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“Reality Surgery” — A Research Ethics Perspective on the Live Broadcast of Surgical Procedures

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Abstract

In recent years, the live broadcasting of medical and surgical procedures has gained worldwide popularity. While the practice has appropriately been met with concerns for patient safety and privacy, many physicians tout the merits of real time viewing as a form of investigation, accelerating the process leading to adoption or abolition of newer techniques or technologies. This view introduces a new series of ethical considerations that need to be addressed. As such, this article considers, from a research ethics perspective, the use of live surgical procedure broadcast for investigative purposes.

Keywords

research ethics; patient privacy; live surgical broadcasting; education; training

“REALITY SURGERY”

The viewing of live surgical procedures by nonessential persons has been practiced for hundreds of years and is established as a valuable tool for medical education. Instruction of trainees by surgeons while operating is still the cornerstone of surgical training throughout the world. However, the operating theaters of the 18th century were just that — theaters — equipped to accommodate numerous residents, students, and other spectators as well.¹ In the early 19th century, operations were not infrequently advertised in local newspapers to the paying public, and a surgeon might receive a round of applause at a procedure's end from the audience. In the 1960s, with television reaching millions of households, cameras were brought into the operating room to show real operations in the documentary series *Your Life In Their Hands* (British Broadcasting Corporation, London, UK). As technology advances, this practice continues to adapt. For instance, bioinformatics researchers are broadcasting live surgery over the internet,² and some medical organizations educate and entertain their audiences with live procedures from around the globe.^{3,4}

There are, of course, both promoters and detractors of this practice. Major concerns have appropriately been raised regarding issues of privacy and patient safety; nonetheless, various practitioners propose benefits to the broadcasting of live surgical procedures. Some argue that the “real life” nature of live broadcasts provide an educational perspective and intrigue not gained through edited tapes or textbook descriptions.⁵ Some argue that live viewing can improve procedure and operational quality through immediate observer feedback.⁶ Others

see real time broadcast is a source of income for hospitals, directly through payments by providers of the live show and indirectly through new patients that may come from the exposure. This economic effect is potentially powerful, as demonstrated in a recently published study where the viewing of reality television shows of cosmetic surgical procedures led to self-referrals.⁷

Though each of these perceived benefits of live broadcast warrants careful consideration and debate elsewhere,^{5,6,8-10} the focus of this essay is the assertion that the live broadcast of innovative surgical procedures constitutes not only an educational method but also represents a platform for investigation. Thus, the ethical concerns of “reality surgery” extend beyond surgical education and include issues surrounding the application of live broadcasts as a component of medical research. We will discuss, from a research ethics perspective, the use of live surgical procedure broadcast for investigative purposes.

THE CONTINUUM BETWEEN PRACTICE AND RESEARCH

The division between surgical practice and research will always be imprecise. Surgeons may be forced to modify current therapies to individual patient conditions, and often this necessary improvisation occurs in the operating room, resulting in new procedures or techniques. Based on professional knowledge and experience, surgeons develop creative solutions to the problems that arise in the operating room. In addition, the discovery of new technology is incorporated into current practice, and surgical strategies evolve over time.^{6,11} Whether this even meets the criteria of research is debatable.

The Belmont Commission of the National Research Act of 1974 makes clear that an innovation, however “experimental” in nature, does not in and of itself constitute research.¹² The Belmont Report defines research as a class of activity designed to develop or contribute to generalizable knowledge. “Practice” by contrast is defined as those interventions designed solely to enhance the well-being of an individual patient.¹² The live broadcast of an experimental procedure to hundreds of observers at an international meeting is not designed to solely enhance the well being of the individual patient but is instead meant to contribute to collective knowledge. One may therefore argue, as proponents of the practice have done, that when the intent of the live broadcast of a new technique is to disseminate new and generalizable knowledge, this constitutes a form of research.

Ethical issues with procedural broadcast in general fall largely in the realm of the physician-patient relationship, with telecasting as a form of intrusion. However, when the designation or claim as research is made, further ethical considerations are needed. Specifically, the Belmont Report states that if any element of research activity exists, the activity should undergo review for the protection of human subjects.¹³ Unfortunately, as Dr. Beecher showed in 1966 by reporting 22 examples of investigator misconduct, not all physicians are reliable stewards of the primacy of patients’ rights in the world of research.¹⁴ Thus, when live broadcasting is justified as being a form of investigation, it is of critical importance that this practice be held to the standard of independent review.

