H155 "Enlightened": The Effect of Training Forensic Pathology Residents With LED-Enhanced Point-and-Shoot Cameras for Forensic Macro Photography

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Learning Overview: After attending this presentation, attendees will better understand that training forensic pathology residents in the use of properly set up point-and-shoot cameras can yield satisfying results in forensic macro photography.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by introducing a very low-cost modification of a point-and-shoot camera with an added camera-mounted Light-Emitting Diode (LED) lamp and by demonstrating how training amateurs with respect to forensic macro photography can generate satisfying results.

Introduction: With increasing exposure of our forensic pathology residents to event scene and death scene photography as well as for clinical forensic medicine deployments, where forensic scientists lack capacity for photography support, the need to burden them with technical extra training becomes more acute. With a team of Forensic Pathology Residents (FPR) of 10–15 people, operative advantages arise from buying affordable point-and-shoot rather than Digital Single Lens Reflex (DSLR) cameras. While the hard restrictions for macro photography (aperture, exposure time, ISO number) create an actual operation space without added light, adding light by mounting a simple LED torchlight using a 3D-printed lamp Mount (LEDMNT) seemed to massively increase image quality. This is an intervention study comparing the image quality before and after training a number of FPR without other formal photography training.

Methods and Materials: This study used four test objects and compared the image quality achieved by six FPR before and after specific individual training in which they were instructed in optimal settings for ISO number, aperture, exposure time for 10-15 minutes each, and after additionally adding the added LEDMNT. For each image, a score S was awarded based on image characteristics read out from the Exchangeable Image Format (EXIF) meta-data contained in the digital files and based on subjective impression of image focus (1 rater), that would result in any S theoretically ranging from 0 to 40.

Results: For each step along the training, scores increased: (1) S=14±4; (2) S=21±2; and (3) S=30±4, with statistically significant differences comparing (2) to (1), (3) to (2), and (3) to (1). The images also showed subjective aspects of improvement; most notably, they were more focused and appeared to contain less noise.

Discussion: While training FPR alone (without adding LEDMNT) already increased the image quality both objectively and subjectively, adding extra light (LEDMNT) added another significant quality improvement. Bringing very affordable camera-mounted extra light in macro photography therefore must be regarded as a significant step beyond knowledge, insight, and training.

Virtopsy, Forensic Macro-Photography, In-House Training