

Video recording the Laparoscopic Surgery for the Treatment of Endometriosis should be Systematic!

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Abstract

Surgery is one of the cornerstones of the treatment of women with endometriosis. Video recording the surgical procedure is extremely important since it can help in the postoperative management of the patient, either with regard to the issue of infertility or pain. Moreover, it can help in the early diagnosis of postoperative complications, in the quality control of services that address deep endometriosis and in the education of new surgeons. This paper discusses the importance of systematic recording of laparoscopic procedures in women with endometriosis.

Keywords: Endometriosis; Video registration; Laparoscopy

Introduction

Surgery is one of the cornerstones of the treatment of endometriosis, especially in women with deep infiltrating forms of the disease. The surgical procedure depends on the location and extent of the endometriotic lesions, as well as the skills, experience and expertise of the surgeon [1]. Despite advances of the radiologic imaging techniques for Deep Infiltrating Endometriosis (DIE), that enable a mapping of the disease and a preoperative surgical planning [2], the confirmation of the lesions occurs during the surgical procedure and the surgical strategy is defined intraoperatively, right after the visualization of the endometriotic lesions. Therefore, every surgery is different even if the lesions are apparently similar in the preoperative work-up [3,4]. As a result, evaluating the effectiveness and possible adverse effects of the surgery is almost impossible, because there is no way to compare one intervention with another standard procedure [1]. One way to ensure the quality control of the surgery would be recording the complete surgical procedure for further evaluation.

As known, the standard surgical treatment for DIE is the complete resection of the disease implants [5]. Sometimes we come across patients who have undergone a surgical procedure and persist with the same symptoms present before surgery. In this situation, the availability of a copy of the recording of the surgery would allow the assessment of the procedure previously performed and the potential need for re-intervention in the case of an incomplete surgery. In cases of late recurrence of symptoms, it could be possible to determine whether the symptoms could be due the appearance of new lesions, the recurrence of old lesions or persistent lesions [1].

Therefore, the recording of surgery could improve the quality of care of patients with endometriosis. Nowadays, the most modern surgical equipments allow the easy registration of the surgical procedure and there are no excuses not to perform it routinely. This would ensure the information to be stored and retrieved easily.

This article will cover some important considerations about the importance of systematic recording the surgical procedures for the treatment of endometriosis.

Situations in which Video recording the Procedure can help in the Disease Management

There are some situations in which a patient with endometriosis previously operated is highly symptomatic or is trying to conceive without success and one could consider the need for re-intervention. In these situations, the availability of the recording of the previous surgery could help in the management of the disease, even contraindicating a repeated surgical procedure in some situations.

Highly symptomatic patients with superficial endometriosis

The vast majority of patients with endometriosis have superficial disease [6]. In this case, the patient may be symptomatic and imaging and laboratory exams little help for the preoperative identification of the lesions. Patients undergoing medical treatment who do not have a satisfactory response to drug treatment may eventually have indication for a diagnostic laparoscopy in order to identify and treat endometriosis, as well as to confirm histologically the disease [5].

For patients with a confirmed diagnosis of endometriosis in a previous laparoscopy, the record of the procedure would probably help a lot to avoid repeated laparoscopies in patients with superficial disease. It is known that most patients with superficial disease respond well to medical treatment [5] and usually there is no large benefit in performing various laparoscopic procedures in this group of patients.

Furthermore, it is important to remember that one of the causes of persistent dysmenorrhea in patients with a complete primary surgery is the presence of uterine adenomyosis [7,8]. Therefore, a patient who remains symptomatic after a complete surgical procedure for the treatment of endometriosis may be a candidate for hysterectomy [9] if she does not have future reproductive desire and does not want to maintain a medical treatment or does not respond to this treatment.

Patients previously operated for infertility considering a re-intervention

In some situations, surgery plays an important role in the treatment of patients with infertility [5]. No one questions the indication of the first surgery in infertile patients with a clinical suspicion of endometriosis. However, the role of reoperation to improve fertility in a patient previously operated may possibly be questioned. Video recording the primary surgery may contraindicate a repeated surgery in order to improve fertility in some situations, such as:

- Patients with minimal or mild disease previously operated and who failed to conceive postoperatively;
- Patients with a prior negative laparoscopy and persistent symptoms of pelvic pain and associated infertility;
- Patients with severe endometriosis and tubal damage in the first surgery that failed to become pregnant after the primary procedure.

In the case of a patient previously operated for endometriosis with evidence of residual disease in the recording of the primary surgery, one might consider a reoperation for the complete surgical treatment of the disease.

Patients submitted to an incomplete primary surgery

Some patients with endometriosis previously operated may have persistent or recurrent symptoms after a certain period. Very often, patients with severe endometriosis undergo an incomplete primary surgery and the persistent symptoms may not specifically address a recurrence of the disease, but the persistence of it [9].

