DENTAL
Digital Photography...
...Made Easier
Today’s Discussion:
Intra Oral vs Digital Camera
Which Digital Camera system?
Camera Settings
Photo Technique (my 5 photos on EVERYBODY)
  - White Balance reference photo*
  - Upper / Lower full Arch Occlusal Photos
  - Teeth together, & slightly apart (MIP)
Lighting to eliminate shadows (see “which camera system”)
Mirrors and Technique
Today’s Discussion:

White Balance – THE KEY to predictable photos

Raw Photo Conversion

Streamlining RAW → JPG conversion

Computer tips

Photoshop tips

Storage Considerations
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Mirrors and Technique
IntraOral vs Digital Cameras
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Mirrors and Technique
Marketshare of dSLR cameras 2010

2010 DSLR/iLC Global Market Share

Data: IDC via Bloomberg (chart at 1001noisycameras.com)
The big DENTAL players:

Canon
Nikon
Fuji
Sigma
Use ANY** Camera Body

Ringflash
Pointflash
Camera Bodies

Megapixels – bigger isn’t always better

I use a 4 Megapixel Camera body

Photos displayed on a 30” monitor to pts

Newer bodies capable of shooting video!
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Mirrors and Technique
Nikon

No longer makes ringflash!

You can use a SIGMA ringflash but *(not MY words)* it’s prone to shadows as the flash units are further away from the lens vs a Canon ringflash

You can use Nikon’s pointflash

but I’ve seen custom brackets fabricated to bring the two point flash units closer to the lens to recreate a ringflash
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Camera Settings
THE F WORD:

F-STOP
F-STOP & Depth of Field
Depth of Field – NOTE focus point, and 1/3 & 2/3 focus area

KEY – you don’t have to agonize and get viewfinder sharp before snapping photo, especially at F32!
Worth Repeating:

**KEY** – you don’t have to agonize and get viewfinder tack-sharp before snapping photo, especially at F32!
Inexpensive P&S cameras do **NOT** give a lot of depth of field **BECAUSE**……

• The F-Stop generally “maxxes out” somewhere around F₄ to F₈

**We need >F₂₂**
F 6.3 – note both out of focus posteriors ... and moustache
F 32 – in focus from moustache to 2\textsuperscript{nd} molars
KEY – you don’t have to agonize and get viewfinder sharp before snapping photo! Focus point is “somewhere near” centrals. Remember 1/3 front, 2/3 behind focus point).
ISO – use lowest setting
• The lower the number, sharper the picture
  • Signal-to-noise ratio
• Set it and forget it
• Higher ISO’s not needed in Dental Office where our lighting is pretty good
• (Higher ISO’s needed on cloudy days when photographing Bald Eagles and you need to increase the shutter speed!)
ISO – use lowest setting
• The lower the number, sharper the picture
  • Signal-to-noise ratio
  • Set it and forget it

**F- STOP** (it’s an inverse thing)
• F4.5: Little number = big aperture = shallow depth of field
• F 32: Big number = small aperture = deep depth of field
ISO – use lowest setting
• The lower the number, sharper the picture
• Signal-to-noise ratio
• Set it and forget it

F- STOP (it’s an inverse thing)
• F4.5: Little number = big aperture = shallow depth of field
• F32: Big number = small aperture = deep depth of field

**Shutter Speed**: 1/60 ~ 1/200 sec is fine for dentistry
ISO – use lowest setting
• The lower the number, sharper the picture
• Signal-to-noise ratio
• Set it and forget it

F- STOP (it’s an inverse thing)
• F4.5: Little number = big aperture = shallow depth of field
• F32: Big number = small aperture = deep depth of field

Shutter Speed: 1/60 ~ 1/200 sec is fine for dentistry
Camera Settings: We only use **TWO**:

These choices can’t shoot RAW
General Settings

“P”  Program Mode
- Camera does **ALL** the work
- Use for full face photos
- I allow camera lens to autofocus, too

“M”  you make all the decisions
- Use for close-up & intraoral pictures
- Lens is in ‘manual focus’, not autofocus (to avoid ‘hunting’)

“Av”  Aperture

“Tv”  Shutter speed

“Bulb”  Open until you click again
KEY: Canon Setup: Extra Oral (Portraits)

“P” Mode

- **Camera** determines
- **Shutter** (generally 1/60 sec)
- **F Stop** (4.5 to 5.6)

FLASH – ZERO “0” Exposure Compensation

Lens: **AUTOFOCUS**
“M” MANUAL MODE

F Stop: small aperture: 32
• Maximum depth of field
Shutter: 1/60 – 1/200
• Its irrelevant (unless you need more light)
• Caffeine consumption dependent (I use 1/200 sec)

FEC: FLASH: + 1 1/3 Exposure Compensation

LENS: MANUAL FOCUS
KEY: Nikon Setup
Mark, Aperture (A) priority for all exposures. Two aperture settings:
   All full face shots at F/8
   All close ups, including mirror shots, at F/32.

If exposures are not spot on adjust EV +/- on the flash unit. Flash setting for R1C1 flash: TTL + EV comp as needed. (once flash output is calibrated it will be the same for all f stops and distances-set it and forget it.).
Hope this helps.
Pat Beug
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photo technique (my 5 photos on EVERYBODY)
- (1) White Balance reference
- (2,3) Upper / Lower full Arch Occlusal Photos
- (4,5) Teeth together, & slightly apart (MIP)
Lighting to eliminate shadows (see “which camera system”)
Mirrors and Technique
TECHNIQUE
Upper and Lower Arch

Landmarks:
Upper: incisive papilla and raphe
Lower: lingual frenum
What NOT to do - #1

- Clean your nose!
- Watch lip
- Watch mirror borders
- Watch mirror size
What NOT to do - #2

Lower arch is generally difficult.
Note red line NOT following lingual frenum.
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Mirrors and Technique
The Right Way…
KEY: Mirror technique

Watch your ‘plane’

Occlusal photos – Don’t be afraid to push mirror against opposing arch

Buccal photos - Don’t be afraid to push mirror against the cheek, ESPECIALLY by 2nd molar!

