



Research Article

Changing the Trends in Surgery during the COVID-19 Times: An Experience from the Eastern Uttar Pradesh State, India

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ABSTRACT

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Background: The COVID-19 pandemic has an immense effect not only on the social and economic lives of people but also on the surgical lives of surgeons, residents, nursing staff, and patients as well as ground level staff. Amidst this COVID pandemic, emergency surgeries were being done but at a decreased rate, whereas elective cases depended on the will of hospitals, surgeons, and patients. Study aims to promulgate a "Neo-Surgical Check Box" by amalgamating the WHO surgical checklist and the results obtained from the questionnaires.

Subjects and Methods: After receiving ethical clearance from the Institute Ethical Committee, an online questionnaire with 50 questions divided into three sections was distributed to 235 surgeons in Uttar Pradesh.

Results: Two hundred and eight surgeons had responded, out of which 154 were male and 54 were female. Only 41.4% (86) were actually conducting the surgery. The emergency surgery rate was 60.3%, whereas 18.6% of elective surgeries were done, 11.8% of surgeries were avoided, and the rate of minimal access surgery was 9.3%.

Conclusion: The "Neo-Surgical Check Box" will not only increase the number of surgeries per day but also provide protection to the healthcare workers while handling not only COVID-positive patients but also any airborne communicable diseases.

Introduction

A global influenza pandemic in 1918 and 2009, H1N1, i.e., swine flu, wreaked havoc on humanity. (1, 2) Lots of people died and suffered. It has been observed that surgical emergencies are complicated by respiratory infections. (3) As a result, surgical preparedness is critical in order to reduce the unwanted infection rate, mortality, and morbidity of not only patients but also healthcare workers. The coronavirus attack, which had its epicentre in Wuhan, China, illustrates a similar situation when the whole world was unprepared for the worse outcome. (4) The recent public health emergency declared by WHO had an immense effect on the surgeons and patients who required surgical care. (5).

As India was facing a major challenge not only in terms of scarcity of resources but also in mobilizing human resources at the cost of surgical branches, (6) The infectiousness, widespread fear, and loss of life among front-line workers had wreaked havoc, resulting in a drop in surgical rates. According to Orhan et al., out of 321 consulted emergency cases, 129 were admitted, out of which 49 patients (38%) were operated on. (7) A reduction in emergency intervention as compared to previous years has been noticed. (8) The WHO Surgical Safety Checklist has been proposed to reduce the rate of surgical site infection, which as a result will reduce morbidity and mortality. (9). Similarly, the combination of the WHO SSC and new normal norms will almost certainly benefit patients, frontline

workers, and surgeons. The Neo-Surgical Checkbox (10) will provide a comprehensive description of the preoperative assessment, intraoperative requirements, and post-operative outcome, benefiting surgical care seekers while protecting healthcare workers. Therefore, it was vital to preserve manpower by minimizing infections among surgeons. However, they were not at the forefront, but the chances of getting infected in the operating room were quite high. (11) Therefore, operating room protocol needs to be modified starting from the entry till the discharge of the patient. (12) To overcome this crisis type of situation in the future, to handle the droplet infectious cases without any hesitation and to provide them with appropriate surgical care on time, we promulgate a "Neo-Surgical Check Box." The "Neo-Surgical Check Box" has been developed by taking into account the standards developed by World Health Organization Surgical Safety Checklist (WHO-SSC) and results obtained from experienced surgeons.

The "Neo-Surgical Check Box" will not only increase the number of surgeries per day but also provide protection to healthcare workers while handling not only COVID-positive patients but also any airborne communicable diseases.

Subjects and Methods

Study type: Questionnaire-based prospective study Material used: After obtaining ethical clearance from the Institutional Ethical Committee. The questionnaire has been circulated online among the surgical branch doctors of Eastern Uttar Pradesh working in tertiary centres. The survey has been conducted for months (March 2021-Nov 2021). This questionnaire has been sent to 235 doctors. Those who have responded within the time period are included in this study.

Questionnaire Validation: The questionnaire has 3 segments divided into pre, intra, and post-operative sections containing 19, 14, and 17 questions, respectively.

Statistical analysis: Analysis of data is done by using excel sheets, pie charts, percentages, and bar graphs.

Results:

Two hundred and eight surgeons had responded, out of which 154 (74%) were male and 54 (26%) were female. Only 41.4% (86) were actually conducting the surgery, where the male-to-female ratio is 3:1.

Pre-Operatively-Team briefing on surgical plans for 86.3%, anaesthesia plans for 50.8%, and both for 9.6%. As an emergency (48.5%), followed by elective (33.8%), and minor surgeries (17.7%). Before shifting the patient to the operating room, 84.3% used proper donning of personal protective equipment, whereas 11.7% still used only gloves and N95mask. (Figure1).

