

Evolving Practices in Elective Arthroplasty during COVID-19 Pandemic: Experience at Tertiary Care Centre in India

Rajendra Kumar Kanojia¹, Aditya Kaushal², Himanshu Bhayana^{3*} and Akash Ghosh⁴

¹Professor, Department of Orthopaedics, PGIMER, Chandigarh, India

²Senior Resident, Department of Orthopaedics, PGIMER, Chandigarh, India

³Assistant Professor, Department of Orthopaedics, PGIMER, Chandigarh, India

⁴Junior Resident, Department of Orthopaedics, Post Graduate Institute of Medical Education and Research, Chandigarh, India

*Corresponding Author: Himanshu Bhayana, Assistant Professor, Department of Orthopaedics, PGIMER, Chandigarh, India.

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Abstract

Background: COVID-19 has emerged as an unprecedented threat to humanity, with a major lifestyle impact in 2020. Not only has this impacted the structure and functioning of emergency healthcare system tremendously, but also elective surgeries such as arthroplasties. We analysed data retrospectively from hospital records from our centre for the lockdown period in our country and compared it with data from the previous year, as well as with some available international data, to see if there was a major change in the trend and management of arthroplasty in our region.

Materials and Methods: For a period from 1 June 2020 to 15 August 2020 during which some conditional relaxations in lockdown were granted, we collected data from our tertiary care hospital which was contrasted with data from similar time frame in 2019. We looked at patient demographics, indications, number of hip and knee arthroplasty, and management protocol changes.

Results: Although the indications and patient profile in 2020 during COVID-19 time and in similar time period in 2019 showed no significant variation, there was a reduction in the number of arthroplasties performed in 2020.

Conclusion: Preserving HCW (health care workers) and medical facilities for our fight against the COVID-19 crisis is the need of the hour, yet we should be aware of the potential raise in challenges and patient load regarding the unmet need of arthroplasty in the immediate future.

Keywords: COVID-19; SARS-CoV-2; Pandemic; Arthroplasty; Elective Surgery; Practices; Phased Return

Introduction

The viral pandemic in Wuhan, China, first reported as a cluster outbreak in December 2019, has now spread all over the world. With its first ever case on 30th January 2020, India formally joined the global havoc [1]. WHO (World Health Organisation) declared it a global health emergency and called for a collective effort to prevent the outbreak [2,3]. Aggressive prevention and containment strategies, such as absolute lockdown, have been introduced in different countries.

Nationwide Lockdown was declared by the government of India on 24 March 2020 in response, where the government, as in many European and western countries, had provided guidelines recommending or mandating the discontinuation of elective procedures and as a result the elective arthroplasty services were severely affected during the time. Initially scheduled for 21 days (24th March to 14th April 2020), the absolute lockout was implemented, however, later extended upto 3 May. Subsequently, the lockout was further extended with some relaxation for 28 days (4 May to 31 May 2020). The districts were divided into zones, i.e. red, orange and green, and varied relaxations were implemented accordingly. The resumption of services was announced in a phased manner from 1 June. While the number of cases was limited during the lockdown period, there has been a sharp rise in the cases in the recent months after the removal of the lockdown.

Hence, from 24th March onwards, Focus and resources were directed towards appropriate management of emergency trauma cases and at the same time, maintaining adequate standards for diagnosis and management of fresh COVID-19 (corona virus disease-2019) positive cases in the department, which included availability of staff, ventilators, PPE (personal protective equipment) and RT-PCR (reverse transcriptase polymerase chain reaction) diagnosis kits and designated isolation areas. In view of the Lockdown and appropriate redistribution of resources, the number of fresh trauma cases and COVID-19 positive cases were found to be lower than expected for our region.

With intention to resume elective healthcare services for the general population as soon as possible as the curfew was being removed simultaneously and number of trauma and COVID-19 positive cases still being limited at the time, it was decided by the institution to resume elective operative services in the Orthopaedics department from 1st June 2020 with strict adherence to the guidelines for diagnosis and management for fresh COVID-19 positive cases.

