

## Adapting surgical services at a tertiary care unit amidst the COVID19 pandemic: a Sri Lankan perspective

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The World Health Organization [WHO] declared COVID19 [SARS-CoV2] a pandemic on the 11th of March 2020 [1, 2]. In the absence of a vaccine, social distancing and personal hygiene was advised as the preferable mode of preventing its transmission [3, 4]. With the country going in to a strict limitation of social mobility in the form of a police curfew there were severe restrictions to usual lifestyle. Health service was affected in more than one way during this unprecedented situation. While the resources had to be diverted in preparation for community spread of the pandemic the patient care was affected by the island wide curfew. Surgical services were also affected in several fronts due to redistribution of resources and limiting social mobility. North Colombo Teaching Hospital [NCTH] is a tertiary care center catering a population of over half a million in the district of Gampaha, in the Western province of Sri Lanka. The district fell within the initial Red Zone due COVID19 spread and the hospital was designated a dedicated COVID19 management center. The hospital serves around 3000 daily outpatient visits, 700 inpatient turnovers [data from planning and administrative unit] in a highly compact structural layout. This article outlines the effects and adaptations of a tertiary care surgical unit to the COVID19 pandemic. The adaptive response was based on national guidelines and adapting them to match local resources with weekly process reviews.

### Emergency care

All emergency admissions through accident and emergency service were accepted as usual. All admissions were screened for fever, cough, possible contact history and foreign travel history at the entrance by dedicated nursing team in personal protective equipment [PPE]. Attending surgical staff were also provided with PPE following an event where a non-suspecting patient was encountered with staff having to self quarantine for 14 days. Overall lesser admissions were observed with around 60% reduction in trauma. Dividing the team in to groups and assigning duty on a roster basis minimized surgical team attending emergency care and allowed to have a buffer in case of exposure. Staff was

educated regarding non-respiratory presentation of COVID19 by sharing existing literature to raise the awareness [5]. Few adaptations were undertaken with regards to the surgical management as well in order to minimize the risk of cross transmission. Acute cholecystitis and uncomplicated acute appendicitis were principally managed with intravenous antibiotics. In those requiring surgery conventional appendectomy was offered instead of laparoscopy. A unit decision was taken to keep in line with the Intercollegiate surgical guidance recommending a CT scan of the chest for trauma and acute abdomens requiring abdominal CT [6]. Spinal anaesthesia was used more frequently for appropriate procedures to minimize the exposure during intubation.

### Routine patient clinics and surgeries

Routine clinics were cancelled from the day of imposition of police curfew in the district. Patients awaiting surgeries were guided over telephone communication and those requiring regular medication were provided with their prescription medication through postal delivery. Post transplant patients were allowed to obtain the special medications through the central hospital pharmacy under special authority in consultation with the physicians. All routine surgeries were postponed indefinitely to preserve resources for the initial two weeks. A policy decision was then taken to proceed with cancer surgeries under specific local guidelines. In a dedicated theatre, each unit in the hospital was allocated a single day of the week in rotation. Personal protective equipment was recommended for all theatre staff. Endotracheal intubation was performed using a video laryngoscope to maintain distance. Preference was given to those patients that had good prognosis, lesser ASA grade and was unlikely to require ICU care for more than 5 days. With time non-malignant diseases that affect quality of life were prioritized according to the effect. Currently both renal and liver transplant surgeries of the unit have been put on hold.


### Multi disciplinary team meeting

With social distancing in practice all meetings had to be cancelled. As the quality of cancer care could not be compromised the multi disciplinary team meeting was held using the social media platform Zoom® [San Jose, California]. With all necessary members participating distantly and the relevant images being screen shared the

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**Figure 1.** intubation of a patient for extended right hemi colectomy by an anaesthetist in PPE, using a video laryngoscope to minimize the risk of disease transmission.

meetings were as effective as usual. One added advantage was that the participation of the trainees was much higher as the online platform enabled them to participate while they were at their duty stations. It was both effective and efficient.

### Endoscopy

All non-essential high-risk procedures such as endoscopies were limited to emergencies to prevent the risk of COVID19 transmission. All upper and lower GI endoscopies were performed with full PPE. It was necessary to perform UGIE in patients requiring dilatation of strictures. Endoscopic release of sigmoid volvulus and assessment of patients with high risk of colorectal cancer were the indications for some of the colonoscopies performed. Initially there were no local guidelines for high-risk procedures although the countries, which experienced the pandemic ahead of us, had published some guidance [7]. The intercollegiate guidelines were also available recommending limiting endoscopies for emergencies.

### Academic activities

With the closure of Universities undergraduate academic activities were completely disrupted. As a university unit we had the responsibility to continue both undergraduate and post graduate education activities. As an experimental effort we organized an online discussion forum on Zoom involving the medical students, postgraduate trainees and consultants. A discussion session was organized every week day night with the participation of around 300 participants. The breath of the discussions spanned from surgical anatomy to operative surgery, which enabled both undergraduates and postgraduates to participate. Social media platforms were used to communicate amongst the group and to upload recorded sessions for later reference.



