

# SURGICAL PRACTICE IN THE COVID-19 ERA

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## ABSTRACT

*The coronavirus disease 2019 (COVID-19), a 21st century pandemic that ravaged most countries of the world claiming over 6.1 million lives and infecting no less than 478 million persons globally. The pandemic has significantly impacted various sectors of the world with the health sector serving as no exception, having claimed the lives of over 180,000 Healthcare workers (HCWs) globally. The impact of the COVID-19 pandemic on the health sector is vividly obvious on the surgical aspect of medicine in Nigeria and the world at large, impacting: surgical volume, mortality and morbidity; undergraduate and postgraduate surgical training and; the cost of surgical services. This article reviews the impact of coronavirus pandemic on the surgery and all that relate with it whilst proffering recommendations.*

*Keywords: COVID-19, Surgery, Novel Guidelines, Medical Training*

## INTRODUCTION

The coronavirus disease (COVID-19), previously named the 2019 novel coronavirus (2019-nCoV), caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), broke out in Wuhan, Hubei province, China, on 31 December 2019.<sup>1</sup> By 30 January 2020, when the World Health Organization (WHO) declared COVID-19 the sixth Public Health Emergency of International Concern, the disease had spread to over 20 countries worldwide, including the United States of America (USA) and Europe, with a case fatality rate (CFR) of 2%.<sup>2</sup> On 11 March 2020, having fulfilled the epidemiological criteria of more than 100,000 infections in at least 100 countries, COVID-19 was declared a pandemic by the WHO.<sup>3</sup> Currently, over 476 million confirmed COVID-19 cases and more than 6.1 million related-deaths have been recorded globally.<sup>4</sup> The first confirmed case of COVID-19 in sub-Saharan Africa (SSA) was reported in Nigeria on 27 February 2020.<sup>5</sup> Since then, there has been widespread community transmission of the virus and presently, Nigeria has recorded more than 255,000 cases and over 3,000 deaths.<sup>4</sup>

Healthcare workers (HCWs), being at the frontline of treatment and disease containment measures, have been significantly affected by the pandemic. The WHO estimates that globally, between 80,000 and 180,000 HCWs have

died from COVID-19.<sup>6</sup> The WHO African Region Office estimates that as at July 2020, over 10,000 HCWs in Africa have been infected with the virus.<sup>7</sup> In Nigeria, according to Elimian et al, HCWs account for 9.3% of all confirmed cases of COVID-19.<sup>8</sup> The first Nigerian doctor to die from COVID-19 was an obstetrician, who died on 15 April 2020 at the Lagos University Teaching Hospital (LUTH), having contracted the virus from an infected patient.<sup>9</sup> These underscore the public health impact of the COVID-19 pandemic. Aside from the direct public health impact, the COVID-19 pandemic has significantly impacted access to quality health care, especially in the surgical specialties. This article seeks to explore the impact of the COVID-19 pandemic on surgical practice.

## Impact Of The Covid-19 Pandemic On Surgical Guidelines

Following the outbreak of COVID-19 disease, the surgical community has had to review different guidelines in management of patients, especially those requiring prioritization in the event of limited resources in medical centers, to ensure balance of the needs of the patients and factors that may affect their surgical outcomes.

Cancer patients, who are at the most risk of developing critical illness if they contract the virus, have been identified and surgical teams have been encouraged to offer telephone

or video consultations in settings where this is possible, in order to reduce the risk posed to them during physical visits to healthcare facilities.

In patients with local resectable colorectal tumors, surgeons have been urged to defer surgeries for 2-3 months, and rather consider the use of neoadjuvant chemotherapy. Guanyu et al.<sup>29</sup> reported on the identification of the SARS-CoV-2 in fecal specimens obtained following laparoscopy where aerosols generated mix with blood, as well as intestinal content during vascular anastomoses.

Lung cancer patients scheduled for surgery with progression in malignancy state have to be carefully differentiated from those who have contracted the COVID-19 virus, as further reductions in their lung reserves would increase the risk of complications following surgery.<sup>32</sup>

All cardiothoracic surgeries have been affected by the disease outbreak, especially in regions with high burden of the disease, resulting in postponement of the majority of elective cases.

The NHS England published guidelines in treatment of Oral Maxillofacial Surgery and trauma patients, suggesting senior members of the surgical teams decide line of patient care as first point of contact, which is a deviation from the normal routine where junior members or emergency physicians made initial assessment of oral and maxillofacial cases.<sup>32</sup>

Otolaryngologists were identified as those with the higher risk of contracting the COVID-19 virus, because of the close proximity required for examination and procedures which generate aerosols through which the virus is transmitted. Guidelines for acute surgical care of tonsillitis, quinsy and epistaxis have undergone revision since the death of the first doctor from the COVID-19 virus, who was identified as an ENT surgeon. Rokade et al<sup>30</sup> described the use of microscope drape during endoscopic sinus surgery, and Hellier et al<sup>31</sup> further described the innovative use of a microscope drape during mastoidectomy, to ensure aerosols generation is reduced to the bare minimum.

