



Should Mirrorless Cameras Be the New Standard in Dental Photography?

Miguel A. Ortiz, DMD, MS

Abstract

High-quality cameras have become a necessary part of the dental practice; the images they capture are invaluable for patient records and communication between members of the interdisciplinary treatment team. These cameras also combine our clinical and artistic talents through imagery. There are so many different cameras, lenses, and photography accessories to choose from that it can be hard to determine what is needed to get the desired result. Advances in technology bring more complexity to our decision making to determine what will fit our needs and preferences. This article will explain the differences between digital single-lens reflex and mirrorless cameras for different uses in dental photography.

Key Words: dental photography, digital single-lens reflex (DSLR) camera, mirrorless camera, photography tips and comparisons

mirrorless

Introduction

“Progress” does not move in a linear fashion; rather, it zigs and zags, jumps forward and steps back. As dentists, we learn not to automatically embrace every new device and trend in our industry, but sometimes, the change is for the better. The key is knowing exactly what is needed and how to achieve it.

High-quality cameras have become an essential part of the dental arsenal. We need them not only for patient records but also to preserve and communicate case details to colleagues and technicians. Our photographic demands are unique. The human mouth is an amazing and challenging canvas—the same camera that vividly captures landscape or cityscape details, for example, may be stymied by the intraoral protocol.

Photography is in the midst of an equipment revolution and mirrorless cameras are being positioned as the new standard in excellence. But does that mean it is time to recommend mirrorless cameras as the new standard in dental photography? Over an 18-month period I evaluated, both in clinical practice and during my dental photography courses, the three main mirrorless camera setups that should be considered for dental photography and am ready to share my conclusions.

The three brands of digital single-lens reflex (DSLR) and mirrorless cameras that most people are familiar with are Sony (New York, NY), Nikon (Melville, NY), and Canon (Melville, NY) (Fig 1). As this article compares and contrasts their ability to meet your needs as a dental photographer, keep in mind the attributes that are most important: a camera that takes beautiful photos, is easy to use in a busy practice’s daily schedule, that all your assistants can use, and that will not break the budget, such as the Canon EOS RP mirrorless camera coupled with Canon’s classic 100-mm macro lens (Fig 2).

The Differences Between DSLR and Mirrorless Cameras

DSLR cameras are not that different from the film-based SLR cameras of the past. All SLR cameras use a mirror to reflect the image that comes into the lens onto the viewfinder. If the image is reaching your eyes, it means it is not reaching the sensor inside the camera. When you take the picture by pressing the shutter-release button, the mirror flips up and reflects the light onto the film, which in turn captures the image. A DSLR uses the same mechanism to capture the image, except the film is replaced with a digital sensor. It is essentially a digitally enhanced version of classic technology.

In contrast, mirrorless cameras like the Nikon Z series, Canon EOS R series, and Sony α7 series all capture a “live view” directly onto their digital sensors. The sensor then sends the information to the camera screens—no reflections, no mirror system, and no optical viewfinder. Instead there is a digital viewfinder, which is a little digital screen inside the window where the eye rests. While this more straightforward design seems better at first glance, there are several practical differences that drive the debate: size, weight, sensor size (full versus cropped frame), lens availability, battery life, viewfinder, focus capabilities, and, most of all, price.

Both DSLR and mirrorless cameras are capable of excellent dental photography, so there is no need to automatically replace your current model. However, if you are interested in upgrading, the following information will help you to assess and form an educated opinion regarding your needs.



Figure 1: Left to right: Sony α7 III, Nikon Z7, and Canon EOS RP.



Figure 2: The EOS RP, Canon's affordably priced answer to the Nikon Z and Sony $\alpha 7$ series.



Figure 3: Relative sizes of the Nikon D850 DSLR and its mirrorless counterpart, the Nikon Z7. The size and weight difference cannot be ignored in dental photography.

Size and Weight

Unlike recreational photographers, dental photographers have to juggle patient comfort, retractors, contrastors, and even mirrors while taking professional quality photos, often while holding the camera with only one hand. Mirrorless cameras are smaller, lighter, and easier to handle than DSLRs, which many dentists and dental assistants find too bulky, heavy, and difficult to maneuver. Because ease of handling is so critical, mirrorless cameras offer a significant advantage for dental photography (Figs 3 & 4).

Sensor Size

Another benefit of mirrorless cameras is that most of the models discussed here are of the full-frame variety. This difference is crucial for dental photographers. All but the most expensive DSLR models have cropped sensors, which means that the image captured is already zoomed in (with the edges cropped off) (Fig 5). How zoomed in are you with a cropped-frame versus a full-frame camera? Cropped-frame cameras are as much as $\times 1.5$, or 50% more, zoomed in than is needed. Add a macro lens to the mix, as is necessary for the extreme close-up aspect of intraoral photography, and the image will capture even less of the subject. Simply put, most dentists use cropped-frame cameras, which means they are in a zoomed-in position from the start, making the intraoral protocol even more difficult. This is an especially crucial point if you are not a tall individual, as a cropped-frame setup forces you to stretch in order to get a wider view of the mouth. While this is not a concern with most other types of photography, for dentists it is a critical distinction. Being so zoomed in makes our work unnecessarily difficult. Full-frame cameras do not artificially zoom in, so they are far more useful in dentistry (Fig 6).