Anterior and Teeth slightly separated - PLASTIC retractors

ARCH PHOTOS – METAL retractors

HINT: Place mirrors in HOT water in rubber bowl to keep from fogging

Pat Beug (NIKON DDS) recommends heating blanket, rather than using water
Buccal Photos – note plane of mirror parallels occlusal plane and use of ONE metal retractor
Focusing Screens
Focusing Screens

Only interchangeable in more advanced camera bodies

Good for superimposing horizontal or vertical lines in your viewfinder

• Makes your job easier!

ADVANTAGE: NIKON D80 (perhaps others)!

• There’s a setting in Setup to superimpose a grid
The Canon EOS Rebel XSi's Live View Function allows you to monitor your subjects directly on the large 3.0-inch LCD display. It is extremely simple to enlarge any part of the scene by five times or ten times for accurate manual focus. The Canon XSi gives you two ways of using the Autofocus feature along with Live View Function for even greater photographic flexibility. This Canon camera even gives you the option of choosing a grid overlay. This is perfect for keeping straight lines in your subject straight in your photographs. While you are working in the studio, the Live View Function can be utilized remotely through your computer simply by using the Canon XSi USB connection.
FIVE PHOTOS
5 pictures I always obtain

1 - White Balance photo
   • Not necessarily in focus, either

2 – Maximum Intercuspation (MIP)

3 - Teeth slightly apart (to see lower anteriors)

4 - Upper Arch

5 - Lower Arch
White balance
White Balance

How do you know that all FLASH UNITS have identical output?

They don’t – I measured with a Kelvin Meter

Gossen

Minolta

What if you place a shade tab in a picture?
MOST of your flash output was below 5200K, exception being Terry’s LED flash which is highest I’ve ever seen.

Remember, Nikon says 5400K, Canon says 6000K is proper flash reading....
Confession:

I shoot both JPG and RAW!

But it’s to show you the difference in colors.

It also allows RAW → JPG conversion to render ‘faster’

If your camera is capable, I recommend you shoot RAW + SMALL JPG
White Balance: Intra Oral
MIP and Slightly Open

Note: **ALL** teeth in focus. this is due to....
White Balance Products & References

WhiBal Card (RawWorkflow.com)
Gretag MacBeth Card
Pro Photo
Others

NOTE WhiBal card is my workhorse!
“WhiBal Card” – from RawWorkflow.com
Other color references:
4900 Kelvin
5500 Kelvin (& which is right?)
Additional Thoughts:

Are your monitors calibrated?
Are your printers calibrated?
And what about the Dental Lab?

==-=-=-=-=-=

Halterman Photo Lab in Ottawa, IL has ~700 photographers on staff and calibrates screens and printers DAILY
Various Products are available...

Eye -1 is my preference

Screens
LCD Screen
Projector
Printer
RAW → JPG
Raw ➔ JPG Conversion

Breezbrowser Pro (breezesys.com)
Photoshop (too slow) / Bridge
Aperture
Capture One Pro
Others…

“Be a master of a few instead of half-assed at many”
Or....

Custom White Balance (Canon)
Preset (Nikon)
Downside to PRESET / CWB

Lighting has to be IDENTICAL situation for “preset” or “Custom White Balance” to work.

Works almost all the time for Intraoral pictures (and I do use this)

“All bets off” for Extra Oral Photography!
Mark,

Interesting, but it looks like busywork that only gets you part way there, unless I am missing something. I still shoot RAW and take two shots with the WhiBal (near and far) for each session. I preset my White balance in camera to 5400K. I then use the eyedropper in Adobe Bridge for the conversion and apply the corrected value to all the exposures in the set—I know you prefer BreezeBrowser, but Photoshop works well for me. My values at conversion are frighteningly consistent: 5550-5600K, -14 to -16, day in, day out. I burn a CD with my WB corrected color images plus a grayscale copy of each shade tab photo and send it to the lab with the case. Mike does a great job of interpreting the data and gives me remarkably good color matches. Since it's working, I don't want to complicate things and start F...ing it up. Thanks, BTW, for turning me on to the WhiBal card several years ago. Like you, I won't leave home without it, and won't change until something better comes along.

All the best, and hugs to that glorious lady with the gourmet touch in the kitchen. I just wish we could take pictures as well as she can cook.

Pat
Put all your pictures in ONE directory

**Insert | PhotoAlbum**

unfortunately, this item is moved about with every version of PowerPoint...

Add text, circles, arrows to make a point

EMAILING A PPT? I can shrink a PPT by 80%!

**PICTURES | COMPRESS**
Other Useful PPT Commands

Flip Horizontally
Flip Vertically
Set Transparent Color
Photo Supplies:

Washington Scientific

• Mirrors (including the “Ward Smalley” series
• Retractors
  • Metal – good for arch photos
  • Plastic – good for anterior (MIP) photos

• I’ve also use plastic retractors which are modified but I personally don’t like them
Photo Storage?

All patient photos are with me on this laptop

From 1999 - yesterday

All photos copied to machine...

...at home

...at office

Breezesys ALSO has a product called “Downloader Pro” to automate copying data from camera to pc.
The White Balances listed on the next 5 slides are using the range (degree Kelvin) from the flashes brought to the lecture. I’ve also supplied a photo with white balance applied and you’ll note the shade tabs look like they should. The tabs are sitting on a WhiBal card...