

# Advantages and Disadvantages of 3-Dimensional Photography for Cosmetic Procedures



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Photography is essential in the documentation of cosmetic procedures. Before and after photographs establish a baseline and illustrate patient progression. New 3-dimensional (3-D) photographic technology gives clinicians enhanced options that extend beyond simple 2-dimensional (2-D) photography. Based on my experience, I have pinpointed some of the advantages and disadvantages of adopting 3-D photographic technology for use in cosmetic dermatology.

## Advantages of 3-D Photography Image Quality

A typical 2-D digital camera will capture images at a resolution of 6 to 12 megapixels. In contrast, a leading 3-D camera system will capture images at a 36-megapixel resolution. The increased detail of 3-D photography allows for greater magnification of images without compromising visual clarity.

## Ease of Image Capture

A 2-D camera system requires that a series of photographs be taken for each before and after session. Prior to the procedure, the clinician must plan various camera angles required by the documentation standards of the practice.

Postprocedure photographs must be carefully aligned with the preprocedure photographs to ensure consistency of camera angles, tilt, lighting, and distance. Capturing the preprocedure and postprocedure images can be time consuming and yield inconsistent results. A leading 3-D camera system only requires that a single image be captured for each session, both before and after, and the clinician can view all possible angles by rotating the digital 3-D image. With a 3-D system, before and after photographs are automatically aligned.

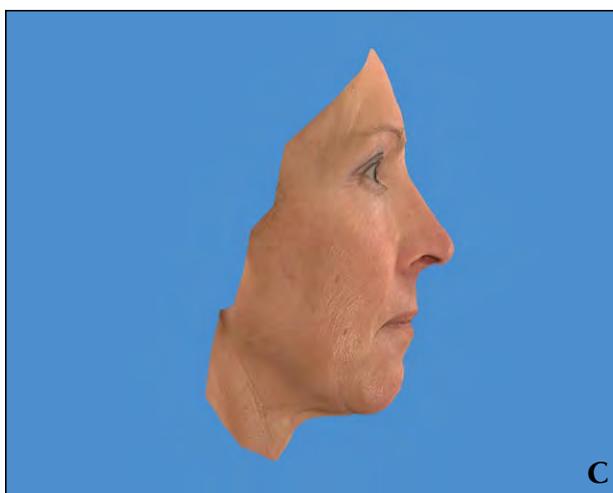
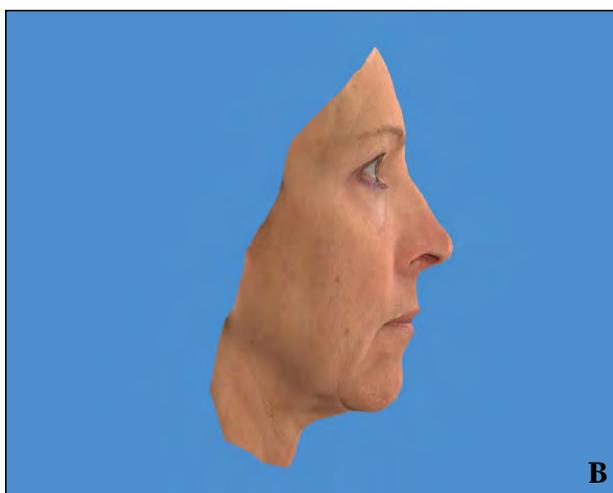
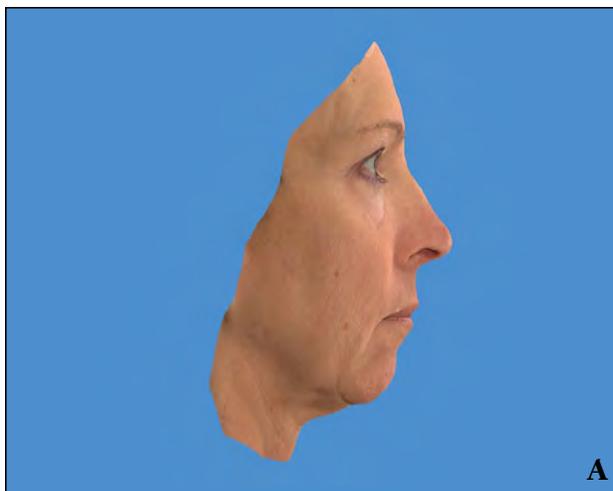
## Volumetric Simulation and Evaluation

Virtual procedure simulations are highly useful in the consultative process with clinicians and patients. The adage “a picture is worth a thousand words” holds true for patients who are contemplating a cosmetic procedure. Some advanced 2-D camera systems enable simulation and evaluation of surface-based procedures, whereas 3-D camera systems add to this capability by enabling clinicians to simulate and evaluate volumetric-based procedures.

