Has the time to reinstate elective orthopedic procedures come?

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ABSTRACT

Background: The coronavirus pandemic changed how we manage and operate patients in orthopaedic practice. Although elective orthopaedic procedures were halted to prevent spread of the disease as well as sustain supplies of essential protective equipment and healthcare workers, trauma services were continued. We studied the orthopaedic trauma cases operated over 6 months of the pandemic, and discuss the protocols used to minimize disease spread.

Methods: Data was collected for all orthopaedic emergency cases operated at our centre from 1st March – 10th August 2020. During this time specific protocols were used for first aid, pre-operative care, inside the operation theatre, post-operative stay as well as follow ups.

Results: A total of 851 patients were operated. A sharp decline in surgeries was seen during the lockdown. Average stay in the hospital was 4 days. Only 44% of the patients came for follow-up visits. None of the contacted patients or their relatives developed symptoms or tested positive for COVID after discharge.

Conclusion: Multiple waves and various mutant strains of COVID-19 have made this pandemic longer than expected. Elective orthopaedic cases cannot be ignored for forever, as it leads to poor quality of life and an increasing burden of such patients. We suggest, that using the protocols used at our centre, we have successfully operated on cases without risking spread of the virus. Thus, we believe it’s time to reinstate elective orthopaedic procedures, in a phased manner.

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1. Introduction

COVID-19 was declared as a pandemic by WHO on 11th March 2020. As a part of pandemic preparedness, the Indian Government evoked a 123 year old Epidemic Disease Act, 1987 to combat the spread of this virus. This was followed by a strict lockdown and discontinuation of all non-essential surgeries and movement of people and goods, which extended over the next 3 months. Learning lessons from China and other severely affected countries, Indian Orthopedic Association and British guidelines advised to halt the elective orthopedic procedures. This was considered essential not only to avoid spread of COVID19, but to also use the highly precious equipment, PPE and healthcare manpower in a more efficient way in the time of a pandemic with better relocation. Dulce et decorum est pro patria mori (it is sweet and befitting to die for the homeland) has become the most appropriate description for the sacrifice of healthcare professionals.

Heeding to these developments, all elective orthopedic surgeries were cancelled and postponed at our tertiary care referral centre. Only cases considered emergency, or those which would lead to significant morbidity if delayed, were considered for admission and surgery. Thus, we continued the essential orthopedic care for trauma cases. Following stringent pre-operative, intraoperative and post-operative protocols, we managed to operate almost all appropriate emergent patients. We hypothesized this study in order to analyze the protocols in place for patients operated during the pandemic, and to find out if these were adequate enough to control the COVID19 infection rates. This would help us to guide in the process of reinstating or initiating elective procedures in this era of the new normal and to also, be better prepared and avoid halting of elective care during the forthcoming predicted waves or re-emergence of COVID19 or other novel contagion in the future.
2. Material and methods

2.1. Study design

This retrospective, observational cohort study was carried out at a Level I tertiary trauma centre. Study protocol was approved by the institutional ethical committee for data collection.

2.2. Inclusion criterion

All patients who presented with a recent traumatic injury (<7 days old) and were managed operatively by the Orthopedic trauma team, at the institute between 01 March 2020 to 10 August 2020 were studied.

Data collected included – age, sex, mode of injury, fracture type, open vs closed injury, surgery done, post-operative complications, debridement if needed during admission and follow up details (in-person vs telephonic preference).

We reviewed the data, analyzed and contacted the patients at 30 days from their date of discharge to find out the outcomes. (COVID infectivity, surgical site infection and surgery related complications).

All patients planned for admission and surgery were testing using RT-PCR for COVID-19 and only the negative cases were immediately admitted to ward and taken to Operation Theatre (OT) depending on availability of anaesthetists and operating team. Those who were positive, were shifted to a dedicated COVID centre, and if possible, operated only once they tested negative, adhering to the then present guidelines, thus causing delay in surgery. All cases were operated by a fellowship trained orthopedic surgeon. We hypothesized that longer delay to surgery due to COVID prevention protocols and mandatory testing as well as post-operative stay in the hospital would lead to higher incidence of COVID-19 positivity in this cohort of patients. All these patients were contacted and followed up via telephonic conversation and details were sought regarding the patient or their family, presenting with any symptoms of flu, cold or respiratory distress or if any of them had tested positive for COVID-19 during their hospital stay or after discharge. The data was compiled in Microsoft Excel for Macintosh and analyzed using ©SPSS version 24 for Macintosh (IBM Inc., Chicago, IL, USA).

