ELSEVIER

Seminars in Cutaneous Medicine and Surgery

The Use of High Definition Video Modules for Delivery of Informed Consent and Wound Care Education in the Mohs Surgery Unit

Michael Migden, MD,*,† Arianne Chavez-Frazier, MD,* and Tri Nguyen, MD*

The use of video in the informed consent process has been well documented in the literature to improve patient satisfaction, understanding, comprehension, and to decrease anxiety. At the MD Anderson Mohs Surgery Unit, we use high-definition (HD) audiovisual (AV) modules to assist with the delivery of informed consent and to educate patients on the subject of postoperative wound care. The purpose of this work was to develop HD-AV media to inform patients of the risks, benefits, and alternatives of Mohs surgery before they are asked to sign the consent form and to educate patients on basic wound care after Mohs Surgery. The use of a HD virtual surgeon and nurse in the videos educates the patient, allowing the surgeon and nursing staff to attend to other patients within the Mohs Surgery Unit. Using HD digital recording equipment, we captured real-time HD-AV media to explain the risks, alternatives, and benefits of Mohs surgery (surgeon explanation) and to give detailed instructions for postoperative wound care (nurse explanation). Once captured, HD modules were created and stored on a central University of Texas–MD Anderson Cancer Center server in the Texas Medical Center approximately 1 mile from the Mohs Surgery Unit. The full-screen HD modules are accessed on demand at the point of need with the use of standard institutional computers within any of the Mohs's center's examination/surgical suites. An early evaluation of this quality improvement initiative was performed to measure patient satisfaction, efficiency, and efficacy of the videos followed by physician/nurse discussion compared with physician/nurse discussion alone. Early evaluation of HD-AV modules used for the delivery of informed consent and postoperative wound care in the MD Anderson Mohs surgery Unit revealed that patient satisfaction was maintained and that this medium was preferred by patients in the video group over physician/nurse discussion alone. The HD modules allowed increased efficiency and patient comprehension, which improved patient education in the Mohs Surgery Unit.

Semin Cutan Med Surg 27:89-93 © 2008 Elsevier Inc. All rights reserved.

KEYWORDS Mohs surgery, video, high definition, quality improvement, patient education and satisfaction

The use of technology in the form of video media has been reported in the literature for the delivery of informed consent and patient education in a variety of medical fields, including, but not limited to, surgery. The use of video for informed consent and patient education has been shown to increase patient satisfaction,[1,2] increase patient comprehension,[2-6] and decrease anxiety.[1,6]

This high-definition (HD) video-quality improvement intervention was initiated to use patients' wait time to better educate them on universally encountered, essential patient topics and to answer frequently asked questions. The use of HD video allows patients to see a much higher-quality, more life-like virtual image compared with standard definition video. HD audiovisual media engages the viewer with height-

*Department of Dermatology, Mohs and Dermasurgery Unit, University of Texas MD Anderson Cancer Center, Houston, TX.

†Department of Plastic Surgery, Mohs and Dermasurgery Unit, University of Texas MD Anderson Cancer Center, Houston, TX.

Address reprint requests to Michael R. Migden, MD, MD Anderson Mohs Surgery Unit, 6655 Travis Suite 650, Houston, TX 77030. E-mail: mrmigden@mdanderson.org

1085-5629/08/$-see front matter © 2008 Elsevier Inc. All rights reserved.
doi:10.1016/j.sder.2008.02.001

ened attention toward the virtual physician or nurse. With physician and nurse content experts fully involved in the editing process, final versions meet the Mohs unit's standard as to accuracy and completeness before deployment. The higher image quality of HD also better enables the patient to see wording on the informed consent document on the screen to follow along while listening to the details being explained verbally by the physician.

Delivery of the informed consent document in an audiovisual format decreases the problem of readability and ensures every patient consistently receives the identical fully approved information regardless of their education and literacy level. This replaces physician rote dialog (Fig. 1). The virtual physician delivers a general overview of their upcoming procedure together with the standard content portion of the informed consent. Content placed in the video encouraging the patient to ask questions, promotes open discussion during the face to face time with the physician that always follows the video.

In Mohs surgery, most surgical procedures occur on the head and neck, leaving a wound that the patient will have to care for at home. The location of the wounds in these areas makes it more difficult to see the dressing being applied by the nurse. Supplementing one on one teaching with a HD video of a nurse applying a dressing not only helps the patient to visualize the steps necessary to dress his or her wound, but it also allows for repetition and reinforcement of the wound care instructions (Fig. 2). The interactive menu design allows the video to be stopped by the patient at any time, and any segment, or portion of a segment, may be repeated to ensure all details are fully understood. Patients can enlist frequently encountered wait time to better understand home wound care (Fig. 3).

