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Emerging trends in rhinoplasty education: accelerated adoption of digital tools and virtual learning platforms

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Purpose of review

The COVID-19 pandemic catalyzed the rapid adoption of digital tools and virtual learning platforms by rhinoplasty educators and trainees alike. This review provides an overview of the variety of digital software and web-based tools rhinoplasty educators have adopted and highlights the advantages and potential drawbacks of virtual learning via e-content.

Recent findings

Medical education including subspecialty surgical training has recently undergone a dramatic digital transformation. Rhinoplasty surgeon-educators have been forced to embrace new digital tools, including videoconferencing, podcasts, virtual simulation and social media to reach and teach trainees. Recognizing the advantages of this new, limitless digital space, rhinoplasty surgeons are also engaging in virtual transcontinental collaboration and distance mentorship.

Summary

The dramatic evolution in how clinical educational materials are now digitally created, curated, disseminated and consumed is likely to far outlast the COVID-19 pandemic itself. Rapid, exponential growth of this digital library, however, places increased responsibility on educators to guide trainees towards evidence-based and state-of-the-art content.

Keywords

education, podcast, rhinoplasty, videoconference, virtual learning

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic forced academic medical centres around the world to transition to a virtual platform for trainee didactics [1,2,3]. For surgical education, this heralded dramatic modifications to the curriculum across subspecialties with the accelerated adoption of videoconferencing, virtual meetings, webinars, online lectures, podcasts and social media [4]. Rhinoplasty is both a scientific and artistic discipline requiring creativity in addition to mastery of nasal form and function, surgical techniques and anatomy, and facial proportions and aesthetics. The rhinoplasty surgeon must also possess exquisite patience and precision. Novice surgeons face a steep learning curve; the advent of e-learning has the potential to accelerate the acquisition of clinical knowledge and technical skills. Similar to other specialties, rhinoplasty surgeon-educators have moved towards embracing the flipped classroom model and are

leveraging preexisting digital tools and web-based platforms to create and promote e-learning experiences, global virtual collaboration and distance mentoring. This article reviews the variety of digital tools and virtual learning platforms currently utilized by rhinoplasty educators, who are, at a global

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KEY POINTS

- The COVID-19 pandemic forced medical centres to rapidly adopt digital tools for trainee didactics and surgical education.
- Rhinoplasty surgeon-educators have embraced new virtual learning platforms, including videoconferencing software, podcasts, surgical simulations and social media.
- This new digital era in surgical education and collaboration has created a limitless, global space for learning, collaboration, research and distance mentoring.
- The digital transformation in how surgical educational resources are now created, curated and shared is likely to stand the test of time.

level, curating an expansive digital library that is likely to endure the test of time.

VIRTUAL RHINOPLASTY EDUCATION

Historically, rhinoplasty education has relied on textbooks, review of published literature, dissection in the cadaver laboratory, observing senior surgeons practice and attending society meetings and conferences, where different points of view or novel ideas are presented and discussed. The global lockdown imposed by the COVID-19 pandemic forced rhinoplasty educators to learn and adopt digital tools, including videoconferencing software (i.e. Zoom, Skype, Microsoft Teams and so on); create podcasts, webinars and surgical videos, which are shared on web-based platforms (i.e. iTunes, Youtube and so on); and curate educational content to be posted on social media (i.e. Twitter, Instagram and so on) [4–6]. Trainees have also transitioned to reading e-books and e-articles, finding they are easier to locate, more cost-effective and more efficiently searched and shared than their print counterparts [7]. Online and cellular phone application-based question banks have also been widely adopted in preparation for board certification examinations. The Rhinoplasty Podcast was introduced in early 2021 and has since been accessed by listeners in nearly 70 countries. Each podcast features an invited guest speaker who discusses three areas, namely introduction about the guest speaker's background, advice for patients and knowledge for colleagues on specific rhinoplasty-related topics. Taking all of these digital tools as a whole into consideration has led some to coin the phrase 'disruptive technology' in medical education [8].

A recent study on the impact of the COVID-19 pandemic on training experiences across all surgical specialties at a single institution found that didactic opportunities offered to surgical trainees via Zoom or other virtual platforms were perceived as enriching due to new opportunities to attend webinars by world experts and recorded lectures offer the flexibility of being easily integrated into busy trainee schedules [9]. Although curriculum components such as knowledge-based lectures and telehealth clinic visits can be easily transitioned to virtual platforms, recreation of the educational experience in the operating room is more challenging to digitally translate. Select academic surgical programmes have responded to this challenge with adoption of wearable, first-person video recording devices to capture footage from the operating room for the creation of virtual surgical experiences and an educational surgical video library [10,11]. Rhinoplasty surgical videos can currently be accessed from a variety of sources, including YouTube, the Quality Medical Publishing platform, and via membership in professional societies (EAFPS, AAFPRS, ERS), which grant open access to online libraries with high-definition instructional videos.

