A primer on endoscopic movie production (with videos)

Live videos constitute an interesting means to tell an endoscopic story, demonstrate an interesting endoscopic finding, or display an innovative technique. It is a tool to help gastroenterologists and endoscopists communicate their experiences with others. I concur with Jonathan Buscaglia's quote: "They say a picture paints a thousand words, but I believe a video paints a million." In this month's Fellows' Corner, Drs. Daram, Tang, and Raju discuss the 4 steps involved in endoscopic video production: preparation, production, postproduction editing, and presentation. I believe that this primer will be an immense asset for all of those endoscopists interested in video editing. The accompanying videos help illustrate the fine steps of equipment setup and video editing.

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ENDOSCOPISTS: CINEMATOGRAPHERS AND DIGITAL MEDIA EDITORS

Whether we realize it or not, endoscopists are photographers and cinematographers inside the human body, and movie production can be an integral part of the endoscopists' professional life, an opportunity not available to most other practitioners of medicine. Although Tom, Dick, and Harry can flip a smart phone to video shoot at the drop of a hat and post their videos on social networks, we have not made it a part of our professional lives. It is fairly simple to do, as summarized in this primer.

Endoscopic video production has several benefits. Recording and editing endoscopic videos aid in self-directed learning, promote critical thinking, complement endoscopic research, facilitate effective communication, and foster problem solving. In addition, it is fun to shoot videos and communicate our experiences. As one ventures into this field as serious photographers and cinematographers, it opens your eyes, mind, and heart to appreciate the inner beauty of Nature.

ENDOSCOPIC VIDEO PRODUCTION

Endoscopic video production involves 4 steps: preparation, production, postproduction editing, and presentation.

Preparation

This is the most important first step. It is the story that defines the success of any movie. Hence, the endoscopist needs to have a well-defined idea of what story he or she wants to tell—whether it is shooting a short clip of an interesting endoscopic finding, demonstrating a novel technique, or producing a documentary covering a broad topic. Once you have an idea of what to share, it is fairly simple to gather the gear (Table 1) for the project. Compared with the standard equipment, high-definition endoscope systems capture high-quality movies. It is not uncommon to see black patches smeared over endoscopic

Key Points

- Recording and editing endoscopic videos aid in self-directed learning, complements endoscopic research, facilitates effective communication, and fosters problem solving.
- Endoscopic video production involves 4 steps: preparation, production, postproduction editing, and presentation.
- Endoscopic videos find their application as auxiliaries in scholarly presentations, case discussions, telemedicine, and journal manuscripts

The American Society for Gastrointestinal Endoscopy offers an annual video editing scholarship program for gastroenterology trainees interested in the art of video editing.

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TABLE 1. Basic equipment

Endoscopy setup
Various connectors, adaptors, and cables
Built-in video recorder or external video recorder
External camcorder
Recording media such as blank DVD-R or DVD-RW
Flash memory drive, 4 GB and higher
Desktop or notebook computer
Video editing software
External microphone

TABLE 2. Digital video editing software: price ranges

Mac based
iMovie (free with most Mac-based systems)
Final Cut Express ($$)
Final Cut Pro ($$$$)
Adobe Premiere Pro ($$$$)
Windows based
Movie Maker (free with certain Windows-based systems)
Corel VideoStudio ($)
Sony Vegas Movie Studio ($)
Pinnacle Studio DV ($$)
Ulead Media Studio Pro ($$$)
Adobe Premiere Pro ($$$$)

$, Less than $100; $$, $100-300; $$$, $300-500; $$$$, more than $500.

video presentations at major international meetings to cover up patient identification to be Health Insurance Portability and Accountability Act compliant. This could be totally avoided by taking one simple step upfront. Capturing a still image at the beginning of the procedure erases patient data from the video recording with Olympus endoscopes; this can also be achieved by using the "remove patient data" key on the keyboard. Informed consent should be obtained before filming any patient's external physical characteristics or any video footage that will be used for marketing.

One could choose to record in bits and pieces or continuously. Recording only the relevant findings and techniques using the pause/record buttons allows one to capture only the requisite short segments of raw video, which saves time during editing. However, one could miss an opportunity to record important sections of the procedure if one is not conscious of the recording in the midst of a technically challenging case. This could be avoided by recording the whole procedure from the beginning to the end. Although the newer versions of fluoroscopy units have digital fluoroscopic video output, the image quality may not be excellent, especially when projected on to a screen. This could be overcome by capturing fluoroscopy images, which could be incorporated during the editing of the final product.

Although most endoscopic videos do not require a prepared audio script upfront, it may be worthwhile to prepare it in advance for a video shoot to demonstrate a novel technique or a classic procedure so that it could be included during the filming. For academic publications, it may be convenient to draft an audio transcript after filming the video and to insert the narration as an overlying track in synch with the video. For short videos that last a minute or two, insertion of appropriate captions on the screen during the editing process may convey the message better.

Production: recording devices and storage

Built-in video recording software and storage. Olympus' Endoworks and Pentax's endoPRO iQ offer built-in video recording capability. Recorded video segments are saved on a central server, which can be downloaded to a disk or a flash drive easily (Video 1, available online at www.giejournal.org).

Medical-grade digital video and image capture. Olympus' nStream is tailored specifically to support clinical work flow. This device offers multiple activation methods such as footswitch, touch screen, mouse click, and camera head button integration, as well as multiple export options including a data CD/DVD, a video DVD, a USB device, or a networked storage device. Additional advantages include the capability to record 2 images/videos simultaneously, built-in editing capability, as well as an ability to annotate still images and videos.

External DVD recorders. The Sony DVDirect DVD recorder costs about $200. The recorder can be connected to the central processing unit of the endoscopic image processor through an S video cable or a component video cable (Video 2, available online at www.giejournal.org). These recorders facilitate transfer of 1080i quality video from the endoscope directly to a disk (recordable or rewritable DVD disk). An assistant is usually required to toggle the play/pause button, but the endoscopist will soon learn to handle it alone with experience. A single disk holds about 60 minutes of video footage. The recorded video segments can be easily transferred to a computer for editing. In our unit (S.R.D and S.T), the DVD recorder is installed on each endoscopy cart, including the travel cart.