No funding was received from any internal or external sources for the above study.

3. Results

A total of 851 cases were operated from 1st March 2020 to 10th August 2020, by the Orthopedic Trauma Department. 66/851 (7.7%) were studied.

Table 1

| Patient demographics in the two groups, Group 1 are the patients tested positive on day of presentation, Group 2 are the patients who tested negative. |
| COVID Positive (66) | COVID Negative (785) |
|---------------------|---------------------|
| Age (years)         | 46.74               | 49.56               |
| Sex Distribution (Male: Female) | 64:36 | 58:42 |
| Fractures (Most common) | Hip – 66% | Shaft femur – 26% |
|                     | Distal radius – 15% | Distal radius – 9% |
|                     | Proximal tibia – 6% |                     |
| Compound Fractures  | 7                   | 78                  |
| Post-operative fever| 11                  | 23                  |
| Infection           | 14                  | 21                  |
| Average hospital stay (Days) | 12 | 3 |
| Lost to follow up   | 15                  | 81                  |
| In person follow up | 28                  | 346                 |
| COVID + on follow up| None                | None                |

were diagnosed COVID-19 positive on RT-PCR testing where as 92% were negative (Table 1). The average age in the positive group was 46.74 years and in the negative group, it was 49.56 years. The sex ratio was 64:36 and 58:42, male: female in both the groups respectively. The most common fractures in the positive group were hip fractures (66%) whereas in the negative group was shaft of femur fractures (26%). There were 7 compound/open fracture cases in the positive group whereas there were 78 in the other group. Post-operative fever was reported by 11 patients in positive group and 23 patients in negative group. 14 (21%) infections were reported in the positive group and 21 (2%) in the negative group. This incidence was significantly higher in the COVID positive cases (p < 0.05). Average hospital stay was 14 days for the COVID positive group and only 3 days for the negative group. 15 cases of the positive group as well as 81 from the negative group were lost to follow up. All 851 patient were telephonically contacted after retrieving their contact details from hospital records, 87 (10%) of total patients either did not respond to the call or their contact details were wrong. 9 (1%) of the recipients, either did not live with the patient or did not know of the patients present state. Time from admission to surgery varied from a minimum of 7 days to a maximum of 21 days for the COVID positive patients with an average of 11.6 days. The COVID negative patients were operated within 24–48 h. 16 (1.8%) patients who developed fever in the post-operative period, were all tested for COVID19 post-operatively, but none turned out to be positive. 7/16 of these had open fractures at index trauma. 3 had to undergo debridement while their initial stay in the hospital. 5 (7%) patients from the COVID positive group and 13 (2%) patients from the negative group had to be readmitted for debridement due to infection. 36/851 patients complained of discharge from wound site on telephonic follow up which was reduced by daily dressing and oral antibiotics (Fig. 1).

Of the remaining 785 (92%), none of the patients had passed away, nor did they develop symptoms suggestive of COVID19. Patients did have other complications like discharge from wound (36, 4.2%), or joint stiffness (59, 7%). Only 374 (44%) patients had yet come to the hospital for follow-up till 30 days post-operatively. Rest of the patients did not come for follow up due to fear of virus spread and uncertainty about hospital services being run or not at present. These patients were followed up only using the tele consult services of the department. 21 (2.4%) patients had a stay of more than 14 days in the hospital.

4. Discussion

The COVID19 pandemic has affected all realms of life, with healthcare systems taking the hardest toll of all. Orthopedics although not directly related to the infection, has also been affected in multifold ways. All spheres of orthopedics, from trauma care, to elective surgeries as well as pre and post-operative management and patient follow up protocols needed to be redesigned according to various guidelines by Indian Orthopedic Association, British Orthopedic Association as well as American Association of Orthopedic Surgeons to fit the pandemic scenario. Almost all guidelines had advised a complete halt of all elective surgeries at the beginning of the pandemic.1,2,3

