ORIGINAL ARTICLE

Service Delivery during COVID-19 Pandemic in Orthopedic Surgery Mayo Hospital, Lahore

MUHAMMAD AKHTAR[1], RANA DILAWAIZ NADEEM[2], SYED FARAZ UL HASSAN SHAH GILANI[3], FAISAL MASOOD[4], MUMRAIZ SALIK NQASHBAND[5], MUHAMMAD TAQI[6]

[1,4]Associate Professor Orthopedic Surgery, King Edward Medical University, Mayo Hospital, Lahore.
[2]Head and Professor Orthopedic Surgery, King Edward Medical University, Mayo Hospital, Lahore.
[3]Senior Registrar Orthopedic Surgery, King Edward Medical University, Mayo Hospital, Lahore.
[5]Assistant Professor Orthopedic Surgery, King Edward Medical University, Mayo Hospital, Lahore.
[6]Postgraduate resident Orthopedic Surgery, King Edward Medical University, Mayo Hospital, Lahore.
Correspondence to Dr. Muhammad Akhtar, Email; mlk_akhtar@yahoo.com, Cell. +923214783478

ABSTRACT

Aim: To explain our experience of service delivery at Orthopedic surgery during pandemic severe acute respiratory syndrome coronavirus (SARS VoV-19).

Methods: We studied a retrospective cohort-based on a manual medical record of the Department of Orthopedic Surgery and Traumatology Unit-I, King Edward Medical University, Mayo Hospital, Lahore, from March to July 2020. The medical record of admission operated cases in accident & emergency, indoor, and all patients attended in the out-patient department were stated. We continued the delivery of our service in an emergency, indoor, elective operation theater, and an out-patient department (OPD). The experience of running the services in the emergency, indoor, and OPD was gathered to present for best practices in future perspective.

Results: Out of the total of 4660 patients treated, there were 2831(60.75%) males, and 1885(40.4%) were female. The mean age of the patients was 32.8±10.14-year. Amongst the total 4660, 1906(40.9%) patients were operated, and 2754(59.1%) were attended in the OPD. Out of these operated patients, 1839 (96.5%) were trauma patients, 58(3.04%) follow up surgery, 05(0.26%) tumor surgeries, 3(0.16%) arthroplasties, and 01 arthroscopies. Amongst the total of 1839 operated patients in an emergency, 1177(64%) were minor procedures, and 662(36%) were major procedures. Total Admissions in the COVID-19 pandemic were 769 (16.5%), out of which 715(92.98%) were admitted through accident and emergency.

Conclusion: There was limitation to elective surgery, with risk to manage the emergency in orthopedic trauma patient. Emergency and tumor surgeries poses real challenge for safety during COVID-19 pandemic.

Keywords: Coronavirus pandemic, Orthopedic Surgery experience, Orthopedic surgery operated cases.

INTRODUCTION

The coronavirus SARS-CoV-19 (COVID-19) pandemic has considerable influence on the health care providence, social welfare, and disrupted the economy in the World. The first case of pneumonia of unknown cause was reported in Wuhan city of Hubei province in China [1, 2]. It was recognized as severe acute respiratory syndrome coronavirus-2 (SARS CoV-2). In January 2020, it was declared as a world health emergency[3]. It spread rapidly from Wuhan to across the World.

The first case of COVID-19 was confirmed on February 26, 2020, in Karachi, Sindh Province of Pakistan[4]. As of today, August 05, 2020, 18,318,928 positive cases have been detected, and 695,788 deaths have been stated[5]. It was estimated that 28-millions elective surgeries had been canceled till May 12, 2020, worldwide in 12 weeks duration[6]. Hospital capacity was constrained in the number of ways like ventilator, bed occupancy, personal protective equipment, and economy[7]. Approximately 82% of orthopedic surgeries have been canceled worldwide. It approximately requires 45weeks to clear this backlog of cancellation if countries increase their rate of surgery by 20% of their normal before the pandemic[8].

