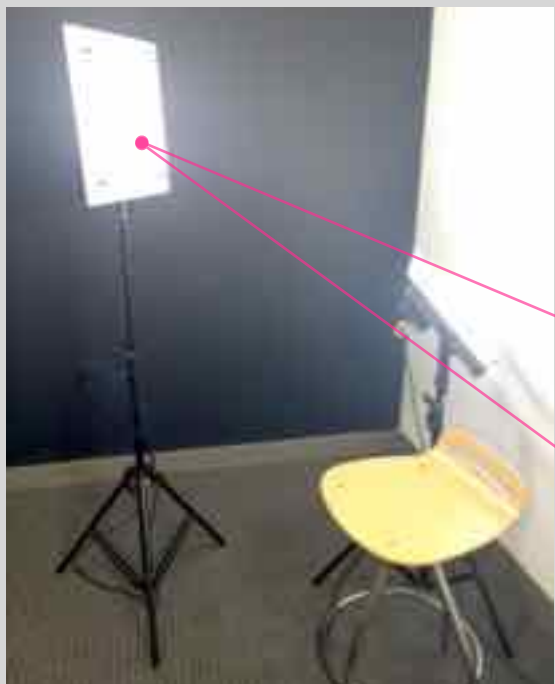
Studio for smart phone videos

2 LED panels are needed over 2 tripods.

1 extra optional panel can be placed behind the patient, towards the wall, to generate a nicer background.



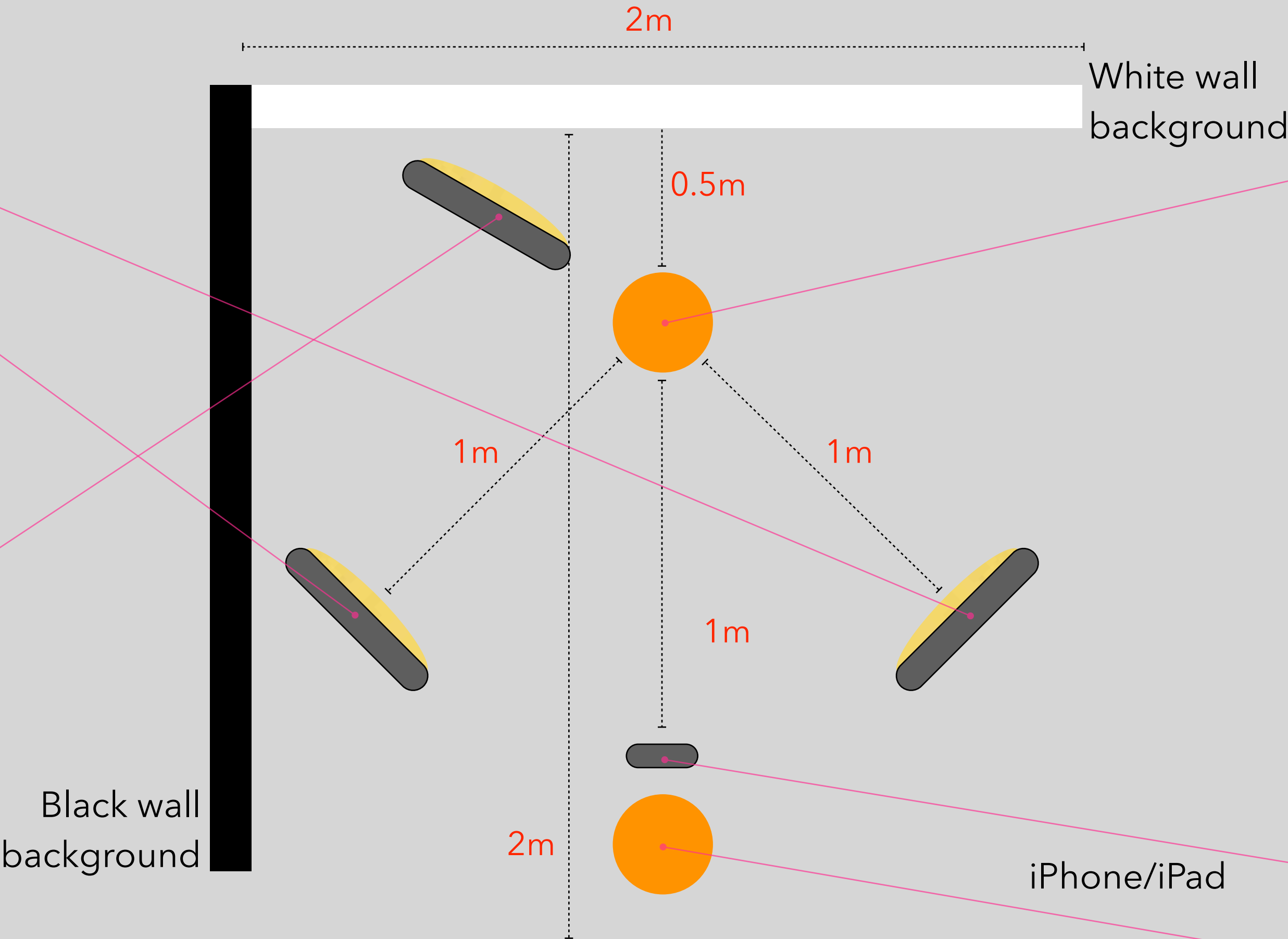
Studio for smart phone videos



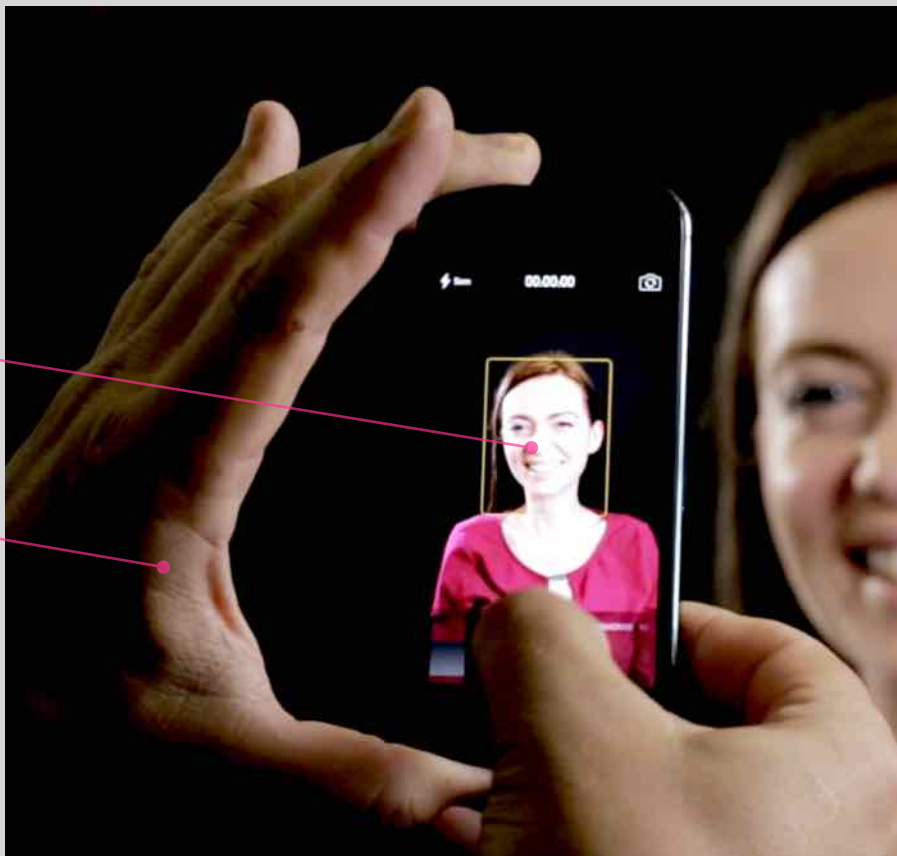
LED panels in front of the patient over a tripod



