

# The Use of Video-capture Technology to Optimize the Education, Evaluate Technical Performance in Residents

Matthew Thau MS

USF MCOM- LVHN Campus, [Matthew.Thau@lvhn.org](mailto:Matthew.Thau@lvhn.org)

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# The Use of Video-capture Technology to Optimize the Education, Evaluate Technical Performance in Residents

Matthew Thau

Lehigh Valley Health Network, Allentown, PA

## Intro/Background

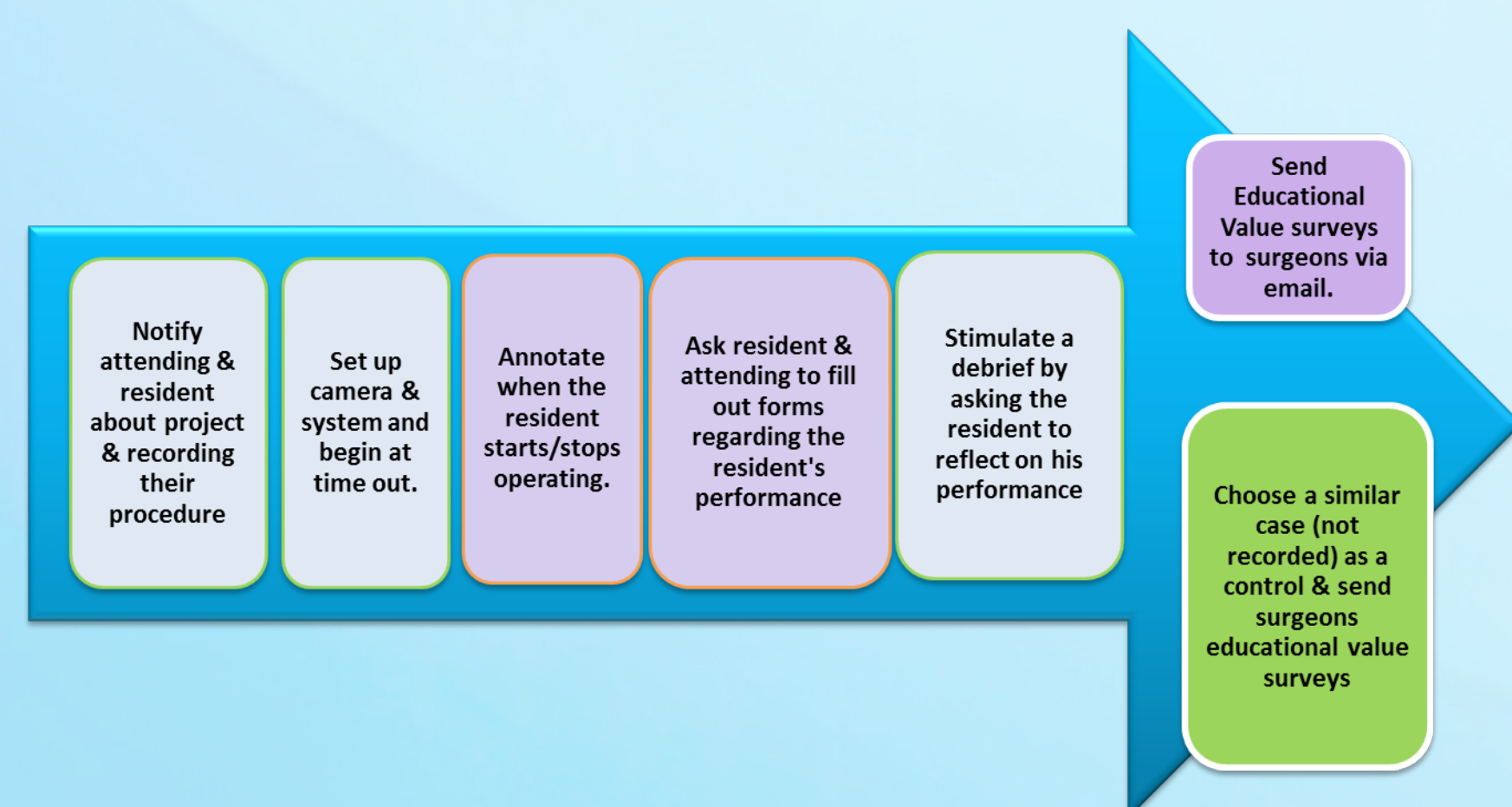
Many factors contribute to the overall competence of a resident surgeon in training, but technical skill is paramount to the objective assessment of surgical competency. Recent studies of bariatric procedures have shown that superior technical ability is associated with fewer postoperative complications, as well as lower rates of reoperation, readmission, and visits to the emergency department. There is little objective data to validate assessment methods of technical ability, and a practical limitation of training lies in the difficulty of instituting an effective process to evaluate, predict, and assess safety and competence. Video recordings of surgical procedures have emerged as an effective tool in critiquing technical ability. Our goal is to assess the efficacy of video-capture technology as a teaching technique for residents in surgical specialties at LVHN. The resident and the proctoring surgeon evaluated performance in real time. Recordings were reviewed by surgical experts, blinded to the residents' level of training and ability. These experts included surgeons within the institution. Data was obtained to determine if the use of recordings and expert evaluation was sustainable and effective.

