

Impact of Covid-19 Pandemic on Waitlisted Preoperative General Surgical Patients in a Tertiary Care Hospital in India – Problems and Probable Solutions: an Observational Study

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ABSTRACT

Introduction: Among patients affected by Covid-19, a large subset included those who were on preoperative general surgical waiting list for elective operations. There are very few studies on the various factors that impacted these patients during the pandemic in India. The current study aimed to analyse the factors which hampered the surgical management of such patients and to suggest implementable solutions which can mitigate those factors in future pandemics.

Materials and methods: This was a cross sectional observational study conducted from March 2021 to February 2022. Patients from the surgical register who were placed on a waiting list for routine elective procedures like hernias, gallstone disease, benign thyroid swellings, etc were included, while those with malignancy and emergencies were excluded. We sought information about their current status regarding the planned surgery, the factors which have prevented or are preventing them from accessing suitable surgical service and the current status of individually experienced symptoms.

Results: There were 38 respondents. Most of the patients belonged to the age group 40–60 years and had an average waiting period of more than six months. In 20/38 patients, surgery was postponed because of Covid-19 pandemic, seven patients were admitted but operation was postponed for various reasons, while a few others suffered due to financial difficulty or lockdown restrictions. In 23/38 patients' symptoms progressed and nine patients had unbearable symptoms at the time of the study. Two of the 38 respondents underwent emergency surgery outside the institute. All subjects knew that Covid-19 patients were being treated in the institute, where most of them were still willing to continue their treatment. Three patients refused to continue treatment because of apprehension about getting Covid-19.

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Article received on the 12th of March 2024 and accepted for publication on the 17th of May 2024

Conclusion: Although the World Health Organization (WHO) declared the Covid-19 pandemic over, experts opine that there might be more such incidents in not-too-distant future. Our study is among the few of its kind that provides some analytical data regarding the factors which prevented the general surgical patients access to surgical service in India during the Covid-19 pandemic and to suggest some implementable strategies to mitigate the effect of those factors in future pandemics.

Keywords: Covid-19, elective general surgery, waiting list, impact.

INTRODUCTION

In May 2023, WHO finally declared that Covid-19 was no longer a global health emergency, after three years during which almost 6.9 million people died worldwide (1). However, newer SARS-CoV-2 variants continue to appear, with the recently emerged JN.1 variant being added by WHO as a variant of concern (2). Although data regarding virulence of newer variants continue to be analysed, it cannot be denied that Covid-19 as a disease is still evolving and spreading. Also, the possibility that Covid-19 will again assume a pandemic form in future cannot be ruled out.

During the pandemic, apart from the people directly affected by Covid-19, there was a fairly large proportion of patients whose hospital-based treatments were interrupted due to various other factors which were either directly or indirectly attributable to the pandemic. One such subset of patients included those who were placed on waiting lists for elective general surgical procedures in hospitals. This is attributable to various causes ranging from guidelines to postpone elective treatments in order to accommodate the expected demand for Covid-19 related admissions, re-deployment of surgical staff and resources to Covid areas (3) and guidelines issued by various surgical bodies reclassifying urgent and non-urgent surgeries (4). Even the Centers for Disease Control and Prevention (CDC) in the USA had recommended cancelling of all elective procedures in various regions affected by Covid-19 (5). In addition to that, repeated lockdowns in various parts of the country (6), which were limiting movement of people, availability of transport facilities, etc, prevented patients from accessing hospital facilities, even though the hospital might have been open.

Implications of Covid-19 on surgical patients have been explored by several studies (7-9), but all of them were only conducted outside India. Given that India is extremely different in terms of population, culture and even healthcare facilities as compared to other countries, the analyses of those studies might not be equally applicable to the local context.

All India Institute of Medical Sciences, Raipur, was designated as an institute of national importance (INI). It is a prototype of a tertiary care institute catering to a wide range of elective surgical patients. Covid-19 pandemic had also impacted patients availing surgical service in our institute due to factors including, but not limited to, the above-described ones.