Received on 07-10-2020
Accepted on 27-12-2020

Pakistan has been affected by COVID-19 in healthcare, economy and social services. The challenges of shortage of staff due to sickness and quarantine. To sort-out, the emergency and elective surgery patient for the surgery and diving the duty hours to minimize the contact/exposure of orthopedic trainees and consultant and render emergency, elective, indoor, and out-patient services was a challenge. It was essential to know how to provide the best care to orthopedic surgery patients in the acute stage of the COVID-19 and operate orthopedic trauma in the emergency.

METHODOLOGY

We studied a retrospective cohort-based on a manual medical record of the Department of Orthopedic Surgery and Traumatology Unit-I, King Edward Medical University, Mayo Hospital, Lahore, from March to July 2020. The medical record of admission operated cases in accident & emergency, indoor, and all patients attended in the out-patient department were stated.

Services rendered 24/7 in the Department of Orthopedic Surgery during the COVID-19 pandemic for all the patients were emergency management in A&E, routine OPD patients with aches and pains were also entertained in A&E as hospital OPD was formally closed. Follow up patients were entertained in the ward. Service delivery in all three areas, included emergency, indoor, and OPD, were treated/ checked with all possible measures for the

protection of healthcare staff and doctors of the unit, i.e., personal protective equipment (PPEs) and COVID guidelines of patient management. The emergency services were run 24hours alternate days, indoor services 24/7, while out-patient department services were provided alternate days in a week.

The department has three teams with an equal number of trainees, a senior registrar, and an assistant associate professor. All teams are supervised by the head of the department, along with the supervision of one team. The duties were managed in an emergency with two post-graduate residents were allocated on the floor to receive and prepare all the patients for surgery. The rest of the team members with consultants stayed in the doctor's office for the surgery and care. The trauma meetings and teaching was done through online tools for the teaching and training of the residents. There was a 12-hour duty of trainee staying in the ward. Two doctors were placed forward week to manage all indoor admitted and operated patients. The round was conducted with ward week doctors and staff nurses. Two doctors in each team were responsible for the OPD follow of the patient. A room was marked for the doctors and patients who visited for OPD. The services that were provided in the OPD were dressings, wound management, treatment planning, and modification. Follow up surgeries advice with necessary admission, medication, and physiotherapy.

Data of all minor and major operations, indoor admission, and OPD follow-up were scrutinized and segregated. All patients were primarily screened clinically by the history of contact or exposure and by body temperature measurement before proceeding. Patients with suspicion of COVID-19 were first sent to the Coronavirus isolation ward for evaluation. Services offered at all places were documented.

Data were cleaned, entered, and analyzed using SPSS version 21.0. Qualitative variables like gender, emergency & elective procedures were presented as frequencies and percentages. Quantitative variables like age were presented as mead±SD. Chi-square test was applied with emergency and elective procedures with the gender of the patients, and p-value <0.005 was taken significantly.

RESULTS

Out of the total of 4660 patients treated, there were 2831 (60.75%) males, and 1885 (40.4%) were female. The mean age of the patients was 32.8±10.14-year. Amongst the total 4660, 1906 (40.9%) patients were operated, and 2754(59.1%) were attended in the OPD. Out of these operated patients, 1839 (96.5%) were trauma patients, 58(3.04%) follow up surgery, 05 (0.26%) tumor surgeries, 03(0.16%) arthroplasties, and 01 arthroscopies.

Amongst the total of 1839 operated patients in an emergency, 1177(64%) were minor procedures, and 662 (36%) were major procedures. The detail of the type and regions operated and conservatively managed are given in table 01. Total Admissions in the COVID-19 pandemic were 769(16.5%), out of which 715(92.98%) were admitted through accident and emergency.