Surgical cases have always been aseptic procedures that require caution to avoid contamination, however the glaring threat to life due to the COVID-19 virus has further led to the implementation of novel practices and prioritizations, in order to ensure the risk of transmission is minimally reduced.

### **Impact of the COVID-19 Pandemic on Surgical Volume, Morbidity and Mortality**

Globally, sequel to the outbreak of the COVID-19 pandemic, and with the rising number of COVID-19 cases, as part of disease containment measures, non-essential hospital services and elective surgeries (excluding cancer operations) were cancelled/postponed. The aim of this was

to limit in-hospital spread of the virus, redistribute staff and resources to provide care for COVID-19 infected patients, preserve scarce personal protective equipment (PPE), and make hospital beds and wards available to accommodate the upsurges in the numbers of COVID-19 cases.<sup>10</sup> This resulted in the cancellation of millions of elective surgical operations worldwide, and consequently, a drastic reduction in elective surgical volumes across all surgical specialties.<sup>11-13</sup>

As at 26 March 2022, a total of 2,372,654 elective surgery slots had been lost in England since 1 March 2020, with an estimated 4,178 drop in the daily total number of elective surgeries, compared to the pre-pandemic period.<sup>14</sup> In Australia, within the first four months of the pandemic, planned surgical activity reduced by 32.6%.<sup>15</sup> A study in Italy reported a 75% decline in elective surgeries and a 30% decline in emergency operations, with an overall 68% reduction in all surgical activity.<sup>16</sup> In Africa, a study by Ademe et al in Ethiopia, reported a 32% and 19% decrease in elective and emergency surgeries, respectively, during the COVID-19 era, compared to the pre-pandemic era.<sup>17</sup> Locally, in the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), a study confirmed a two-third decrease in surgical volume during the peak of the COVID-19 pandemic between March-July 2020, compared to the same timeframe in 2019 before the pandemic.<sup>18</sup> Delaying/postponing some elective surgeries risks advancing the pathology, resulting in complications that may require emergency interventions with increased cost and likelihood of poorer outcomes.<sup>18</sup> The result is a significant rise in surgical mortality and morbidity.<sup>19</sup>

### **Impact of the COVID-19 Pandemic on Undergraduate and Postgraduate Surgical Training**

The COVID-19 pandemic significantly impacted undergraduate medical education globally. Worldwide, clinical placements/rotations, physical teaching sessions, didactic lectures, and examinations, were discontinued. This was aimed to minimise the exposure of medical students to the virus.<sup>20</sup> Locally, at the peak of the pandemic, the Federal Government of Nigeria ordered the closure of all tertiary schools with effect from 19 March 2020, preceding the total lockdown on 30 March 2020. Sequel to this, public medical schools in the country neither graduated nor admitted fresh medical students for the over one year of schools' closure. This was against the backdrop of a very poor doctor to patient ratio of 4:10,000 in the country, predating the pandemic. Only few private institutions of higher learning continued to lecture their students virtually, even though this was difficult to sustain, owing to both poor mobile networks and high cost of internet in the country.<sup>21</sup> The stall in career progression/graduation of medical

undergraduates, could potentially adversely affect their mental and psychological health and wellbeing. This is aside from potentially worsening the already very poor physician to patient ratios, especially so in developing countries.

The postponement/cancellation of outpatient clinics and elective operations meant that surgical residents saw fewer patients in the outpatient clinics and attended less emergency and elective surgical operations during the pandemic.<sup>22</sup> This has the potential of significantly negatively impacting acquisition of surgical skills, competence and expertise, which are all hinged on hands-on-experience. Surgical residents were also unable to complete their clinical rotations, fill their operative log books or fulfill the prerequisite surgical exposures required for programme acquisition and qualification for examinations.<sup>23</sup> Programme accreditation visits were cancelled and examinations postponed. In Nigeria, the March/April/May 2020 Part 1/Membership and Part 2/Fellowship examinations of both the National Postgraduate Medical College of Nigeria and the West African College of Surgeons were postponed for six months. The consequence was an elongation in the duration of training of surgical residents. Postgraduate academic programmes and meetings were also scaled down, with many training centers holding these programmes/meetings virtually, against the limitations of poor internet networks and high cost of internet data subscriptions.<sup>22</sup>