**Figure 2.** Performing colonoscopy on a patient with suspected exacerbation of ulcerative colitis by a surgeon in PPE.

### Change reaction and other challenges

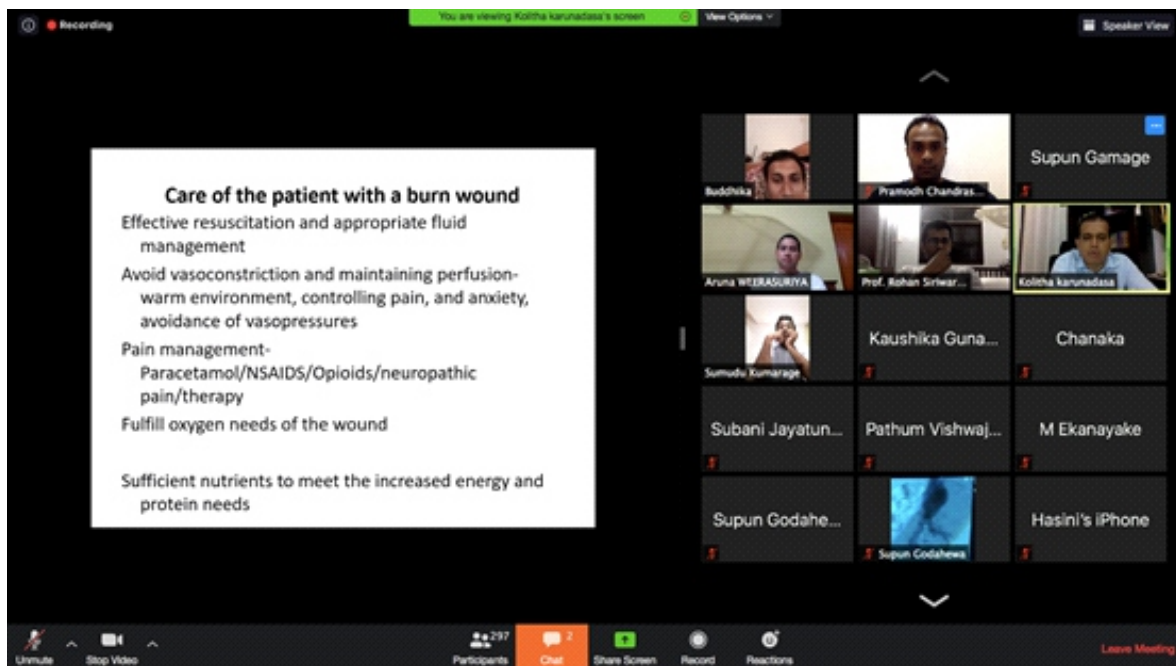
Resistance and agitation is a natural response to change and this was no exception. There were mixed sentiments amongst the staff regarding the response. A fragment was holding the view that it was an over reaction while the others were panicked about encountering unsuspected patients. Staff were not familiar with the use of PPE either. With local guidelines being published and staff training on 'donning and doffing' some of the anxieties were addressed.

With the implementation of curfew, on call and resident staff were faced with meal shortages. Uninterrupted meals were arranged by coordinating with the Sri Lanka Navy.

Two main issues faced during online teaching was the non-familiarity of the senior staff with the software and limited access to broadband Internet by students. With distant training programmes and collaborating with Lanka Education & Research Network [LEARN], access to Zoom has been made available free of charge through the University.

### Discussion

At the time of submitting this manuscript an effective vaccine has not been developed [8] and a district wide police curfew is imposed to the Western province of the country. Districts with low incidence of COVID19 have partially returned to function. The global community is still in the process of understanding the full potential of the virus and disease spectrum. Symptoms varying from conjunctivitis to bowel necrosis and swollen toes have emerged as atypical presentations which makes it difficult to clinically screen



**figure 3.** Clinical surgery teaching session carried out using Zoom® involving medical students, postgraduate trainees, consultants and an invited lecturer for special topics in the same platform.

those infected [9]. Health care has to return to normalcy in order to prevent a post COVID19 pandemic of non-communicable diseases in the community. The idea of working with COVID19 rather than waiting for it to be eliminated is currently emerging. It will be pertinent to redesign the outpatient clinic setting to meet the requirements of social distancing. Strict practice of personal hygiene will have to be implemented across the site. These behavioural changes will require a significant financial and human resource allocation. Endoscopy and other invasive investigations will have to be restarted in order for the surgical services to be fully effective. Initial reports from China suggested fecal transmission of COVID19 [5, 10]. However, evidence is emerging from Italy, one of the hardest hit European states, that endoscopy can be performed with low risk of infection with PPE [11]. Safety of performing laparoscopic surgery is still not established although there is an absence of reported cases of this highly theoretical possibility of transmission [12]. Both malignant and benign surgical procedures will have to be performed under strict measures with minimal staff involvement and patient contact until further evidence regarding the viral transmission is available [13]. Implementation of efficient theatre turnover to minimize waiting, day surgery and enhanced recovery after surgery [ERAS] protocols will play a key role in returning to full capacity amidst COVID19. This might provide a window of opportunity to implement these, resource and time saving structures in to the local health service. Managing chronic

surgical conditions such as inflammatory bowel disease, chronic pancreatitis and occlusive vascular disease will also need special attention. These patients will require multiple hospital admissions and long hospital stays. Dedicating a separate clinic, unit or a ward for the care could compartmentalize the care and prevent cross transmission. In the event of the pandemic remaining for a longer time routine testing prior to admission and preoperatively will have to be adapted [14]. Student and postgraduate teaching will have to continue through alternative methods. Using online platforms for teaching have increased globally and locally [15, 16]. Teaching theory can be continued using distant learning while students can be given an opportunity to be involved in clinical training in rotations to maximize social distancing. The government mechanism will need to subsidize the online infrastructure for undergraduate education.

Returning to 'normalcy' under present conditions will entail adapting the practice to minimize the impact of disease transmission while providing maximum care to patients. It is important to focus on psychological stress that will be experienced by both patients and staff during these testing times [17]. These adaptations will pose new challenges even for the resource rich environments until an effective vaccine is discovered and tested safe for human application [18, 19]. The special requirements will have to be taken in to consideration when allocating resources for health care and higher education.

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