There are several advantages to the utilization of virtual learning platforms to optimize rhinoplasty education. There are no geographic or temporal barriers and trainees can acquire uniform knowledge base and surgical techniques from experts around the world by accessing on-demand lectures and digital learning resources [12]. It is simultaneously cost, time and resource-effective. Three-dimensional technology for surgical simulation and preoperative planning is likely to be the next major innovative solution for enhancing rhinoplasty education and promoting multisensory learning [13,14]. Virtual animations can more effectively explain key steps of the procedure, help novice surgeons comprehend the impact of each step and its effect on the form and function of the nose, and demonstrate the end result once all planned steps are completed [15]. The European Academy of Facial Plastic Surgery Task Force has recommended use of surgical videos and virtual tools, including the Anatomage Table, which allows for advanced, 3D virtual dissection of a life-sized human cadaver [16]. Touch Surgery is another software application that contains videos of 42 plastic surgery procedures that trainees can watch. A digital curriculum creates a boundaryless virtual community of educators and learners and empowers learners to engage in self-study in accordance with their own schedule and level of knowledge and training. Virtual simulation technology has the potential to provide a superior and faster paced learning experience and may

become an enduring component of standard rhinoplasty education.

VIRTUAL GLOBAL COLLABORATION AND MENTORSHIP

The COVID-19 pandemic forced plastic surgery organizations and societies to convert meetings and conferences to virtual formats [17]. The Society of Rhinoplasty Surgeons of South Africa began hosting biweekly video-conference webinars. They partnered with the University of California Irvine to offer CME points. They hosted international guest speakers and expert panels and over 1000 people from around the world participated in the webinars. The EAFPS and RSE similarly began a series of webinars and the SORSSA organized a World Rhinoplasty Day via a 24-h continuous webinar. Presenters from over 40 nations participated and an international expert panel of judges was compiled. The EAFPS hosted the first hybrid meeting – with the option of participating via video-conference or in-person – in 2021 in Nice, France. The IFFPSS hosted the first ever Global Summit of Facial Plastic Surgery webinar, a virtual event featuring 18 three-hour sessions during which 14 member societies presented talks.

Witnessing the success of virtual meetings and conferences, participants began to comprehend the potential value of continuous international collaboration through web-based and cellular phone-application group chats. The Evidence-Based Research in Rhinoplasty Group (EBRRG) is a telegram group overseen by a board of 30 internationally recognized experts. Members post clinical questions or problems to the group chat and discussions often lead to the sharing of academic articles and polls conducted about a specific topic.

The advent of such accessible transcontinental collaboration is an exciting new chapter in surgical academia and mentorship. Distance mentorship – when the mentor and mentee are located in different geographic areas – involves the use of virtual platforms to create a transcontinental telementorship relationship [18[¶]]. Although the lack of in-person interaction is a significant disadvantage, trainees and novice surgeons can connect live and face-to-face with experts from around the world via video-conferencing. Mentorship in surgical subspecialties is paramount to career success and distance mentorship eliminates geographical barriers and increases global access to mentors [18[¶]]. Some have even called for the establishment of structured virtual mentorship communities within each surgical subspecialty to foster equitable access to mentors and to promote diversity and inclusivity [19]. A 2021 systematic review on long-distance mentorship in

surgery found that most junior surgeons utilize distance mentorship to enhance surgical skills, but they identified additional benefits to include career enhancement, professional development, increased surgical research and clinical knowledge [18[¶]].

POTENTIAL DRAWBACKS OF E-LEARNING

There are several potential drawbacks of virtual learning that must be acknowledged. Despite the multitude of digital tools available, there is a significant lack in the ability to practice technical skills with direct supervision and real-time feedback. Although virtual cadaver dissection software exists, the lack of haptic feedback and in-person faculty observation and guidance is a significant disadvantage [20]. The personal interaction and connection formed between the educator and student during face-to-face teaching is an invaluable component of in-person medical education and surgical training. Trainees also need to be self-motivated and create their own study plan to navigate and effectively utilize the variety of digital learning resources available. Blending the specific advantages of each didactic method – in-person and virtual – a hybrid model for surgical education is likely to offer the best teaching and learning experience for both educators and students.

CONCLUSION

The COVID-19 pandemic heralded a dramatic digital transformation for medical education and surgical training resources. Rhinoplasty educators and trainees have rapidly adopted digital tools, including videoconferencing software, surgical simulation, podcasts and social media. Virtual communication platforms have enabled continuous transcontinental collaboration and distance mentorship. Electronic educational resources have experienced a rapid and exponential growth across all subspecialties since the start of the COVID-19 pandemic. This massive and growing digital library calls on educators to become increasingly familiar with the content available so that they can guide trainees towards consumption of evidence-based and state-of-the-art content. Historically, surgical faculty have prided themselves on recalling details of landmark research articles and foundational textbooks. The surgeon-educators of the future may need to recall the landmark podcasts and webinars and foundational YouTube channels for their respective specialty.

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Conflicts of interest

There are no conflicts of interest.

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- of special interest
- of outstanding interest

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