In these situations, there could be an indication for a reintervention if the patient persists with pain symptoms despite postoperative clinical treatment. With the advance of imaging exams for preoperative diagnosis of DIE [2], we do hope that such events become less frequent in clinical practice, since the recommendation of good practice is that patients with known or suspected deep endometriosis are referred to centres of expertise that offer all available treatments for endometriosis in a multidisciplinary context [5].

The initial goal of the surgical procedure is the complete resection of all endometriotic lesions. If the surgical skills of the attending gynaecologist do not fit this goal, it is preferable to refer the patient to a centre with expertise in this type of procedure than performing an incomplete surgery [9].

In the case of infertile patients with DIE whose primary surgery was incomplete, the recording of the procedure could help the attending gynaecologist to decide among:

Reoperation to complete the surgery: obviously this decision depends on several other factors such as patient's symptoms, age, tubal patency, absence of associated male factor, etc.

Indication for IVF if the patient has failed to become pregnant after the surgery, regardless the completeness or not of the primary surgery [9].

Consider a reoperation to complete the surgery if there is failure of 2 or 3 cycles of IVF in a patient with incomplete primary surgery.

Indicate a reoperation to complete the surgery considering that there may be a benefit of complete removal of the disease before IVF [10,11].

Early diagnosis of complications

Whenever a postoperative complication occurs, revision of the recording of the surgery can be a useful tool to make an early diagnosis and, consequently, can lead to an early reintervention.

Quality Control of Surgeons

As the results of surgical treatment of DIE depend on the surgical technique, surgical skills and surgical environment, the differences in results when comparing different studies may reflect much more a difference related to the surgeon than to the technique itself [1]. It is very easy to say that the surgical technique for the treatment of DIE includes complete resection of endometriotic lesions preserving adjacent structures not affected by the disease, starting the dissection in the healthy tissue and progressing towards the disease [3]. However, the application of such principles is not always so simple!

It has been demonstrated that the recognition of the disease implants in a surgical procedure for endometriosis varies according to the expertise of the surgeon [12]. Once the learning curve for the identification of the endometriotic lesions was overcome, the results of the surgical procedure depend on the technical quality of the performed surgery. For example, the quality of surgery for the treatment of ovarian endometrioma can be assessed by the postoperative ovarian reserve and will vary according to the medical centre and the surgeon [13-15]. In the case of DIE, the radicality of the procedure and the possibility of carrying out a complete resection of the lesions will depend on the experience of the surgeon and the center for disease management. The importance of the learning curve could be demonstrated in the paper of Carmona et al. [16] in which it was observed that after an experience of 30 cases of laparoscopic conservative treatment of patients with rectovaginal endometriosis, the rate of disease recurrence was significantly lower. In addition, it is well known from other surgical procedures that there are important differences in terms of results and complications among surgeons. After overcoming the learning curve for a specific surgical procedure, there is a significant decrease in the duration of surgery, the bleeding episodes, the complications and the judgement errors [17-20].

Not only these variables can result in variability in the outcomes of the surgical procedure for the treatment of women with endometriosis, but also there are philosophical and conceptual issues involved in the decision making process at the time of surgery. One can come across patients who underwent incomplete surgeries due to lack of experience of the surgical team and patients undergoing complete resection of the disease using conservative or radical techniques [21]. There is a wide difference between the groups with extensive experience in the management of patients with DIE, ranging from some [22,23] that use conservative techniques (rectal shaving, mucosal skinning, discoid resection) and avoid the most the segmental bowel resection to others [24] that perform segmental bowel resection almost as a routine.

So, how can anyone check if a surgeon is able to perform the surgical procedure for the treatment of DIE with competence?

The process of accreditation of surgeons could be a solution; however, there are no accreditation standards regarding surgery [1]. In this context, the recording of the surgery could be a simple solution! The recording of the entire surgery would document the whole procedure and could be used to ensure that the surgery was performed with accuracy, thoroughness and precision. If there was recurrence of

symptoms after surgery, the assistant gynecologist could use the recording to check if all lesions had been removed and to determine whether current symptoms could be the emergence of new lesions or recurrence of old lesions (or persistence of lesions).

Furthermore, providing a copy of the recording of the surgery to the patient would enable her to continue the treatment with another professional in the future, based on an operation previously performed.

Other Applications

In minimally invasive surgery, the endoscope is used to view the operative field inside the abdominal cavity without requiring a large incision. The recording is essential for these types of intervention, but data are not necessarily stored afterwards [25].

Video recorded data can be used to teach and train students and professionals. The videos can be used before, during and after an intervention. Before the procedure, the data serve to guide or teach students or professionals, preparing them for new or difficult procedures. During the procedure, the videos are used to teach students outside the operating room or to provide information to a supervising surgeon or a counsellor who is far away (concepts of telemedicine). After the procedure, the video can be used for critical evaluation of the procedure in an attempt to improve the surgical skills of the surgeon [25].

Videos can also play a role in the research, with the goal of improving the quality, safety or efficiency of the health system [25]. Video recordings of surgery could still be used as a tool for accreditation of surgeons after training, for intermittent recertification of surgeons, and for revalidation of the title of specialist [1].