Although, with the limited resources, including ventilators and personnel and limited new COVID-19 cases in the region, we were able to resume our elective theatres for a period from 1st June to 15th August 2020. However, with the removal lockdown in India by the government in a phased manner we have seen a rapid rise in the number of cases with more than 70 thousand new cases diagnosed each day across the nation and the total number of new cases more than 3 million, there is still a significant and eminent burden on the health care infrastructure of the nation.

This has led to a situation where significant shortage in the availability of ventilator, PPE and blood products has developed, as are needed for management of COVID-19 patients. In response, recommendations were made to delay elective Surgical procedures requiring > 24 hrs hospitalisation in efforts to re-allocate the available resources to our COVID-19 response facility, which predominantly affected joint arthroplasty. It can be safe to presume that joint arthroplasty services have been affected substantially in the rest of the nation over the last few months as well.

With a brief period of experience in carrying out approximately 257 elective arthroplasty cases during this window period of 2 months and 18 days during the pandemic, there has been a recognition of difficulties faced in management of such patients and at the same time the eminent need for evidence-based guidelines for the resumption, if and when resources allow, of fully functioning Arthroplasty services.

Ours is a tertiary care referral centre in North India, with multiple super specialties including Orthopaedics, this is one of the busiest hospitals in the nation. With phased resumption of activities, we restarted the resumption of arthroplasty with more stringent case selection preferring more symptomatic patient with preference to lesser co-morbidities. However, as the number of cases further escalated leading to higher load in the dedicated COVID-19 centre of our hospital, elective operation theatre had to be shut down from 18th August onwards.

Aim of the Study

In view of the current situation, this article aims to briefly outline our experience including difficulties faced in the management of patients taken for elective arthroplasty surgery at our tertiary care facility and methods, which can be adopted to overcome such difficulties in the epoch of COVID-19 Pandemic specifically in a population dense nation such as India.

Materials and Methods

Ours was a retrospective observational analysis conducted in North India at a tertiary care referral centre. The information was obtained from the hospital records department and counter-checked from admission and discharge records available in wards. New patients were included, as well as those referred for tertiary level management, were included in the study. In addition to arthroplasty, other elective cases, such as arthroscopy or tumour surgery, were omitted from the research. In addition to indications, variables such as demo-

graphic profile, total number of arthroplasties, hip and knee arthroplasties, and primary and revision arthroplasties were gathered. Data for a period of 2.5 months (1 June 2020 to 15 August 2020) was obtained. In order to determine the improvements in trends and management protocols, data for the corresponding time frames from 2019 (previous year) was taken as the basis. The research was accepted by the Departmental Review Board as it was solely a data-based retrospective observational study, without any patient involvement. All data were collected for review on Microsoft excel (2016) spreadsheet and the level significance was calculated by the Chi-square test. A p value < 0.05 was considered to be statistically significant.

Results

A brief overview of the data collected retrospectively indicates the following key findings. In the month of June 2020, after the lockdown was removed a total of 25 Arthroplasties (0.83/day) were done of which 14 were males and 11 were females (Table 1). The number of Arthroplasties increased to 37 Arthroplasties (1.19/day) in the month of July, out of which 19 were males and 18 were females and subsequently in the month of August (1st - 15th August/15 days) a total of 12 Arthroplasties were done (0.8/day) with 9 males and 3 females. In June, a total of 11 patients (44%) of patient were aged below 60 yrs of age, 14 (56%) were aged between 60 - 80 yrs of age and no cases above 80 years of age. This number increased for patients below 60 yrs of age (n = 29, 78%), decreased for age group 60-80 yrs (n = 8, 22%) in the month of July. In the month of August (1st - 15th August/15 days), there were 8 cases below 60yrs (67%) and 4 cases between 60 - 80 yrs (33%) following the previous months trend. In total there were no cases above 80yrs go age in any of the three months. The Number of cases done per day for the whole period indicate that below age 60 yrs 0.63/day cases were done, between 60 - 80 yrs of age 0.34 cases were done and no cases above 80yrs of age were done.