Table 1: Details of the type and region of the minor and major procedures done in the emergency (n=1906)

Variables	Frequency	%age
Types of procedure in the upper limb		
Manipulations & POP	451	23.6%
Manipulations & Polysling	149	7.8%
Closed reduction and K-wire fixation	128	6.7%
Debridements	73	3.8%
Dynamic compression late	46	2.%
Reduction of dislocations	36	1.%
Clavicle Plates	02	0.1%
Elbow Reconstruction	04	0.2%
Rush nails	04	0.2%
External Fixators	08	0.4%
Amputations	13	0.7%
Types of procedure in the lower limb		
Manipulations & POP	544	28.5%
Wound debridement's	172	9.02%
IM IL Nails	72	3.8%
Locking Compression Plate	29	1.5%
Dynamic Hip screw	23	1.2%
Titanium elastic nail	23	1.2%
Tension band wiring	23	1.2%
Dynamic compression plate	13	0.7%
Bicolumn fixation	13	0.7%
Proximal femoral nail	06	0.3%
External Fixators	45	2.7%
Amputations	14	0.7%
Reduction of dislocations	10	0.5%
1/3rd Tubular plates	08	0.4%
Closed cannulated screws	04	0.2%

*POP= Plaster of Paris

Table 2: Details of the elective operation theater procedures (n=71)

Variables	Frequency	%age
Elective OT procedure		
Follow up surgery	58	81.7%
Arthroplasty	03	4.2%
Arthroscopy	01	1.4%
Tumors surgery	05	7.04%

DISCUSSION

Due to the severe acute respiratory syndrome coronavirus (SARS CoV-19) pandemic, the activities of life have halted around the World. There was a sudden pause in social contact, teaching activities, and patient care. The un-expected pause in elective surgeries has open new debates about the post-pandemic management plan. The teaching with online gadgets has created the limitation of yearly experience of contact learning. The care has been shifted from contact to telemedicine and SMS services. It has open new challenges of satisfaction in patients as well as treating physician and surgeon.

The focused need for teaching and training has led to many questions on filling the gap of hours and competencies development. The exam system is evolving in a newer way. Assessment of students is emerging as a global challenge due to the rapid spread of SARS CoV-19. It is required to develop the new curriculum of digital learning in teaching and training, which till now has not been accepted by the medical professionals in Pakistan. The safety of orthopedic surgeons operating emergency

and necessary elective cases is deemed a fear due to asymptomatic cases and the economic burden to screen every patient. PPE's lead constrained and contacted free hours with a proper area of donning and doffing knowledge was limited in the start has spread many hypothetical fears in the medical professional.

Keeping all the knowledge and updates of pandemic fear, it was also necessary to continue the trauma and necessary orthopedic care in tertiary care. Pandemic has serious and long-lasting effects on surgery[9-12]. However, surgical care is not essential, and time-critical can be delayed for a time period[13]. However, certain procedures have to be done in emergency care, tumor surgery, and urgent transplants that are life-saving procedures. We performed 1839 (40.1%) emergency surgery during the pandemic. The delay of such a procedure can cause an inadvertently increase in deaths. The ethical dilemma of necessary surgeries should be mapped clearly to increase the concern of management in limited resources during such pandemics[14,15]. The delay and cancellation also create a backlog that ultimately has to be managed after the pandemic.

There needs to develop a consensus regarding surgery of non-emergent orthopedic surgery cases that should be done during the pandemic. Different centers and organization have developed their own guidelines for such procedures. We performed 71(1.5%) of the elective surgery, including follow-up, tumor, arthroplasty, and arthroscopy surgery. Our center has a limited approach in this regard due to the negligible experience of elective surgery in the pandemic. There also needs to define major elective surgery during the pandemic. The addition of co-morbidities in elective surgery also needs its approval for elective procedure continuation during the pandemic. The study has defined that co-morbidities have a role in defining major surgeries[16].

The future plan of managing the backlog is required to complete the procedure along with freshly presented cases. The strategies can be defined by increasing the number of patient per list with additional staff or working hours can serve the purpose of clear this backlog. It requires resources to entertain all cases. Defining the priority of different procedures with the duration of cancellation will carry a few challenges that needed to be defined. Pre-strategies will be better to organize, plan, prepare, and execute such challenges of the future. It will also carry a risk of infection in healthcare work along with burn-out in a continuous routine.

