

Cataract Surgery Trends during Lockdown and Unlocking Periods of COVID-19 Pandemic: A Cross-sectional Hospital-based Study

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ABSTRACT

Introduction: Coronavirus Disease-2019 (COVID-19) has affected healthcare access to population around the world. India also had its own set of problems for patients with disruption of healthcare services during the pandemic. This also brought in unique challenges for ophthalmologists who adapted to new challenges to provide quality care to the patients including those reporting for cataract surgery.

Aim: To find out cataract surgery trends and demographic variables during lockdown and unlocking periods of COVID-19 pandemic.

Materials and Methods: This cross-sectional hospital-based study was conducted at Ophthalmology department of a tertiary care centre in eastern India, from January 2020 to March 2022. Trends of cataract surgery including numbers, demographic factors, visual acuity at presentation, difference during first and second lock and unlock periods etc were compared during various lock and unlock period over more than two years.

Results: A total of 3,843 patients were planned for surgery and 3,594 patients underwent cataract surgery. A total of 218

patients reported being positive for COVID-19 preoperatively and voluntarily dropped out from surgery. A total of 24 patients were found to be positive during preoperative Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) work-up and were excluded from surgery. Seven patients didn't report for the surgery. A total of 59 patients reported febrile illness during one month postoperative period. There was dip in cataract surgery during lockdown periods (from 178.33 every month in pre COVID-19 period to near zero during first lockdown period) but recovery was much faster during second unlock period compared to first unlock period.

Conclusion: The study concludes that there was drastic decrease in number of patients undergoing cataract surgery during COVID-19 pandemic. Predominantly young, male patients who had advanced morphology of cataracts with poor visual acuity accessed healthcare set-up for cataract surgery during initial lock and unlock period. Similar trend was seen during second lock and unlock period with rapid recovery of numbers and demography of cataract surgery patients to pre-COVID-19 levels.

Keywords: Coronavirus disease-19, Healthcare, Phacoemulsification

INTRODUCTION

The COVID-19 pandemic has taken the world by storm from early 2020 onwards and had devastating effects on all aspects of human life including education, healthcare, economy, psychosocial and recreational [1]. At the outset, it was believed that the spread could be controlled by imposing severe restrictions/curbs for a short period of time but the restrictions and curbs continued at various levels of intensity for last almost two years [2,3]. During the initial intense phase of the pandemic and the lockdown, all elective surgeries were suspended in healthcare centres. This impacted most of ocular surgeries including corneal transplantation, vitreoretinal surgeries and cataract surgeries [4,5]. Once the restrictions were relaxed in June 2020, patients who required early surgery, started surfacing.

Cataract surgery, the most commonly performed surgery in the world, resumed around June 2020 in most centres, especially in cases that required urgent surgery [6]. Initial reports and studies suggested that phacoemulsification, being an aerosol generating procedure, bears a high risk for transmitting COVID-19 virus [7,8]. The health ministry guidelines mandated COVID-19 RT-PCR test preoperatively during intense phase of COVID-19 [9]. The pandemic curve flattened over the next few months and the number of patients requiring elective cataract surgeries increased. Most centres started performing phacoemulsification with various degrees of precautions [10]. Preoperative, negative COVID-19 RT-PCR was an essential prerequisite everywhere.

The vaccination rollout among healthcare workers and elderly started in January 2021. Once the healthcare staff and the patients received the first dose of vaccine, COVID-19 guidelines were reviewed and modified accordingly if the patient was asymptomatic [11].

This study aims to analyse the two years trends of cataract surgery during the lockdown and unlocking periods of COVID-19 pandemic in a tertiary care hospital in eastern India and compare differences in trends during first lock and unlock period to second lock and unlock period.

MATERIALS AND METHODS

A cross-sectional, hospital-based study was conducted in Ophthalmology department of a tertiary care centre in eastern India. Study adheres to declaration of Helsinki and approved by Institutional Ethical Committee (IEC) (no 100039/IEC/study/2022 dt 28 July 2022). None of the patient identifiable parameters were used in the data collection. Written informed consent was obtained from all patients.

Inclusion criteria: All patients who had significant cataract and planned for cataract surgery from January 2020 to March 2022 were included in the study.