### Impact of the COVID-19 Pandemic on the Cost of Surgery

The COVID-19 pandemic also significantly increased healthcare costs, especially so in low- and middle-income countries (LMICs), where health insurance coverage is limited, and out-of-pocket spending is the predominant source of financing for healthcare. The increased cost is owing to the additional cost of PPE, which are in short supply.<sup>24</sup> The cost of procuring scarce PPE in many LMICs are invariably transferred to patients, owing to a combination of poor government funding of public healthcare and low health insurance coverage in these countries.<sup>9</sup>

Screening for COVID-19 has been recommended for patients booked for elective surgery.<sup>25</sup> Owing to paucity of testing kits and facilities, many patients in LMICs have to pay out-of-pocket for pre-surgery COVID-19 screening. In Nigeria for instance, there are only 63 Nigeria Center for Disease Control (NCDC) accredited non-fee-paying testing centers located in 32/36 states of the country, serving more than 200 million Nigerians.<sup>26</sup> Not all patients can therefore access these free test laboratories, and many are compelled to pay out-of-pocket for the tests, which cost as high as 60,400- 100,400 (\$121-242).<sup>27</sup> Adding these extra costs to the cost of surgical consumables/materials,

which patients also have to pay out-of-pocket for, has increased the cost of surgery up to more than five times the pre-pandemic cost.<sup>18</sup> Findings in the OAUTHC and the Lagos University Teaching Hospital (LUTH) have revealed that patients spend up to 74,400 (\$179) on additional consumables and PPE.<sup>18</sup> This is against the backdrop of the fact that 70% of Nigerians live on less a dollar per day, earning a paltry 30,000 (\$72) as minimum wage.<sup>28</sup>

## CONCLUSION AND RECOMMENDATIONS

The COVID-19 pandemic has significantly impacted all aspects of surgical practice globally. To assuage the increased financial burden of surgical costs on patients, aside from taking steps to upscale health insurance coverage and government funding of public healthcare, the government should ensure the provision and increased supply of PPE to hospitals. Production costs of PPE can be reduced by encouraging indigenous manufacturers to produce these PPE in line with standard recommendations. Increasing COVID-19 testing capacity and non-fee-paying testing facilities, and regulating the cost of tests in fee-paying laboratories, would improve access and reduce the cost of screening for patients planned for surgery. There is a need to invest in digital and virtual technologies for the education and training of medical students and surgery residents. Teleconsultations/medicine/surgeries should be encouraged and developed, as these would reduce unnecessary hospital visits by patients, in line with disease containment measures.

## REFERENCES

1. Xu Z, Shi L, Wang Y, Zhang J, Huang L, Zhang C, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. *Lancet Respir Med* 2020;8:420-422.
2. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the coronavirus (2019-nCoV) outbreak. *J Travel Med* 2020;27:taaa020.
3. Callaway E. Time to use the p-word? Coronavirus enters a dangerous new phase. *Nature* 2020;579(12):10-38.
4. World Health Organization. WHO Coronavirus (COVID-19) Dashboard. Available at [www.covid19.who.int](http://www.covid19.who.int). Accessed 27 March 2022.
5. Adepoju P. Nigeria responds to COVID-19; first case detected in sub-Saharan Africa. *Nat Med* 2020;26(4):444-448.