CONCLUSION

Emergency and tumor surgeries had lead a challenge for the orthopedic surgeon during the pandemic to maintain safety standards. Residents working floor were more at risk with difficulty in receiving, preparing and shifting with personal protective equipment.

REFERENCES

1. World Health Organization. World Health Organization; Geneva, Switzerland: 2020. Pneumonia of Unknown Cause – China.https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/ 2020 May 21.
2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395(10223):497-506.
3. Cucinotta D, Vanelli M. Who declares COVID-19 a pandemic. Acta Biomed. 2020;91(1):157-60.
4. Abid K, Bari YA, Younas M, Tahir Javaid S, Imran A. Progress of COVID-19 Epidemic in Pakistan. Asia Pac J Public Health. 2020;32(4):154-6.
5. https://covid19.who.int/?gclid=CjwKCAjwsan5BRAOEiwALzomX0_O4L9QkPmNhROVNVqIi08LL8Qqch_FOjrJcHV4ZJbjDB9faFl6RRoCtSMQAvD_BwE.
6. Nepogodiev D., Bhangu A. Elective surgery cancellations due to the COVID- 19 pandemic: global predictive modelling to inform surgical recovery plans. Br. J. Surg. 2020;12:10.
7. Søreide K, Hallet J, Matthews JB, Schnitzbauer AA, Line DL, Lai PBS et al. Immediate and long- term impact of the COVID - 19 pandemic on delivery of surgical services. Brit J Surg 2020;10: 1-10
8. Alyami AH, Alyami AA, AlMaeen BN. Impact of COVID-19 on orthopedic surgery: Experience from Saudi Arabia. Ann Med Surg (Lond). 2020;56:61-3.
9. Dexter F, Parra MC, Brown JR, Loftus RW. Perioperative COVID-19 defense: an evidence-based approach for optimization of infection control and operating room management. *Anesth Analg* 2020; https://doi.org/10.1213/ ANE.0000000000004829 [Epub ahead of print].
10. Greenland JR, Michelow MD,Wang L, London MJ. COVID-19 infection: implications for perioperative and critical care physicians. *Anesthesiology* 2020; https://doi.org/ 10.1097/ALN.0000000000003303 [Epub ahead of print].
11. Chen X, Liu Y, Gong Y, Guo X, Zuo M, Li J *et al.*; Chinese Society of Anesthesiology, Chinese Association of Anesthesiologists. Perioperative management of patients infected with the novel coronavirus: recommendation from the Joint Task Force of the Chinese Society of Anesthesiology and the Chinese Association of Anesthesiologists. *Anesthesiology* 2020; https://doi.org/10 .1097/ALN.0000000000003301 [Epub ahead of print].
12. Aminian A, Safari S, Razeghian-Jahromi A, Ghorbani M, Delaney CP. COVID-19 outbreak and surgical practice: unexpected fatality in perioperative period. *Ann Surg* 2020; https://doi.org/10.1097/SLA.0000000000003925 [Epub ahead of print].
13. Brat GA, Hersey SP, Chhabra K, Gupta A, Scott J. Protecting surgical teams during the COVID-19 outbreak: a narrative review and clinical considerations. *Ann Surg* 2020; (in press). Brindle M, Gawande A. Managing COVID-19 in surgical systems. *Ann Surg* 2020; https://doi.org/10.1097/SLA .0000000000003923 [Epub ahead of print].
14. Emanuel EJ, Persad G, Upshur R, Thome B, Parker M, Glickman A et al. Fair allocation of scarce medical resources in the time of Covid-19. N Engl J Med 2020; https://doi.org/ 10.1056/NEJMsb2005114 [Epub ahead of print].
15. Rosenbaum L. Facing Covid-19 in Italy – ethics, logistics, and therapeutics on the epidemic's front line. N Engl J Med 2020; https://doi.org/10.1056/NEJMp2005492 [Epub ahead of print].
16. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 inWuhan, China: a retrospective cohort study. Lancet 2020; 395: 1054-62.