An ideal setting for this is the Institutional Review Board (IRB), which was established in the United States in the 1970s as a key mechanism for ensuring protection of human research subjects. The core ethical principles of the Belmont Report — respect for persons, beneficence, and justice — are the foundation of an IRB charter. Specific IRB duties include ethics consultation, peer review, education, and study monitoring, with the authority to reject proposals or terminate investigations.¹⁵ Thus, if live surgical broadcast is to be justified as a component of biomedical research, IRB consultation becomes prudent.^{16,17}

INVESTIGATIVE MERITS OF LIVE BROADCAST

Informed consent, a primary application of the responsible conduct of research, is made possible by the transfer of information from the physician to the patient. Knowledge is power, in Bacon's proverb. The experience of live viewing potentially empowers patients with an understanding of what an investigative procedure involves. Real time broadcast may contribute in this way to informed consent and thereby enhances a core component of both research and medical practice. Moreover, patients may be reassured that there is nothing to hide and the medical profession gains trust in surgical procedures, research, and academic processes.¹⁸

However, the ethical principles of informed consent already operate within the current culture of increasing visibility of surgical decision making and procedures. A quick search of the video sharing web site YouTube (<http://www.youtube.com>; > YouTube, LLC, San Bruno, CA) reveals a vast array of surgical procedures for public viewing, everything from laser-assisted in situ keratomileusis (LASIK) to open heart surgery. Patients have posted their own procedures for anyone interested enough to see. What benefit beyond enhanced entertainment would the real time streaming of the procedures hold for informed consent? A taped procedure of scientific interest allows for some degree of follow-up and the opportunity for relevant commentary by the clinician-investigator regarding the patient's postoperative course. Openness is certainly desirable, especially when there is any investigative component to a patient's care.¹⁹ If after informed consent an investigative procedure is taped, show the good and the bad in an edited, time-efficient clip for fellow investigators. If the case might be instructive for future patients, obtain permission to use it as such.

Live case demonstration has been touted as being indicative of an eagerness to investigate and a catalyst for dissemination of new information.⁹ Innovation through deviation from standard practice is an important means of improving surgical care and needs to be shared even if results may not always turn out as expected.²⁰ Through live broadcast, other practitioners and nonsurgeon scientists can experience a surgical procedure in real time and even ask questions of the surgeon without being physically present in the operating room. From an operating room across the globe, audience members can assess a live demonstration of this new technique for their own patients. In effect, the valuable experience of a single innovative procedure can be shared via live broadcast. As such, proponents of live broadcasting argue that new applications will be realized and discoveries for patients will be hastened.⁵ Reality viewing is a powerful tool for drawing our attention; like a football game or tennis match, the outcome is often unknown until the last stitch is thrown.

WISDOM IN REPUGNANCE

Scientific development usually outpaces ethical implementation. An amendment to the Nuremberg Code is impossible for every new investigative technique. Perhaps, however, when a clinician's instinct suggests that something is wrong, credence should be paid as there may be some wisdom in the repugnance.²¹ Dr. John Cameron recounts viewing a live broadcast of a valve repair resulting in an unacceptable outcome because the surgeon did not want to acknowledge failure of the repair technique in front of an audience of viewers.⁸ A component of medical professionalism in the 21st century is a commitment to improvements in care — and live broadcast may improve care in some cases — but is the sensationalism intrinsic to live broadcast professional?²² Does performing for live broadcast represent a commitment to the individual patient, a commitment to the patient's privacy, and a commitment to balance conflicts of interest? Temptations to overlook traditional components of medical professionalism surround us in today's environment.

While live procedure broadcast may facilitate the adoption of new ideas, a sensationalized portrayal is not the best way for innovation to spread. Viewers do not follow the patient's postoperative course when the cameras and lights are turned off. Other options for dissemination of investigative therapies are available which pose less risk to patients. Medical journals are a generally trusted source of peer-reviewed research. Peer-reviewed online media, including videos, photographs, and slide presentations has been recently established.^{23,24} The formation of high-quality registries and reporting of adverse events in monitored repositories, such as the Food and Drug Administration's MedWatch system provide today's clinician-investigators with surveillance data for emerging therapies.