Exclusion criteria: Patients without significant cataract were excluded from the study.

The data was compiled by three independent observers, assigned one each for perusing surgery appointment register, operation theatre register and patient files from January 2020 to March 2022 to analyse trends in cataract surgery during lockdown and unlocking periods. The study duration was divided in to pre-COVID-19 phase from January 2020 to March 2020, first lockdown period from 25 March 2020 to 31 May 2020, first unlock period from 01 June 2020 to 15 May 2021, second lockdown period from 16 May 2021 to 31 May 2021, second unlock period from 01 June 2021 to March 2022.

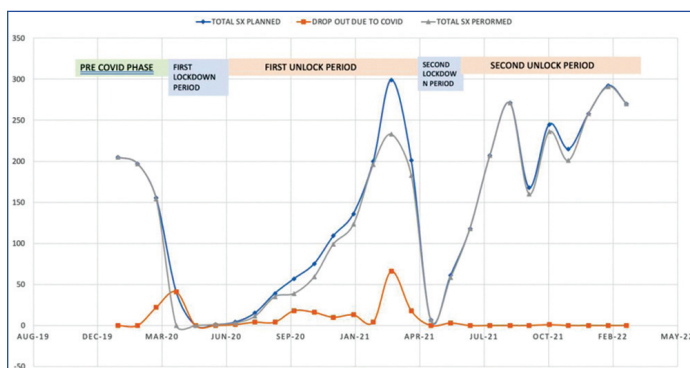
STATISTICAL ANALYSIS

Data collected included total number of cataract surgeries planned and performed, patient dropout due to COVID-19 positivity as reported by patient or due to positive preoperative RT-PCR result, patient demographics like age, gender, clinical findings including visual acuity, lens status and development of postoperative febrile illness upto one month.

RESULTS

A total of 3,843 patients were planned for surgery and 3,594 patients underwent cataract surgery. A total of 218 patients reported being positive for COVID-19 preoperatively and voluntarily dropped out from surgery. Seven patients didn't report for the surgery. A total of 24 patients were found to be positive during preoperative RT-PCR work-up and were excluded from surgery. A total of 59 patients reported febrile illness during one month postoperative period.

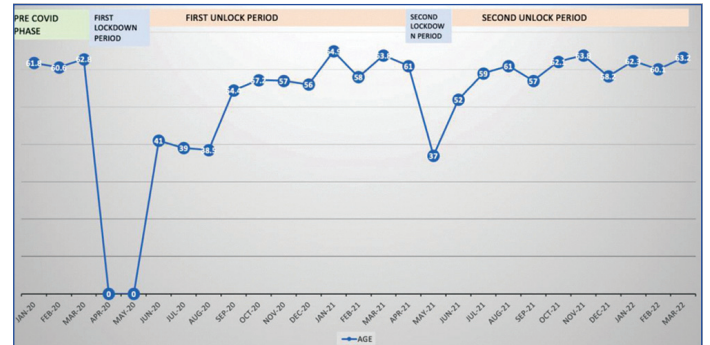
Change in number of cataract surgeries during lockdown and unlocking period: Mean number of monthly cataract surgeries performed in pre COVID-19 phase was 178.33±98.032 [Table/Fig-1]. During first lockdown period, no cataract surgery was performed in the month of April and May 2020. During first unlock period, the number of surgeries increased gradually every month. By February and March 2021, number of cataract surgeries performed every month had crossed the mean monthly cataract surgeries performed during pre-COVID-19 phase. This was probably due to the large number of patients with cataract, who were waiting for pandemic to subside, reported for surgery as soon as there was decrease of COVID-19 positivity rates. There was second major dip observed in May 2021 when second phase of lockdown was announced and only seven cataract surgeries were done in the month of May 2021. During second unlock period, number of cataract surgeries further increased gradually and again surpassed the monthly cataract surgeries of pre-COVID-19 phase. Number of patients who had to be dropped from cataract surgery due to COVID-19 was highest in the month of October 2020 to December 2020. COVID-19 cases further increased in the month of March 2021 with as high as 66 patients planned for surgery dropped out due to COVID-19. Number of