Data from the same periods in 2019 (Table 1) indicates that a total of 71 Arthroplasties were done (2.37/day, m/f 35/36) for the month of June 2019, 75 (2.42/day, m/f 33/42) for the month of July 2019 and 32 (2.13/day, m/f 17/15) for the corresponding time period in August 2019. In June, a total of 38 patients (54%) of patient were aged below 60 yrs of age, 31 (44%) were aged between 60 - 80 yrs of age and 2 cases (2%) above 80 years of age. This number increased for patients below 60 yrs of age (n = 46, 61%), decreased for age group 60 - 80 yrs (n = 27, 36%), and same for more than 80 yrs of age (n = 2, 3%) in the month of July. In the month of August (1st - 15th August/15 days), there were 19 cases below 60yrs (60%) and 11 cases between 60 - 80 yrs (34%), 2 cases (6%) above 80 yrs of age, following the previous months' trend. Total number of operated cases below the age of 60 yr was 103 cases (58%, 1.36/day) while between 60 - 80 yrs of age were 69 cases (39%, 0.91/day) and 6 cases were more than 80 yrs of age (3%, 0.08/day).

2020		June		July		August*		Total	
		2019	2020	2019	2020	2019	2020	2019	2020
1	Total No. Of Arthroplasties Done	25	71	37	75	12	32	74	178
	(No./day)	(0.83)	(2.37)	1.19	2.42	0.8	2.13	0.97	2.34
2	Males/ Females	14/11	35/36	19/18	33/42	9/3	17/15	42/32	85/93
	(%)	(56%/44%)	(49%/51%)	(51%/49%)	(44%/56%)	(75%/25%)	(53%/47%)	(57%/43%)	(48%/52%)
3	Age Group <59yrs	11 (44%)	38 (54%)	29 (78%)	46 (61%)	8 (67%)	19 (60%)	48 (65%)	103 (58%)
	(No./day)	(0.37)	(1.27)	(0.94)	(1.48)	(0.53)	(1.27)	(0.63)	(1.36)
4	Age Group 60-79yrs	14 (56%)	31 (44%)	8 (22%)	27 (36%)	4 (33%)	11 (34%)	26 (35%)	69 (39%)
	(No./day)	(0.47)	(1.03)	(0.26)	(0.87)	(0.27)	(0.73)	(0.34)	(0.91)
5	Age Group >80yrs		2 (2%)		2 (3%)		2 (6%)	0	6 (3%)
	(No./day)		(0.07)		(0.06)		(0.13)		(0.08)
	Total							74	178

*: Cases calculated for the month of August are from 1st to 15th August for 2020 and 2019 respectively

Table 1: Table showing the demographic distribution over the period of two and a half months w.r.t. same time period in previous year.

Hip arthroplasties accounted for 68% (n = 17) of the arthroplasties done in June 2020, 62% (n = 23) in July 2020 and increased to 92% (n = 11) in August 2020 (1st- 15th August/15 days) (Table 2). Knee Arthroplasties, on the other hand, accounted for 32% (n = 8) in June, 38% (n = 14) in July, and 8% (n = 1) in August respectively. Out of the above, majority were primary arthroplasties (n = 70) as compared to revision arthroplasties (n = 4). The most common indication for primary arthroplasty was osteoarthritis (n = 28, 40%), second most common was trauma (neck and I/T femur fracture) (n = 21, 30%) and third most common indication was avascular necrosis (of head of femur) (n = 15, 21%). 6 cases (9%) of ankylosing spondylitis were operated whereas no cases of rheumatoid arthritis were operated.

Data from the same period from 2019 (Table 2) indicate that hip arthroplasties accounted for 52% (n = 37) of the Arthroplasties done in June 2019, 59% (n = 44) in July 2019 and 56% (n = 18) in August 2019 (1st- 15th August/15 days) (Table 2). Knee Arthroplasties, on the other hand, accounted for 48% (n = 34) in June, 41% (n = 31) in July, and 44% (n = 14) in August respectively. Out of the above, majority were primary arthroplasties (n = 174) as compared to Revision Arthroplasties (n = 4). The most common indication for Primary arthroplasty was Osteoarthritis (n = 91, 53%), second most common was trauma (neck and I/T femur fracture) (n = 38, 22%) and third most common indication was avascular necrosis (of head of femur) (n = 35, 20%). 6 cases (3%) of rheumatoid arthritis were operated whereas 4 cases (2%) of Ankylosing spondylitis were operated.