At the same time, orthopedicians were de-specialized, worked on the frontline and did non-surgical tasks. Those operating on emergency trauma patients, were constantly threatened with self-infection due to high aerosol production in orthopedic procedures, leading to aggravated stress and anxiety amongst these healthcare providers.4,5 To add to this vicious mix, all academics and skill learning courses for orthopedic trainees came to a complete halt.8

Lockdown in India, was initiated on 25th March 2020, when all non-essentials activities were halted for the general public.9

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Keeping in tune with the lockdown, our Level-1 Trauma Centre saw an almost linear decline in the number of emergency surgeries from March to April, when the lockdown and the virus spread were at its peak (Fig. 2). Following these few months, Unlock 1.0 was announced in our country from 1st June 2020 onwards, when phased reopening of services and public movement was to be started. We saw an almost linear rise in number of emergency cases, with maximum number of surgeries being done in the month of July (206). Trauma care was never stopped at our centre, irrespective of the phase of the pandemic. Also, a dedicated COVID facility along with a trauma centre, allowed us to keep the poly-trauma or compound fracture cases that were COVID positive admitted, till they could be operated. This led to a smaller number of neglected trauma cases, malunited fractures, delayed unions, technically challenging fracture reductions as well as higher blood loss or infections due to delayed surgery. Such pooling of cases, due to either inability to access the trauma centre or halted services, leading to grave consequences have been shown in some of the studies.

With such sudden and drastic changes in work conditions, returning back to normalcy is bound to be a bumpy and a prolonged process. A study conducted in USA, showed that up to 61% of the participant patients, were concerned about contracting COVID19, primarily during check in and waiting periods or during interaction with hospital staff. Vaishya et al. have also echoed a similar tale, with a fall of 71% in outpatient attendance and a fall in orthopedic...
admissions by 59% in the COVID pandemic year. This could also be seen with only 44% of our patients coming back for in person follow-ups. Such deep-seated fears need to be battled with substantial research, data and protocols to make hospital care a safe experience for patients again. Multiple studies have attempted to pave a roadway to successful return to elective surgeries once the pandemic nears its end, which seems as far as of now.

In the past, the SARS-CoV-2 pandemic spanning across 2002–04, was the most recent comparable event to the present pandemic. Although the outbreak did not engulf the globe like COVID19, it did strike a few countries with full force. The Canadian experience with this virus, reported the use of negative pressure isolation rooms, N95 or higher level of respiratory protection, gloves, gowns and eye protection, and careful hand hygiene; as tools to control the spread. In another systemic review, simple PPE was also found to be effective for adequate protection of HCW. We can learn from these previous experiences and imbibe such practices in our fight against this continued viral disaster. Over the past 4 months, nCOVID–19 has become an essential part of healthcare systems. COVID-19 testing, like HIV/HBsAG and Hepatitis C testing has COVID19 has become an essential part of healthcare systems.

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time it takes to bring numbers to normal. Another study by Meena et al. has focused on the need to continue some essential arthroplasty services and have shown in detail the protocol that they have used in their hospital to successfully operate 147 arthroplasty cases. Reinstating elective surgeries with adequate precautions is the need of the hour. This would allow the mounting load of patients in need of urgent orthopedic intervention to have an improved lifestyle. Our series of trauma patients proves that this can be done without risking spread of this virus, which is bound to stay here for at least the next few months or maybe years. The reinstating of shoulder, knee and ankle arthroscopies (and other orthopedic procedures requiring 23 h of hospital stay) in Singapore is a recent example of the same. This study is retrospective in nature and presents data regarding trauma surgeries. Extrapolating this data to elective surgeries is not the best practice. But the large data set from our centre presents a unique insight into the ongoing trauma services throughout the pandemic, when most of the trauma centres had come to a halt. This gives a real time picture about management as well as successful surgeries of high load of trauma patients. Thus we feel, the measures described above, and followed at our centre, are tried and can be applied to elective surgeries safely. 5. Conclusion Stringent pre-operative testing, adequate PPE, strict intra and post-operative protocols and novel ways of patient follow up, are ways of continuing adequate surgical care for patients as we recover from this pandemic. The new normal demands a modified plan to tackle this contagion. The above study helps to establishes that by following a strict protocol, we can successfully initiate elective surgeries and expect fair to good results, although the patients and the doctors need to thoroughly understand the increased risk that they face.

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