LED panel behind the patient over a tripod



patient



videographer

iPhone/iPad

The 6 DSD Photos



Facial Frontal

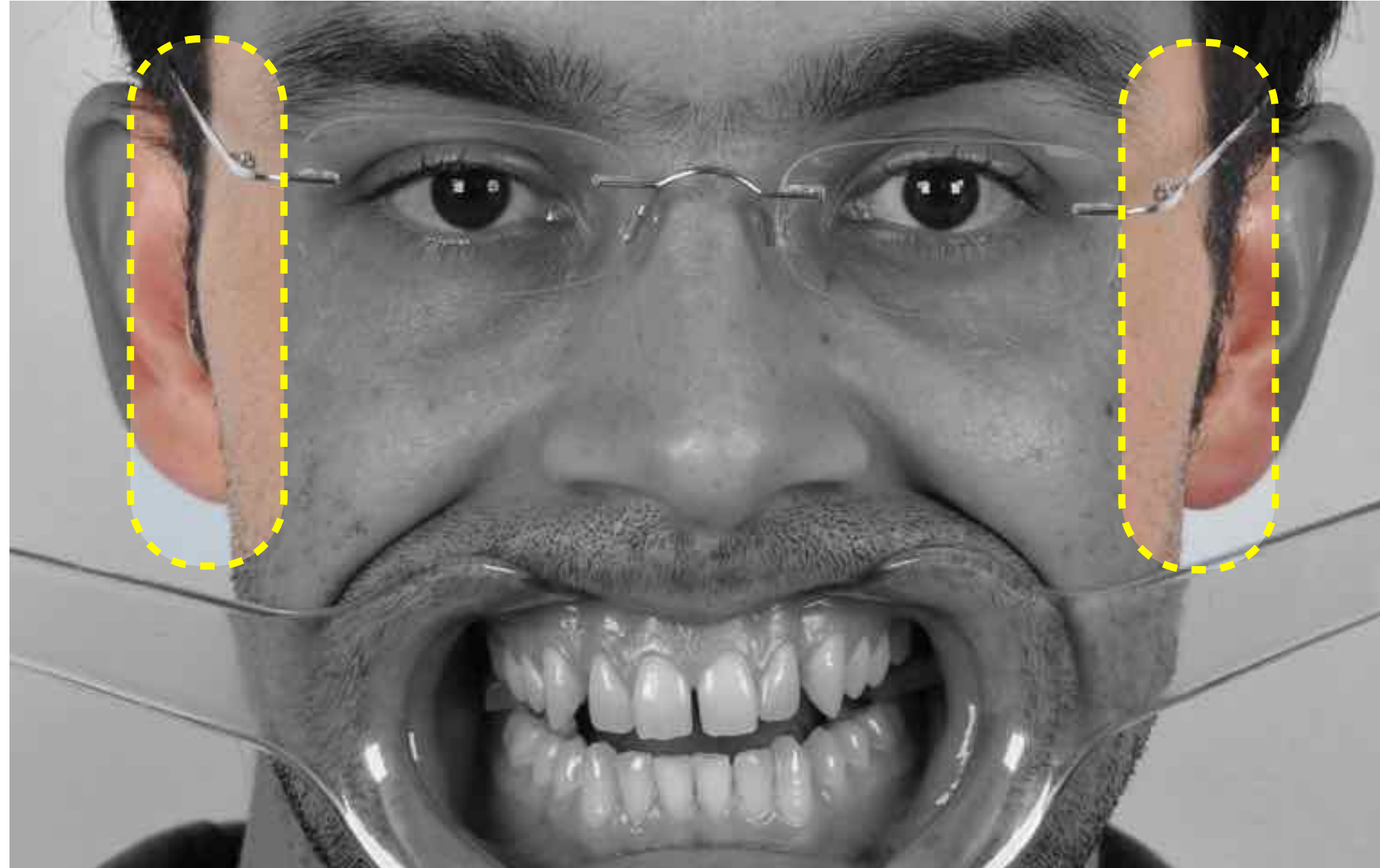


Facial Frontal

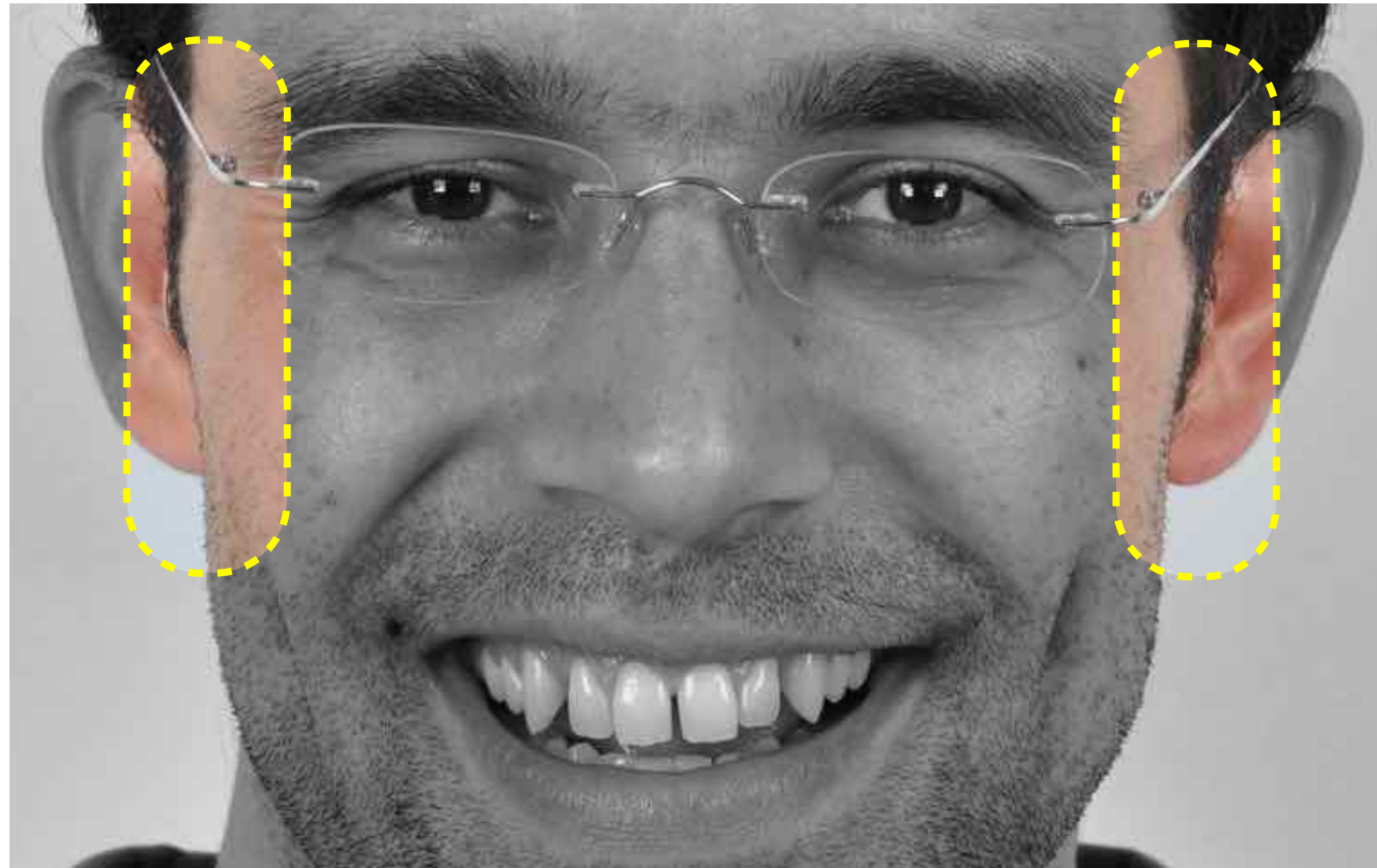


The first 2 photos are the facial frontal.
a) with retractors
b) wide smile

Facial Frontal



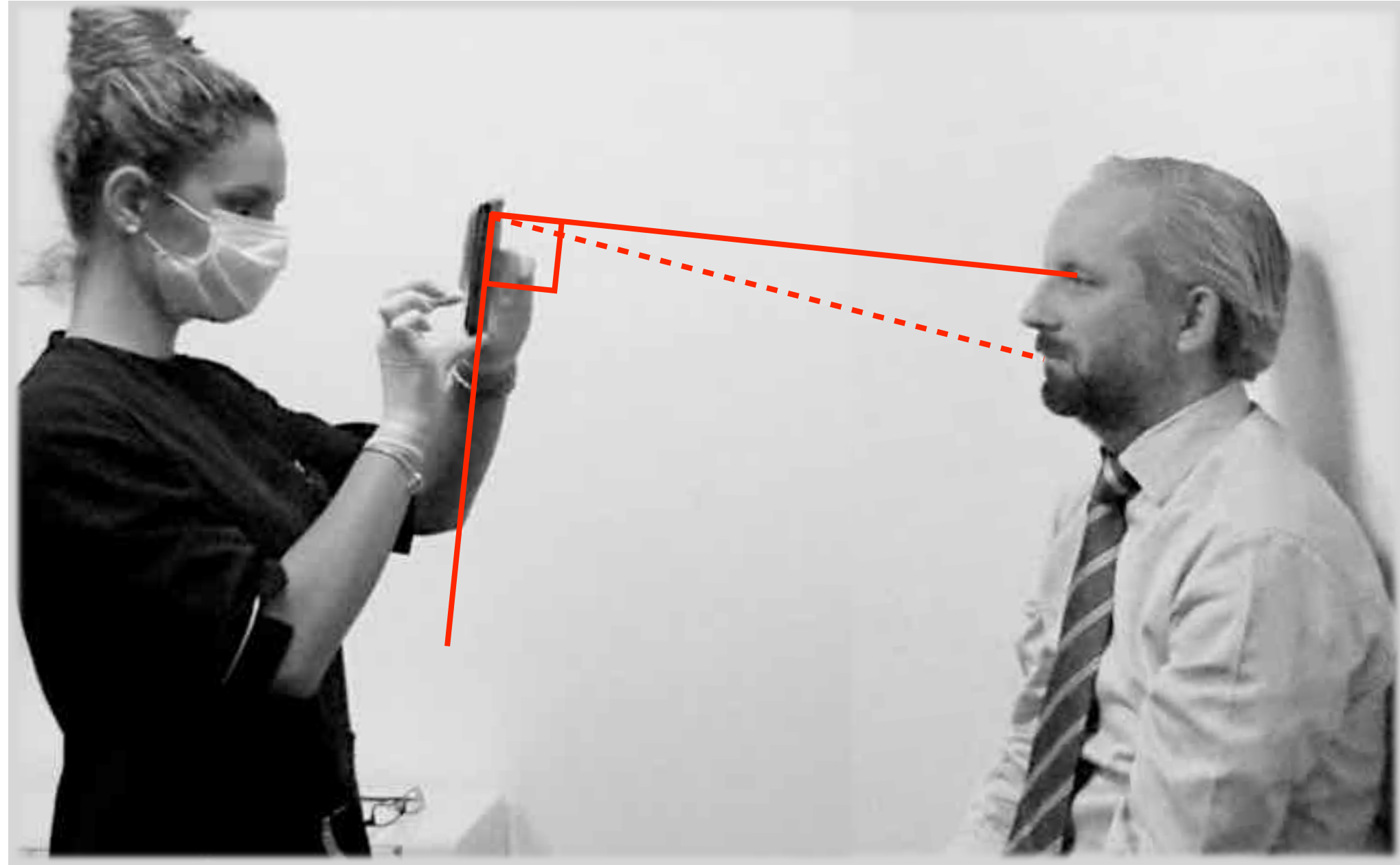
Face should be centered. Both sides of the face should be seen the same amount. Use the base of the ear on both sides as a reference and make sure they show equal



Make sure that the hair is behind the ears so the whole face is visible



Facial Frontal



The camera should be leveled with the eyes. That means that the camera will be slightly above the mouth creating a natural smile curve. Make sure the patient is not lifting their chin when smiling.

