

# How Can We Improve Gynecological Surgery Webinars during the COVID-19 Pandemic?

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## Abstract

The COVID-19 pandemic prevented doctors from attending surgical meetings or conferences where they learned surgical skills from others and shared surgical experiences. It also resulted in the rapid use of webinars in obstetrics and gynecology meetings. While webinars or virtual meetings enable distance learning and replace face-to-face meetings using various teleconferencing software programs, many attendees are not satisfied and find it difficult to learn surgical techniques using commercially available telecommunication programs. Therefore, dedicated webinars are necessary to present emerging surgical technologies, satisfy the attendees, and achieve a successful outcome. This article reviews the existing telecommunication programs, new presentation technologies, and proposed webinars developments to improve its delivery of surgical techniques and training during the COVID-19 pandemic and in the future.

**Keywords:** 360° video, COVID-19, gynecological surgery webinars, teleconferencing, three-dimensional video, virtual reality

## INTRODUCTION

Conventionally, surgical teaching is one-to-one or hands-on teaching but remains true nowadays. It is good to be finite and fine tunneling surgical skill training as possible. However, it is very time-consuming and limited by the location and availability of the teacher and the trainees. Gynecologic endoscopy conferences/meetings aim to provide opportunities to allow doctors to learn minimally invasive surgical skills safely and feasibly to offer their patients less invasive surgical options. However, routine medical education programs appeared to stop for a long while in many countries due to social distancing, infection risk, and travel restrictions during the COVID-19 pandemic.<sup>[1]</sup> As a result, medical professionals have quickly shifted to webinars or virtual meetings using the Internet platform.<sup>[2,3]</sup> Then, teleconferencing platforms play an increasing role in medical education for doctors, getting in touch with each

other, involving experts from various places, and continuing medical development.<sup>[4]</sup> A webinar is an interactive seminar or presentation meeting on the Internet.<sup>[5]</sup> Today all group activities, from the top, the international governments, big companies, universities, and schools, are using it. It allows participants in different places to see and hear the presenters and each other without travel. It also allows us to express opinions and ask questions like in conventional meetings. While webinars meetings enable distance learning using various telecommunication programs, many participants are not satisfied, find it difficult to learn, and consider it not completely replace conferences.<sup>[6]</sup> It is even more difficult for webinars to teach and learn surgical skills. The fundamental difference in webinar is two dimensional; whereas in surgery, it is three dimensional (3D); and together with the time axis, it will be four dimensional. Hence, it is not easy to teach and learn surgical skills through webinar.

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Since the invention of optic fiber, digital data transmission has been revolutionized with the development of 4G and 5G communications. However, there are still problems encountered during the webinar with interruption of the transmission and suboptimal quality in some countries. More developments in webinar programs are also necessary to improve the delivery of surgery webinars to achieve a successful outcome. In this article, the authors present the existing telecommunication software programs used by the medical professions, new presentation technologies, and proposed webinars/virtual meetings developments to improve their effect during the COVID-19 pandemic and the future.

## METHODS

Due to the coronavirus pandemic, the medical professions have shifted very quickly to meetings using the internet platform. The medical professionals commonly used the communication software ZOOM to hold their webinars. Individual groups also use other webinar software, and they are listed and discussed as follows in Table 1.

Most of these teleconferencing software are for commercial users for general meetings and are not dedicated to delivering surgical teaching and learning. Therefore, new technologies that can enhance the future delivery of surgical skills, technologies, and training are suggested as follows:

1. 360° and 3D camera presentation for live surgical demonstration. In the live surgical demonstrations, the 3D approach has been successfully employed in laparoscopic surgery using a 3D laparoscopic camera and in the da Vinci surgical system.<sup>[7,8]</sup> The video pictures only focus on pelvic anatomy and pathology. Webinars, however, require further technological advancement to allow off-site attendees to view the 3D videos. Furthermore, the live surgery demonstration can last for hours. It can be very boring and tiring. The on-site and off-site attendees often cannot easily understand how the operation is being done; for example, how many doctors and nursing assistants are there? When some movements stop, for example, after intraoperative bleeding, attendees would not know how the surgeons handle the situation externally in the theater or what is happening. To resolve this issue, a 360° live surgical demonstration using a 360° external camera will allow the attendees to appreciate the emergency or learn from the surgery demonstration in the theater. The live surgical demonstration can then show the 360° view of the whole theater and the endoscopic view [Figure 1] when attendees wear a virtual reality (VR) Google. The whole surgical procedure can also be digitalized and stored for later retrieval. Then, the meeting participants can sit comfortably at home,

log in to the website, and learn the procedure at leisure. A 360° video for laparoscopic surgery is available to be viewed from Youtube <<https://www.youtube.com/watch?v=1vw1Z21v1EU>>