The present study aimed to analyse factors which were impacting the patients seeking elective general surgical care in a pandemic scenario to identify the problems and to suggest probable solutions. The ultimate aim is to help develop and implement policies at both the institutional and government level, which will contribute to improving and sustaining elective surgical service in future pandemic scenarios. □

MATERIALS AND METHODS

This study was a questionnaire-based cross-sectional observational study conducted from March 2021 to February 2022. Clearance from institutional ethics committee (Ref. AIIMS RPR/IEC/2021/754) was taken. The surgical register for patients awaiting elective surgery in the Department of General Surgery at that time was reviewed and patients were contacted either by phone or during follow up visit in the outpatient department for any reason. Every alternate patient from the register was selected. All those who were placed on waiting lists for routine or elective procedures like hernias,

gallstone disease, benign thyroid swellings, perianal pathologies and operation for other benign diseases were included in the study. Patients with either any type of malignancy or benign diseases with any urgent or emergent indications for operation at the time of the study were all excluded.

Eligible participants received a questionnaire and information was sought about their current status regarding their planned surgery, the factors which have prevented or are preventing patients from accessing suitable surgical service and the current status of individually experienced symptoms. We also enquired about any factors that caused the patient to seek surgical service outside the authors' institute. Patients' attitude towards getting treatment for their surgical problems in a healthcare unit designated as a covid hospital were also recorded. Informed consent was taken from all study participants. Data was compiled and analysed in Microsoft Excel and results were expressed in terms of descriptive statistics. □

RESULTS

A total of 38 responses were received. Among respondents, 17 were males (44.73%) and 21 (55.26%) females. Most of the patients (n=16, 42.1%) belonged to the age group 40–60 years. The majority of study participants lived within the city limits (<30 km from the hospital) (n=23, 60.52%) but a significant proportion of subjects was living outside the city. Demographic details are shown in Table 1.

Most patients (n=10, 26.31%) had been suffering from groin or ventral hernias, while gallstone disease was the second most common cause for planning of surgery in these patients. The distribution of diseases with indication for surgery is shown in Table 2.

The majority of patients (n=21, 55.26%) had been waitlisted for more than six months from the study period, while a considerable number (n=12, 31.57%) had been waiting for more than three months. Most of them (n=22, 57.89%) had not completed their preanesthetic fitness checkup (PAC) at the time of study. The waiting period and PAC data is shown in Table 3. Average waiting time for waitlisted elective patients, calculated averaging the time (days) from the date of entry into the operation register to the date of operation, was about 129 days at the

TABLE 1. Demographic details and distance of residence from the hospital

Age group (years)	n	%
<20	4	10.52
21-40	14	36.84
41-60	16	42.10
>60	4	10.52
Total	38	
Sex		
Male	17	44.73
Female	21	55.26
Distance between residence and hospital (kms)		
≤ 30	23	60.52
> 30	15	39.47%

Disease/system	n	%
Gall stones	9	23.68
Hernias and hydrocele	10	26.31
Perianal	5	13.15
Mastectomy	3	7.89
Goitre	2	5.26
Intestinal	3	7.89
Skin/superficial	2	5.26
Liver	3	7.89
Pancreatic	1	2.6

TABLE 2. Diseases with indication for surgery

Waiting period (months)	n	%
<1	2	5.26
1-3	3	7.89
3-6	12	31.57
>6	21	55.26
PAC status		
Done	16	42.10
Not done	22	57.89

TABLE 3. Waiting period and preanesthetic fitness checkup (PAC)