2020		June		July		August*		Total	
		2019	2020	2019	2020	2019	2020	2019	2020
1	Total No. Of Arthroplasties done	25	71	37	75	12	32	74	178
	(No./day)	(0.83)	(2.37)	(1.19)	(2.42)	(0.8)	(2.13)	(0.97)	(2.34)
	a. Hip Arthroplasty (%)	17 (68%)	37 (52%)	23 (62%)	44 (59%)	11 (92%)	18 (56%)	51 (69%)	99 (56%)
	b. Total Knee Arthroplasty (%)	8 (32%)	34 (48%)	14 (38%)	31 (41%)	1 (8%)	14 (44%)	23 (31%)	79 (44%)
2	Primary Arthroplasty	24	68	34	74	12	32	70	174
	(No./day)	(0.80)	(2.27)	(1.10)	(2.39)	(0.80)	(2.13)	(0.92)	(2.29)
	a. Osteoarthritis (%)	10 (42%)	36 (53%)	16 (47%)	37 (50%)	2 (17%)	18 (56%)	28 (40%)	91 (53%)
	b. Trauma (Fractures) (%)	8 (33%)	16 (23%)	9 (26%)	17 (23%)	4 (33%)	5 (16%)	21 (30%)	38 (22%)
	c. Avascular necrosis (%)	4 (17%)	14 (21%)	5 (15%)	15 (20%)	6 (50%)	6 (19%)	15 (21%)	35 (20%)
	d. Rheumatoid Arthritis (%)	-	2 (3%)	-	2 (3%)	-	2 (6%)	-	6 (3%)
	e. Ankylosing Spondylitis (%)	2 (8%)	-	4 (12%)	3 (4%)	-	1 (3%)	6 (9%)	4 (2%)
3	Revision Arthroplasty	1	3	3	1	-	-	4	4
*: Cases calculated for the month of August are from 1 st to 15 th August for 2020 and 2019 respectively									

Table 2: Table showing the Case distribution over the period of two and a half months w.r.t. same time period in previous year.

Discussion

With the beginning of “Lockdown” on 24 March 2020, the Indian government was vigilant enough to implement this “protection measure” against the spread of coronavirus. The nationwide “Lockdown” was successful reducing the infection of rate of COVID-19/SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) but keeping in view the associated impending economic and financial crisis in

nation, the government decided for a phased removal of “lockdown” depending on the incidence of COVID-19 infection in various regions. As the “Lockdown” was removed in our region there was a simultaneous resumption of OPD (outpatient department) and elective arthroplasty services at our institution [4,5]. However, certain protocols were put in place to provide maximum level of healthcare services and prevent the spread of COVID-19 infection. These were as follows.

