

Review Article

Redefining Work Practices at Tertiary Care Hospital's Orthopaedic Department in a Developing Country During COVID-19 Pandemic

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Author's Contribution

¹ Conception of study

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¹ Analysis/Interpretation/Discussion

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Abstract

Coronavirus infection (Covid-19) originated in Chinese city of Wuhan, Hubei in late December 2019. While the disease is thought to be highly contagious, WHO declared it a public health emergency on 30th January 2020. Pakistan reported its first coronavirus infection on 26th February 2020. Initially, infection was limited to those travelling from endemic areas but on 13th March 2020, Pakistan reported its first coronavirus infection from the local transmission. With the limited testing ability and lack of a uniform national coronavirus response strategy, Pakistan reported a total of 38,799 confirmed coronavirus cases by mid-May 2020. Confirmed cases reached 905,852 on 24th May 2021. Lack of definitive guidelines for health care workers (HCWs) and poor existing hospital strategies in response to the COVID-19 pandemic increased the agitation and stress level among HCWs. More than half of the doctors working in our orthopedic department suffered from COVID-19. In this COVID-19 pandemic, an orthopaedic community should continuously evolve taking into consideration resource optimization, social distancing, innovation, and best practices to minimize COVID-19 infection among health care workers who are working day and night to combat COVID-19 in the already overburdened health care system of a developing country. Adopting these recommendations will not only give a uniform policy for health care workers (HCWs) of orthopaedic departments working in resource-limited government hospitals, where thousands of patients present daily but also limit the COVID-19 infection among health care workers (HCWs). We hope to get the best possible outcome out of current circumstances where a developing nation like ours cannot afford the luxury of PPE for every health care worker and PCR COVID-19 testing for every patient.

Keywords: COVID-19; Pakistan; Coronavirus; Pandemic; Orthopaedic surgery; Tertiary Care Hospital.

Introduction

Coronavirus infection (Covid-19) originated in the Chinese city of Wuhan, Hubei in late December 2019.¹ While the disease is thought to be highly contagious, WHO declared it as public health emergency on 30th January 2020.² Pakistan reported its first coronavirus infection on 26th February 2020.³ Initially infection was limited to those travelling from endemic areas but on 13th March 2020, Pakistan reported its first coronavirus infection from the local transmission. With the limited testing ability and lack of a uniform national coronavirus response strategy, Pakistan reported a total of 38,799 confirmed coronavirus cases by mid-May 2020. With an exponential increase in cases, the number of confirmed coronavirus cases reached 905,852 on 24th May 2021 (Figure 1).⁴

Lack of definitive guidelines for health care workers (HCWs) and poor existing hospital strategies in response to the COVID-19 pandemic increased the agitation and stress level among HCWs. Out-Patient Departments (OPDs) of government-run hospitals of Punjab, one of the largest and most populated provinces of Pakistan, remained opened; catering to thousands of patients on daily basis without actual implementation of Government calls for 'social distancing'. It wasn't surprising that sooner or later Health Care Workers (HCWs) would start getting infected with this deadly disease without proper detailed guidelines and actual implementation of those guidelines.

Aerosol generating procedures like electric cautery, power drills, and reamers can increase the risk of infection.⁵ Developing countries like ours, are forced to see orthopedics patients at the same facility where COVID-19 patients are also being seen. With an increasing number of Covid-19 patients, it is estimated that around 20 percent of patients can be asymptomatic carriers.

The incidence of getting infected from other Health Care Workers (HCWs) was reported to be as high as 20.7% by Guo et al.⁶ The orthopedic department of a government run tertiary care hospital in Punjab was closed after 16 Health Care Workers (HCWs) tested positive for COVID-19.⁷ The purpose of this study is to comment on existing COVID-19 Strategies for HCWs working in Orthopedic Department, their limitations and to formulate a new working strategy to limit COVID-19 infection among Orthopedic HCWs with limited resources available.

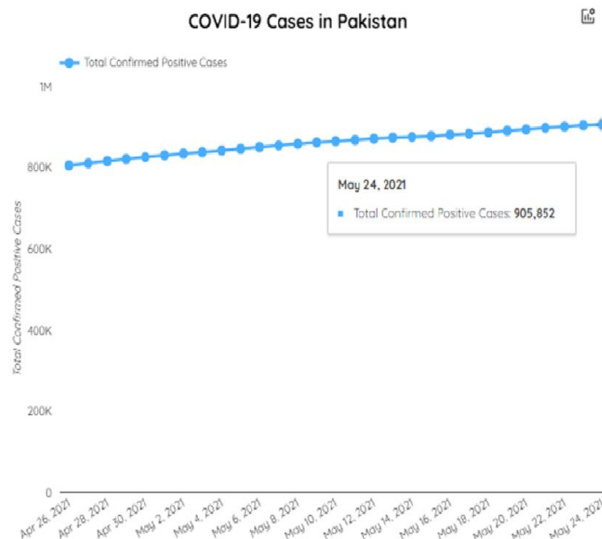


Figure 1:- Covid-19 cases in Pakistan

Pakistan Orthopaedic Association (POA)