If doing photos with iPhone/iPad, the closer you get to the patient the bigger the distortion of the image. So it's better to keep a distance (1m) and zoom in digitally.



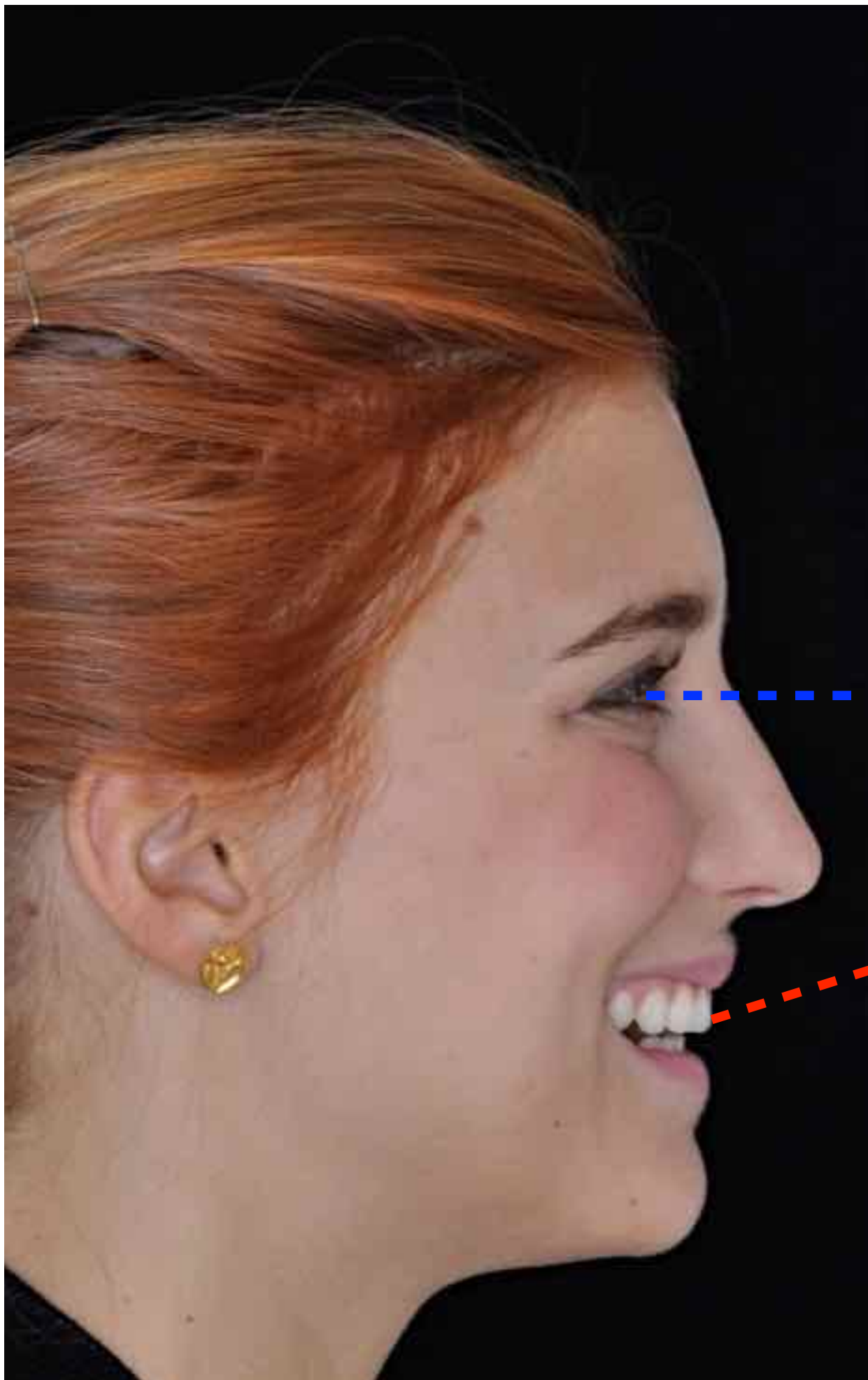
The ideal is to make the photos with both seating on a dental stool with the patient on a comfortable position looking to the horizon with the back well supported.

Focus

Make sure that maximum focus is on the teeth even though the center of the photo should be the eyes.

Technique with SLR:

1. Set your camera in automatic focus
2. Aim first to the teeth and capture focus by half clicking the trigger.
3. Keeping the focus by holding the trigger, move up the camera towards the eyes and then take the photo with the camera leveled with the eyes.



Focus

Since maximum focus should be on the teeth one should zoom in the photos on the teeth area to check the quality of the focus.

The full photo size on the camera screen doesn't allow a good visualization of the photos on the teeth.



Zoom in and out



Zooming in to the teeth area to check the quality of the focus and approve the photo before moving to the next one

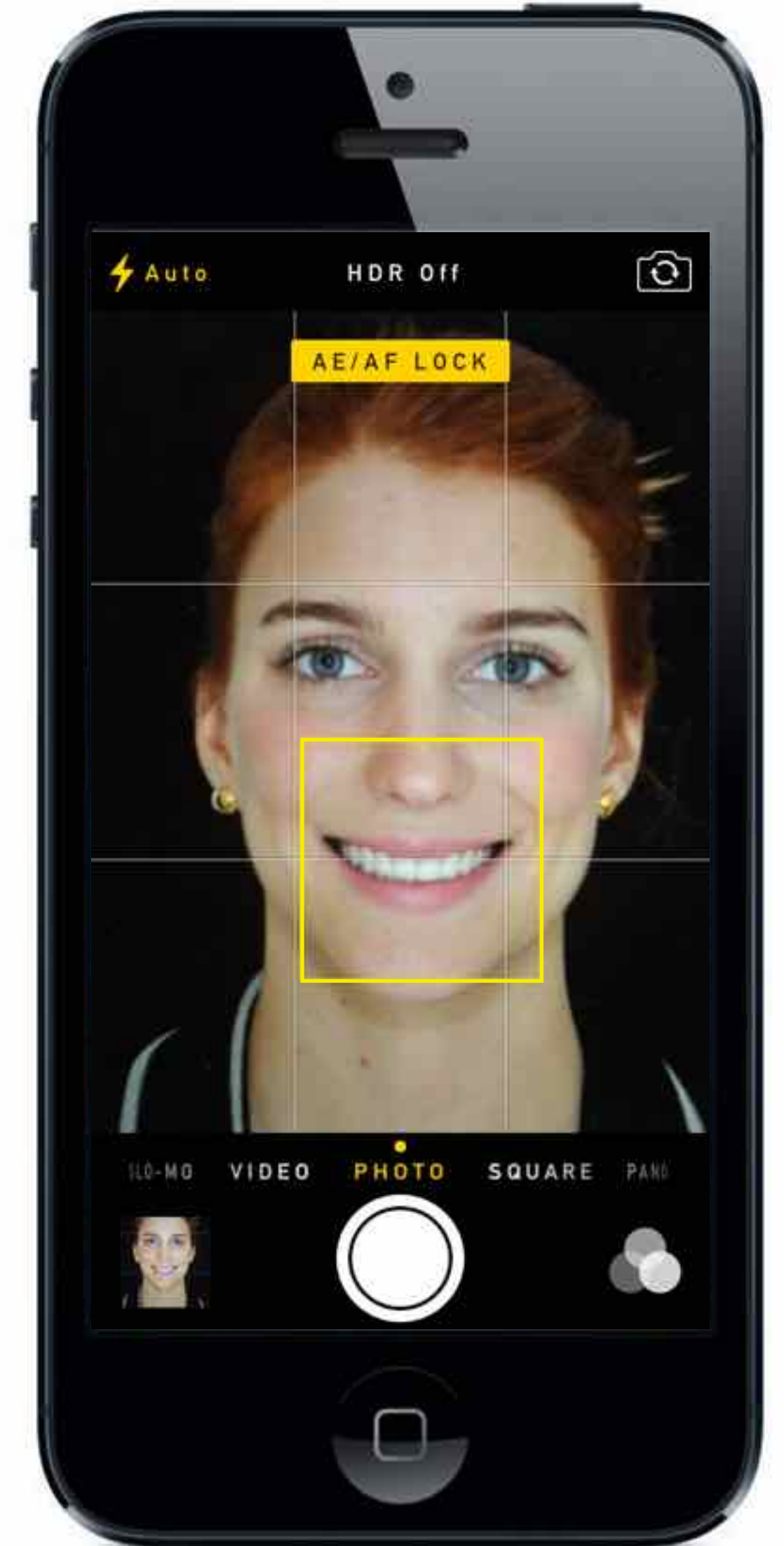
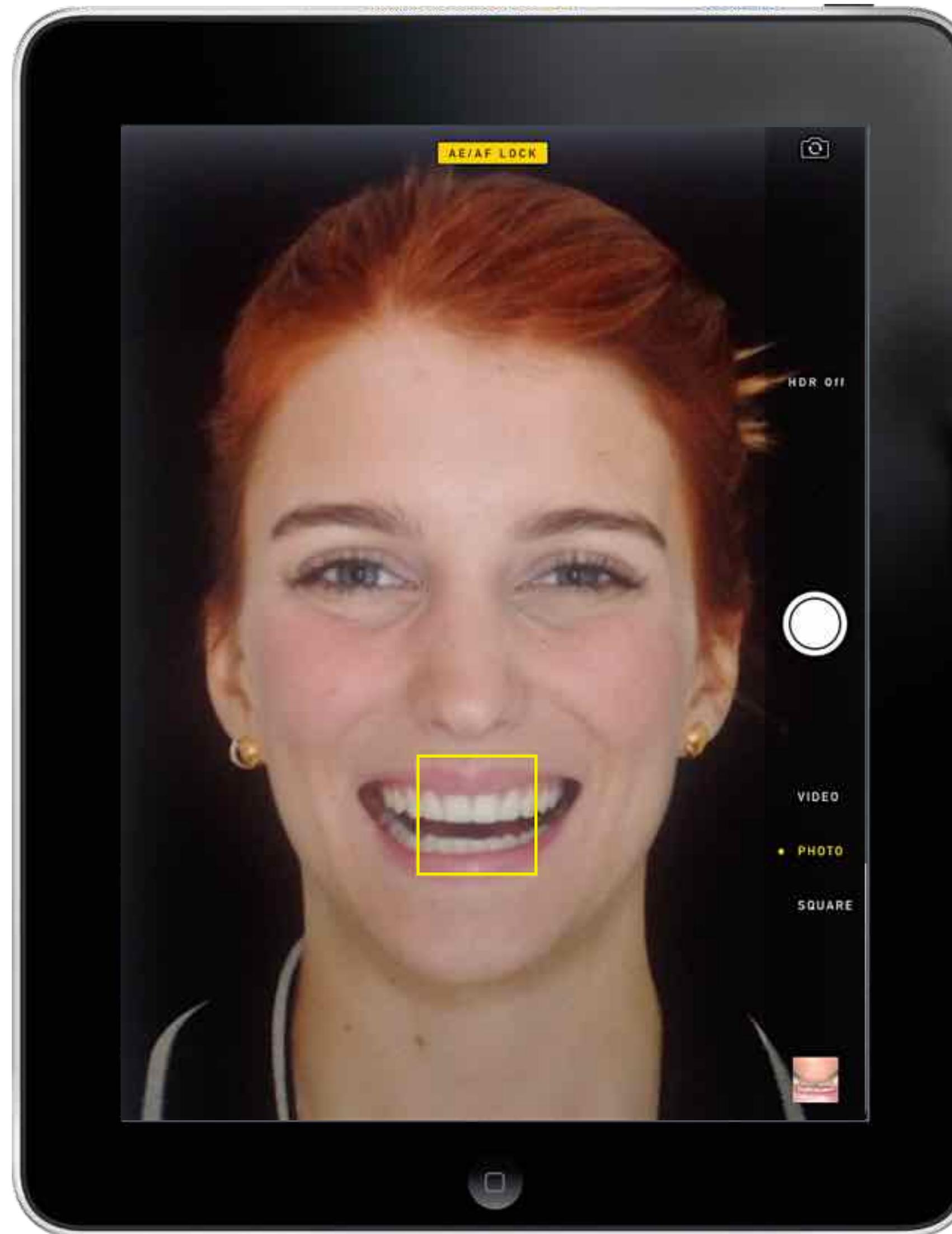