## Problem Statement

Technical skill is the foundation of surgical competence, yet is difficult to evaluate. We wanted to determine if use of video recording technology and a standardized review process will better assist in the evaluation of competency in OB/GYN residents, leading to improvements in education, patient outcomes and quality of care.

## Methodology

A multi-camera recording system was purchased, allowing surgical cases to be assessed in real time or after the fact as a means of debriefing and providing feedback on performance. Other pertinent functions in the operating arena were also assessed, including: communication, teaching ability, leadership, and teamwork. Evaluation included residents from OB/GYN performing performed procedures including cesarean sections and hysterectomy. This footage evaluated independently by expert surgeons who critiqued and rated surgical performance using standard forms. Survey data was collected and compared from all individuals participating in the evaluation (e.g., residents, proctoring surgeons, expert surgeons) regarding the value of the process and opinion regarding the use of viewing blinded audiovisual based cases as a tool to optimize surgical teaching and rate performance.



## Results

12 of 23 OB/GYN residents participated in the 8-week trial period. Four procedures were recorded and evaluated: Cesarean Section (n=17), Robotic Hysterectomy (n=8), Hysteroscopy (n=12) and Bilateral Tubal Ligation (n=12). A significant number of residents found the video feedback to have educational value (p = 0.086). Furthermore, 75% of participating attendings found value in the feedback process and appreciated the ability to give timely and specific feedback (p<0.001)

