



Original Article

Surgery during COVID-19: A Journey from Deprogramming to Reprogramming

P Umar Farooq Baba*, A Rasool, HR Zargar, SA Bashir and AH Wani

Department of Plastic, Reconstructive Microsurgery and Burns, SK Institute of Medical Sciences, India

Abstract

COVID-19 came to be known as a major health care challenge since its eruption as multiple cases of severe pneumonia of unknown aetiology in Wuhan city of China towards the end of the year 2019. With high infectivity and essentially no treatment (except supportive care), it spread across seas and borders, and soon the whole world was lavished by it. The world was ill-prepared for the outbreak which exposed various infirmities of the health care infrastructure, both in developed countries as well as in the third world equally. All the local, as well as international health/ medical organizations came to life for the combat. With the aim is to flatten the exponentially rising curve of infection, restriction protocols of varied intensity were imposed by all nations. The health care workers had to work to reduce the transmission of the virus and free up the resources to treat patients who were seriously ill with the disease. All medical surgical elective activities were lent a leave with only non-delayable procedures being maintained unaltered. The reorganization of the anesthesiology and surgical departments was need of the hour for redistribution of resources including manpower to tide over the crisis. Fundamentally, the pandemic changed demand on healthcare services with a proportionally higher claim for medical and critical care specialties compared to surgical and paramedical ones. With the gradual easing of the restrictions following the sustained fall in cases, the timing and the order for resuming elective surgeries, based on local data was envisaged with revisions and myriad modifications regarding case priority, type of anesthesia, and follow up after release from the hospital.

Keywords: COVID-19; Surgery; Deprogramming; Reprogramming

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*Correspondence:

P Umar Farooq Baba, Department of Plastic, Reconstructive Microsurgery and Burns, SK Institute of Medical Sciences, Srinagar, J&K-190011, India, Tel: +91-9419081397; E-mail: drumar397@gmail.com

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Introduction

The COVID-19 pandemic will be recollected as one among the most exceptional intercontinental health calamities that have hit the globe uniformly. The viral breakout was earliest revealed in December 2019 in Wuhan city of China [1-6]. Owing to its pronounced infectious and contagious character, the COVID-19 rollout throughout the globe in an unprecedented fashion within a flying span. By mid-March the eruption had hitherto escalated to encompass beyond 190 countries, thus, being proclaimed a 'Pandemic' by the World Health Organization (WHO) on March 11th, 2020- the first pandemic of corona virus [1,4-8]. In India, the first case was reported on January 30th, 2020. Further, with the purpose to limit the community transmission of the infection, the government of India announced a nationwide lockdown, beginning from March 25th, 2020 [9,10].

Health Care Organization

The pandemic has a deep-rooted hold on the health sector with legion ramifications and repercussions that turn to be durable enough till now. Positive and suspected patients outnumbering the routine admissions compelled various hospitals to be designated as COVID treatment centers. The healthcare sector transformed and is still evolving and adapting itself to the day-to-day newer issues and challenges owing to the swapping trends of the disease, including the recent emergence of newer strains [9,10]. The staggering numbers of infected individuals desperate for hospital and intensive care admissions literally intimidated to crumble the medical systems throughout the world. At the outset, it seemed to be a threat for developing countries with the prevailing craving for basic amenities, and multiple benchmark issues and dilemmas of essential gadgetry both for the diseased and for care providers. However, the 'novel virus' sounded a war cry challenging all nations equally pitched so much so that, at times, all had to resort to the sky for mercy. Taking exception to this triggered a pronounced conversion in the traditional organizational structure and practices of hospice across the globe alike. Fundamentally, the demand for healthcare services remolded- with a disproportionately inflating call on medical and/or

critical care specialties, in contrast to surgical and other disciplines. This ensued into an adaptive redistribution of resources to satisfy the requirements, including infrastructure, healthcare personals and patient conduits and pathways. The major substitutions and adaptations were required for all major specialties and subspecialties to guarantee the adequacy of hospital beds, and continuing emergency services with strict observance of control measures to deter disease transmission, particularly amongst healthcare providers [3,7,8,11,12].