Focus

With iPad/iPhone:

1. Adjust the digital zoom to fit the whole face on the screen
2. Click and hold over the mouth until the yellow square blinks 2 times and fixes the focus and exposure. A yellow window will show (AE/AF LOCK).
3. Take the photo.



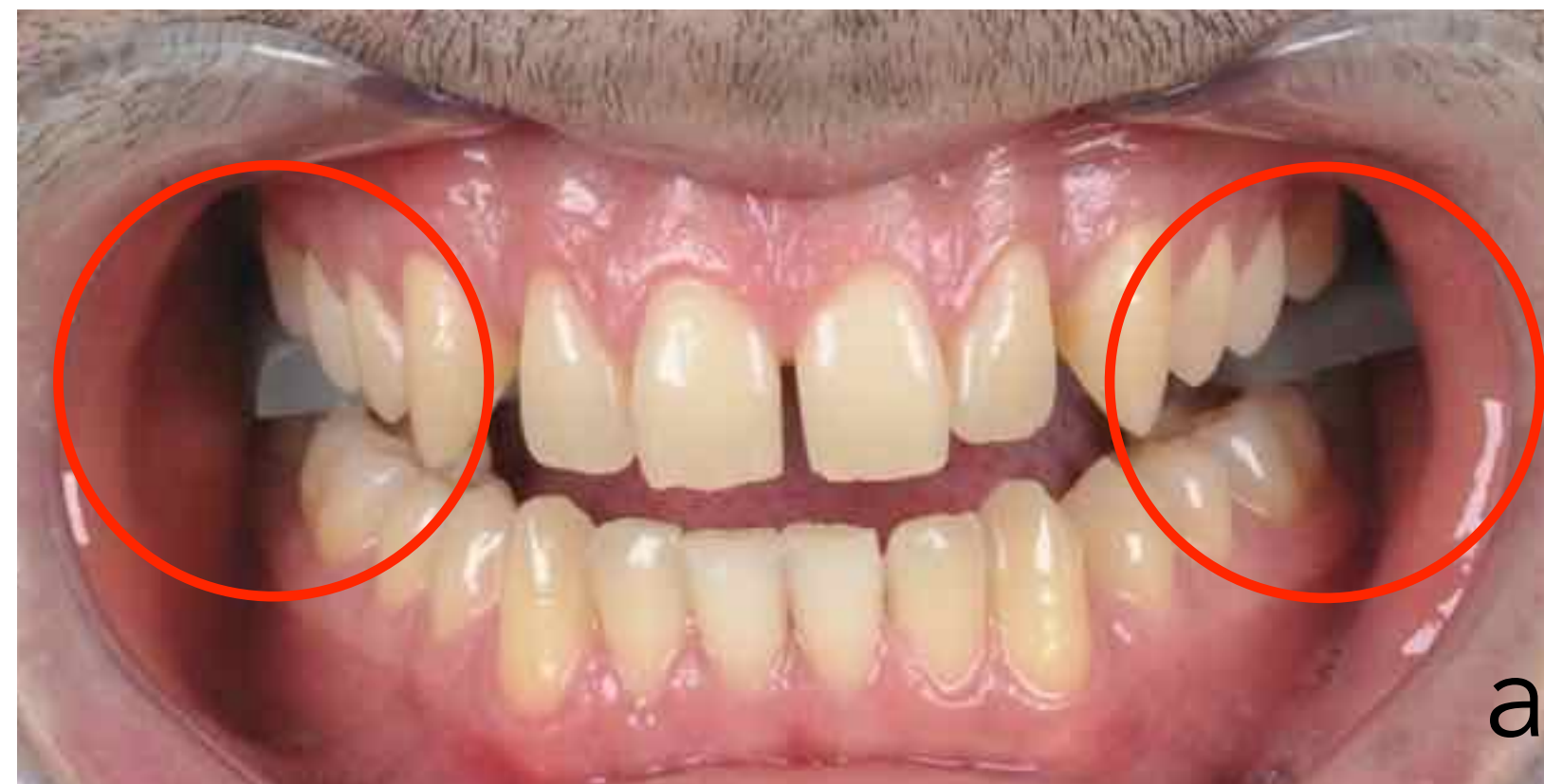
Facial Frontal

Both frontal photos should have the teeth apart for better:

- Visualization of the esthetic issues
- Visualization of lower teeth
- Visualization of drawings and simulation

To keep the teeth apart similar on both photos, the patient should bite a jig on the molar area (a), made of silicone (b) or the disposable flexible plastic suction (c).

If using the suction device one should cut the tip of (red line) and leave a similar length of the diameter of the arches on the molar area.



Facial Frontal



a



b

The relation between the camera and the patients face should be the same on both frontal photos so the teeth position are as similar as possible. This way both photos can be precisely overlapped during the DSD drawing process.