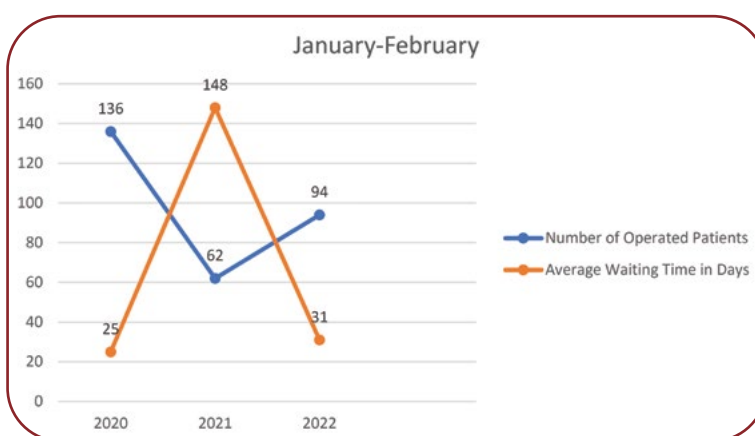


FIGURE 1. Comparison of number of operations and average waiting time in the months of January and February from 2020-2022

time of data collection and around 25 days during the same period of the preceding year for similar patients (Figure 1).

On enquiring the status of patient's treatment, two patients reported they had already sought treatment in other hospitals (Table 4). Among those who were still untreated, half of those patients (n=20) responded that, after discussion with their doctors, surgery was postponed due to the prevailing Covid-19 pandemic. Seven patients responded that they were admitted for surgical intervention but the operation was postponed due to any other reason. Three patients responded that they had been called for admission but were unable to come to the hospital due to transport problems caused by Covid-19 lockdown at their place of residence. One patient reported that surgery was postponed after he had tested Covid-19 positive on hospital admission. All responses are summarized in Table 5.

On enquiry about symptoms of the disease, the majority of patients (n=14, 36.84%) reported that their symptoms have progressed but were still bearable, while 11 (28.94%) responded that their symptoms remained unchanged since they were placed on the waiting list. However, a significant number (n=9, 23.68%) of patients reported that their symptoms have progressed, which they found to be unbearable (Table 6).

Regarding study participant's knowledge and attitude about Covid patients being treated in the authors' institution, all subjects responded that they knew this fact and almost all of them (n=35, 92.1%) were still willing to continue their treatment or get operated in the same hospital (Table 7). Those who responded they did not

TABLE 4. Status of patients' treatment at the time of the study

Status	n	%
Waiting for operation	36	94.73%
Operated in institute emergency	2	5.26%
Operated outside hospital emergency	0	0
Operated outside elective	0	0

Symptom status	n	%
Progressed but bearable	14	36.84
Progressed and unbearable	9	23.68
Symptoms relieved/currently asymptomatic	2	5.26
Symptoms are same	11	28.94

TABLE 6. Current status of patient symptoms

TABLE 7. Study subjects' knowledge and attitude about covid patients being treated in author's institution

Knowledge about other covid patients being treated in authors' institute	n	%
Yes	38	100
No	0	0
Still willing to get operated/treated in authors' institute in the future	n	%
Yes	35	92.10
No	3	7.89

TABLE 8. Reason for not willing to get further treatment in authors' institute

Cause	n	%
Apprehension about getting infection in perioperative period	3	100
Apprehension about delay/cancellation in operation after admission	0	
Apprehension about all facilities not being available currently	0	
I want to get operated only in a non-covid facility	0	

want to continue their treatment in this hospital explained that they feared getting SARS-CoV-2 infection during the postoperative period.

Analysis of operation theatre records revealed that in the months preceding Covid-19 pandemic and lockdown (January-February 2020), the average number of general surgical operations performed in the hospital was twice that performed during the same months in the succeeding year (2021) at the pick of the pandemic. However, it gradually picked up again following the decrease in pandemic intensity and easing of lockdown restrictions (Figure 1). □

DISCUSSION

While there was much debate over various aspects of Covid-19, patients who were indirectly affected during the pandemic seem to

TABLE 5. Reason for non-operation in authors' hospital

Reason	n	%
After discussion with my doctors, it was decided to post pone due to current pandemic situation	20	52.63
Advised admission but unfeasible due to lack of transport during lockdown	3	7.89%
Lack of accompanying attendant	0	0
Financial difficulty – affected by current pandemic situation	2	5.26
Admitted but turned covid positive so surgery deferred	1	2.63
Admitted but operation postponed due to any other reason	7*	18.42
My symptoms are bearable/resolved and I do not want a surgery	2	5.26
Other	3	7.89

*Two of those patients underwent an emergency operation outside the authors' hospital after surgery postponement

have escaped the limelight, particularly in the Indian scenario. Our study comes up with some relatable data regarding such affected patients.