Deprogramming

The daunting situation exhorted to reorganize the hospital structure into a template to limit the risk of exposure to the virus in patients more prone to develop serious forms of disease while reserving adequate acute care resources for managing both COVID positive and COVID negative cases. All the departments/specialties were required to release so many beds as practicable to make room for the 'wave of infected patients'. All elective surgeries were deprogrammed with the cancellation of all routine surgical procedures in an attempt to set free standard as well as Intensive Care Unit (ICU) beds. The number of active operating rooms was also reduced with the anesthesiology and intensive care teams (usually dedicated to the operating theatres) gradually being reassigned to the newly created high dependency and intensive care units. Many experts argue that the consequences of calling off such surgeries are hard to foresee; times are to come when we would probably encounter a steady logjam of procedures as non-urgent cases turning into urgent ones at some point of time. Nevertheless, certain surgical indications were maintained; the retained ones comprised surgical emergencies and semi-emergencies including oncologic surgeries and vital organ transplantations. All this transformed into a marked decline in the total number of surgical procedures performed during the COVID times, compared to the usual surgical occupancies of previous years [7,9,12]. All medical care/nursing was accomplished using maximal individual protective measures, including the use of face masks, disposable and protective aprons, Personal Protective Equipment (PPE's), hand gloves, protective headwear, and eyeglasses. For emergency surgeries, an emergency operating room had been particularly equipped for negative patients, with another operating theatre reserved for emergencies in cases with a positive or awaiting result. This dedicated 'COVID positive' operating room was organized and coordinated in a way to contain the spread of infection- placement of only necessary materials in the room, minimal staff traffic, and so forth. Post-surgery, the patients were transferred via predesignated pathways to the COVID Unit for further management [12]. In order to implement the said adjustments within a lean spell was in itself a formidable enterprise. However, the key to success is striking equipoise in ensuring continuous quality service to the community in tandem with procuring the wellbeing of the care providers by a robust team footing coupled with the self-sacrifice of all personnel. Continuing this for about a quarter with witnessing of lockdowns, quarantines, self-isolations, loss of precious lives (general public as well as health professionals), 'work from home' became a new norm and a new household term for many non-medical professionals [13]. With the gradual easing of lockdown from May 17th, 2020, people steadily commenced resuming some activities like road travel, visiting offices as per the predesigned schedule (roster) to avoid human congestion, and so on. All can discern a palpable change in

lifestyle. Now we have become more health-conscious, hygienic, and are maintaining social distancing, reflecting the responsibility sharing by one and all. 'Work from home' is in vogue, wherever pertinent, thereby diminishing the need for travel and overcrowding on roads [5]. With the pandemic stretching beyond a year now, the number of long-suffering patients has reached a critical magnitude that needs to be managed sensibly and sensitively as the improvement in the situation becomes noticeable. Though it may sound premature to foresee the post-pandemic scenario, if nothing else, the pandemic has trained us forward planning to mitigate the need for disaster planning at the eleventh hour. A roadmap for resuming elective surgeries is already in place, based on the considerations such as regional disease trends, testing availability, the capacity of institutional resources, facilities and workforce, case prioritization, peri-operative care capabilities, and, above all, readiness for any future pandemic resurgence [14].