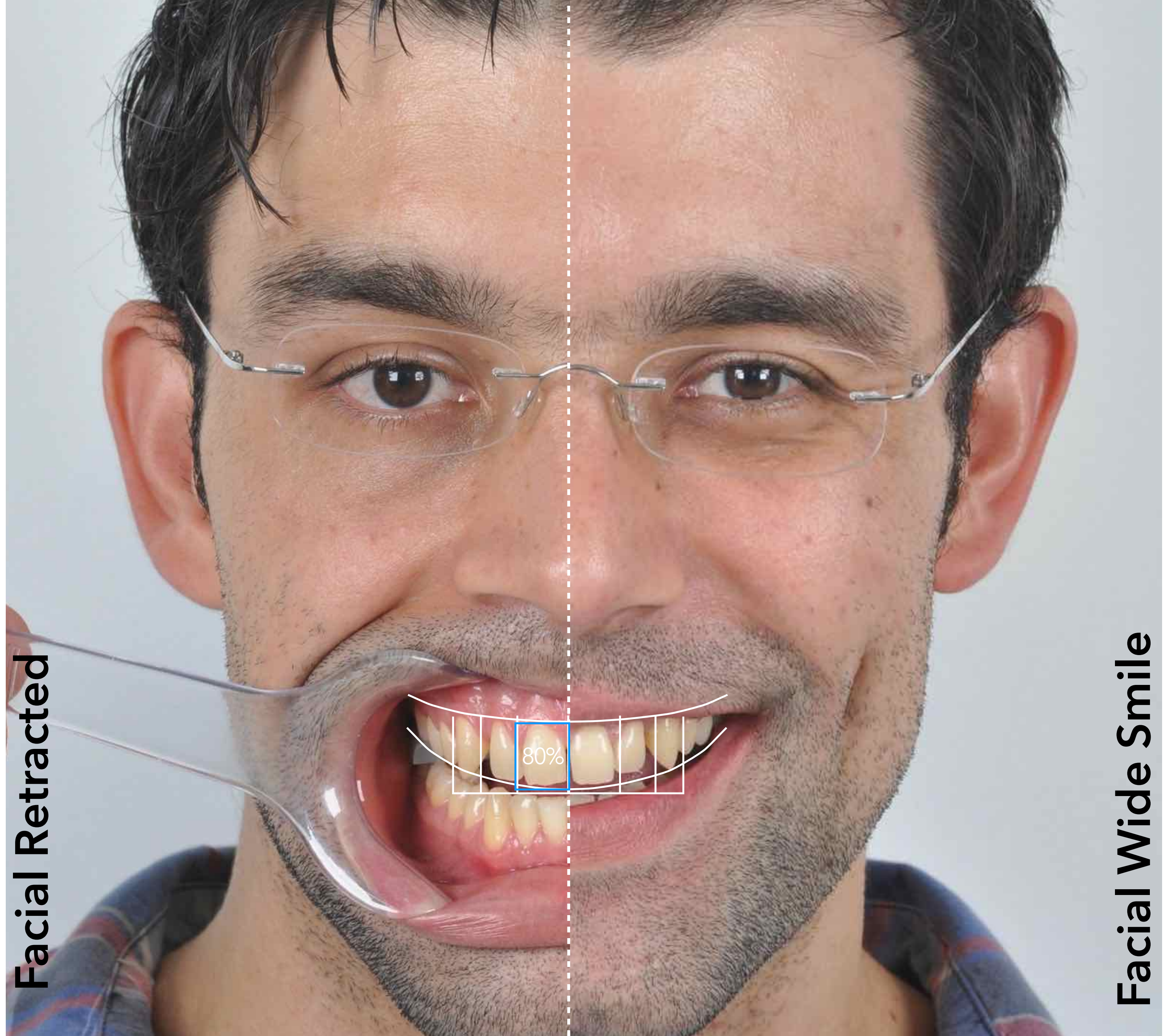
A glove box is placed behind the patient head to keep it stable.

First photo to be taken is the retracted photo (a) and after the smile photo (b) because its easier for the patient to remove the retractor without moving the head than to put the retractor without moving.



Facial Frontal

Having both photos on a similar position allow us to overlap the images and transfer the drawings from extra oral to intra oral.



Facial Profile



Facial Profile

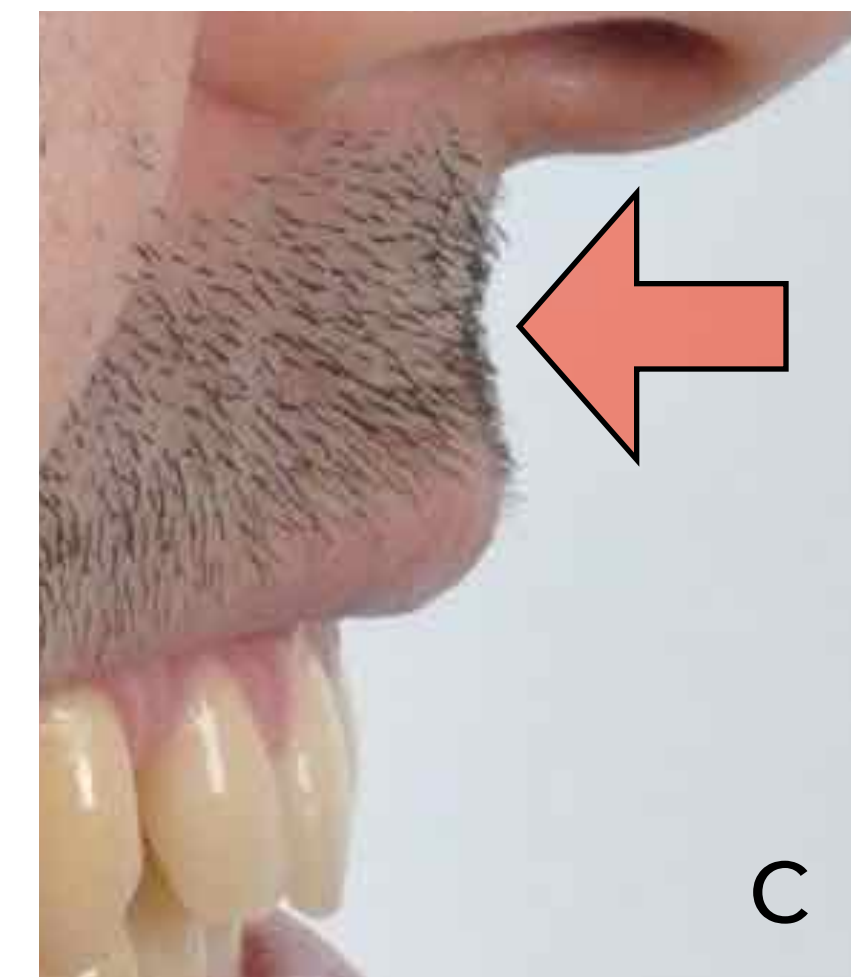


2 profile photos are made. Smiling and at rest.

Make sure the patient is smiling with the upper teeth close to the lower lip (a).

Make sure the patient has the lips apart on the rest position (b).

Make sure the profile position is correct by making sure that both sides of the filtrum are aligned (c).



Facial Profile

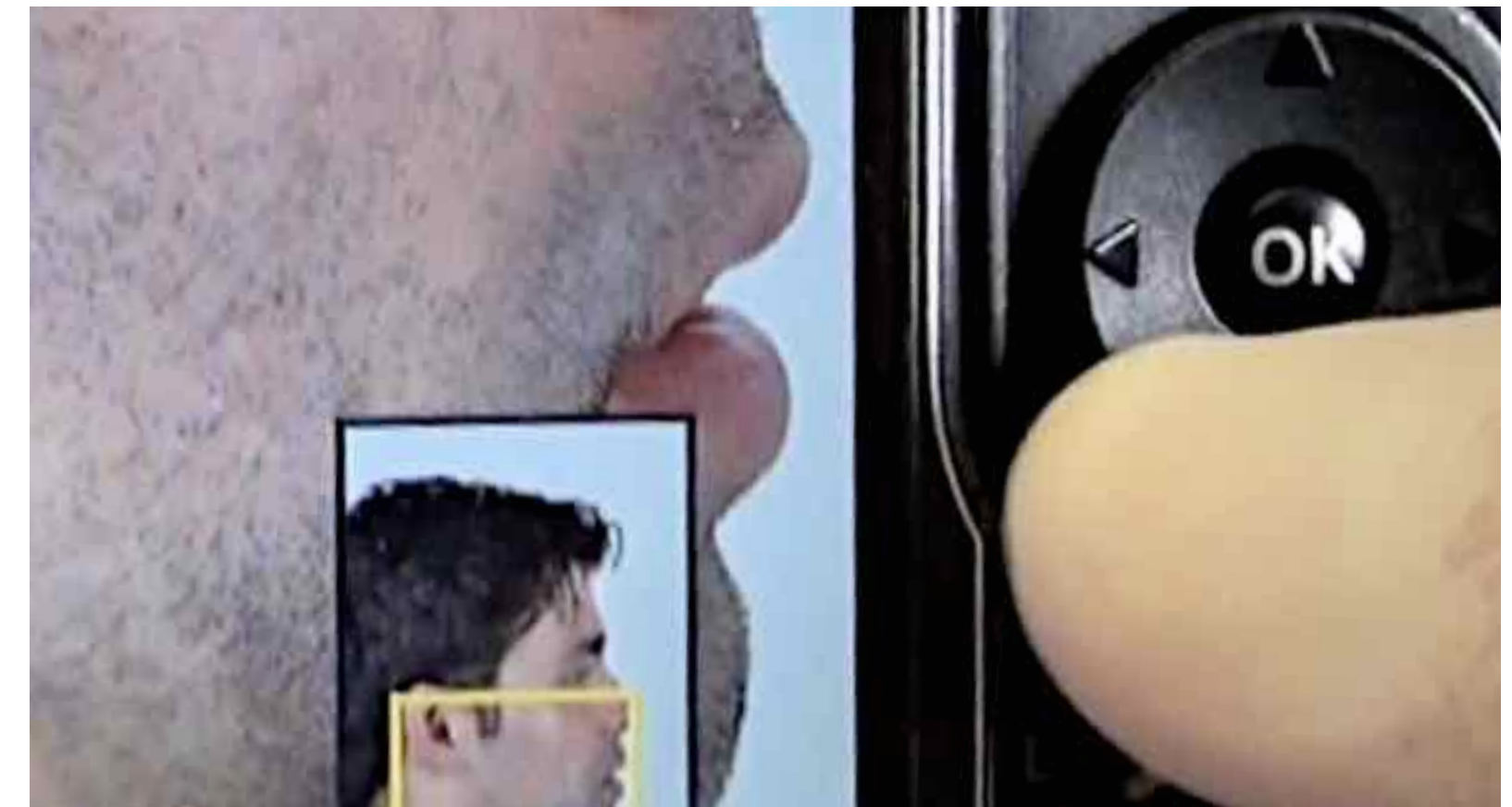
The same strategy for the profile photos. Checking the focus by zooming in to the photo.



Photo is taken. Face is very small on the screen.



Zooming in to the mouth



Checking the focus on the lip area.

12 o'clock photo



12 o'clock photo

The 12 o'clock photo is one of the most important angles to be analyzed for a good smile design process integrated with the face.

