

Endoscopic photography and image documentation

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BACKGROUND

During clinical endoscopy, adequate, relevant, and quality endoscopic images or video capture are necessary to faithfully document endoscopic findings and interventions. Selected captured images and/or video footage should be treated as an important part of the medical records. Accurate and adequate image documentation is also an integral aspect of endoscopy quality control.^{1,2} Quality documented images foster informative communication and understanding between physicians, health care providers, patients, and family members. During a second-opinion consultative process, optimally recorded images can potentially be cost-effective by avoiding repeat endoscopy. Frequently, quality endoscopic images confer more relevant information than text descriptions in the report. A picture tells a thousand words, and video footage tells millions. These endoscopic images can be used in teaching, conference, research, and publication. Furthermore, if any medicolegal issues arise, this good practice protects both the endoscopist and patient. As in nature photography, many endoscopists enjoy the additional job satisfaction by capturing quality endoscopic images on a daily basis. Currently, there are no society guidelines or recommendations on proper endoscopic image

documentation during conventional endoscopy. In this article, the authors propose how to accurately and adequately document endoscopic images during GI endoscopy, ie, endoscopic photography. Every endoscopist should be a professional endoscopic photographer, leaving no room for amateurs.

In the art of photography, there are generally 4 key elements: subject, composition, light, and exposure. Because every modern flexible endoscope is a “point-and-shoot” camera with almost all functions automated, there is no need to adjust the aperture and shutter speed.³⁻⁵ The light illumination is automatic and adjusted by the built-in image processor based on light reflection.⁶ Before clinical endoscopy in each case, the technician or endoscopist needs to perform the white balance function by simply pressing the “white balance” button on the processor with the tip of the endoscope against a pure white subject. The subjects include endoscopic anatomies or landmarks and endoscopic findings. One aspect of endoscopic photography focuses on adequate coverage of the anatomy and other findings, even if they are normal. This practice not only records the completeness of the intended endoscopic examination, but establishes a baseline endoscopic landscape for potential future endoscopic evaluation. On the other hand, the element the endoscopist needs to improve and master is composition. Composition in endoscopic photography focuses on what subjects and visual ingredients are to be included in the picture and how to frame them by using conscious thought so the recorded images accurately represent the findings, and the maximal amount of endoluminal information can be transferred. This relies on the skill of the endoscopist and what message he or she wants to convey. Good composition means a balance of the point of view or interest, sense of scale, texture (mucosal surface qualities), form (width, length, and depth), and space (the space taken up by the subjects and in between the objects). Modern flexible endoscopes have 2 buttons for image capturing: one to freeze the action image and another to record the “frozen” or still image. This gives the endoscopist the ability to record wanted still images. During endoscopy report composition, the endoscopist can further select, annotate, and add descriptions to the recorded images into the final report.^{2,7} Unlike artistic photography, the endoscopic photographer does not need to focus on artistic interpretation, unity, harmony, rhythm, or geometry.

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TABLE 1. Objectives of endoscopic photography

1	Document and shoot what is important to the patient, performing endoscopist, and other health care providers.
2	Maintain a clean lens.
3	Remove any view-obscuring fluid, bubbles, and debris.
4	Avoid mist effect in the field by checking the air-water valve function before the endoscope insertion.
5	Proper use of panoramic and close-up views.
6	Time-lapse photography is helpful when video capture is unable to share relevant information with colleagues.
7	Adequately document normal endoscopic anatomy.
8	During interventional endoscopy, obtain baseline images of the lesion, selected snapshots of the endotherapy in action, and postintervention appearance of the submucosal base and its surrounding mucosa.
9	Proper labeling and annotating of the selected images for the final endoscopy report.

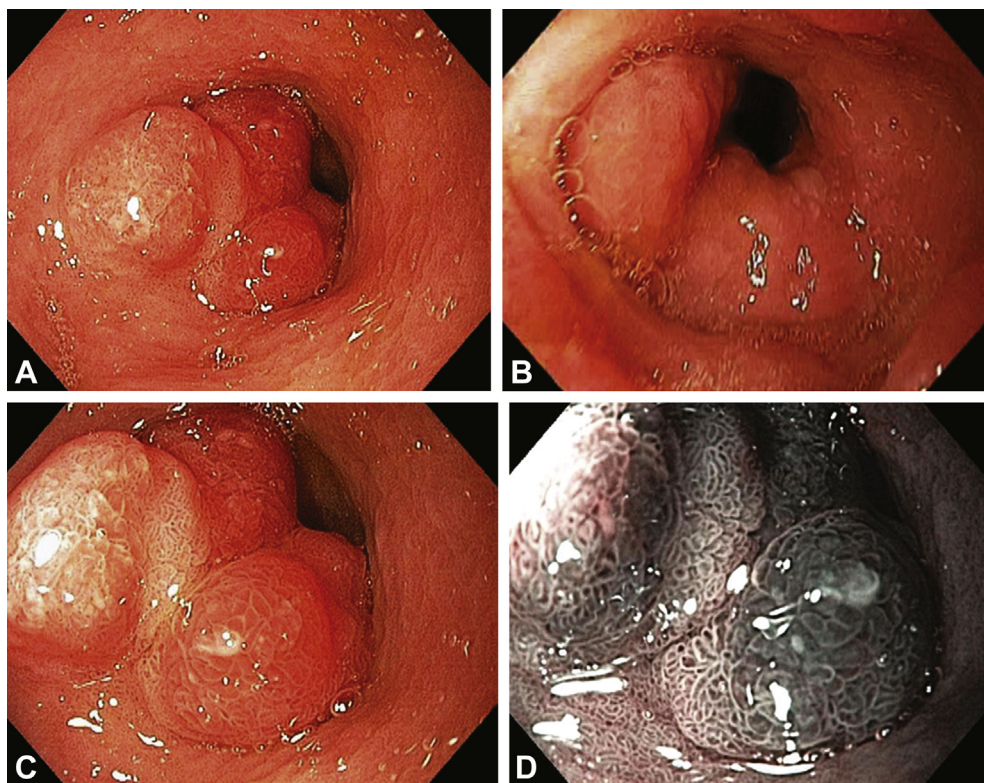


Figure 1. Endoscopic images demonstrating the proper use of panoramic and close-up views. **A,B,** The panoramic or distant view provides the audience with a global impression, relative size estimation of the antral polyps (hyperplastic) compared with surrounding normal endoscopic anatomies and luminal size, luminal location of the finding and surrounding macroscopically normal mucosa. **B,** A normal pylorus is seen distal to the polyp. **C,D,** The close-up view displays the mucosal surface, vascular patterns, and mucosal integrity. **D,** Selected image of the lesion under digital chromoendoscopy.

The 2 cornerstones in endoscopic photography are accuracy and completeness.

Endoscopic photography should be recognized as a specialized form of medical photography. Medical photography focuses on documentation of the clinical presentation of patients, medical and surgical procedures, medical devices, and specimens from autopsy.⁸ The practice requires a certain level of technical skill to present the photograph free from misleading informa-

tion that may cause misinterpretation. Besides this basic principle, there are other objectives to endoscopic photography (Table 1): (1) Document and shoot what is important to the patient, performing endoscopist, and other health care providers such as surgical colleagues. (2) Maintain a clean lens. (3) Remove any view-obscuring fluid, bubbles, and debris. (4) Avoid mist effect in the field by checking the air-water valve function before the endoscope insertion. In the settings

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