

## Communication



# Plastic surgery education in the COVID-19 pandemic: hindrance or opportunity?

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## Introduction

The coronavirus disease 2019 (COVID-19) pandemic and the ensuing public health response have posed challenges to the traditional medical education model. The urgent need to steward scarce resources and maintain social distancing has led to the postponement of elective surgeries and the downsizing of inpatient care teams. This has significantly impacted medical training at every level. For plastic surgery residents, the reduction of hands-on surgical training is particularly pertinent given the increasing levels of sophistication of plastic surgeries in the past decade and the high clinical volume of elective procedures. Knock-on impact on training competencies and progression remains to be seen, but a review acknowledged by the General Medical Council shows a decline in skills in 6–18 months [1]. As for medical students, canceled electives may have denied students insight, interest and mentorship in the field [2,3], which is aggravated by the limited inclusion of plastic surgery in the medical curriculum.

Given the rapidly evolving healthcare landscape, there remain no official recommendations to guide surgical education. Leveraging existing technology whilst mitigating its limitations and adapting the curriculum to manage healthcare crises are of utmost importance to uphold the standards and competencies of the learners.

## Plastic surgery education and the role in telemedicine

With social distancing restrictions in place, there has been a prompt

and global adoption of telemedicine. Telemedicine has predominantly been used for screening, triaging routine consultations. The incorporation of telehealth services has increased efficiency with patient consultations and follow-ups, with high satisfaction rates from healthcare providers and patients [4,5].

Transitioning from practical and theatrical-based experiences to telemedicine has been crucial for surgical education during the pandemic. The unprecedented increase in virtual grand rounds, clinics, webinars and educational conferences has shown to be highly efficient and well-received by trainees [6-8]. The lack of time and geographic restraints in webinars also offers flexibility to trainees who are redeployed to other specialties or hospitals [8]. Increased engagement, evident from higher attendance rates compared to in-person meetings at individual institutions, demonstrates the utility of telemedicine in replacing or supplementing future training programs [9,10]. Virtual video platforms have also shifted the paradigm for recruitment and admission [9,11].

However, limitations exist. First, these didactical tools may not sufficiently compensate for technical and interpersonal skills. Technical skills encompass both physical examination techniques and surgical proficiencies. The opportunity to perfect physical examination techniques, especially key to procedures wherein precise measurements are fundamental, such as measuring topographic distance and tissue compliance, may be scarce [12]. Yet the increasing incorporation of artificial intelligence and 3-dimensional printing to compute accurate measurements in digital consultations during the pandemic may circumvent this [12]. Surgical proficiency, dependent on both psychomotor and cognitive capabilities, may be affected [13]. To augment these cognitive processes, virtual tools that aid visualization of topographic anatomy and step-by-step guidance of surgical procedures such as the Anatomage Table and Touch Surgery, may be useful adjuncts [14]. Some institutions have also adopted simulation-based education, and proposed live-streaming surgeries upon patient consent using encrypted web-based communication [15-17]. As for interpersonal skills, concerns over the lack of digital empathy may allow new terrains of professionalism to be explored and improved upon [18].

Second, technical limitations, such as digital literacy and the lack of access to suitable audiovisual equipment and high-speed internet, may limit its integration. Rather than an impediment, this emphasizes the importance of incorporating formal telemedicine into standardized medical school curriculum [19]. Last but not least are concerns over data confidentiality and patient safety issues. This necessitates appropriate education and support for practicing trainees, as well as a coordinated effort from different disciplines, to ensure patient privacy and confidentiality are well respected. This may involve increasing patient safety awareness, using up-to-date security and encryption systems with regular safety testing, as well as consensus-driven guidelines by regulatory and professional bodies [20].

## Transforming skillsets in plastics surgery

Apart from new pedagogical tools for learning and assessment, as well as novel strategies for recruitment and admission, other competencies befitting the challenges brought by the 21st century may be attained. COVID-19 has also served as a catalyst in identifying the gaps in the plastic surgery curriculum, one that physicians must learn to master in preparation for future pandemics. Key skills have been highlighted in extant literature.

### Telemedicine and digital empathy

The precipitated adoption of telemedicine could alter the nature of the patient-doctor relationship. Emotional and non-verbal cues that may be conveyed via in-person consultations could be lost or diminished through telephonic and video interactions. Frameworks for digital empathy and professionalism is currently lacking and require more research and attention. An initial step would require a thorough understanding of the changes in the provider-patient interaction between face-to-face encounters and telemedicine and its influence on health outcomes. Objective interaction analysis systems, such as the Roter Interaction Analysis System, could be incorporated in plastic surgery education to examine consultation behavior [21]. This may facilitate the formulation of strategies and interventions to be implemented in clinical curriculum.

### Changes in surgical techniques

The diversion of resources and the subsequent reduction in surgical capacity has led to changes in surgical techniques. For instance, the adoption of WALANT (wide-awake local anesthetic no tourniquet) hand and upper limb surgery has removed the risk of aerosol generation from intubation and extubation thus potential viral transmission. In addition, the substantially improved cost efficiency may be explained by the reduced staff requirement (e.g., anesthetists), consumables, and length of hospitalization. Other surgical techniques are modified to minimize the risk of acquiring diseases, such as avoiding entering sinus cavities [17,22] or having patients wear masks for eyelid procedures [17].

### Decision-making, crisis management, and leadership

The importance of other aspects of surgeons' clinical development is exemplified in this pandemic. Of particular concern is the eventual recovery period with eased restrictions and re-establishment of non-urgent health services. The temporal uncertainties that accompany COVID-19, such as the length of which it will prevail or remain at baseline and its seasonality, make the planning of surge capacity expansion difficult. Patient welfare also hinges heavily on the dynamic decision-making process. The conditions of patients with deferred elective non-urgent surgeries may deteriorate without appropriate surgical care, not to mention the financial and psychological burden of cancellations [23,24]. Leadership, communication and decision-making skills are key to balance logistical challenges and coordinate

between stakeholders, allowing for an optimized and efficient restoration of practices.

## Conclusion

The COVID-19 pandemic has served as an impetus for the optimization and advancement of medical education. The innovative adaptations of surgical education in such unprecedented times have demonstrated its utility in multiple institutions worldwide. Looking forward, it is unclear whether plastic surgery education will retreat to the status quo ante post-pandemic due to barriers to broad implementation such as costs and regulations [25]. However, these alternative approaches should be considered and appropriately leveraged to optimize surgical education and training. Research into the long-term impact of these solutions should be undertaken.

## Notes

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

### Author contribution

Conceptualization: CYC Chau, MK Ho. Data curation, formal analysis, methodology, project administration, and visualization: CYC Chau. Writing - original draft: CYC Chau. Writing - review & editing: CYC Chau, MK Ho.

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