

An image says more than a thousand words: Standardising video registration in the operating theatre

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ABSTRACT

Today, video imaging is a major part of laparoscopic surgery. Despite continuous efforts to improve or innovate laparoscopic techniques, the registration of laparoscopic imaging for quality of care purposes remains an afterthought. By recording the essential steps of a surgical procedure, it is possible to inquire in more detail about what actually occurred in the operating theatre. However, it is necessary to take the legal framework into account. Questions concerning patient consent, permission from healthcare providers, whether video documentation should enter the patient record, and the length of the period it is retained must be answered. Also, the prevention of the misuse of information is important and therefore the purpose of documentation needs to be put on record beforehand. Video documentation is a promising method of registering surgical quality. However, the first priority is to demonstrate the actual quality improvement of video documentation and the formulation of precise guidelines.

INTRODUCTION

In recent years, recording surgical procedures on video has become increasingly accessible. Originally intended for educational purposes, these video images were later on also used for quality improvement in surgery. The prime example is found in laparoscopic cholecystectomy, in which the 'critical view of safety' is documented on image as adjunct to the operative report, to demonstrate that the transection of structures was done without any anatomical misidentification. Meanwhile, this method is standard practice in the Netherlands.¹

Despite the ongoing innovation and improvement in image quality, it seems that documenting laparoscopic images for quality of care purposes, aside from this example of laparoscopic cholecystectomy, remains an afterthought. In aviation, the police sector, and even in top-class sport, video is currently being used as a quality improvement tool. Furthermore, all events in aviation are recorded in real-time during flight by a so called 'black box', something that is still not a prerequisite in surgery. It is self-explanatory that the events which transpire during the surgical procedure have a major impact on postoperative outcomes. Not documenting these crucial events is therefore a missed opportunity.

In this article we discuss the pros and cons of peroperative video registration as a method of documenting the care provided and improving its quality, as well as the legal aspects that accompany it.

Background

The outcomes of a certain treatment could differ immensely among similar patients. This is notably the case in complex surgical procedures, such as rectal surgery. For instance, after rectal surgery the majority of patients suffer from potentially avoidable functional disorders, e.g. urogenital dysfunction and faecal incontinence.²⁻⁴ Also due to this variability the importance of quality control policies are widely endorsed.

The chief example of quality control in surgery is the addition of the 'time-out'-procedure to the guideline regarding the peroperative phase. This procedure implies that the 'surgical safety checklist' is run down in the presence of all attending the surgical procedure, including the patient, before the start of the procedure.⁵ However, this checklist mainly focusses on the preoperative factors, whilst peroperative factors are also defining for the eventual prognosis. The applied surgical techniques could not be analysed in this way and additionally this checklist does not guarantee that essential operative steps are executed in a correct manner.

Currently, the traditional and often subjective operative report is the only source of information of what transpired during surgery, especially in absence of the primary surgeon. The operative report does indeed provide a textual outline regarding the general course of the procedure, yet prior research has demonstrated that operative reports lack critical components at times.⁶ In a recent study, we have determined that video documentation of surgical procedures provides a more detailed and objective representation of peroperative events.⁷

Quality improvement and control

Purposeful and systematic application of video documentation in surgery could lead to quality improvement in several ways. For instance, it is possible to compare distinct surgical techniques among each other or optimise a certain approach. Using video-analysis, a number of preoperative causes of sexual dysfunction were identified in patients that underwent radical prostatectomy.⁸ In a similar way, an operating team could review footage of the procedure as a form of self-reflection, for example after a complication has occurred.

The development of a 'black box' in surgery, of which recently a version was brought into service in the Academic Medical Center Amsterdam, follows this ideal. Comparable to an airplane equipped with a flight data recorder, the operating theatre is prepped with recording equipment which continuously registers video and sound of the surgical procedure and operating theatre surroundings, as well as data regarding the patients' vital signs. The goal is to document all technical and non-technical actions (i.e. communication) of the operating team in real time, so that causes of possible adverse events could be identified upon review of the black box data.⁹ In theory, the mere realisation that the surgical procedure is recorded on video could potentially improve outcomes, the so called 'Hawthorne-effect'.

Is consent necessary?