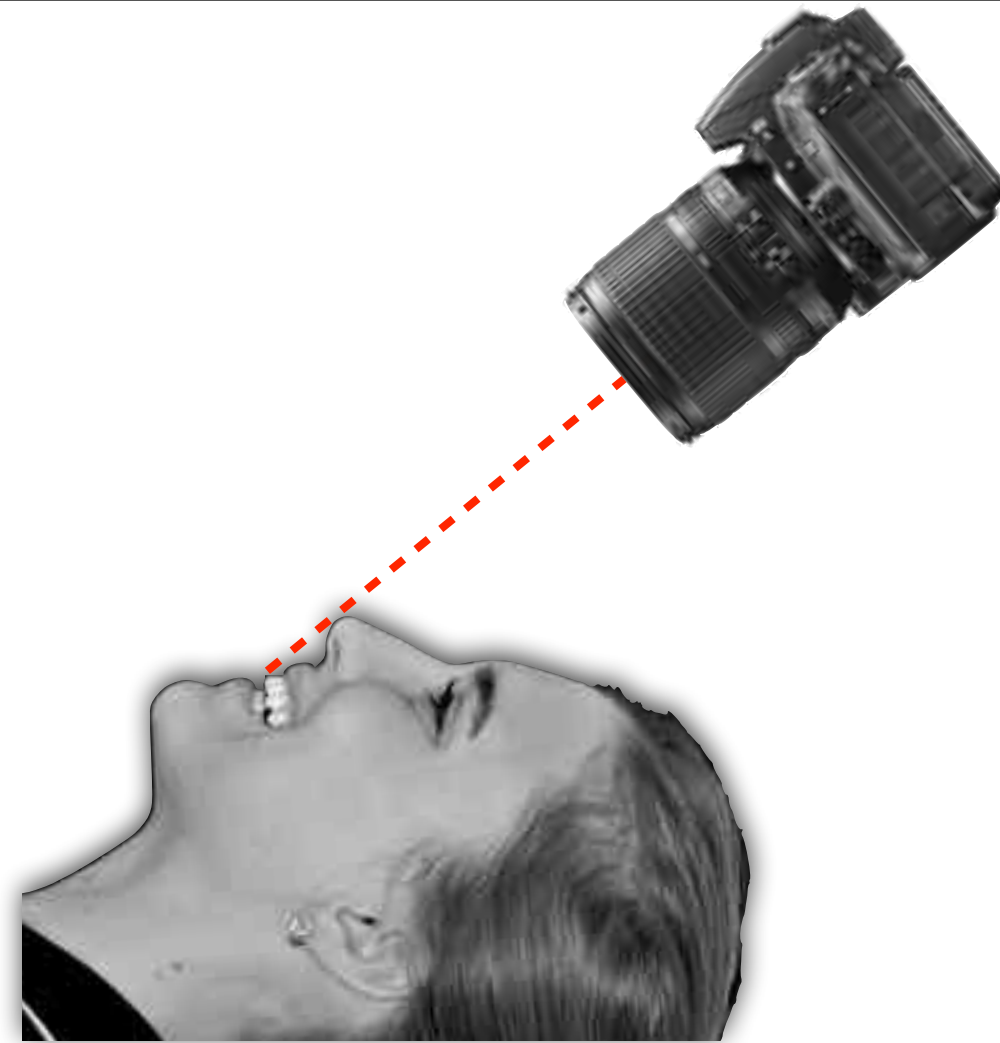


1. Make sure the eyes, chin and angles of the mandible are in the photo.
2. The patient should be looking to the camera.
3. The photo should be taken from the most coronal position without having the nose covering the teeth.
4. The patient should be smiling with the lower lip almost touching the upper teeth.

12 o'clock photo

This photo can be taken in 2 ways:

1. On the dental chair, with the patient on the most flat and low position and the photographer from behind. The patient will look back towards the camera without moving the face back.



2. With both, patient and dentist, seating on the dental stool. The patient will lean forward, supporting the elbows on the knees and look up towards the camera keeping the face down.





12 o'clock photo



When using a DSLR camera, the same strategy for the 12 o'clock photo. Checking the focus by zooming in to the photo on the teeth area. Be careful not to have the best focus on the nose and the teeth slightly out of focus.

Occlusal photo



Occlusal photo

Model or Intra-Oral

The occlusal photo for DSD can be taken intra orally or from the model.



Intra oral occlusal photo for DSD:

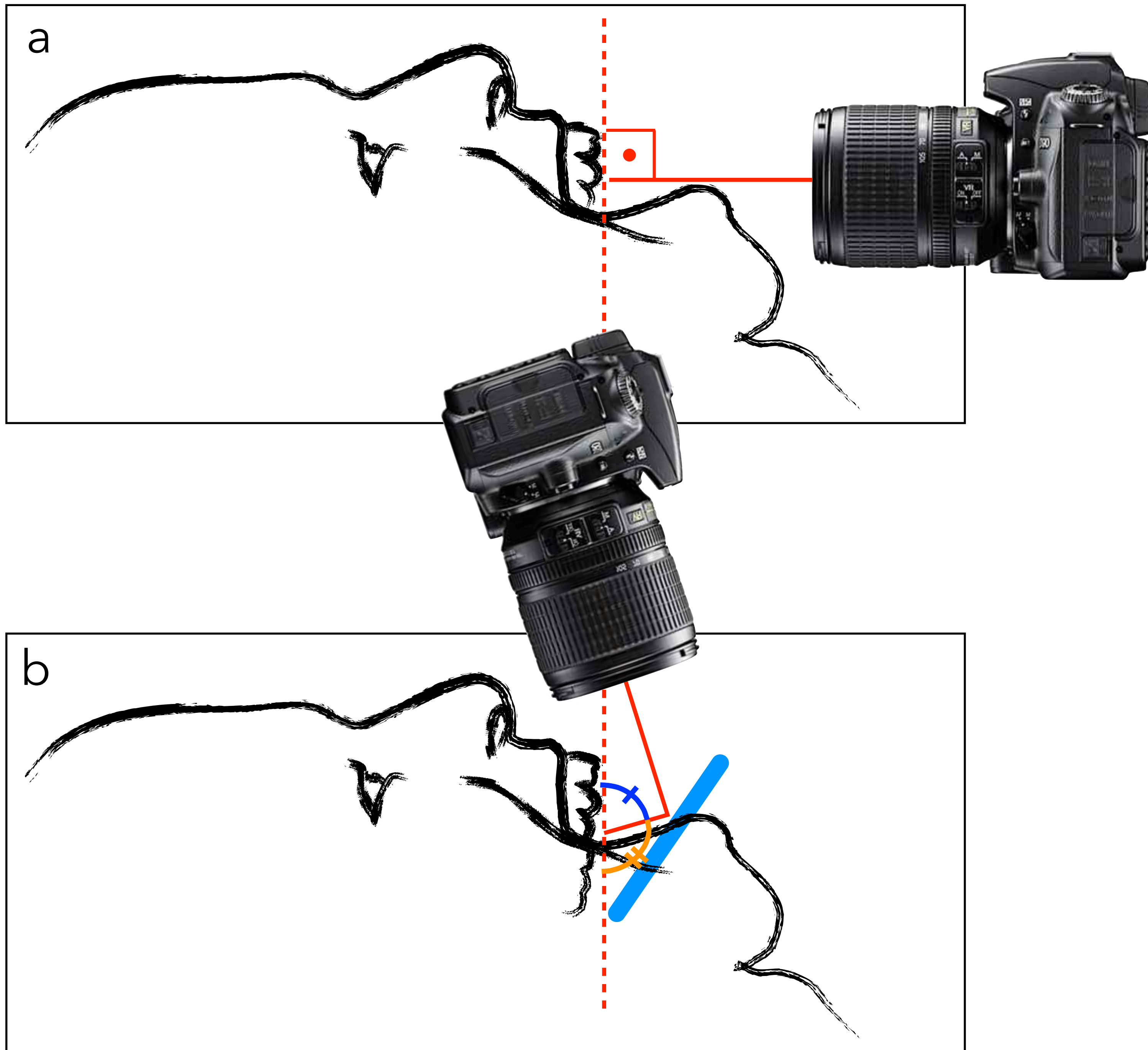
Without mirror, to avoid distortions and angulations that will harm the analysis and measurements. Without the mirror usually the photo will show from bicuspid to bicuspid, enough for the DSD analysis. Occlusal photos with mirror are important and can be taken afterwards, not necessary for the DSD process.



Model occlusal photo for DSD:

Make sure the model has the whole palate so the rafe can be seen and work as a reference for the camera angulation.