6. The impact of COVID-19 on health and care workers: a closer look at deaths. Health Workforce Department- Working Paper 1. Geneva: World Health Organization; September 2021 (WHO/HWF/WorkingPaper/2021.1).
7. World Health Organization Region Office for Africa. Over 10,000 health workers in Africa are infected with COVID-19. 23 July 2020. <https://www.afro.who.int/news/over-10-000-health-workers-africa-infected-covid-19>. Accessed 28 March 2022.
8. Elimian KO, Ochu CL, Ilori E, Oladejo J, Igumbor E, Steinhardt L et al. Descriptive epidemiology of coronavirus disease 2019 in Nigeria, 27 February-6 June 2020. *Epidemiology and Infection* 2020;148:e208.
9. Ijarotimi OA, Ubom AE, Olofinbiyi BA, Kuye-Kuku T, Orji EO, Ikimalo JI. COVID-19 and obstetric practice: A critical review of the Nigerian situation. *Int J Gynecol Obstet* 2020;151(1):17-22.
10. Negopdiev D, Collaborative C, Hoste E. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *Br J Surg* 2020;107(11):1440-9.
11. Pertile D, Gallo G, Barra F, Pasculli A, Batistotti P, Sparavigna M, et al. The impact of COVID-19 pandemic on surgical residency programmes in Italy: a nationwide analysis on behalf of the Italian polyspecialistic young surgeons society (SPIGC). *Updat Surg* 2020;72:269-280.
12. Fuller S, Vapaorciyan A, Dearani JA, Stulak JM, Romano JC. COVID-19 disruption in cardiothoracic surgical training: an opportunity to enhance education. *Ann Thorac Surg* 2020;110(5):1443-1446.
13. Amparore D, Claps F, Cacciamani GE, Esperto F, Fiori C, Liguori G, et al. Impact of the COVID-19 pandemic on urology residency training in Italy. *Minerva Urol Nefrol* 2020;72(4):505-9.
14. Surgery Tracker. @SurgeryTracker. Twitter. 26 March 2022. Accessed 28 March 2022.
15. Sutherland K, Chessman J, Zhao J, Sara G, Shetty A, Smith S, et al. Impact of the COVID-19 on healthcare activity in NSW, Australia. *Public Health Res Pract* 2020;30(4):3042030.
16. Di Marzo F, Gemmi F, Cennamo R, Forni S, Bachini L, Collini F et al. Impact of SARS-CoV-2 on elective surgical volume in Tuscany: effects on local planning and resource prioritization. *Br J Surg* 2020;107(10):e391-e392.
17. Ademe Y, Genetu A, Lacke T, Taye M, Bekele A. Impact of COVID-19 on surgical volume: a single-center experience from Addis Ababa, Ethiopia. *Ethiop J Health Sci* 2021;32(1):37-44.
18. Adesunkanmi AO, Ubom AE, Olasehinde O, Fasubaa OB, Ijarotimi OA, Adesunkanmi AR, Okon NE. Impact of COVID-19 on the cost of surgical and obstetric care: experience from a Nigerian teaching hospital and a review of the Nigerian situation. *Pan Afr Med J*. 2020;37(Suppl 1).
19. Egol KA, Konda SR, Bird ML, Dedhia N, Landes EK, Ranson RA et al. Increased mortality and major complications in hip fracture care during the COVID-19 pandemic: a New York City perspective. *J Orthop Trauma* 2020.
20. Sani I, Hamza Y, Chedid Y, Amalendran J, Hamza N. Understanding the consequence of COVID-19 on undergraduate medical education: Medical students' perspective. *Ann Med Surg* 2020;58:117-9.
21. Adumah CC, Abolurin OO, Adekoya AO, Onuoha KM, Adumah LO. Perception of medical students toward online lectures during the COVID-19 outbreak in a Nigeria University. *Niger J Med* 2020;29(4):638-41.
22. Adesunkanmi AO, Ubom AE, Olasehinde O, Wuraola FO, Ijarotimi OA, Okon NE, et al. Impact of the COVID-19 pandemic on surgical residency training: Perspective from a low-middle income country. *World J Surg* 2021;45:10-17.
23. Potts JR. Residency and fellowship program accreditation: effect of the novel coronavirus (COVID-19) pandemic. *J Am Coll Surg* 2020;230(6):1094-1097.
24. Nicola M, Alsafi Z, Sohrabi C, Kerwan A, Al-Jabir A, Iosifidis C et al. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *Int J Surg* 2020;78:185-193.
25. Al-Muharraqi MA. Testing recommendations for COVID-19 (SARS-CoV-2) in patients planned for surgery-continuing the service and 'suppressing' the pandemic. *Br J Oral Maxillofac Surg* 2020;58(5):503-505.
26. Nigeria Center for Disease Control. NCDC Molecular Laboratory Network. Facebook, 13 August 2020. Accessed 7 May 2022.
27. Punch Healthwise. Lagos' laboratories accredited for COVID-19 testing charge extra fees ranging from ₦10,000 to 50,000. 12 July 2020. Accessed

7 May 2022.

28. Musti BM, Mallum A. An assessment of the effect of casual employment on the level of poverty and economic growth in Nigeria. *JBED* 2020;5(3):172-177.
29. Guanyu Y, Zheng L., Wei Z. [Several suggestions of operation for colorectal cancer under the outbreak of CoronaVirus Disease 19 in China] *Chin. J. Gastrointest. Surg.* 2020;23:9–11. doi: 10.3760/cma.j.issn.1671-0274.2020.03.002. [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
30. Rokade A., Burgess A., Koch H.I., Tsagkovits A., Ioannidis D. 2020. FESS in the COVID Era: the Microscope Drape Method to Reduce Aerosolization. <https://www.entuk.org/fess-covid-era-microscope-drape-method-reduce-aerosolization> accessed April 17, 2020. [[Google Scholar](#)]
31. Hellier W., Mitchell T., Thomas S. 2020. Mastoidectomy in the COVID Era – the 2 Microscope Drape Method to Reduce Aerosolization. <https://www.entuk.org/mastoidectomy-covid-era-%E2%80%93-2-microscope-drape-method-reduce-aerosolization> accessed April 17, 2020. [[Google Scholar](#)]
32. Al-Jabir, Ahmed et al. “Impact of the Coronavirus (COVID-19) pandemic on surgical practice - Part 2 (surgical prioritization).” *International journal of surgery (London, England)* vol. 79 (2020): 233-248. doi:10.1016/j.ijssu.2020.05.002