Judicious case selection

1. All cases that were taken for elective arthroplasty surgery should have a negative COVID-19 RT-PCR report within the last 72 hrs.
2. Patients selected for elective surgeries were preferably aged < 60 yrs and ASA (American Society of Anaesthesiologists) grade 1 or 2 and/or were assessed to benefit immensely from the procedure.
3. It was mandatory for patients as well as the attendants to wear face masks at all time during hospital stay covering nose and mouth and were also advised to limit touching their face to prevent viral transmission [6].
4. Strict hand hygiene and social distancing norms were followed inside the hospital premises with availability of hand sanitizers at hospital entrance and ward entrance and bedside of individual patients, in accordance with the CDC (Center for Disease Control and Prevention) guidelines [6,7].
5. Surgical indication such as peri-prosthetic fractures, acute trauma/femoral neck fractures, infection and revision arthroplasty were given preference [8].
6. Surgery was avoided in patient with co-morbidities such as chronic steroid use, chemotherapy, obesity, high blood pressure, uncontrolled diabetes, renal, pulmonary, hepatic disorder as these conditions can potentially predispose the patient to complications, including cardiac arrest, impaired ventilation and death.
7. Patient demand and willingness along with socio economic and urgency to return professional situation was taken into consideration.
8. Consent form having appropriate information was provided before the surgery mentioning that although procedures will be carried out to the highest possible standards, certain modifications had to be made in view of the current pandemic and informed consent was taken from patients after informing them, at least, the following points
 - COVID-19 has been declared a pandemic by WHO.
 - Certain measures taken by the surgeon and Institution were to reduce the spread of the virus.
 - Patient acknowledges that despite efforts to minimise transmission, the Risk of hospital acquired COVID-19 cannot be eliminated.
 - Patient understands that arthroplasty (apart from peri-prosthetic fracture, failure, trauma and infection) is an elective procedure.
 - The patient acknowledges that, although they may have been tested negative for COVID-19, they may still have COVID-19 infection and in case they develop symptoms they have an increased risk of significant complications and death.
 - The Patient acknowledges the option to re-schedule surgery was provided, and that delay may lead to worse overall outcome.

9. Unilateral procedures instead of bilateral procedures were preferred to decrease to risk of development of post-operative complications and need of ICU (intensive care unit) care.
10. Dedicated multidisciplinary team was available at all times.
11. In case patient was diagnosed to be positive, the patient was transferred to our COVID-19 care facility and any elective procedure was deferred until two negative RT-PCR reports were attained and patient was declared COVID-19 negative.
12. Financial implications of COVID-19 testing on the patient were considered and all COVID-19 testing was provided by the institute to the patient free of cost. This not only reduced the economic burden on the patient but also provided for a safe, reliable and trustworthy source of COVID-19 status for the Health Care personnel.

In the operation theatre

1. The operating room is potentially a high-risk environment during the current pandemic, particularly if intubation is required, as the virus can become aerosolised hence, precautions were taken to restrict the generation of respiratory droplets and fomites in the immediate environment of the infected person.
2. Laminar air flow system with ventilation of minimum 20 air changes in 1 hour as preferred where possible.
3. Surgical team members were advised to remain outside the OT during intubation and extubation procedures to decrease the risk of exposure to the team.
4. Preference was given to spinal and regional anaesthesia wherever possible.
5. Use of approved gowns, gloves, eye protection and N95 masks by the anaesthesia as well as the surgical team before contact with the patient.
6. Optimal use of PPE otherwise universal precautions was maintained at all times with N95 masks [8].
7. There was a preference to minimise Operative time as much as possible.
8. Bilateral surgeries were avoided.
9. Surgery was conducted by senior experienced surgeon only and Minimal OT support staff was advised to remain inside the theatre to prevent viral exposure.
10. Open communication between the surgical staff and operating team.
11. Separate donning and doffing areas were maintained where possible.

OT sanitisation

1. To prevent cross infection as well as infection of the staff routine "High level disinfection" of reusable medical equipment/supplies was done between each patient use, using an alcohol based (60-70%) or chlorine based (0.5 - 1%) disinfectant [9].
2. Ot and surroundings were sanitised after every procedure as soon as possible [9].
3. Disposable scrubs were discarded and disposed after procedure in dedicated areas.

4. Use of drill, saw and burr was kept to minimum possible and when required was operated at lower RPMs to decrease aerosol generation [10].
5. Utmost precaution was maintained while doing intra medullary reaming where required.
6. Pulsed lavage system was avoided.

Post op period

1. Early post-operative discharge was encouraged [10].
2. Home based physiotherapy was advised wherever possible with taking the following points into consideration [10,11]:
 - Identification of a definitive home caregiver.
 - Training the patient and the caregiver in basic rehabilitation and exercise protocol through simulation exercises and audio - visual material.
 - Identification of Red flags and early and rapid response.
 - Detailed information regarding the devices of utility for home-based post op care such as walker, toilet chair and saturation probe.
 - Establishment of a communication link between surgeon and patient to ensure correct aptitude and attitude of the patient regarding rehabilitation.
3. Virtual/telephonic consultations was provided via a smartphone for patients for follow up to restrict repeated contact and spread of infection [10].
4. If a patient required face to face encounter, appropriate precautions had been taken to ensure the visit was safe for everyone involved.