Intra-operatively- 83.1% agreed that the viral filter is present at the patient end of the breathing circuit. An aerosol box is used for intubation only by 27.7%. Maximum and minimum aerosol generation have been seen in general and in local anaesthesia, respectively. (Figure 3).

Surgeons are predisposed to infection when dealing with exploratory laparotomy, i.e., an emergency as compared to elective and minor surgery. (Figure 4).

25.1% agreed that part of the patient's preparation takes place in the operating room. For sanitization, sodium hypochlorite is mostly used. (Figure 2). Other yields of pre-operative assessment have been briefed under Table 1.

Post-operatively all the operative room (OR) team members remain in quarantine for 4–14 days, whereas 15.3% agreed that they should receive quarantine only in symptomatic or in suspicion cases. RTPCR testing on the OR team was done immediately on 29.2% of the doctors, whereas the maximum were tested after 7 days irrespective of symptoms or in asymptomatic conditions. (Table 3) Of 80 surgeons who had operated, 28 had gotten COVID test positive within 7 days of operating. Table 2 provides the rest of the questionnaire statistics

Table 1: Preoperative outcome

Pre – operative Questionnaire (n=208)	Agreed (%)	Denied (%)
Separate pre-operative room	87.5	12.5
Status of covid patient briefed	95.5	4.5
Covid notification sign on door	90.5	9.5
patient wearing surgical mask	95.5	4.5
RTPCR of OR team	81.8	17.7
Recovery plan and location confirmed	97	3
Stretcher cleaned after patient transferred to OR	93.4	6.6
WHO Sign IN done	96.4	3.6
All OR staff wearing Personal Protective Equipment (PPE) kit is confirmed	88.8	10.2
Identification of OR staff and names are listed in register	94.9	5.1
OR is under negative pressure	82.4	16.6
OR runner present outside OR	82.4	16.6

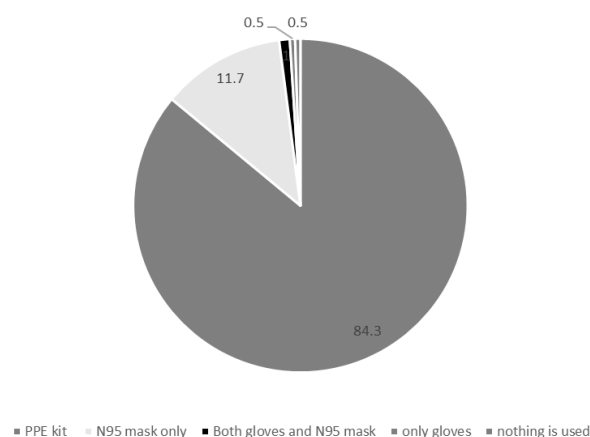


Figure 1: Use of personal safety materials

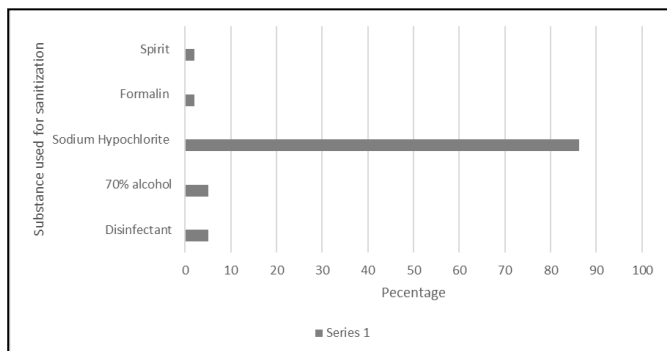


Figure 2: Sanitization products used

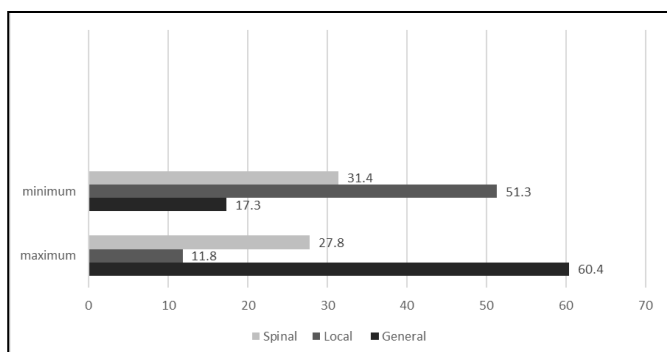


Figure 3: Aerosol generation in a specific anesthesia

Table 2: Intraoperative outcome

Intraoperative requirements (n=208)	Agreed (%)	Denied (%)
Non-essential staff not required in OR	68.4	31.6
No. of Staff should be		
<6	93.3	6.7
>10	5.6	94.4
Surgery is aerosol generating	51.6	48.4
WHO Time Out preferred	92.7	7.3
Extubation process is aerosol generation	88	12

