



How the COVID-19 pandemic has enforced a new way of surgical training

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Dear Editors,

The medical profession today is facing perhaps the biggest challenge of this century. The battle against COVID-19 has affected patient care on all fronts. Since clinical training is a product of good healthcare, it has suffered the most, due to dwindling patient numbers and administrative priorities. With a vaccination program that is yet to be universal and an emerging threat of newer strains of the virus, surgical training has faced the pressure of accommodating to the new normal during the present crisis [1].

Bernardi et al. studied the impact of COVID-19 on the general surgical training program in Italy and observed a significant decline in the total number of procedures ($p=0.033$) performed by postgraduate (PGY-6) residents [2]. However, this study was underpowered with just 6 participants, and included only final-year residents. In a more homogenous study with 192 neurosurgical residents, Zoia et al. observed a 78.6% reduction in surgical exposure across all postgraduate years [3]. A similar observation has also been made by Amparore et al. in the urology residency program [4]. It has significantly reduced both hands-on and supervised training of the surgical residents, as the emphasis has now shifted toward minimizing the operative time and the size of operative teams [4]. Aziz et al. observed that 40% of residents in the USA were not allowed in cases with a high-risk of COVID transmission, and at least 12% of residents were not allowed at all [5]. Furthermore, posting of surgical residents in COVID-19 units reduced their opportunity for rotation in surgical subspecialties, which means that

many surgical residents may not be able to fulfil the minimum requirements of training during their residency. With a decline in operative exposure, there has been greater emphasis on simulation programs [6].

The impact of the COVID-19 pandemic on the academic front has been no less forgiving. With enforcement of social distancing, academic activities have mostly become online. While most surgical residents accept a decline in attendance in the academic programs due to irregular duty shifts, particularly in the COVID-19 emergency department and critical care units [2, 4, 7], Khalafallah et al. found an increase in both academic activities and resident attendance, which was attributed to reduced operative caseload [8]. However, the overall satisfaction with virtual learning has generally been poor [2]. Furthermore, with reduced manpower and time, and the risk of infection transmission, situated learning in ward rounds and case discussions have been pushed to a backseat [4]. Due to travel restrictions, most academic meetings and face-to-face training programs have been suspended or shifted to virtual platforms [4]. It is therefore likely that the overall quality of surgical care will be affected in the long run, as academic learning may not translate uniformly into surgical competency.

The pandemic's impact on medical research has been less uniform. Due to significant reduction of elective surgeries, residents find themselves having more time to engage in research activities [2]. However, those involved in emergency duties could not avail of this benefit [9]. With suspension of most elective surgical work and disappearing patients, quality clinical studies remain wanting in the presence of many new professional restrictions and guidelines.

Although this pandemic will have an impact on the medical education and training of the next generation of doctors, only time will tell to what extent this

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will impair professional competency. It is premature to comment on whether vaccination may improve the present training situation in the long run. While traditional forms of surgical training have been affected, it has promoted experimentation with pedagogical novelties and bench research.

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