Reprogramming

In the initial phases of restarting elective procedures, data regarding surgical complications and mortality rates should be analyzed to study the safety of ramping up the surgical case load. A working committee consisting of a multidisciplinary team of surgeons, anesthesiologists, nurses, and hospital leadership should govern the renewal of surgical procedures, especially during the initial phases. Regular meetings may be required considering waxing/waning of the caseload based on real-time data before resorting to biweekly or monthly reviews as the ground-level situation ameliorates and stabilizes. The local case data would better guide the resumption process with a very low threshold for reversal when the need arises. Specific thresholds for infection rates should be set by the hospital to re-suspend elective surgeries again based on bed capacity, ventilators, PPE's, and workforce projections [5,14]. Elective surgery should only be planned if there is a sustained reduction in the numbers (case statistics) in the geographical area managed by the hospital, say for a period of at least 2 weeks or a month. Additionally, the health facility should ensure adequate Intensive Care Unit (ICU) and non-ICU beds, ventilators, PPE's and other equipment to manage both elective and urgent cases, in addition to existing infected patients. The workforce should be adequate enough to maintain safe duty hours with the safeguarding of their well-being too. First, the list of previously canceled/postponed cases should be prepared, and patients should be reviewed to determine whether they are keen to proceed with the procedure during the initial phases of resumption or are contented to further postpone their operations. Ding et al. [14] proposed that an objective priority scoring system like the Medically Necessary Time-Sensitive (MeNTS) scoring system can be relevant for the prioritization of the patients. Established on the attributes related to a particular procedure, disease features, and patient characteristics, such scoring systems may prove a boon to predict the likely outcome, the risk to the personnel, and feasibility of resource availability and utilization. Surgical strategical traits may take operating time, expected length of hospital stay, the likelihood of postoperative intubation and ICU requirement, approximated blood loss, and a minimum number of surgeons needed into consideration. Besides, age, cardiopulmonary status, other comorbid conditions as well as the immune status of the patient is to be taken into account on an individual case basis. Disease factors include contemplations for non-operative management and further hold up of surgeries on disease outcome. A higher score outlines the worse outcome, a higher vulnerability of staff, and disproportionate resource consumption [14]. It should be emphasized

to the patients that the assigned surgical date may be subjective to change depending on the situation just about the proposed date. Since an appreciable length of time had elapsed, patients do necessitate to be assessed anew preceding the planning for surgery. Various newly added hospital protocols and policies regarding mandatory testing, inpatient policies to contain the nosocomial transmission, visit guidelines, post-surgical care, and follow-up care are to be spelled out to the patient. Enhanced recovery after surgery should be ensured to cut short the hospital stay and early recovery. Intraoperatively, minimally invasive surgical techniques with smaller incisions, shorter surgical times, and anesthetic techniques such as spinal anesthesia/regional blocks may aid in rapid recovery of the patient. Aerosol generation during general anesthetic procedures should be kept to a minimum [4,7,14]. A study by Park et al. [4] indicated that the anesthetists in the United Kingdom prefer local/regional anesthesia to general one during pandemic times. The study revealed that the prevalence of surgical procedures done under general anesthesia was reduced from 87% to 73% when compared with pre-COVID times. At the same time, a surge in regional blocks was observed from 3% to 16%. Furthermore, it is high time that the beneficial role of Wide-Awake Local Anesthesia no Tourniquet (WALANT) in limb surgery (especially hand procedures) is exploited to the fullest in the backdrop of the 'novel viral' pandemic. The follow-up hospital visits after minor procedures can be brought down by performing surgeries under local anesthesia, using absorbable subcutaneous/subcuticular sutures, and calling for trained healthcare workers at the primary care level for simple dressings and suture removal (if required). Patients should be discharged to their own homes as early as possible to mitigate the risk of disease transmission [4,7,9]. As we proceed for reprogramming the surgical ventures, data about current case figures, ICU and non-ICU bed availability, ventilators, and PPE's as well as information about disease characteristics and trends, should continue to be collected, reviewed, and analyzed to predict potential shortfalls in resources and to pause the non-urgent procedures in the wake of precipitous spurt in the freshly diagnosed infections. With all this going on, it is of immense importance to organize systematic refresher training programs to fortify the comprehension and understanding of sound Standard Operative Procedures (SOP's) during the pandemic [3,14].

Conclusion

Thus, the term "new normal" has garnered ample public as well as internet attention as the world tries to come to terms with the changed contemporary outlook of the life and lifestyles around us. It is crucial to have a good understanding of the current trend of the outbreak in the region, and the preparedness to defy any eventuality. Generation of a manual of Standard Operating Procedures (SOP's) to win over the situation in the coming times, and keeping all health care professionals cognizant of the policies developed may prove to be game-changers till any breakthrough is achieved in the treatment [15,16].

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