Interestingly, it was observed that number of elective Arthroplasties that were conducted between the period of 1st June to 18th August 2020 was less than half of that in the same period in the pre COVID-19 time. The number of elective arthroplasties that were done was 74 in 2020 whereas a total of 178 elective surgeries were performed during the same period in 2019 (Pre COVID-19 period) (p = 0.514) (Figure 1). This can be attributed to the fact that in order to maintain adequate sanitised environment inside the operation theatre there was a corresponding decrease in the number of operations possible per day. Although, emphasis was laid to decrease the Operative time there was an average increase in the duration of preparation for the procedure, including donning and doffing time and an increase in the OT cleaning time between two consecutive surgeries, including cleaning of anaesthetic equipment, leading to a total decrease in the number of elective surgeries performed from 2.34/day (2019) to 0.97/day (2020) in the same time period. The total number of cases in age various age groups were also significantly decreased. However, no variation in trend was observed (p = 0.514) (Figure 2).

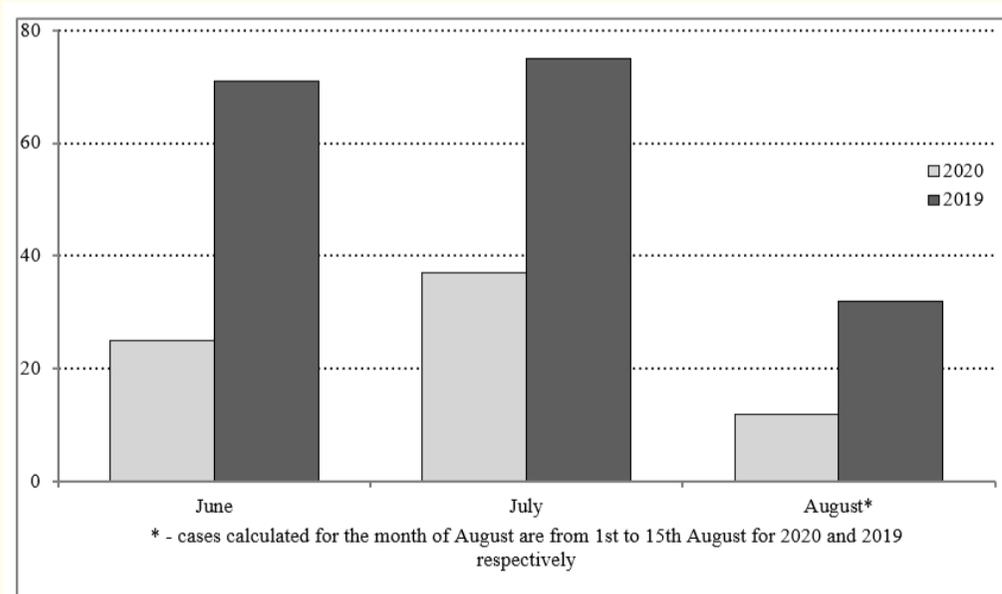


Figure 1: Comparative analysis of total arthroplasties done (2020 vs 2019).

