Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/cmrp

Original Article

The ethics of live demonstrations of surgery

Vinay Kumaran [a,*], Samiran Nundy [b]

[a] Liver Transplant and HPB Surgery, Kokilaben Dhirubhai Ambani Hospital, Mumbai, India
[b] Sir Ganga Ram Hospital, Ganga Ram Institute of Medical Education and Research, New Delhi, India

ARTICLE INFO

Article history:
Received 17 June 2015
Accepted 3 July 2015
Available online 1 August 2015

Keywords:
Ethics
Live demonstration
Gastrointestinal surgery
Liver
ERCP

ABSTRACT

Background: The use of live demonstrations of surgery and other invasive procedures has become a popular teaching tool at medical conferences. However, concerns have been raised that the interests of the patients participating in such events may be compromised.
Material and methods: We searched the PubMed database using the terms ''live surgery,'' ''live surgical demonstration,'' and ''live procedure'' and manually filtered the results to select the articles we considered to be most relevant. After reading 55 abstracts, we reviewed 36 full-text articles in detail. The relevant and non-repetitive information from these articles is presented in this paper along with the authors' own opinions.
Results: In procedures with a low level of complexity, the complication rates do not seem to be significantly higher in patients participating in live workshops than when they are performed in a routine and familiar setting. However, the rate of successful completion of the procedures is reported to be lower. In more difficult operations there may be an unethical selection of 'suitable' patients and these may be followed by postoperative complications, some of them fatal, which are, understandably, not divulged to the conference participants. Many countries and societies, such as the American College of Surgeons, have banned the performance of live demonstrations of surgery.
Conclusions: We suggest that there is sufficient evidence that patients may be harmed when complex surgical procedures are performed in the context of live surgical workshops. The learning objectives may be met equally well by using video recordings of such operations.

1. Background

When one of us (Vinay Kumaran) was a senior resident in general surgery, he attended a live surgical workshop on advanced hepatobiliary surgery. The workshop was organized at a well-known teaching hospital, which was one of the pioneers in advanced hepatobiliary surgery. The invited surgeon was internationally renowned for his hepatobiliary and liver transplant skills. He demonstrated an extended right hepatectomy for a hilar cholangiocarcinoma. It was a virtuoso performance. The surgeon stood on the left side of the patient so that the camera would have a good view. He lucidly explained the importance of a good lymph node dissection and

* *Corresponding author*. Tel.: +91 9022932994.
E-mail address: kumaranvinay@yahoo.com (V. Kumaran).
http://dx.doi.org/10.1016/j.cmrp.2015.07.003

of resecting the caudate lobe of the liver. The operation was performed with minimal blood loss. The surgeon answered questions from the audience while operating.

''I had already decided to specialize in gastrointestinal surgery but there is no doubt that the workshop did influence me to focus on hepatobiliary surgery and liver transplantation. To this day I perform extended right hepatectomy for hilar cholangiocarcinoma in the manner demonstrated that day. About 3 years later, I was doing my MCh in gastrointestinal surgery at the same teaching hospital where this workshop was held and I saw the patient who had been operated then. He was alive and well with no evidence of recurrence.'' This, perhaps, was the best-case scenario and the aims of a live demonstration had been achieved – curing the patient and inspiring and teaching and influencing the subsequent practice of the watching surgeon.

However, the results are not always the same. Recently, in a major city in India, there was an international conference on hepatobiliary and pancreatic surgery. A live demonstration of complex hepatobiliary surgery was one of the highlights of the conference. The invited surgeon was a well-known pancreatic surgeon from Europe who had been asked to perform a procedure on a patient who had a locally advanced carcinoma of the head of the pancreas. It was expected that he would need to perform a Whipple's procedure and resect and reconstruct a segment of the portal vein. Unfortunately, as the operation proceeded, it became clear to experienced hepatobiliary surgeons in the audience, the tumor was more advanced than was originally expected and was also involving the hepatic artery. The reasonable course of action, in a 'routine' setting, would be to abandon any attempt at resection and instead perform a bypass procedure with the option perhaps of reassessing resectability after neoadjuvant chemotherapy and/or radiotherapy. However, the surgeon, who clearly felt compelled to complete the demonstration of a resection and vascular reconstruction, proceeded to take out the tumor when it was obvious to the audience that there would be residual tumor tissue. The surgeon reconstructed the hepatic artery as well as the portal vein and the blood loss was considerable. The outcome was never reported to the participants in the workshop but we later heard that the patient was re-explored for intra-abdominal bleeding and eventually died.

These cases, while anecdotal, do raise questions about whether participation in live surgical workshops is harmful for the patient involved. The concerns raised are:

1. Does the patient have the undivided attention of the surgeon? Clearly, this may not make much difference if the operation is a simple one but it might be a factor in a complex procedure. The surgeon is called upon to answer questions from the audience, ensure a good view from the camera, and perhaps work with unfamiliar instruments in an unfamiliar operation theater with unfamiliar anesthetists and assistants.
2. Is the decision-making process skewed? Clearly there is pressure on the surgeon and the organizers to demonstrate the operation in its entirety. The audience may be hoping that the operation turns out to be difficult, partly because they want to see an expert dealing with tricky situations and partly because it improves the ''spectacle.'' The surgeon may feel pressured to undertake a resection in a situation where resection may not be the best option for the patient and the organizers may be pressured to list for resection a patient for whom other options may be better.
3. Is the optimal timing of surgery compromised? The organizers may delay the procedure so that cases are available for the demonstration or they may compromise on the pre-operative evaluation or preparation in order to have the patient ready by the date of the workshop.
4. Is the post-operative management compromised? If the surgeon is itinerant, the host institution may not be accustomed to managing patients undergoing the procedure in question. The question of responsibility and liability is also nebulous. While responsibility for the patient is generally understood to be with the host institution, it is clear that there is an element of a ''it wasn't my fault'' attitude on the surgeon's part when complications occur.

We discuss some of the available evidence on these issues.

2. Methods

We searched the PubMed database using the terms ''live surgery,'' ''live surgical demonstration,'' and ''live procedure'' and manually filtered them to select out the ones we considered most relevant. After reading 55 abstracts, we reviewed 36 full-text articles in detail.

3. Results

A large amount of the literature on live demonstrations comes from the fields of Urology and Gastroenterology. Many of their procedures are conducted endoscopically or laparoscopically and are inherently suitable for live telecasting using the video feed from the camera. The procedures are also technically easier and more standardized than cardiovascular, surgical oncology, or hepatobiliary procedures.

A patient undergoing an aortic aneurysm repair in a live demonstration in Japan in 2006 died.[1] This led to considerable discussion and several bodies stopped the practice of live demonstration altogether. These included the American College of Surgeons and the American College of Obstetrics and Gynecology.[2] Khan et al.[2] report an anonymous survey of participants in the European Association of Robotic Urology Society Meeting in 2012. Of the 106 surgeons who responded, 98 had personal experience of performing live surgical broadcasts. Anxiety was reported by 6.5% when they were operating at home and by 19.4% while operating away from home. The quality of the procedure was perceived to be slightly worse by 16.1% of the surgeons and significantly worse by 2.2%. When operating in an ''away'' situation, these figures increased to 23.9% and 3.3%, respectively. Most of the surgeons (62.4%) reported some anxiety or apprehension and 6.5% felt the level of anxiety was significant. While most of the surgeons reported that their surgical performance was normal, 16.1% felt it was slightly worse and 2.2% felt it was significantly worse when they were performing live.