Patient safety is also a serious concern. Unnecessary equipment and nonessential personnel in the room have been suggested to increase surgical site infections²⁵ and investigated as a source of reduced quality in outcomes.²⁶ Real time broadcast of surgical procedures may involve the use of an unfamiliar operating theater or suboptimal operative conditions. The reality is that reality television portrays a modified and contrived form of reality on the part of all participants. During a live procedural broadcast, the judgment of the surgeon as well as other physicians, nurses, and staff may be altered by the mandate to perform for the audience. This may result in a surgeon persisting to perform the new procedure when conditions dictate that a conventional approach may yield a better result. Further, the demands of "the performance," including questions and discussion with the audience, may divert the surgeon's attention and produce an inferior outcome. The duty to minimize risks while maximizing benefits is a fundamental tenet of the ethical conduct of research.

Additionally, the ethical researcher must protect against loss of patient privacy or dignity. The meticulous guarding of potential patient identifiers during a live broadcast only adds to the complexity of a case. While safety may be enhanced by viewing a new procedure before performing one yourself, it is often more efficient and equally instructive to view a recorded case, with edited commentary by the operating surgeon, and the post-taping removal of patient identifiers optimally protects privacy.

THE PRIMACY OF PATIENTS' RIGHTS

The principle of primacy of individual patient welfare dates back to ancient times. Toward this end, physicians continue to study and learn throughout professional life. A great professional achievement for many surgical investigators is being first, the first to do something new.²⁷ The competitiveness required to excel in medical school and through surgical training selects a group which, when engaged in their scientific pursuits, is desirous of novel discovery through research and innovation. What better forum than a broadcast for the public or for an international meeting of peers? A conflict is thus created between what is best for the patient and what is best for the surgeon-scientist. Here, the principles of ethical research must enter the discussion. Real time broadcast of investigative therapies should be subject to institutional review board standards of ethical research. Research should be conducted under written protocol, with a clear objective and with attainable procedures designed to reach the objective.

The American College of Surgeons' statement of principles mandates the welfare and rights of patients above all else, and the particular need to preserve the primary principles of patient autonomy and safety.²⁸ Several Japanese surgical societies have issued guidelines seeking to restore the primacy of the patient with respect to the use of live procedure broadcasts.²⁹ The American Association of Thoracic Surgery (AATS) and the Society of Thoracic Surgery (STS) have led the way in the United States in questioning the added benefit of live viewings and establishing guidelines for the appropriate use of live broadcasts based on existing ethical principles.¹⁰

These actions have come as a surprise to some.^{5,9} Surgical broadcasts are consistent with surgeons' duties to teach and innovate. Real time broadcasts may enhance patient understanding and informed consent, solidify openness and trust in the profession, and share important scientific knowledge. Years from now we may look back and wonder what the concerns were all about. Did we think history would repeat itself with surgery as theater? What we know is that our science and technology are ahead of our ethics. Recognizing this potential conflict, we must apply the principles of our existing ethical codes. Intrusion into the physician-patient relationship is a threat with any live broadcast, and for those telecasts constituting a form of investigation, important concerns should arise regarding the ethical conduct of research — balancing the risk to research subjects with the potential benefit to other patients. In addition, we support the concept of providing follow-up to each observer, as recommended by the Society of Thoracic Surgery and the American Association of Thoracic Surgery, to guarantee the transparency of the process.¹⁰

CONCLUSIONS

While in general so-called “reality surgery” falls in the realm of intrusion into the physician-patient relationship, use for investigative purposes also deserves careful consideration from a research ethics framework. Review board consultation and approval is necessary to ensure protection of human subjects in cases where the academic imperative of a live broadcast involves investigative pursuits.¹⁷ If, after the careful consideration of patient risks and benefits, the use of a live broadcast is determined to be justified, a surgeon is ethically bound to obtain specific informed consent for the broadcast — including a complete explanation of the potential risks. To protect the dignity of the experience, the surgeon should attempt to limit the extent of the transmission and to register and inform each observer. As medicine and technology evolve, these important issues require ongoing thought and review by surgeons.

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