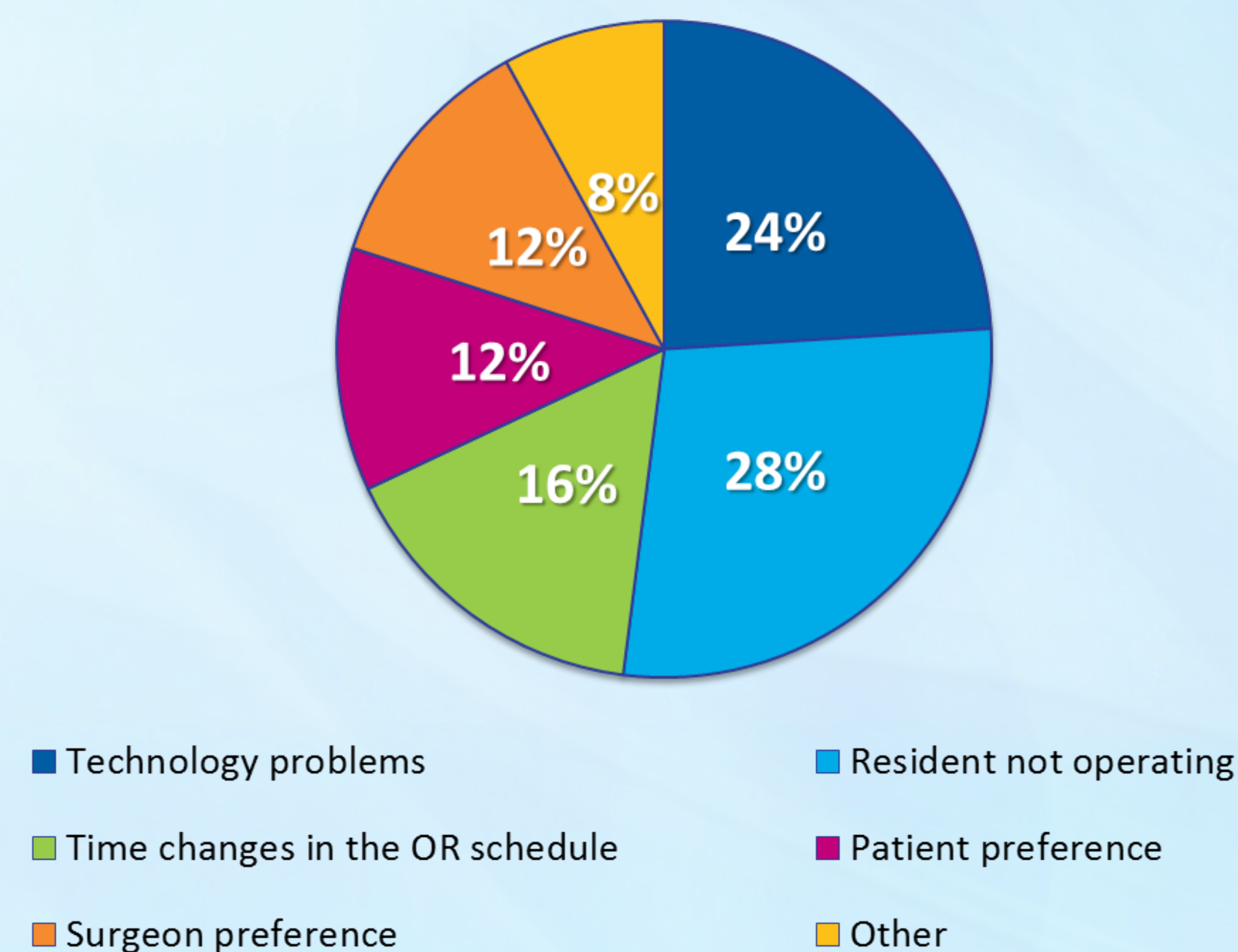
Case	Subject	Control
Cesarean Section	17	4
Robotic Hysterectomy	8	1
Hysteroscopy	12	8
Bilateral Tubal Ligation	3	2

**Table 1:** Four common obstetrical procedures (Cesarean Section, Robotic Hysterectomy, Hysteroscopy, Bilateral Tubal Ligation) were recorded using video-capture technology. 40 cases were recorded from July-August 2015. An additional 15 cases were used as a control to assess the efficacy and teaching opportunities made available by the technology.

Did Video Capture Provide	Subjects	Controls	P Values
Adequate preparation?	4.3871	4.5556	0.838
optimal training?	4.3226	4.4444	0.160
questions were fair & appropriately challenging?	4.3448	4.5556	<0.001
appropriate debrief?	4.3226	3.7778	0.599
appropriate correlation to performance?	4.2333	4.6250	0.451
specific & timely feedback?	4.4516	4.0000	<0.001

**Table 2:** Attending Survey Responses following video recorded cases. 75% of attendings surveyed were noted to find value in the video feedback process. A significant number felt that the recordings allowed for specific and timely feedback (p<0.001). Of note, 87% of Subject Residents found the video feedback process valuable.

Figure 1: Barriers to Recording Cases



**Figure 1:** 25 cases were unable to be properly recorded during the trial period. Analysis of the barriers suggested that over 50% of the issues pertained to technology problems or miscommunication regarding the resident operating schedule.

## Conclusions and Future Implications

Videocapture is a viable means of providing feedback and assessment of surgical performance. Residents felt that recorded feedback enhanced training and educational value when compared to traditional teaching methods. Attendings believed the tool led to greater focus on the feedback process and re-enforced educational teaching in the operative setting. Video files could be sent and evaluated by blinded experts, and the prospect of storing the files as a portfolio was feasible.

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