Concerns

Although video recording is a powerful tool for various purposes, concerns arise as obstacles to the wide implementation of it in clinical practice.

Medicolegal issues

The systematic recording of surgeries could cause some side effects! Errors would be recorded and could be used against the surgeons during medicolegal actions. The concern is real because the medicolegal system and judges are not always able to distinguish between unavoidable accidents and real mistakes during the procedure [1]. However, many legal actions are prolonged because of lack of good information and a recording might well be of great help in determining what actually did occur. If there has been no negligence, a recording will act to protect staff against unwarranted accusations and help to resolve misunderstandings [26].

Privacy

The videos invade the privacy of patients and health professionals. Legislation on video registration varies from country to country. In the Netherlands for example, any person involved in the process, be patient or healthcare professional, has to be informed in advance about the nature and purpose of the recording. This person must also authorize the video registration. As the video is not directly related to the treatment itself, such data should not be included in the medical

record. In the Netherlands, data not included in the medical record are not necessarily accessible to the patient. On the other hand, in the United States, any type of personal health information must be accessible to the patient, regardless of whether it is part of the medical record or not [25].

Important Aspects of the Video recording Process

Laparoscopic video cameras

The type and the quality of the video camera are important aspects of the video recording process. Complex surgical procedures are better performed when using HD video cameras that offer a superior viewing experience for surgeons (16:9 aspect ratio, 1920 by 1080 horizontal and vertical lines). Anatomical structures become much more visible and well defined which may be hidden in the flatter standard device image. Certainly, the quality of the video documentation is better when a HD video camera is used during the procedure.

Video recording systems

There are many ways to record the laparoscopic surgical procedure. For example, the IMAGE 1 HUB HD from KARL STORZ offers documentation and printing functions as integrated modules. The camera control unit's front and rear USB ports allow for the simultaneous connection of various printers and USB mass storage devices. KARL STORZ also has the AIDA documentation system that allows for easy and quick recording of images, videos, and audio files in HD quality. Particularly, we use an alternative device to record our procedures in high definition format (1080i HD, 29.97 fps 1920x1080).

In order to minimize the problem of data storage (because of the size of videos in HD quality), one may use other USB capture devices with S-video input to get smaller video files (25 fps 720x480). It is a good alternative to enable the systematic video documentation in services with high surgical volume.

It is a Time-consuming Procedure!

There is no doubt that the analysis of the video recordings may be time-consuming! There are 2 options when one considers giving one copy of the recorded procedure to the patient:

Giving the patient the complete recorded file. Giving the patient an edited copy of the video registration. The former option seems to be easier and is not so time-consuming; however, files recorded in high definition format (1080i HD, 29.97 fps 1920x1080) are too big (more than 50GB per hour of video recording). In these situations, it is usually necessary to convert the original file into a smaller one, what takes some time! The latter option seems to be the best in our point of view, provided that the one who is video editing the file does not exclude the most important steps of the procedure. Nevertheless, it requires more time to edit all the recorded videos!

Discussion

The videos are used in real time during minimally invasive surgeries, but the image files can be stored and used for further evaluation of the surgical procedure and education [25]. The video recording allows the results to be revised at any time and from anywhere, even helping in the quality improvement of the surgical technique. It was demonstrated in the paper from Touijer et al., [27],

in which they evaluated 12 cases of patients undergoing laparoscopic radical prostatectomy with positive surgical margins and the postoperative analysis of the video identified 8 procedures with technical error. The exact step of the procedure in which the technical mistake occurred could be clearly identified and their group was able to improve their surgical technique for subsequent patients.

Currently, technology allows us to systematic recording the entire surgical procedures, as well as archiving and recovering data to further revision of the videos. The cost is low and not prohibitive [1].

Specifically in endometriosis, the video serves to guide the postoperative treatment, for the purpose of either fertility or pain management, according to the disease status. Whatever procedures were performed on a patient gets recorded so future gynaecologists get the full context of what has or has not worked in different scenarios. The availability of the video of the surgical procedure can, in some specific situations, "save" the patient from a reoperation. Moreover, it could serve as a quality control of reference centres for the surgical treatment of DIE [1].

The availability of the videos for replay can be a useful tool for training other physicians on specific procedures. It can have other benefits such as improvement in quality of care as peers can review the video content after the procedure in order to identify technical failures of the surgeons to be corrected. Also, the surgical department of a hospital may be able to assess their surgeons' proficiency by using the video recordings. It has been already demonstrated that the procedures performed by skilled surgeons are associated with fewer complications and lower rates of reoperation, readmission, and visits to the emergency department [28].

Systematic video recording of the entire surgical procedure was incorporated in our daily practice since we started performing our surgical procedures, not only for endometriosis surgery but also for all other surgical procedures. Despite some aforementioned concerns from a medicolegal view and several privacy politics to be respected, we believe that the video registration of the surgery only benefits the patient and should be adopted systematically in cases of surgery in patients with endometriosis.

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