Published on 1st April 2020 on the official website of POA, the National Orthopedic Association of Pakistan, recommended the following guidelines for orthopedic surgeons.⁸

1. Three levels of Triage were introduced after all patients underwent a questionnaire/checklist with scoring (Figure 2). Patients with less than 3 scores were assumed to be safe for undergoing routine admission and operative procedure. Those with a score of 3 were screened further for a detailed history and examination to determine the further level of risk they pose, if the score was more than 3 then the patient was advised to be referred to a Government run facility for treatment/screening of COVID-19 patients.

Visual Triage Checklist for COVID-19 Respiratory Illness

Date: _____ Time: _____ MRN: _____
 Name: _____ CNIC#: _____ Hospital: _____

Circle the number reflecting the patient's condition (exposure and clinical picture) and calculate final score:

Risks for Accurate Respiratory Illness	Score	
A. Exposure Risks (In the past 14 days prior to onset of symptoms OR 14 days in case of asymptomatic patient)	Any Patient (Adult / Paediatric)	
1. Had a history of travel abroad or to the identified high-risk area where local transmission has taken place OR A close contact with a confirmed COVID-19 case 14 days prior to symptoms onset OR Working in or attended a health care facility where patients with confirmed COVID-19 were admitted.	3	
B. Clinical Signs and Symptoms	Adults	Paediatric
1. Fever	2	1
2. Cough (new or worsening)	2	1
3. Fatigue / Myalgia	2	-
4. Uncommon other symptoms ▪ Sore throat ▪ Runny Nose/Congestion ▪ Vomiting /Diarrhoea ▪ Shortness of Breath	1	1
Total score		

Figure 2: Visual Triage Checklist for Orthopedic Patients

2. The Dress Code was defined as follows:

Non-COVID Wards	COVID Wards/ Critical Areas	OPD/Radiology/ Triage 1	ER/Triage 2
OT Gowns	OT Gown	Scrubs	OT Gowns
3 Ply Surgical Masks	N95 Masks	Gowns and Gloves if examining patients	3 Ply Surgical Masks
Gloves for patient contact	Gloves for patient contact	Masks	Gloves for patient contact
Face Shield for Aerosol Generating Procedures*	Face Shield for Aerosol Generating Procedures		Face Shield for Procedures

*Aerosol Generating Procedures for Orthopaedic Surgeons are Drilling, using oscillating saw, pressure lavage and Suction. Other Aerosol Generating Procedures include Nebs, BAL, CPR, Endoscopy, Intubation and Bi-Pap. Scrubs will be worn by ALL staff members.

- No visitors were allowed as per policy, if necessary each visitor was recommended to go through the process of triage.
- It was recommended that COVID-19 Orthopedic patients must not be admitted to the hospital other than designated hospitals by the government for COVID-19 patients
- All Curtains were advised to be removed in wards and all surfaces would be cleaned with hypochlorite spray.
- All consultants were advised to wear scrub suits in the outdoor department, gowns, and gloves while examining patients. It was also advised to maintain safe distancing with at least a 1-meter gap between seating.

Limitations

- The whole process of triage is based on a visual triage checklist which takes into account the level of exposure and clinical symptoms. With a rise in local transmission, it does not consider asymptomatic COVID-19 carriers.
- The process of defining dress codes for COVID, Non-COVID wards, OPDs, and ER based on the Visual Triage Checklist without considering asymptomatic carriers is incomplete. It doesn't give detailed Operation Theater (OT) guidelines for aerosol-generating orthopedic procedures. Just mentioning face shields to be used for aerosol-generating procedures is not enough.
- A patient cannot be labeled COVID-19 positive without taking into consideration of asymptomatic carriers.
- Detailed recommendations for Indoors, Outdoors, Emergency Room (ER), Operation Theater, and Rehabilitation are missing.
- Government-run facilities have thousands of patients presenting at Out Patient Departments (OPDs). Just mentioning 1-meter safe distancing seating is far from reality for these setups where thousands of patients present to OPDs on daily basis.
- Does not take into account the working mechanism of Health care workers (HCWs).