[Table/Fig-1]: Monthly trends of planned vs performed cataract surgeries during lock and unlock periods of COVID-19. Also, depicted are monthly patients drop out due to COVID-19. X axis represents the time of presentation and y axis represents the % of males and female patients

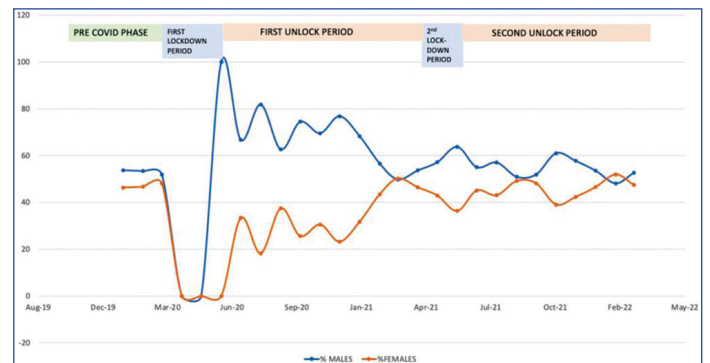
surgeries decreased to low i.e., seven surgeries in the month of May 2021. This was during the second wave of COVID-19.

Age: Mean age of patients undergoing cataract surgery was 61.733±2.736 years during pre-COVID-19 period, 53.709±6.502 years during first unlock period, 37.02±8.732 years during second lockdown period and 59.87±2.529 years during second unlock period. During initial unlock period between June to August 2020, mean age of patients undergoing cataract surgery was 39.5 years. Mean age of patients undergoing cataract surgery during study period every month is shown in [Table/Fig-2]. It is clear from the figure that during lockdown and initial unlock phases, only younger people came out to the hospital for cataract surgery. Older patients waited for the pandemic to subside.



[Table/Fig-2]: Shows mean monthly age of patients undergoing cataract surgery during various lock and unlock periods of COVID-19.

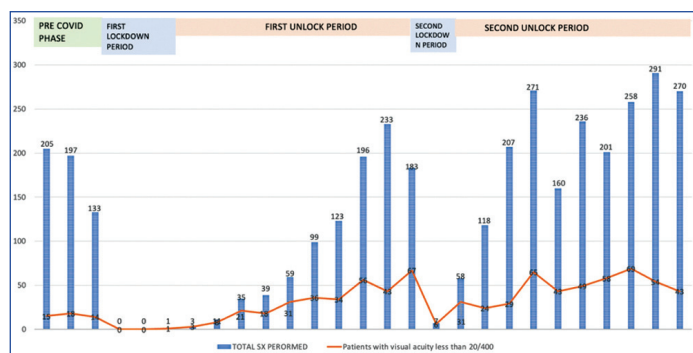
Gender: During pre-COVID-19 phase, percentage of female patients undergoing surgery was 47%. It decreased to 30.9% during first unlock period, 42.9% during second lockdown period and 44.9% during second unlock period. The data suggest that less number of female patients reported for cataract surgery during pandemic [Table/Fig-3].



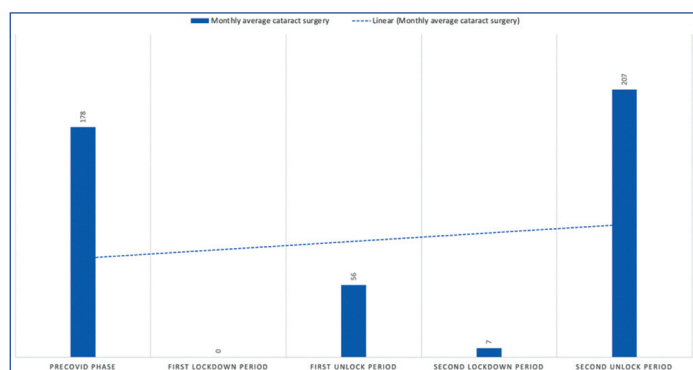
[Table/Fig-3]: Shows gender distribution in percentage during various periods of COVID-19. X axis represents the time of presentation and y axis represents the % of males and female patients

Cataract surgery and visual acuity: During pre-COVID-19 phase, percentage of patients with best corrected visual acuity of less than 20/400 was 8.967±3.985. The percentage increased to 46.291±20.065 during first unlock period, 85.7±9.374 during second lockdown period and 24.95±7.958 during second unlock period [Table/Fig-4]. During lockdown and initial unlock periods, most of patients who had either total or dense cataracts with marked reduction of visual acuity, underwent cataract surgery.