2. The new innovative high-intensity focused ultrasound (HIFU) ablation for treating fibroids and adenomyosis is mainly controlled by a computer console, guided, and monitored by ultrasound scan or magnetic resonance imaging. Therefore with the software program Zoom [Figure 2], the whole HIFU ablation procedure can be viewed. A narrative description of the surgery can be communicated online [Figure 2] with any attendees. A surgical webinar held using the Zoom platform or other telecommunication programs will enable the delivery of live HIFU ablation demonstration to a group of attendees online. A private HIFU clinic is using this Zoom communication to teach new doctors who cannot attend a live surgical session on site.<sup>[9]</sup> Future surgical development in this area will enhance the webinar's delivery of surgical skills and techniques as a possibility
3. For small groups teaching surgical skills, VR programs teaching basic surgical techniques,<sup>[10]</sup> such as suturing and standard laparoscopic surgery can be remotely learned on the Internet platform, such as playing games [Figure 3]. These developments will enhance surgical skill learning on virtual or augmented surgical programs; hopefully, doctors can become proficient before operating patients at the operating table. Many orthopedic or general surgical virtual or augmented programs can be studied on surgical websites;<sup>[11]</sup> The potential of VR for surgical education could be expanded<sup>[12]</sup> and hopefully be designed for gynecological surgeries
4. A video content management platform called Panopto is a good management system for education and webinars.<sup>[13,14]</sup> All conference lecture videos, questions and answers, and chairman comments can be captured, digitalized, and stored using this program. Webinar organizers using



**Figure 1:** (a) A 360° view of the whole theater with an endoscopic view visualized on a monitor (with a VR viewer). (b) If using a VR Google viewer, attending participants can appreciate the 3D vision of the theater environment and the surgical procedure. VR: Virtual reality, 3D: Three-dimensional

**Table 1: Commonly used teleconferencing software**

Software	Descriptions	Limitations	Charges/maximum time
Zoom (7)	It is the best webinar software on the market today and is a very popular video conferencing application It has a simple, user-friendly interface It shares screen for presentations, having full record meeting, and messaging service It is available on Mac, Windows, iOS, and Android It allows up to 1000 people	Too many subscriptions HD video is not the standard inconsistent cloud file sizes Security may be an issue	Free – 100 for 40 min USD14.99/month maximum 100 USD19.99/month maximum 300 USD50/month maximum 1000
GoToMeeting	It allows access to the meeting via a computer or other mobile devices It offers cloud recording, note-taking, automatic transcription services It can invite more than 3000 people at once	It requires a stable internet connection The quality of the equipment matters More costly to access the premium features The chat option is limited It can use a lot of bandwidth	Need payment (amount unknown)
Webinar Ninja	It is an easy tool to use It can run multiple polls before, during, and after the webinar Email automation is available Analytics dashboard, able to export data Maximum 100 attendees	Interruption A lot of effort needs to change the registration template for the host The setup process can prove to be counterintuitive	Need payment (amount unknown)
Tencent VooV Meeting	Tencent Meeting is accessible in Mainland China. The VooV's pro version currently allows up to 100 free participants for an unlimited amount of time	A relatively new application, new users may not be familiar with it Mainly downloaded and used in China	Free – 25 participants Pro – 100 participants Enterprise – 300 participants
Skype for business	It is an office application More security It manages participant's account Maximum 250 persons	Occasionally unreliable communications, split between conversation May have a call problem It requires MS office 365	Ceased to operate from July 31, 2021
Microsoft Teams	It replaced Skype for business It shares screen for presentations, full recording, messaging service It is available on Mac, Windows, iOS, and Android operating system Maximum 300 people	Microphone or webcam issues Teams are only showing older messages and chats Not receiving notifications Login error messages Operations keep freezing	\$97/m, maximum 30 h
TeamViewer	It keeps a directory of workstations It can easily connect to any workstation It allows remote control of workstations so can implement changes and fixes It can be used in Window, macOS, Linux, Chrome OS, iOS, Android	It cannot share large files It does not work through proxy servers Every operating system needs to have TeamViewer and the same version installed, or it won't work	Free for personal use Charge for commercial use
Facebook Messenger	A social media for chatting It can do texting, phone call, sharing	Privacy issue Intrusive issue Using lots of memory Often meeting distracted by advertisements	Free for personal use
Webinar Jam	It works with various browsers and operating systems It incorporates surveys and polls It is easy to use, has user-friendly dashboards and interfaces	Time lag and nonreal-time performance Webinar setup may be affected by the software provider	Need payment (amount unknown)

this video content management system can allow the attendees to log into the program, navigate between presentation videos, search for specific terms, find out any favourable speakers, and watch the videos along with the speakers after the meeting. Then, any attendees can go to learn any lecture or videos in their leisure time (<https://www.panopto.com/panopto-for-education/video-management/>).