HD video has been used on a daily basis in the MD Anderson Mohs surgery unit for more than 1 year to educate our patients on the subject of postoperative wound care. This module received wide acceptance from our patients, and with the development and deployment of our informed consent video into our practice, we decided to evaluate the patient satisfaction, efficiency, and efficacy with a quality improvement initiative. Metrics are currently in progress to evaluate both video modules. A preliminary evaluation of this initiative will be discussed in the results section of this report.

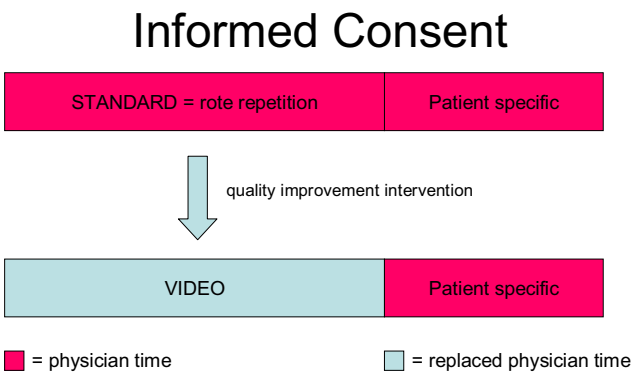

Figure 1 Substitution of HD video in the informed consent process allows the patient to receive the best version of standard content within the informed consent document. This replaces previously required physician rote time, which can be better spent on patient specific tasks. (Color version of figure is available online.)

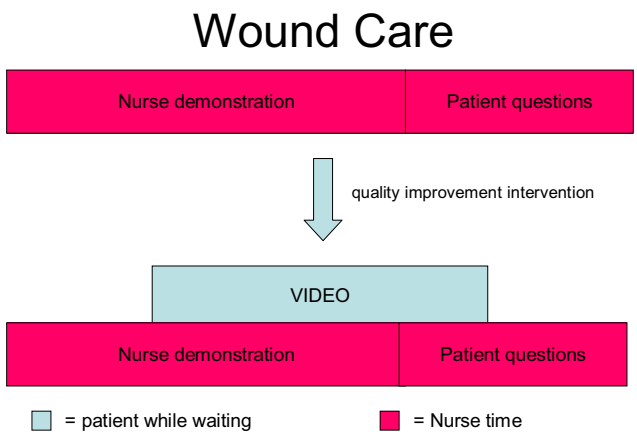

Figure 2 Supplementing HD video in the postoperative wound care instruction process allows use of patient wait time for repetition and reinforcement of wound care to improve patient education. (Color version of figure is available online.)

Methods

All production and postproduction of these modules was performed entirely on location within the MD Anderson Mohs Surgery Unit. We digitally recorded HD audio visual (AV) media direct to local raid server using our own HD media capture and editing equipment acquired to produce educational titles. After the content was saved to raid, it was edited, audio processed, exported as WMV HD files and, together with HD menus, we developed, authored in XML script-based HD modules written to folders instead of disks. These folders were then placed on a University of Texas MD Anderson Cancer Center file server, located approximately 1

Figure 3 A nurse can accesses her virtual facsimile to teach a patient wound care instruction in one room while she assists patients in other rooms. (Color version of figure is available online.)