Difference of cataract surgery trends during lockdown period 1 and 2: During first lockdown period, no cataract surgery was performed in centre for about two months. Recovery during first unlock phase was also slow where it took almost six months for cataract surgeries to reach pre-COVID-19 phase. During second lockdown period, urgent surgeries were undertaken and recovery to pre-COVID-19 period was rapid (two months) [Table/Fig-5].



[Table/Fig-4]: Shows patients with visual acuity less than 20/400 compared to total patients undergoing cataract surgery.



[Table/Fig-5]: Shows average number of patients undergoing cataract surgery during lock and unlock periods of COVID-19.

DISCUSSION

The COVID-19 pandemic and the lockdown to curb its spread commenced in the third week of March 2020. In this study, this was reflected in the drop outs/ cancellations from the planned surgeries in the months of April and May 2020. The ensuing months, till the month of July 2020, saw intense nationwide lockdown dropping the elective cataract surgeries to nearly zero. August 2020 onwards the numbers started rising slowly. Mandatory preoperative COVID-19 RT-PCR testing was being performed on all the patients during preoperative visit. Subsequent months, saw a steady rise in the number of surgeries planned as well as performed. In the month of February and March 2021, there were large number of patients tested RT-PCR positive for COVID-19 and dropped from surgery, leading to gap in planned vs performed cataract surgery as seen in [Table/Fig-1]. This was also reflecting increasing number of cases in the general public and second lockdown period started. This led to a sharp dip in cataract surgeries again in the month of May 2021, coinciding with the peak of the second wave.

There was difference in trends during first unlock and second unlock periods. Recovery during second unlock period was faster and it took just two months compared to six months during first lockdown period for cataract surgeries to return to pre-COVID-19 period. Major reason for rapid recovery of number of patients for cataract surgery to pre-COVID level during second unlock period were availability of vaccination for patients and healthcare staff, availability of protocols and guidelines for management of COVID-19 positive patients in the health set-up and reduced fear of unknown which was a major factor during first lock and unlock period [12-14].

Trends of cataract surgery during various lock and unlock periods also reflect demographic variations compared to pre-COVID-19 period. There were no cataract surgeries during first lockdown period. During initial months of first unlock period, there was sharp decrease in numbers of older patients and women reporting for cataract surgery. It could be due to cautious approach to travel to hospital during pandemic by patients of these demographic groups as well as older patients with co-morbidities didn't want to expose

themselves. Restrictions as well as availability of transport services could also be a factor for lower turnout of these patients. Hence, large percentage of cataract patients who underwent surgery during this period were young males. Das AV et al., studied trends of cataracts surgery for one year during initial part of COVID-19 pandemic and reported drastic reduction in surgical volume during lockdown period [15]. They also reported that young, males with poor visual acuity and denser cataracts staying nearby surgical centre accessed surgical facilities during this period. Present study showed similar findings in first lock and unlock period. Though during second lock and unlock period this demarcation was much less and for shorter duration. One major probable factor for this was increased vaccination coverage which led to more patients reporting to healthcare set-up for cataract surgery during second lock and unlock period.

The COVID-19 pandemic threw up several challenges as well as highlighted some weaknesses of healthcare system. The initial response of policy makers was to err on the side of excess caution as there was no evidence available to guide the course of action. Test, trace and isolate was the mantra espoused by all agencies. Once it was clear that this is a long-term crisis and emerging evidence periodically modified strategies [16,17]. The observations of these cataract surgery trends can help to plan and adopt novel future strategies in similar scenarios.

Limitation(s)

The limitation of the present study was that it was conducted in one tertiary care centre Kolkata, West Bengal, India.

CONCLUSION(S)

This study concludes that predominantly young, male patients with advanced morphology of cataracts accessed healthcare set-up for cataract surgery during initial lock and unlock period. Similar trend was seen during second lock and unlock period with rapid recovery of number of patients undergoing cataract surgery to pre-COVID-19 levels.

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