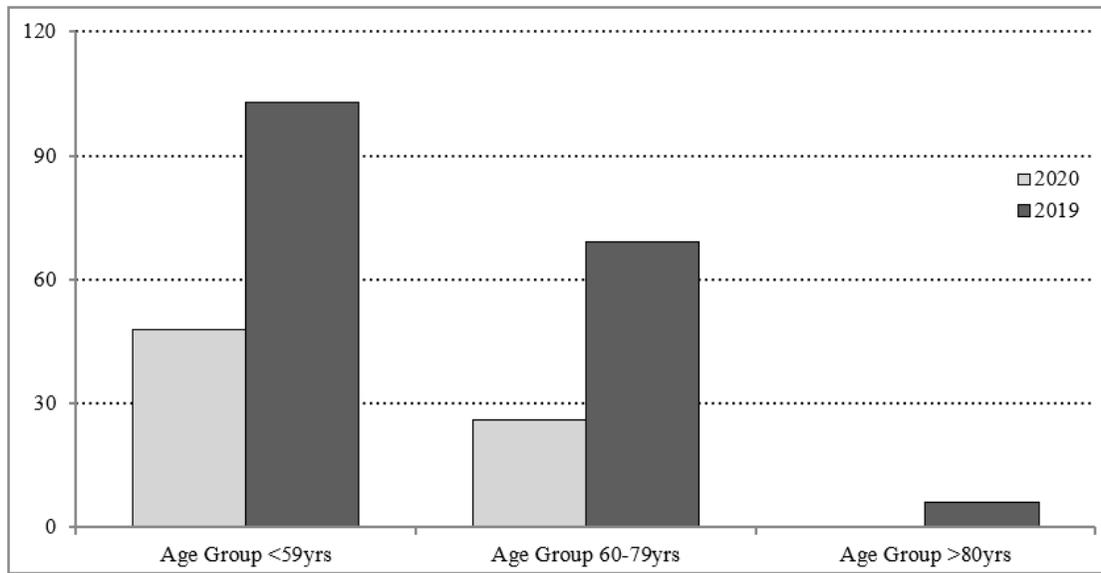


Figure 2: Comparative analysis of age distribution (2020 vs 2019).

Primarily focusing on elective surgeries such as arthroplasty, most nations that have initiated elective surgeries have established separate pathways for COVID-19 negative operations either in the form of specified COVID-19 hospitals (as in our institution) or physically dividing patients, wards, operation theatres and personnel with a higher degree of caution for carrier detection. Moreover, the number of new cases in these countries and hence the burden on the healthcare system is decreasing. In such a situation, however, it is also important to titrate the allocations of services and hospital beds to elective services against the future demand for these services if a pandemic resurgence actually does happen.

The need and burden of arthroplasty is growing as elective procedures are being rescheduled, and therefore soon there will be a need to establish an equilibrium between the volume of surgeries needed to resolve case backlogs and at the same time various services, including personnel and supplies, needed to ensure that sufficient medical care is provided. It is estimated that up to 150,000 patients will have their elective hip/knee arthroplasty rescheduled each month in the US alone [12]. Furthermore, the provision of the PPE, operating room, routine personnel screening, a multidisciplinary team and a stable central management system are crucial for organisational efficiency.

It is unethical to delay all elective arthroplasty operations indefinitely when elderly and more vulnerable patient populations will struggle the most. The beneficial effect of complete joint arthroplasty is easily recognised in terms of mobility, social life, work ability, general wellbeing, patient comfort, pain relief, increased joint function and cardiovascular disease prevention [13]. Postponing TJA (total joint arthroplasty) leads to a rise in the use of opioid-specific substance misuse and a more unsatisfactory cumulative result with respect to revision rates and readmission rates. In addition, rescheduling often negatively impacts working families as it can entail further lack of working days. Another challenge is weighing the advantage of treatment against the uncertain possibility of contracting COVID-19 and the related risks while going to hospital for treatment, which will adversely impact the patient psychologically. Significant decline of the quality of life and reliance on support with everyday living tasks are other considerations that need to be taken into account.

Moreover, judicial case selection in the current scenario cannot be emphasised more. A recent retrospective cohort report from China outlined their early operative outcomes on population [14]. Their reports are compatible with existing ideas, showing that elderly

adults with various comorbidities are more at risk of complications. Surgery on such patients (similar to a patient with high-energy trauma) appears to trigger a pattern called 'second-hit' that may trigger a systemic inflammatory reaction. Operating on a COVID-19 patient can have significant effects, with almost 44 percent needing post-operative ICU treatment and a mortality rate of up to 20 percent [14]. Public health authorities suggest routine serologic monitoring for SARS-CoV-2 for all patients and, under certain cases, as well as for members of the health care team.