*Example: Volumetric Simulation*—A clinician takes a baseline 3-D photograph of a patient considering calcium hydroxylapatite injections in the chin. The image then is manipulated to simulate the effects of the injectable filler. The amount of correction is adjusted in real time until the patient is satisfied with the simulated results. The simulated image then is compared to the original image to illustrate the volumetric difference. This photographic analysis can give an indication of the amount of filler required to achieve the desired results shown through 3-D simulation (Figure).

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When 3-dimensional photography is used in a cosmetic practice, the clinician can take a baseline photograph (A) that can be manipulated to simulate the effects of treatment (B). The simulated results from the 3-dimensional image are similar to the actual results, which are demonstrated in a postprocedure photograph (C). These images reflect volumetric simulation.

*Example: Volumetric Evaluation*—A clinician takes a baseline 3-D photograph of a patient who is undergoing a CoolSculpting (Zeltiq Aesthetics, Inc) procedure. The patient returns to the office 8 weeks after the procedure to be photographed again. The postprocedure photograph is compared to the original baseline photograph to demonstrate the degree of volume reduction in the targeted area of the body.

### Marketing

The novelty of 3-D photography provides a marketing opportunity for the cosmetic practice. Early adopters of 3-D photography differentiate themselves from competitors while building a brand enhanced by advanced technology. Patients who are impressed by new 3-D techniques may spread positive feedback throughout the community. Some practices may even choose to market 3-D photography as a service provided to patients.

### Presentations

Clinicians may take advantage of animation functionality for use in presentations. Using a leading 3-D photography system, any series of images can be animated. These dynamic animations can show simulated progress from preprocedure to postprocedure, which can be incorporated into PowerPoint or other presentation formats.

### Disadvantages of 3-D Photography

#### Image Capture Location

Three-dimensional camera systems typically are larger than 2-D camera systems and require that all photographs be captured in the same physical location within a practice. Practices with space constraints may find this physical limitation to be burdensome. By comparison, clinical staff can easily move handheld 2-D digital cameras from one physical area of a clinic to another.

#### Image Rendering Time

Images are captured efficiently on a leading 3-D photography system; however, after a photograph is taken, it must be rendered before it can be viewed and manipulated. This process takes at least 3 minutes per image, even using high-end graphics hardware. The camera cannot take additional photographs during the rendering process, which may frustrate a busy clinician and create procedural bottlenecks within the practice.

#### Imaging Idiosyncrasies

A leading 3-D photography platform exhibits some peculiarities compared to 2-D technologies. With 3-D photography, patients cannot show teeth when smiling, as 3-D

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software does not realistically render teeth. Also, 3-D camera systems are sensitive to cosmetic makeup and clinic staff must diligently enforce a clean-face policy. Patients may find it annoying to have to wash off makeup for 3-D photographs.

### Required Technology Investment

A clinic choosing to fully implement 3-D photography will incur substantial up-front expenses. In addition to the cost of the 3-D photography system itself, the practice also must invest in peripheral technology. These investments may include expanded data storage for large 3-D image files and upgraded graphics processors for all computers where images will be viewed. Many tablet computers are incapable of rendering 3-D images, even if the tablet computers are maximally upgraded.

### Summary

A clinician should analyze the current or projected business plan for his/her practice before investing in 3-D imaging technology. A practice with a procedural focus requiring volumetric-based simulation and evaluation would benefit most from 3-D photographic capabilities, and a practice with one centralized location could minimize the cost by purchasing a single 3-D camera to capture all images. A practice with an existing network and computer infrastructure also may require less incremental spending to implement 3-D imaging technology. If the clinical staff is technologically savvy, adding a 3-D camera system to your practice will be easier. Overall, the clinician's goal should be to determine if 3-D imaging technology would positively differentiate his/her clinic in the competitive procedural market. ■



### Quick Poll Question

Do you use 3-dimensional photography for cosmetic procedures in your office?

- Yes
- No

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