Most of our study participants were females and belonged to the age group 40-60 years which tallies the disease for which they had sought surgical attention, namely hernias and gall stone disease. Apart from that, there were patients who were awaiting operations for thyroid and benign breast disease that were also mostly prevalent in the same age group. Most of the study participants (55.26%) were on the waiting list for more than six months, while 31.57% of subjects had a waiting period of more than three months but less than six months, which can be explained by the fact that most of those patients were enlisted during various periods of lockdown (10, 11). Inguinal hernias have a cumulative 2.8% risk of strangulation at three months and 4.5% risk at two years if left untreated (12) and emergency repair of strangulated hernias has a 3% risk of mortality, which is significant (13). Similarly, gall stones can cause recurrent cholecystitis or pancreatitis (14). Unfortunately, such patients are more likely to have their waiting periods prolonged during pandemics as their diseases are usually considered stable and are not considered to be medical emergencies.

In our institute, as a routine, surgical patients undergo checkup for anaesthesia fitness (Pre-Anesthesia Checkup/PAC) before their names are enlisted in the waiting register. However, among respondents, most patients (n=22, 57.89%) had not yet undergone PAC. This can be attributed to the fact that outpatient departments, including PAC, remained closed during various phases of lockdown and only emergency services were functioning. Preoperative checkup of fitness for anaesthesia can reduce patients' perioperative anxiety, surgery cancellation rates and even hospital stay (15). This is even more important in the context of difficulty in getting operation slots where cancellation of scheduled operation might happen due to anaesthesia issues which were missed due to lack of PAC (16).

Patients were also asked to mention the specific reason why they had not been operated upon at the time of study, with half of the respondents (n=20, 52.63%) reporting that it was a consensual decision to postpone their surgeries after discussion with their treating doctors after considering the various pros and cons of delaying

their treatment. From the perspective of the treating physician, this seems logical in the context of the pandemic scenario. Indeed, between the clinician and his/her patient, the first one is the more knowledgeable about disease and its complications and the onus of informing the patient about adverse effects of delaying treatment rests with him. But most of the patients were advised to postpone their treatment for the time being. These decisions were guided by both non-clinical and clinical factors. Non-clinical factors were mostly related to government imposed regulations and included lockdown and closure of elective hospital services and diverting medical personnel from various departments to Covid-19-related duties (17). Like the general population, a significant number of healthcare personnel was also affected by Covid-19 thereby or quarantined thereby reducing numbers available for non-covid duties (18, 19). Clinical factors included various guidelines by surgical bodies across the world on elective surgeries during the pandemic as well as concerns about perioperative patient safety. The American College of Surgeons had recommended minimizing or cancelling electively scheduled invasive procedures (4, 20). Several other bodies had also recommended similar measures (21). Increased risk of perioperative complication was also one of the influencing factors. One large study with 5479 patients reported an increased incidence of postoperative pneumonia, respiratory failure, pulmonary embolism or sepsis (22). Considering all these factors, it seems logical that patients were advised to postpone their scheduled surgeries. The Royal College of Anaesthetists and the Royal College of Surgeons of England had issued a consensus statement where they advised that timing of surgery after Covid-19 infection should be a shared decision making between the patient and healthcare team (23). Analysis of operation theatre records showed that there was more than 50% decrease in the months of January and February of 2021 compared to the same months in the preceding year when the pandemic had not yet started or lockdowns announced.