Occlusal photo

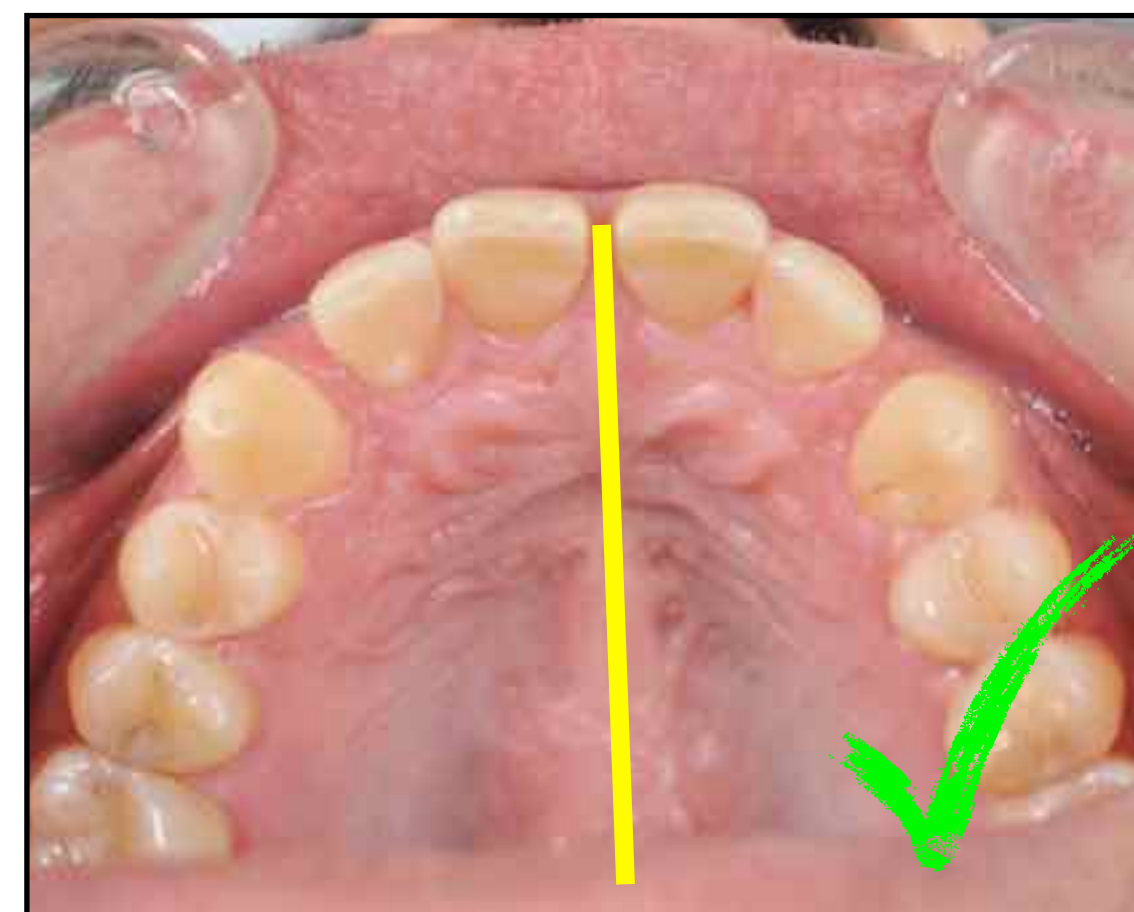
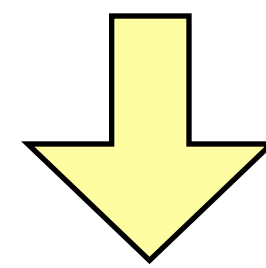
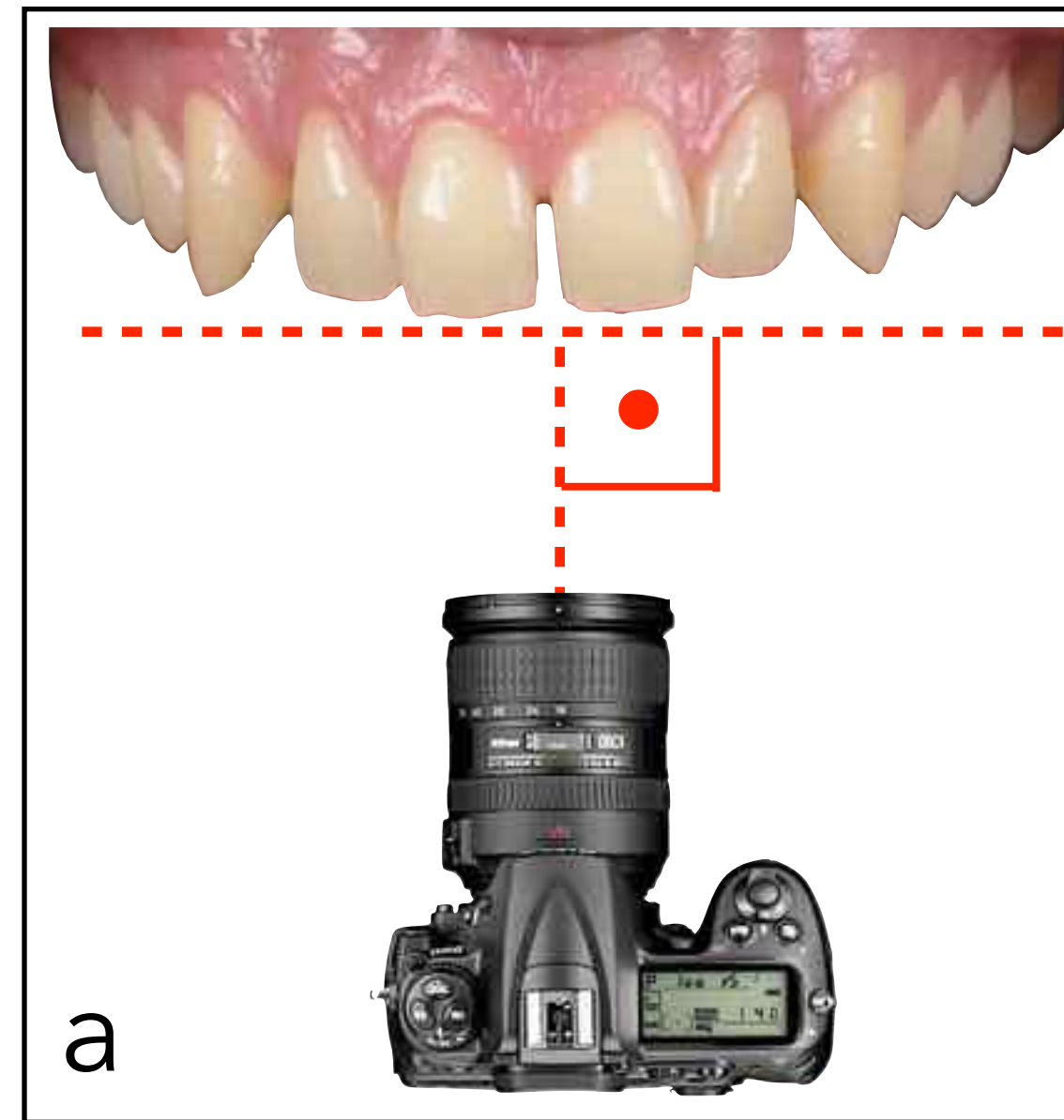


The most important is to have the photo camera perpendicular to the occlusal plane (a), only possible without the occlusal mirror, either doing a intra oral direct photo from the angle shown on the diagram or taking a photo from the model.

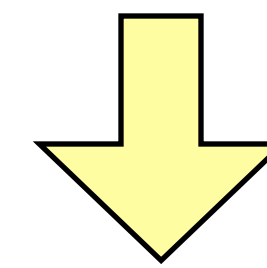
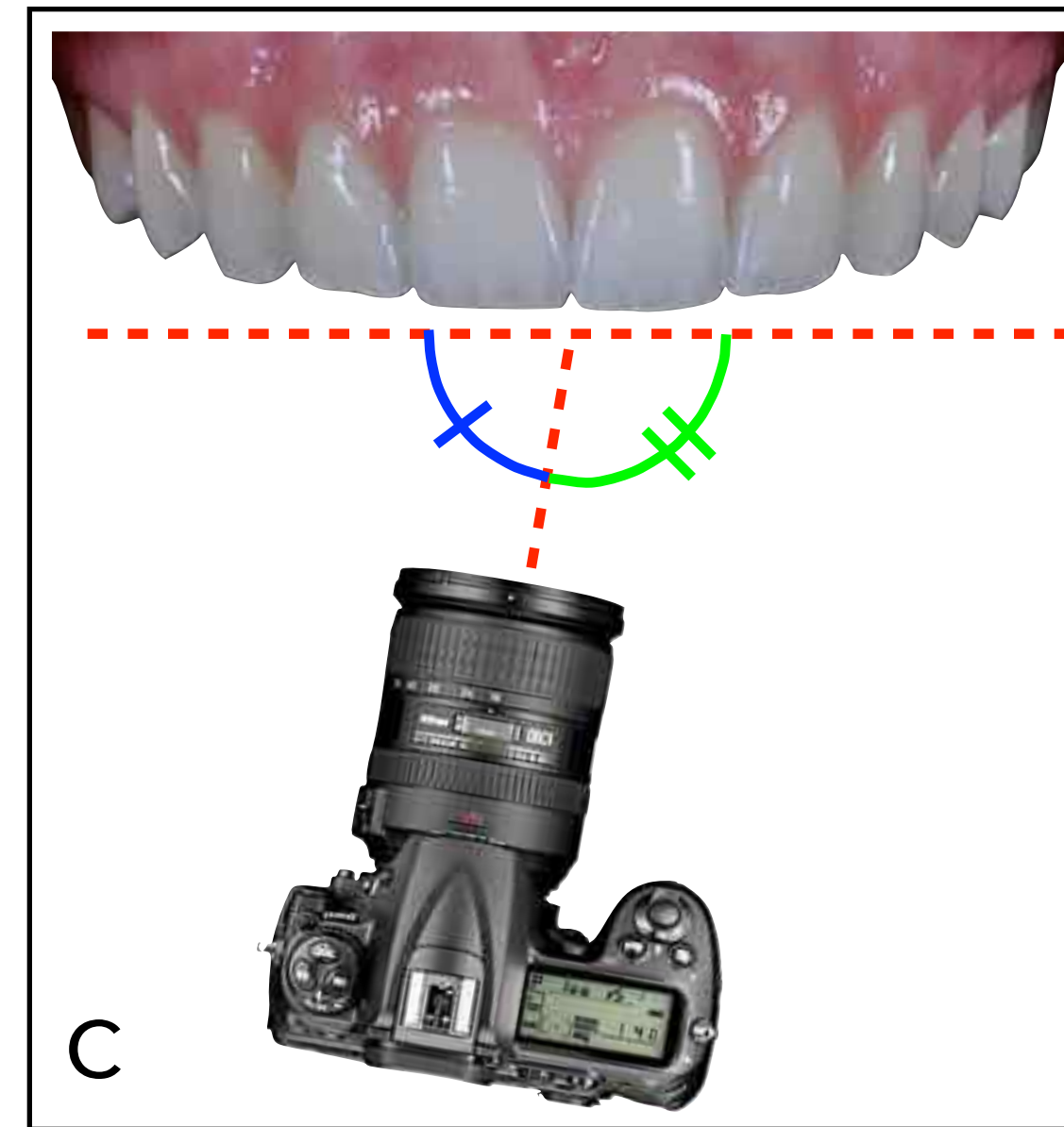
With the mirror (b), the distances between the camera and the teeth will be different harming the occlusal measurements of the DSD analysis.