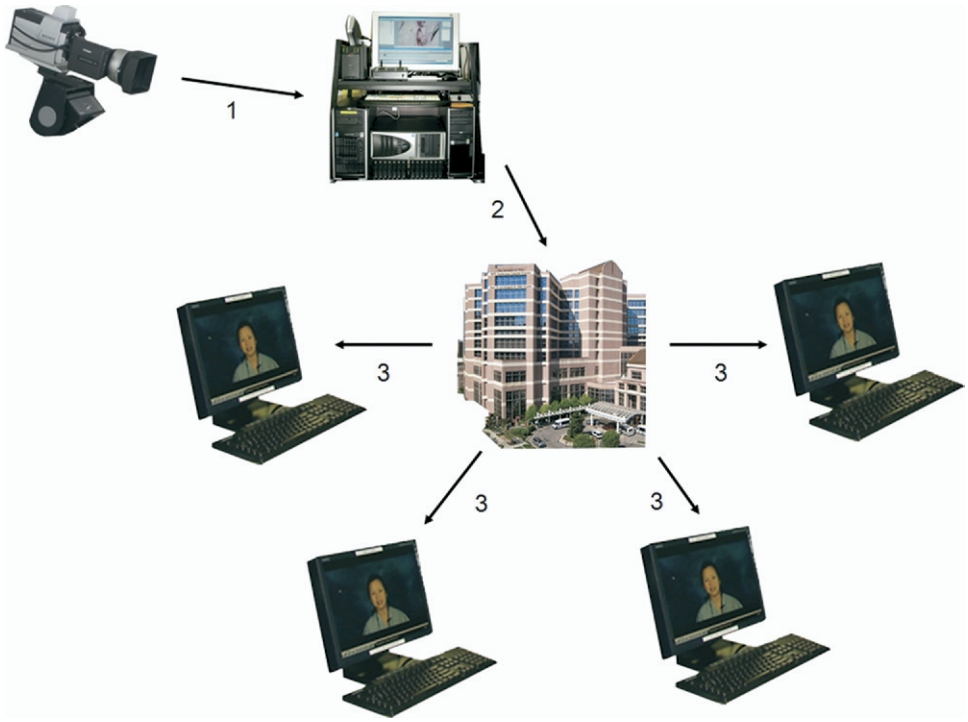

Figure 4 The steps involved in creating the high definition videos. (1) The HD video is captured digitally direct to local raid server and editing equipment. (2) After postproduction editing, processing, exporting, and authoring, the HD video module is stored on a central University of Texas MD Anderson server distant from the Mohs Unit. (3) The HD video module may be accessed at any time and from any Mohs surgical suite with a standard institutional computer. (Color version of figure is available online.)

mile away from the Mohs unit. Any change or update of the module can be accomplished locally on the editing/authoring system, and the folder comprising the module on the file server is simply replaced with a new one. In this way, modification in one location achieves changes at all patient-viewing stations. The AV modules are rapidly accessed on demand from the central file server from any of the standard client workstations already present in the Mohs dual purposed examination and operating rooms (Fig. 4). Distribution occurs via the institution's local area network (LAN). The LAN backbone operates at a bandwidth of 1 gigabyte with 100 megabyte connections from switches to individual workstations in the Mohs unit. No modifications in operatinworkstations in the Mohs unitg system or build configuration were performed and no hardware or software was installed on these computers.

As an early assessment of this quality improvement initiative, a total of 45 patients were randomly divided into 4 groups: (1) physician-informed consent, (2) informed consent video followed by physician informed consent, (3) nurse wound care, and (4) wound care video followed by nurse wound care. Patient satisfaction questionnaires were conducted with answer choices, ranging from very satisfied to very unsatisfied, on a 5-point scale. Individual components of the wound care education and informed consent processes were timed using standard digital timers and recorded, including (1) time for patient to watch either video module, (2) time for patient specific informed consent delivered by physician, (3) time for standard portion of informed consent delivered by physician, (4) time for nurse to demonstrate wound care verbally, (5) time for questions and answers, and (6) total time for informed consent and wound care instruction processes. At the end of the clinic visit, all patients were asked to complete a standard multiple choice quiz to evaluate their knowledge regarding the information provided. All information was recorded into a Microsoft Excel® (Seattle, WA) document, and average means were calculated and compared.

Results

Preliminary results from the quality improvement initiative are discussed in the sections to follow.

Informed Consent

Eleven patients participated in the informed consent arm of the quality improvement initiative (Table 1). All patients had an initial discussion with the physician regarding their individual risks of Mohs surgery. This discussion varied with each patient depending on type and location of tumor and his or her individual comorbidities. This patient-specific informed consent component took 1:02 minutes in the video group and 1:19 minutes in the non-video group. Seven patients then watched the standard informed consent video (average time = 4:53 minutes) followed by a question-and-

Table 1 Preliminary Metrics From Informed Consent Video Quality Improvement Initiative: Informed Consent Metrics

	Video	No Video
Standard component	4:53	3:40
Patient-specific component	1:02	1:19
Patient questions	0	0:31
Total physician time	1:02	5:31
Total consent time	6:11	5:31

answer session with the physician (average time = 0 minutes). Four patients had the standard portion of the informed consent delivered verbally by the physician alone (average time = 3:40 minutes) followed by a question and answer session with the physician (average time = 0:31 minutes). Total physician time in the nonvideo group was 5:31 minutes, and 1:02 minutes in the video group, a difference of 4:29 minutes. All of the patients were satisfied or very satisfied regardless of method delivery of the informed consent document. In the non-video group, all patients preferred to have the surgeon deliver the informed consent information rather than watching a video; however, in the video group, 100% of patients said they would recommend the video method of informed consent to a friend having Mohs surgery in the future. Because of the small sample size in the informed consent arm, the metrics for the informed consent quiz have not yet been evaluated.