The act of documenting this kind of personal data is bound by legislation. The primary rights that patients are granted in their relation to a treatment provider are written in the Medical Treatment Agreement Act (Wet op de Geneeskundige Behandelingsovereenkomst – WGBO).¹⁰ The management of patient data is recorded in the Personal Data Protection Act (Wet Bescherming Persoonsgegevens – WBP).¹¹

In the process of creating peroperative video, three situations can be distinguished.¹² In situation I, video is an integral part of the treatment provided, for instance in the case of laparoscopic surgery. In situation II, the images are not an indispensable part of the treatment but are an added value in, for example, quality improvement, such is the case with the black box. Situation III concerns the use of images that are used for a different purpose than was initially intended, such as for education.

Article 8 of the WBP states that unambiguous consent is a prerequisite for the processing of data which can be traced back to a person. Naturally, in all previous situations consent from both patient and treatment provider is necessary. Yet in theory, certain types of video documentation will not be traceable to the person in question, for instance endoscopic images. To use these types of video documentation in practice however, e.g. as documentation method or for quality improvement, requires patient identifiers. Therefore, video documentation in principle will be covered by the WBP.

Situation I is a noteworthy case. In this, the creation and processing of images is interwoven in such a manner with the treatment, that its justification lays in the accomplishment of the medical treatment agreement. Given the fact that this agreement already is based on patient

consent, the images may be processed, if only for documentation purposes. In the cases of situation II and III, patient consent is indeed necessary. In addition, it is not unthinkable that in the case of situation II, recorded video images could potentially become such an integral part of the treatment, that these eventually appertain to situation I.

Moreover, it is plausible that for the use of images such as in the case situation III 'assumed consent' is applicable, as is described in KNMG-guideline 'Handling medical data' and article 7 and 9 of the Healthcare Quality, Complaints and Disputes Act (*Wet Kwaliteit, Klachten en Geschillen Zorg – Wkkgz*).^{13,14} This is then exclusively applicable to the use of images for internal quality improvement purposes, of which the patient has to be informed about.

Storage and retention period

How should these video images be stored? In situation I, in which the creation of these images is an essential part of the treatment, addition to the patient file is recommended.¹² In that case, the documentation will be covered by the WGBO and the images, with a few exceptions, will be stored 15 years from the moment of creation.¹⁰

In situation II the images, which are not essential for the treatment, would not necessarily have to be stored in the patient file. These are then covered by the WBP, of which article 10 states that a retention period has to be defined beforehand.¹¹ As of yet, no consensus regarding this exists.

Drawback of video documentation

Documenting peroperative video does pose some risks. If the purpose for which data may be examined and by whom is not properly documented beforehand, information could then be used for a different goal that was formerly intended, which in turn might lead to exposure of not only the patient, but also the members of the operating team. This is undesirable. All members of the treatment team must be able to open up for improvement, whilst care is being taken to maintain a 'no-blame'-culture. The WGBO already states who is able to review patient data, including video images, for what purposes.¹⁰ For images covered by the WBP, this should clearly be formulated in advance.¹¹

A different fact of great significance is that the medical disciplinary committee and the public prosecutor is allowed access, under strict circumstances, to the stored video documentation for use as evidence.^{12,13} The objective representation that video documentation provides does not necessarily have to discredit the healthcare professional. It might just as well speak in favor of the defendant.

Future perspectives

Changes in healthcare practice are often received with hesitance. Implementing peroperative video documentation will be accompanied with challenges on legal and technical areas. For instance, at this moment only endoscopic procedures are reasonably suitable for video

documentation. Recording video using the current IT environment in operating theatres is often complicated to achieve, let alone the storage of the great amount of data in the case of the surgical black box. It is also important to realise that video documentation is not destined to replace the written operative report. Many healthcare providers are not able to interpret the video images and also the considerations of the operator are less adequately documented using video alone.

Conclusion

Video documentation is a promising method to record surgical quality. We consider that it is a question of time before this method will take a prominent place in the operating theatre. Until that time, the priority is to demonstrate actual quality improvement through video documentation and the development of clear guideline regarding documentation and use of video images. In 2016, an international prospective multicenter trial has been initiated from the Erasmus University Medical Center to evaluate the process and results of systematic video- and sound registration in the face of documentation and quality improvement.

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