



Surgical Roller Coaster during the COVID-19 Pandemic: A Review of Changing Evidences

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Letter to Editor

The surgical community has gone through and still going through several roller-coaster movements from the Severe Acute Respiratory Syndrome-Coronavirus-02 (COVID-19). The surgical evidences were significantly changing over the last few months. The SARS-Coronavirus-02 has been an international health related calamity originated from an animal wet market at Wuhan city of Hubei province in China. The first reported case was in November 2019. The World Health Organization (WHO) declared pandemic on 11th March 2020 followed by the United Kingdom announced lockdown on the 16th of March. Considering the nature of the novel virus transmitted from animals to human beings, we had plenty of dark moments in the medical history. The peak incidence and prevalence of COVID-19 in late March and early April changed the hospital functioning with priority for emergency admissions for COVID related medical and surgical problems. The elective operations more importantly, the cancer operations were suspended. This was mainly to create the bed capacity and manpower to manage the acute symptomatic COVID patients who needed intensive care support including non-invasive (CPAP: Continuous Positive Airway Pressure) and invasive ventilation. The intensive care extended in to the operating theatres for ventilation support when the prevalence of COVID was at its peak.

This initial unknown and uncontrolled situation generated significant anxiety among the policy makers, health care providers and more importantly amongst the general public. The patient group included those who were waiting to have their operation after confirmed diagnosis of a cancer and those who have had red flag symptoms of cancer waiting for tests to confirm. The British Society of Gastroenterologists (BSG) and the Joint Advisory Group on Gastrointestinal Endoscopy (JAG) also recommended to withhold the non-emergency diagnostic endoscopies due to the perceived risk of aerosol generating nature of these procedures and prioritized based on the risk assessment on case by case basis [1].

The number of operations cancelled or postponed worldwide was estimated at 2,367,050 per week during the 12-week peak disruption. This included 37.7% cancer surgery and 25.4% elective caesarean sections [2]. The oncological surgeons worried about the progression of the cancer and the risk of in-operability on those who could potentially be offered curative treatment. Amit Sud et al. [3] published epidemiological statistics on the impact of delayed cancer surgery for three/six months. The attributable death 'per patient delay' was predicted at 4,755 and 10,760 for three and six months delay, respectively [3]. Even if the post pandemic surgical capacity is increased by 20%, it will take 45 weeks to clear the backlog [2]. These are some of the significant collateral damages from the COVID pandemic. The Macmillan cancer support, from a very small survey, raised concern that almost 45% (45/101 patients) of the cancer treatment were cancelled, delayed or modified [4]. This resulted in a significant fear for the patients. There was a 39% drop in emergency admissions in April compared to similar month in 2019[5]. The Macmillan charity warned about 'the forgotten c' when coronavirus had significant impact on the delivery of the cancer treatments [6]. Moreover, there was shortage of the hospital and community members of staff shielding for personal protection due to medical conditions and also those who were affected by the COVID.

The Emergency services were also affected. The patients obviously worried about acquiring the virus especially those under the high risk category. This lead to delayed and advanced disease presentation with associated significant complications. The Accident and Emergency (A and E) attendances in England dropped to 1.26m in May 2020 compared to 2.17m in May 2019. There were concerns on the excess mortality due to this reduction in accessing the emergency service. Similar drop in General Practitioners' attendance was also noted and hence the drop in hospital referrals for

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both elective, 2-week wait and emergency cases (Down by 60%) [7]. Our own hospital experience reflected the national data. There was around 75% reduction in the emergency admission and those who were admitted had more complicated pathology.

The various Royal colleges, National Health Service England (NHSE), NIHR Global Surgery and the specialist associations attempted gathering the limited available evidences in the early stages of the pandemic. Good quality evidences were scarce at the early stages. However, the available data could not be completely ignored but needed regular update during this unprecedented pandemic. The initial recommendation in March 2020 based on the evidence available at the time was to prioritize the patients according to the condition, presentation and severity of the symptoms. The face to face outpatient clinic consultations were replaced by telephone or video consultations; Elective benign operations were postponed or cancelled; High risk patients were identified and advised to shield themselves and their operations were postponed where possible. Some of the cancer managements were modified to reduce the exposure of the vulnerable patients to immunosuppressive treatment or even surgery. Short course Radiotherapy (No added chemotherapy) followed by longer wait was also contemplated for some category of rectal cancers who would normally proceed for surgery without neo-adjuvant treatment if pandemic was not in existence.