Table 3: Post-operative outcome

Post -operative outcome (n=208)	Agreed (%)	Denied (%)
Separate post-operative room available for COVID positive	95.9	4.1
Same gloves are used during surgery and for the shifting of patient	68.2	31.8
Separate way to shift the patient	92.3	7.7
COVID Notification sign on post-operative door	92.3	7.7
Oxygen flow available in post-operative room	96.9	3.1
While shifting patient PPE kit is used	86.7	13.1
Cleaning of OR is done		
Immediately	84.3	15.7
Within 6hrs	6.8	93.2
Within 24hrs	2.6	97.4
Before next case	6.3	93.7
Stretcher sanitizer after shifting the patient	90.2	9.8
Biomedical waste disposal followed	94.9	5.1
COVID task force constituted	60.4	39.6

Table 4: Neo – Surgical Check Box (NSCB)

Pre- operative assessment	Put “√” for the checked ones	Intra- operative requirement	Put “√” for the checked ones	Post- operative observation	Put “√” for the checked ones
COVID notification sign on the door of the patient room		Patient wearing N95 mask		Separate post-operative room available	
Status of the patient on COVID briefed to OR team		Staff limited to ≤ 6		Change of gloves while shifting the patient	
Patient wearing N95 mask		Viral filter present at the patient’s end		Separate way to shift the patient	
Briefing on surgery and anaesthesia plan to the OR team		Aerosol box for intubation		COVID notification sign on post-operative doors	
Recovery plan and location confirmed		Type of surgery performed		Oxygen flow availability checked	
Part preparation of the patient		Cautery fumes continuously sucked out		Patient wearing N95	
RTPCR status of the OR team		Slow Extubation		PPE kit wore by shifting team	
PPE kit worn by the shifting team		Biomedical waste disposal rules followed		COVID task force vigilance on OR team	
Separate way for the transportation of the patient		WHO “Time Out”		Quarantine period minimum of 7 days provided	
Stretcher cleaned after patient transfer		Immediate cleaning of the operating room		RTPCR of OR team sent on Day 5	
10% sodium hypochlorite used for the sanitization		Immediate Disposal of unused or left over medicines			
OR team members identified and names listed in the register		Disposal of waste according to BMW guidelines			
Full PPE Kit worn by the OR team with proper donning		Disposal of drain fluid according to BMW guidelines			
1 OR runner present outside OR					
OR under negative pressure					
WHO “Sign In” done					

Discussion

The global death toll stands at around 1.3 million (13) and, as per the Indian Medical Association COVID registry, the maximum number of doctor deaths is reported in Delhi, followed by Bihar and Uttar Pradesh. This survey had a broad perspective on the surgical cases faced by the eastern part of Uttar Pradesh. Whether it's a natural calamity or a man-made disaster, the health issues of the people will remain, casualties will come, and deliveries are going to happen. Hence, it's important to look forward to managing the situation, keeping in mind patient safety and security as well as keeping surgeons healthy. Banerjee et al. are correct in recommending that surgical techniques (5) be adjusted. Orhan has reported a dramatic reduction in emergency as well as in elective cases in pandemic time as compared to 2018 and 2019 in the same month. Here, in this survey, the number of elective surgeries being performed was less as compared to emergency surgeries.

Refusal of surgeries by the hospital and doctors, as well as patient reluctance to report to the hospital due to fear, always had a negative impact on the number of cases performed, which in turn had a negative impact on the health care system. A study was conducted in Ontario between March 15 and June 13, 2020, which revealed a backlog of 148364 surgeries. (14) According to Uimonen et al., the mean waiting time for the surgery was 92.6 days, which was an 8% increase as compared to the usual time. Therefore, delays in surgery increase complications and mortality rates. (15)

To keep a check on the backlog and perform usual surgeries even at the time of a pandemic, we are proposing a "Neo-Surgical Check Box" keeping in mind the WHO surgical checklist (Table 4).

Conclusion:

Due to lack of knowledge of the pandemic situation has moved the surgical resident towards the theoretical aspect of surgery as compared to the practical one. Mobilizing the surgical resident to handle the medical part of the COVID patient would hamper or delay their progression of surgical career. Hence, this checkbox will bring the residency life towards normalcy where they can handle all sorts of carefree surgeries

It's good to be ready with all the possible outcomes. This check box not only will be beneficial for the surgeons and covid positive patients but it will be a boon in any sort of respiratory ailments for the near future.

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Conflict of Interest

No conflict of interest.

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