Figure 4: Overhead view of the Nikon Z7.



Figure 5: A cropped-sensor (frame) Canon T series camera with its relatively small sensor. Cropped-frame cameras make dental photography much harder due to artificial zoom in.

Tips for the Dental Photographer

BEGINNER

- Don't buy gear based on colleagues' recommendations.
- Take a dental photography course, in person or online, before making a purchase.

INTERMEDIATE

- Take an in-person dental photography course.
- Practice the dental photography techniques you have learned and when you are done, keep practicing.
- Don't be afraid to replace photography gear as you learn that there are better ways to achieve great results.

ADVANCED

- Play with light, texture, and shadows.
- Don't become dogmatic. Be flexible—what you know today can improve or change quickly.
- Keep practicing, you can only get better.

“...most of the objections professional photographers have to mirrorless cameras... do not apply to dental photography.”



Figure 6: The new mirrorless Canon EOS R. The body is significantly smaller than the T series, and it has a full-size (full-frame) sensor. Dental photography is much easier when there is no artificial zoom in.

Lens Availability

Some photographers argue that the newer mirrorless cameras have fewer lenses available. While this is essentially true, the dental photographer needs only to have a great macro lens. With a simple and inexpensive adapter, we can find exactly what we need (Figs 7 & 8). And as technology advances, this issue will no longer be a factor.

Battery Life

Battery life is another concern for some photographers who are considering an equipment upgrade. While a DSLR can take about 800 shots per battery charge, mirrorless cameras are capable of approximately 250 pictures before needing a recharge. In a dental office, 250 pictures per session is more than enough.

Viewfinder

Another difference to consider is the viewfinder itself. This is more a matter of personal preference rather than an issue of quality. The mirrorless viewfinder is different, not inferior. Some photographers hate it, some love it. The most vigorous opposition comes from veteran users who find the change off-putting. Dentists, however, might not even notice the change—all that matters to us is that it works.

Focus Capabilities

For those taking action shots DSLRs may have the advantage, but this obviously is not an issue in dental photography. In fact, most of the objections professional photographers have to mirrorless cameras—lens availability, battery life, viewfinder preference and focus capabilities—do not apply to dental photography. Mirrorless cameras are just as capable as DSLRs in the ways we need (Figs 9 & 10).



Figure 7: The Canon EF/EF-S lens mount (adapter), which allows most available Canon lenses to connect to the Canon EOS R mirrorless series.



Figure 8: The mirrorless Nikon Z with the FTZ lens adapter and 105-mm Nikon micro lens.

Price

The final issue in the debate is price. It is true that mirrorless cameras are expensive, but they are not as costly as their DSLR counterparts. While cropped-frame DSLRs can be quite affordable, a full-frame version will cost significantly more, sometimes thousands of dollars. Mirrorless cameras put the best option within easy reach.

Mirrorless cameras cost a little more than a cropped-sensor DSLR, but the gains in field of vision will make your intraoral protocol so much easier that it is worth the slightly higher price. I have taught more than 2,000 colleagues in my dental photography courses, and everyone who tries a full-frame camera for the first time during the intraoral protocol is amazed: no need to stand on tiptoes, no arm stretching, and no suffering.

Summary and Recommendations

After thoroughly testing mirrorless setups for 18 months I highly recommend mirrorless cameras over DSLRs for dental photography. My preferred cropped-frame mirrorless camera is the Nikon Z50 in combination with the Nikon 85-mm f/3.5G AF-S DX Micro ED (VR-II) lens (note that this setup will save you money, but you will be unnecessarily and artificially zoomed in). If you can afford a bit more, the Nikon Z6 with the Nikon 105-mm f/2.8G ED-IF AF-S VR micro lens is a superior option and well worth the additional expense. Its size, quality, price, user interface, battery life, and overall handling make this my top choice.

This is—literally—a beautiful time in dental photography. We can finally have a full-frame camera that allows for a much easier intraoral protocol, at a reasonable price and half the weight and size of DSLRs (Fig 11). Life has just become easier.



Figure 9: The Sony α7 III can be used with many macro lenses without an adapter. However, these lenses (minimum aperture of F20–F22) present a problem in dental photography. If your choice is Sony, I recommend the Sony 100-mm f/2.8 macro lens with its correspondent A-to-E mount adapter.



Figure 10: The small, sleek design of the Sony α7 III.

	COMPARISON	
	DSLR	MIRRORLESS
SIZE		✓
WEIGHT		✓
PHOTO QUALITY	Great	Great
LENSE AVAILABILITY	✓	Not an issue
BATTERY LIFE	✓	Not an issue
VIEWFINDER	✓	Not an issue
FOCUS	Great	Great
PRICE FULL FRAME	\$\$\$	\$\$\$
PRICE CROPPED SENSOR	\$	\$\$

Figure 11: Comparison of DSLR and mirrorless cameras.

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Dr. Ortiz is a dual-trained dental technician and prosthodontist, as well as an experienced dental photographer. He practices in Brookline, Massachusetts.

Disclosure: The author did not report any disclosures.