## DISCUSSIONS

Nowadays, webinars provide not just continuous medical education for doctors to contact colleagues, their workplace, and future development. It can also be important in the teaching and training surgical skills as technology advances. It seems that the COVID-19 pandemic has become a tremendous drive for improvements in the webinar.



**Figure 2:** The HIFU ablation of a submucous fibroid was viewed in a real-time ultrasound scan during a small group webinar using the ZOOM. The surgeon delivered a narrative description of the procedure. HIFU: High-intensity focused ultrasound

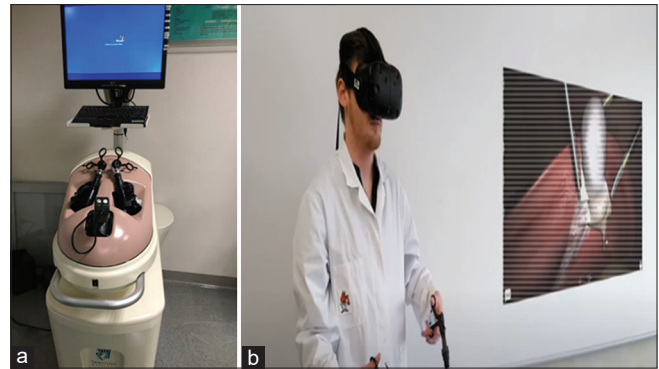
The advantages of webinars compared to conventional conferences are listed in Table 2.

In learning the new HIFU ablation technology, only a small group of doctors’ traveled from time to time to China to learn and practice this surgical technology. However, during the COVID-19 pandemic, where travel restrictions are imposed in many countries, international meetings or surgical training can now be sought using webinars.<sup>[15]</sup> More attendees can participate in gynecological surgical webinars, not limited to the available venue space. Therefore, it might become more cost-effective without rental payment, costs for refreshment, staffing, and accommodation than a conventional conference. The whole meeting can be digitalized, allowing recording, searching, and playing back later. The webinars also will not be affected by weather, travel delay, and geographic border. Compared to the webinar, the number of participants at a conventional conference is limited by the available rental space at the venue. Some participants are also more expensive to pay for travel, accommodation, and food. There are also limited resource materials after a conventional meeting, although participants can have the abstract book or related journal papers.

However, there is a downside to these webinar meetings. Humans are social animals who like face-to-face interaction. Speakers may miss parts of that valuable feedback from the attendees that help one to adjust his presenting approach – they miss those visual, non-verbal, and even those subtle verbal cues that come with face-to-face communication at question time. A speaker also cannot utilize body language’s full potential to convey or highlight certain messages and, overall, to connect with and engage participants at the highest level emotionally.

## CONCLUSION

Although nothing beats face-to-face interaction and communication between people, there are times when online



**Figure 3:** For small group surgical skill teaching, (a) locally installed laparoscopic surgery system set up can be replaced by (b) augmented reality training through webinar. (b) Downloaded from Youtube - Highly-Immersive Virtual Reality Laparoscopy Simulation. Huber *et al.*<sup>[11]</sup>

**Table 2: The comparisons between webinars and conventional face-to-face conferences in gynecological endoscopy meetings**

Webinars	Conventional conferences
More participants not limited to allowable space	Participants determined by allowable space
More cost-effective	More expensive for some participants – travel, accommodation, food
Allow recording and playback of the presentation at the meeting	Limited revision resources – only abstract books or journal papers
Not affected by weather, travel, or delay	

Internet learning could be an optimum solution, for example, during this pandemic. These days, it may be the only viable and effective solution for education covering the whole world rapidly. Together, webinar meetings can be ideal for teaching surgical techniques especially using a certain technology, for example, fast network, the noninvasive HIFU ablation technology, new developments in 3D, and VR programs, which we have presented in this paper.

This paper does not recommend a software platform and technology for a surgical webinar that is up to individuals or organizations. Yet, increasing popular webinars will make the software industries fully aware of the competitions, deficiency, and security issues, thus making an ideal virtual meeting possible over the Internet in the future. All the communication industry, surgeons, and attendees need to put some extra effort to make the overall experience of webinars worthwhile, for example, fast network, 3D/360° video technology, virtual/augmented reality, and searchable digitalized data. Further technological improvement may also lead to new Internet platforms to deliver surgical webinars.

Finally, the burning questions are, can webinars effectively replace traditional surgical conference sessions or act as

a complementary role? Can they be a reliable, workable solution with increasing importance? The answers are yet to come.

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