Authors Recommendations

General Recommendations:

1. All patients presenting to Orthopedic Department with or without COVID-19 symptoms be considered COVID-19 positive, until proven otherwise.
2. Establishing functionally independent units/teams with no physical interaction between them to prevent cross-infection between HCWs of the same department, hence preventing closure of the whole department in case of exposure or actual COVID-19 infection.
3. Health Care Workers should wear disposable gowns; surgical masks 3-3ply/N95 masks, disposable caps, and gloves all the time during a hospital stay. Hands should be sanitized before seeing the next patient or gloves changed to prevent cross-infection.
4. All elective non-urgent cases should be postponed including procedures to be done under local anesthesia till the time rate of local transmission is lowered.
5. Consider non-operative management of fractures if possible. If conservative management is not possible consider delaying operative procedure where ever possible.
6. Orthopedic surgeons, nurses, OT assistants should undergo training and simulation exercises to practice ideal mask fit, use of goggles, use of PPE with donning, and doffing process in case of need.

Indoors (Ward) Recommendation:

1. No visitors should be allowed strictly if needed one visitor can be allowed for a limited time with strict adherence to the policy of wearing a 3-ply surgical mask all the time during the stay in the ward.
2. Elderly patients with co-morbidities should be given priority for an operative procedure, to limit their waiting period in wards.
3. X-rays of admitted patients should be displayed all the time on X-Ray illuminators, reducing the need to hold them every time a new duty doctor visits a patient.
4. Consider spacing of at least 1-meter between beds of admitted patients, encourage the use of examination screens/dividers between beds.
5. Stable indoor patients having a delay in surgery due to various reasons can be sent

home and can be called back one day prior to surgery.

6. Early discharge of post-operative patients whenever possible and remotely follow-up.
7. Frequent use of educational banners/posters for mandatory use of masks in wards both for patients and their attendants.
8. Consider shifting to virtual rounds, postpone ward meetings between HCWs.
9. Ensure safe distancing of at least 1-meter between HCWs and patients in ward.

Out-Patient Department (OPDs) Recommendations:

1. All efforts should be made to decrease footfall at outpatient departments (OPDs). Consider shifting to Telemedicine/Virtual consultation for follow-ups and non-emergent cases. The majority of the cases can be given remote consultation.
2. Establishment of orthopedic filter clinic to assess which patients can be given virtual consultation and which patient needs to be seen by an orthopaedic surgeon.
3. Use of glass-walled barriers between HCWs and patients with microphones and speakers to give consultations in OPDs.
4. Ideally, a single person examining the patient should wear PPE. If not possible then the use of a 3-ply surgical mask/N95 mask, gowns, disposable caps, and gloves should be mandatory for a person examining a patient.
5. Only one patient at a time should be seen in the OPD room. Attendants should wait outside.
6. All patients should wear a mask during their visit to OPDs.

Operation Theater Recommendations:

1. There should only be limited staff present in Operation Theater at the time of induction and extubation by the anaesthesia team, consider a separate induction room where possible.
2. Ideally, all aerosol-generating procedures should be done in negative pressure ventilation, if not possible consider using a double 3-ply surgical mask/N95 mask, operative goggles, and face shields during an operative procedure.
3. The use of aerosol-generating power tools such as electrocautery, bone saws, and burrs, reamers, and drills should be minimized wherever possible.

4. Limit entry/exit of medical personnel during an operative procedure.
5. Dedicated separate OT for PCR positive/CT Suggestive COVID-19 patient in which delay is not an option and use of PPE and headcover by all medical personnel involved in that procedure. A separate area should be dedicated to donning and doffing process.
6. Elderly patients with comorbid should be operated first on the operation list.

Emergency Room Recommendations:

1. Strictly follow one patient at a time with no attendant policy at all times.
2. All medical personnel working in ER should use a 3-ply surgical mask/N95 mask, disposable gowns, disposable caps, face shields, and gloves.
3. Patients should wear a face mask while in an emergency.
4. All discharged patients should be given comprehensive guidelines and follow-up should be done remotely wherever possible to decrease the burden in OPDs.
5. Ensure adequate social distancing between Health care workers (HCWs) and patients.
6. Use sanitizer/change gloves after every patient.

Conclusion

In this COVID-19 pandemic, an orthopaedic community should continuously evolve taking into consideration resource optimization, social distancing, innovation, and best practices to minimize COVID-19 infection among health care workers who are working day and night to combat COVID-19 in the already overburdened health care system of developing country. Adopting these recommendations will not only give a uniform policy for health care workers (HCWs) of the orthopaedic department working in resource-limited government hospitals, where thousands of patients present daily but also limit the COVID-19 infection among health care workers (HCWs). We hope to get the best possible outcome out of current circumstances where a developing nation like ours cannot afford the luxury of PPE for every health care worker and PCR COVID-19 testing for every patient.

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