Occlusal photo

The occlusal photo needs to be taken with the camera on a perpendicular angle with the occlusal (a) plane so the Palatine Rafe is seen as a straight line (b) not a curve. Having a canted line is not a problem because one can fix it by rotating the photo on the computer. The photo with the straight Rafe will facilitate the calibration of this photo with the other photos and will allow for a more precise dento-facial DSD evaluation.



b



d

If the occlusal shot is not taken with the camera on a perpendicular angle with the occlusal plane (c), the Rafe will be seen as a curve (d) and will not allow for a good calibration with the frontal and 12 o'clock photo, harming the dento-facial DSD analysis.

Doing the occlusal photo without the mirror allows for more precision (photo b). Occlusal photo with the mirror increases the chances of making the mistakes mentioned (photo d).

Occlusal photo

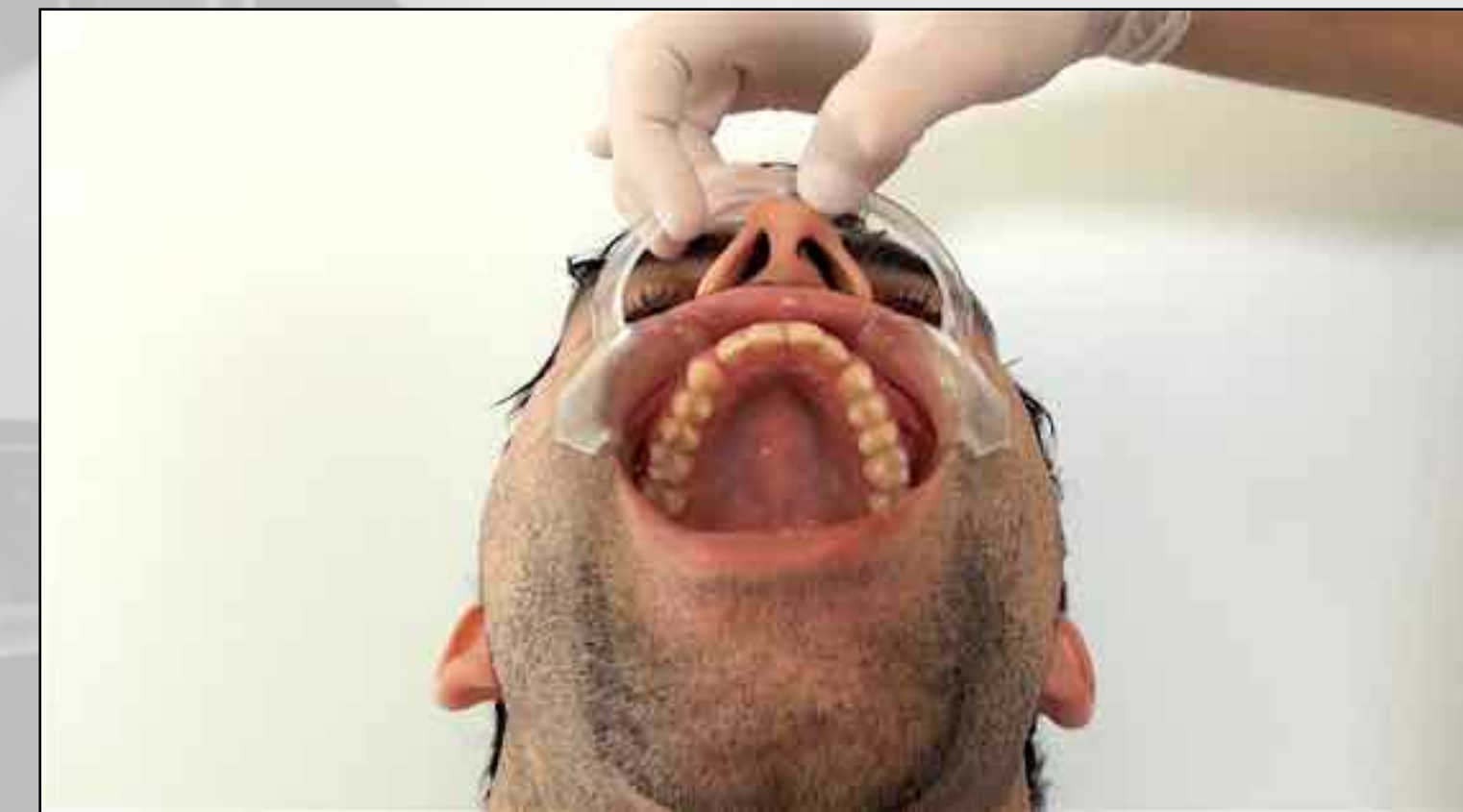
The easiest way is to also do it on the dental stool, with the patient holding the retractor, leaning back and opening the mouth as much as possible (a). The best retractor to take occlusal photos with or without mirror and also to take intra oral photos with black contrasters (b), it allows for ideal retraction, great visualization (c) and no interference with the occlusal mirror and contraster when using them (www.photomed.net).



a

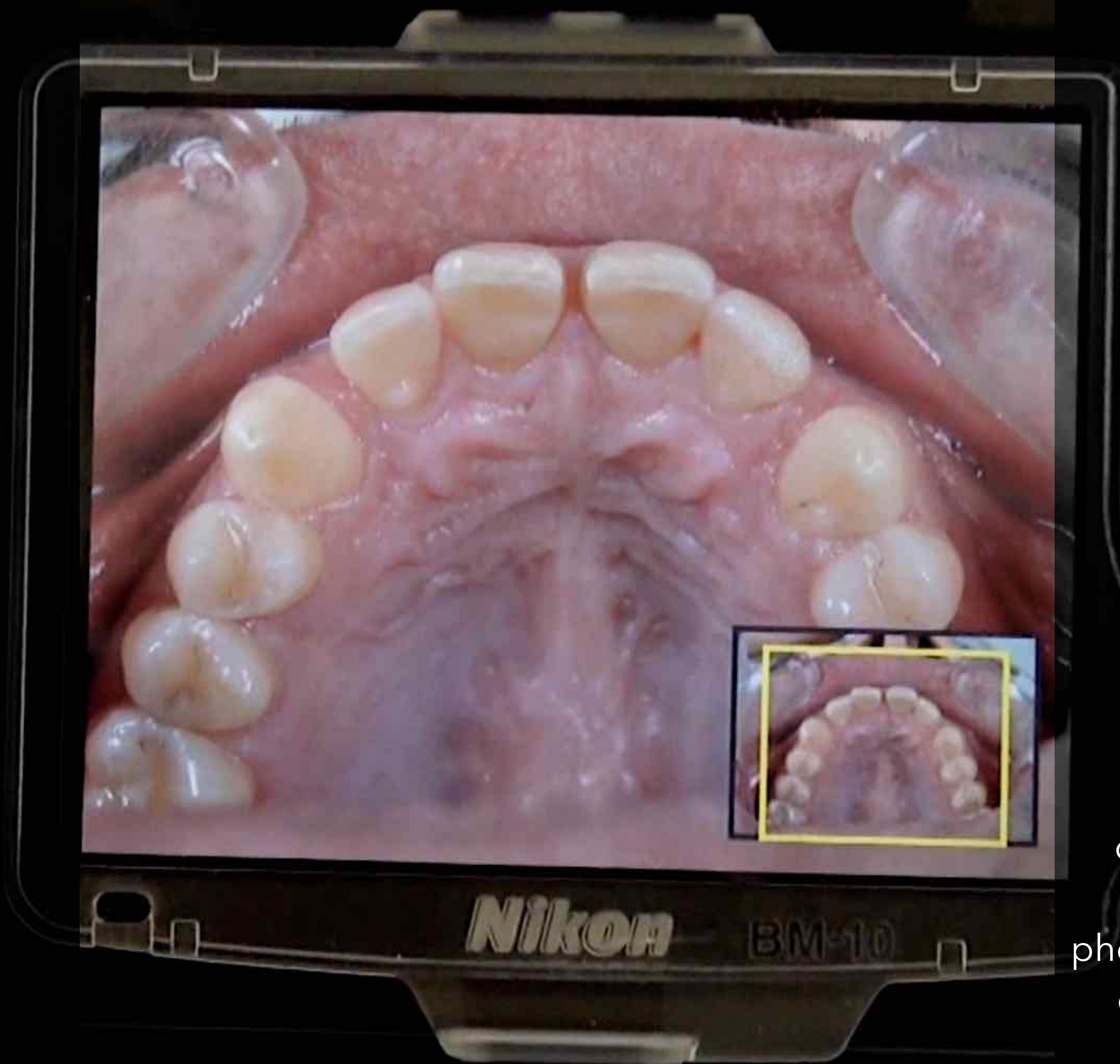


b



c

Occlusal photo



When using a DSLR camera, the same strategy for the occlusal photo. Checking the focus by zooming in to the photo on the teeth area. On the occlusal photo also checking the Palatine Rafe line.