Wound Care

Thirty-four patients participated in the wound care arm of the quality improvement initiative (Table 2). Fourteen watched the video (average time = 6:40 minutes) followed by the nurse wound care demonstration with verbal instructions (average time = 3:59 minutes). In the non-video group, 20 patients had the nurse demonstration with verbal wound care instructions delivered by the nurse alone (average time = 4:57). The total time for patient questions in the video group took slightly longer (average time = 1:37) than in the non-video group (average time = 1:04); however, the nurses felt the patients were more involved in their wound care and asked more educated questions. Total nurse time was 5:22 minutes in the video group and 5:59 minutes in the non-video group. All patients were satisfied or very satisfied with their wound care education whether or not they had watched the video; however, in the video group, 100% said they would recommend the video to a friend having Mohs surgery in the future. Patient comprehension was improved in the video group with patients scoring on average 91.6% on their quiz versus 84% if they had not watched the video.

Table 2 Preliminary Metrics From Wound Care Video Quality Improvement Initiative: Wound Care Video Metrics

	Video	No Video
Video time	6:40	0
Nurse demonstration	3:59	4:57
Patient questions	1:37	1:04
Total nurse time	5:22	5:59
Quiz score	91.6%	84%

Discussion

In the medical literature, it is well documented that patients have a poor retention rate or do not understand information that doctors tell them. In the dermatology literature, Fleischman and Garcia[7] demonstrated that patients undergoing Mohs micrographic surgery informed of 10 possible complications have an overall retention rate of 26.5% after 20 minutes and 24.4% after 1 week. Alternative delivery of the informed consent process, by audiovisual methods, has been shown to increase patient comprehension and understanding of other procedures, including knee arthroscopy, intravenous contrast administration, and ankle fracture surgery.[2-6] Rossi and coworkers,[4] evaluated the effectiveness of using a videotape to educate patients on risks, benefits, and alternatives of treatment before signing a consent form. Patients were then given a multiple-choice questionnaire to determine comprehension and retention, and the video group outperformed the verbal consent group by 40.1%. In addition, patients with educational levels of less than or equal to the 12th grade performed 67.8% better on the initial questionnaire after watching the video than after receiving the information verbally.

Increased patient understanding was demonstrated in our assessment of the wound care video group, with patients scoring 91.6% on the multiple-choice quiz compared with a score of 84% in the group with only nurse demonstration of wound care. The metrics of patient comprehension in the informed consent arm of our assessment are pending further enrollment at this time.

As each patient views the identical detailed content, quality and safety is enhanced through decreased variability. This reduces potential omission errors, less effective wording, and less than optimal demonstration of key concepts. Efficiency is increased by allowing the virtual provider to convey time-consuming rote repetition information during patient wait time while the human provider is freed to engage in delivery of care and higher level patient interaction, such as answering questions. Enlisting available technology infrastructure in the form of server and client workstation architecture resident for access to the electronic medical record avoids the logistical hurdles frequently encountered with traditional video storage and playback. By utilizing wait time to teach essential patient education, we improve quality through enhanced comprehension and may also return a time savings to our patients through decreased length of their visits.

Conclusion

In health care, patient wait time remains a virtually untapped opportunity for patient education. The use of LAN delivered HD-AV modules in our Mohs Surgery Unit improves our

patients' satisfaction, and increases their comprehension of the informed consent document and their wound care instructions. These HD patient education modules allow our Mohs surgeons and nursing staff to be more efficient while improving patient education through rapidly accessible, interactive, and uniformly detailed, information delivered on demand at the point of need.

References

1. Phillippe F, Meney M, Larrazet F, et al: Effects of video information in patients undergoing coronary angiography. Arch Mal Coeur Vaiss 99: 95-100, 2006 (abstr)
2. Cowan EA, Calderon Y, Gennis P, et al: Spanish and English video-assisted informed consent for intravenous contrast administration in the emergency department: A randomized controlled trial. Ann Emerg Med 49:231-233, 2007
3. Agre P, Kurtz RC, Krauss BJ: A randomized trial using videotape to present consent information for colonoscopy. Gastrointest Endosc 40: 271-276, 1994
4. Rossi M, McClellan R, Chou L, et al: Informed consent for ankle fracture surgery: Patient comprehension of verbal and videotaped information. Foot Ankle Int 25:756-762, 2004
5. Rossi MJ, Guttmann D, MacLennan MJ, et al: Video informed consent improves knee arthroscopy patient comprehension. Arthroscopy 21: 739-743, 2005
6. Luck A, Pearson S, Maddern G, et al: Effects of video information on precolonoscopy anxiety and knowledge: A randomized trial. Lancet 354: 2032-2035, 1999
7. Fleischman M, Garcia C: Informed consent in dermatologic surgery. Dermatol Surg 29:952-955, 2003