In eight patients (21.05%), operation was cancelled due to either testing covid positive after admission or other reasons like non-availability of doctors or anaesthetist and discovery of health issues which could interfere with anaesthesia. This happened due to lack of PAC before

waitlisting. In the majority of patients (60.5%), symptoms progressed; also, 23.6% of subjects claimed that their symptoms were unbearable, and two of them developed acute symptoms requiring emergency operation outside our institute, which was always a possibility with such long waiting periods. Five patients (13.15%) were also affected by the pandemic in other ways such as financial difficulty or lack of transport, because of which they could not get admitted.

Assessment of patients' knowledge and attitude showed that all subjects were aware that the authors' institute was catering to Covid-19 patients, but in spite of that the majority of them were still willing to get treatment here, although they were aware of the infection risk which could occur in the perioperative period. Only a minority of patients (7.89%) were apprehensive about getting operated in the institute due to fear of SARS-CoV-2 infection. With majority of the hospitals in the country catering to mainly Covid-19 patients and most hospitals running to full bed occupancy, options of getting elective treatment or even securing a hospital admission were limited for majority of the population in the country (24). The situation was similar worldwide (25).

Although the Covid-19 pandemic has been declared over, it has been suggested that the risk of future pandemics is still high (26) and research worldwide currently is focussing in assessing and improving the preparedness to handle future such scenarios (27, 28). These not only include research from microbiological perspective, but also developing newer strategies at all levels to mitigate the various problems faced by the population during the pandemic.

After analysing the results of our study and considering the situation of healthcare infrastructure in the world's most populous country, India, the authors like to suggest some implementable strategies for catering the subset of waitlisted general surgical patients in future pandemic scenarios which are presented pointwise below:

1. Strengthening of the peripheral surgical healthcare system so that routine general surgeries like cholecystectomy, hernia repair and benign breast lumps can be operated in peripheral institutions without having to travel far from patients' homes during lockdowns and in lack of transport situations.

2. Building well equipped and competent mobile surgical and anaesthesia teams which can preferentially visit localities with more wait-listed patient concentration and operate on daycare basis within the existing local government or private healthcare facilities.
3. Peripheral government facilities with surgical setup can be equipped with telesurgical (29) facilities involving video ward rounds and perioperative guidance and help to local surgeons by experts from central institutions. Use of robotics and AI are required to be implemented in such facilities.
4. Reducing hospital stay for elective operations may lower the risk of perioperative infections by transmissible diseases. Implementation of enhanced recovery protocols (30) as well as equipping operation theatres with surgical resources like tissue adhesives, staplers, minimally invasive surgery facilities, etc may help cut down on hospital stay during elective operations in a pandemic scenario.
5. Use of information technology for joint perioperative assessment and risk stratification (31) between surgical and anaesthesia teams may reduce the need for physical presence of doctors as well as patient's need to attend hospital for preanesthetic checkup.
6. Incentivizing healthcare workers for service during pandemic situations might boost morale and mitigate the mental health risks (32).

Limitations of the current study include a small sample size. Due to the ongoing second wave of Covid-19, it was difficult to contact patients. Larger sample size would have uncovered some other factors which escaped the current analysis. As soon as restrictions were reduced and the situation somewhat normalized, the majority of respondents were accommodated in the surgical schedule on preferential basis. □

CONCLUSION

The Covid-19 pandemic was an unprecedented public health catastrophe in the lives of the current generation. However, experts opine that there might be more such incidents in not-too-distant future. Research currently is focussing on preventing and enhancing preparedness to deal with such situations in the future. Our study is among few of its kind which provides some analytical data on factors that affect

ted the general surgical patients in India who were waiting for their elective surgeries during the Covid-19 pandemic. Therefore, data obtained by us helped suggest some implementable strategies to mitigate the effect of those factors in future pandemics. Joint action at the political,

governmental and institutional level is required to achieve the same goal. 

Conflicts of interest: none declared.

Financial support: none declared.

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