Dedicated theatre facilities with appropriate Personal Protective Equipment (PPE) for the theatre team was recommended and also dedicated wards for the care of COVID-19 positive and negative patients. Some of the surgical conditions were advised to manage non-operatively or using radiological drainage-appendicitis, cholecystitis, to mention a couple. Elective operations on patients with COVID positive were postponed for at least 2-weeks and re-tested.

NICE [8] and NHSE [9] published a COVID-19 decision support tool to allocate the resources in the intensive care unit on the basis of three criteria including Age, Clinical Frailty Scale (CFS) and Co-morbidities. The surgical patients were prioritized based on the presentation, the site/nature of pathology and the potential consequences of delaying the operations [10,11].

Moreover, laparoscopic surgery was considered as an aerosol generating procedure in the early stages of pandemic peak and hence advice was given for open surgery. Stoma was recommended instead of bowel anastomosis. This was based on the level 5 evidence of coronavirus found in the peritoneal fluid [12]. However, the evidence was reviewed and the new revised guidelines on 27th March from the joint statement of the Royal Colleges and Surgical Associations suggested care should be taken for laparoscopic surgery with appropriate PPE [13].

Further guidance evolved from the European Association of Endoscopic Surgeons (EAES) and American surgical society (SAGES). They identified no risk to laparoscopic surgery from COVID as long as PPE precautions are adhered to. They also recommended keeping the inflation pressure at 12; careful insertion of ports without leakage of gas during surgery; deflating the abdomen once surgery is completed prior to removing the ports; well-sealed smoke extractor system and minimal usage of the energy devices [14]. Some developing countries made their own smoke extractor system using anesthetic filter and Intercostal drain bag. The ALSGBI position statement also reflects the same safety precautions for laparoscopic surgery [15]. Another publication in *Annals of Surgery* suggested that no viruses were

isolated from the omentum and peritoneal fluid on four patients with positive COVID status [16].

The current national guidelines from NHSE recommend screening of the patients prior to any elective surgery to facilitate the provision of safe care. For all elective Admissions including day surgery: Patients should maintain social distancing for 14 days prior to admission. This should be supplemented with a COVID-19 swab test and chest X-ray performed within a maximum of 72 h prior to surgery, allowing patients whose test negative to be admitted on the day of operation. The chest X-ray was later removed from the requirement. Surgery performed in green zone theatre and the same for the recovery area and the post-operative COVID free ward which has access only for those who have gone through the screening process pre-operatively. Appropriate PPE protection in the theatre followed. We moved on from these strict criteria as the prevalence of the virus reduced with decreasing 'R' number of less than 1. However, the second peak has started recently leaving us in a dilemma for the new protocol for safe uninterrupted delivery of surgical services. The previous experience from the pandemic should help us to plan the services supported with more easy availability of the testing. More than 8-months since the peak of the pandemic and with the second surge of incidence, it is very crucial to plan meticulously so that the services are delivered in a timely fashion and safely. Our hospital is planning for the reintroduction of the 14 days strict self-isolation prior to surgery with swab test within last 72 h of surgery with admission on the day of operation, for the cancer patients. We have evidence that these measures worked well because we safely operated more than 1000 cancer patients in colorectal, breast, urology and endocrine sub-specialties with a mix of day case, overnight stay and in-patient, in all our regional hospitals. This successful pathway should also help to sustain the benign service started few months ago. We are prospectively auditing our results during this difficult time to facilitate the provision of safe surgical care.

Conclusion

The SARS-CoV-2 has created significant damage to the health care system and global economy. With the second wave of peak incidence, measures are contemplated based on the previous experience to keep the services running. We need to work towards a 'new normal' in order to revive the economic growth and sustain the provision of medical facilities for our needy general public and at the same time protecting the health care providers. There have been changing evidence and guidance at each stage of the disease prevalence and still evolving. The vast international experience during the first phase of the COVID pandemic should help the health care system to plan for the imminent second wave until a definitive treatment or vaccine is discovered.

Keywords: COVID-19; SARS-Coronavirus-02; Surgical guidelines

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