As there is a silent window between infection and PCR positivity, or seroconversion, a COVID-19 misdiagnosis is still probable. There are no known adverse effects of surgery and drugs on the potential exacerbation of an asymptomatic condition. COVID-19 is associated with an abnormal thrombotic syndrome that may be of interest to orthopaedic patients at risk of thromboembolic events [15]. Elective surgery, with the same preparation, the same protective anticoagulation and the same antibiotics for prophylaxis, was carried out as normal before the pandemic. For this group, we did not find a greater incidence of complications than previous to the pandemic, and none of these patients required ICU treatment due to COVID-19 related symptoms. Despite that, relative to the pre-COVID-19 era, we were able to treat only a limited number of patients. The supply of ICUs is now the bottleneck of the COVID-19 pandemic.

The above-mentioned problems should also be taken into consideration as the health system will have to face the burden of rescheduled surgeries once the restrictions are removed. Hence, it is interpreted from the study that when possible the resumption of elective arthroplasties should be done in a phased manner to maintain balance of resources between the burden of rescheduled elective cases and the pandemic on the health care personnel.

Phased return to full functioning

In the first phase, all patients will need to be screened and tested negative 48 - 72 hrs before surgery and only those negatives are considered for surgery. Patient selection will be required with importance to those who will receive maximum benefit of surgery and who will be mentally conditioned. Relatively younger patients age < 60yrs and ASA grade < grade 2 would be preferred. Patients fit for day care arthroplasty should be preferred. Longest phase, depending on epidemiology and demographics and availability of resources.

This phase should last until the area is declared orange area.

In second phase, patients should include low to moderate risk depending on age and urgency of surgery and benefit of surgery and will certainly depend on the epidemiology of the area. Shorter inpatient stay < 48 - 72 hours can be provided. It is advisable to move to next phase once no new cases in the area for a period of twice the incubation period i.e. 28 days (as an incubation period of 14 days has been recorded, with a median presentation of 5 days), or falling trend in the number of new cases i.e. when area is declared green area [16].

In the third phase, there should be resumption of all Arthroplasty services once it is declared as green area. To encourage elective and scheduled post-operative intensive care admissions, healthcare services should be reasonably free and available. Without compromising the interests of COVID-19 patients, dedicated ICUs should be available, and a dedicated multidisciplinary team should be accessible throughout all times.

There is still a scarcity of evidence on the effects on elective and trauma surgery since the pandemic. The number of trauma operations conducted at our hospital has risen since the termination of the lockout. In our research, there are a few drawbacks. First, our analysis was a retrospective study and information was obtained from medical records. Secondly, it may not be indicative of the overall trend of elective arthroplasty. In comparison, certain patients may have preferred to attend other hospitals for care as our institution is a specified COVID-19 Hospital, thereby altering our results. Third, some of these patients were older, had more chronic comorbidities, had longer surgical time, and had more complicated surgery, but no complications were found. Fourth, the possibility of an asymptomatic and undiagnosed COVID-19 patient being operated during this time remains possibility, despite uniform RT-PCR testing, likely due to the prevalence

of disease. However, we are not in a position to have concrete advice beyond sharing our perspectives, due to the constraints of our data and the fact that our information and perceptions are changing with the pandemic.

Conclusion

With the recent rise in the number of COVID-19 positive patients, we are yet to resume our elective arthroplasty procedures and return to normalcy appears to be a dream of the future. However, with the rising burden of patients being rescheduled, it is almost inevitable that we will eventually need to restart at some point. Surgeons must be mindful that there are compromises between delivering patients with surgical intervention and the possibility of the virus transmission. Meticulous planning and a clarity of protocol is required to achieve our goal of providing the highest possible health care services to the patients while at the same time safeguarding the lives of our patients, staff and other health care personnel including ourselves from the pandemic. Areas with lower viral density are more likely to see a “return to normal” sooner than hard-hit areas, but the challenge lies in providing the same level of quality with fewer resources.

Conflict of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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