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Managing Orthopaedic Injuries in Covid-19 Pandemic: A Consise Review

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Abstract

Conservative, non-operative therapeutic approach may provide an alternative in non-obligatory fractures in the current COVID-19 pandemic and perhaps later on as well. It may serve as a route for us to manage orthopaedic injuries till we tide over the peak of the pandemic and resume elective surgeries. Perhaps, the Coronavirus crises has given us this unique opportunity to rethink and revisit traditional methods of treating fractures and the tolerance to operate every limb fracture must be risen. We must realize that all the fractures do not always need operative management and the conservative management still has a certain place in our armamentarium of fracture management, in an evolving world.

Index terms— orthopaedic injuries, trauma, COVID-19, non-operative management, fracture, dislocation.

or bed, fall from a bicycle or a bike, fall from a height more than 1m height like roof of the house, tree etc, high energy fracture from high height, road traffic accidents. 17 These accidental injuries not only increase the susceptibility of COVID-19 transmission but also aid in consumption of medical resources that have declined during the SARS-CoV-2 caused pandemic via the way of transmission through hospital. **??**8 Simplifying the management of injuries with the use of braces and boots rather than a plaster casts along with consideration for uncemented implants and un-reamed nails, have resulted in potential advantage in decreasing the respiratory complications in patients who were infected with COVID-19. Such treatments help reduce number of visits to the hospital and also exposure to ultra-dense waiting rooms which could be a breeding ground for SARS-CoV-2. [19][20][21] Few patients with lower limb fracture have been more susceptible to pulmonary infections with limited ambulatory capacity. 22,23 The COVID-19 pandemic exposed orthopaedic surgeons to manage traumatic injuries with limited resources and in safe manner whilst guarding all other healthcare professionals. [24][25][26][27][28][29][30] According to Fineberg 2020, the patients who have to be treated should be categorized based on the COVID-19 exposure - 31 1) A patient who is not known to be exposed or infected at any time 2) A patient who was exposed but is currently asymptomatic 3) A patient who has recovered from COVID and could be adequately immune 4) A patient who is possibly infected (persons with sign and symptoms consistent with infection who initially test negative) 5) A patient who is currently infected Extensive measures have been taken by different countries, in order to reduce person-to-person transmission of COVID-19 in a variety of ways, in which the social distancing, lockdowns, curfew and selfisolation remaining common across the whole world. [9][10][11][12][13] Hence, the rate of Road Traffic Accidents (RTA's) are drastically declined due to extensive lockdown, but the rate of fragility fractures continues to be unaffected, due to more prevalent osteopenia and osteoporosis with progressive ageing. The fragility fractures and traumatic fractures require robust intensive care. 11,[13][14][15][16] Few other injuries include -falling from standing height, fall from less than 1m height like from stool, chair oronavirus disease (COVID-19) is a novel severe acute respiratory syndrome. 1,2 The virus was first isolated from three people with pneumonia connected to the cluster of cases in Wuhan. It was first identified in December 2019 in Wuhan, China and has spread to the rest of the world creating a global pandemic. [3][4][5][6][7][8] On the basis of urgency of surgical procedures patients are categorized as: 32

1 Category type

Procedures should occur within 1a 24 hours 1b 72 hours 2 1month 3 3month 4 >3months

Steps in Managing a Trauma Patient with Covid-19 Symptoms or History of Contact An Orthopaedic surgeon has to be vigilant at all times during providing pre-operative, intra-operative as well as post-operative care to refrain cross-infection amongst surgeons as well as other healthcare professionals. 33 Thermal screening for both the patient as well their attendee should be carried out, appropriate travel history, history of any previous contact should be undertaken. A three-layer surgical mask, hand sanitizer and a pair of disposable gloves should be provided at the entry point to patients along with their attendants who require emergency care. [34][35][36] The door handles, chair handles, tables and other necessary material in the waiting areas should be regularly cleaned with 1% sodium hypochlorite atleast 4 times a day. [37][38][39][40] A separate specialized area should be kept ready in the triage to treat COVID patients with trauma. The respective CMO's and the SMO's in the hospital should be informed immediately, in case a symptomatic patient is encountered.

Each orthopaedic surgeon along with attendants, are advised to donned PPE kits before examining every single patient, which later on should be carefully doffed off after use. [41][42][43][44][45] Resuscitate the patient and rule out all the injuries, also ask the patient to fill Informed consent, along with splintage of fracture limb. 33 All the necessary pre-operative investigations along with COVID-19 testing are advised.

If possible, the portable X-rays and ultrasound should be shifted to consulting room to avoid contamination of the radiology area and it also helps in decreasing movement of symptomatic patients. 35 For investigations like CT scan or MRI, we have to sterilize the respective area after investigating every patient as per centres for disease control and prevention guidelines. 35 Patients with closed fractures are advised to wait for surgical interventions until the COVID-19 results are out.

All cases that need urgent management like an open fracture, vascular injuries, compartment syndrome or mangled limb; and cannot wait until COVID reports. These patients should be treated as COVID positive patients unless proven otherwise and strict precautions should be taken while treating them so as to avoid transmission to healthcare professionals or to other patients. [33][34][35] If the reports are positive keep the patient in the COVID isolation ward until the results are negative and take the help of the COVID response team of the hospital. If the results are negative shift the patient to the orthopaedic ward and then discharge as early as possible. [33][34][35] Care must be taken during the hospital stay to physiotherapy, bedsores and DVT prevention.

2 II.

3 Emergency Triage

Patients presented to the emergency triage with an orthopaedic emergency such as joint dislocations, compartment syndrome, open fractures, mangled extremity, polytrauma with Full Endoscopic Spine Surgery (FESS) should be managed according to a specific guidelines during global health emergencies like a pandemic of COVID-19. [46][47][48][49] These orthopaedic emergencies require effective outpatient, inpatient and surgical care besides avoiding transmission of infection to fellow patients and health care givers.

The injuries that cannot be managed by the non-operative approach, should be corrected immediately with the surgical approach, with minimum usage or if possible by, completely avoiding Aerosol-Generating Procedures and with proper usage of Personal Protective Equipments with minimum assistants in the operatory. 20,[50][51][52][53] Patient Triaging Guidelines for Orthopaedic Surgeries: 54 The Expert group from the Chinese Orthopaedic Association and Chinese Association of Orthopaedic Surgeons formulated an expert consensus on the diagnosis and treatment of orthopaedic emergency surgery during the outbreak of COVID-19, which has been published within the Chinese Journal of Orthopaedic Trauma in Chinese. 55 The expert consensus categorized the orthopaedic patients into four types: 55 Type I-Patients had not travelled within the in the epidemic area within 14 days and had no history of direct or indirect contact with suspected or confirmed cases. Type IV-Patients were diagnosed as a confirmed case.

4 Medical

5 Orthopaedic Subspeciality

Operative

On the advent of COVID-19 pandemic, it has been acknowledged by the British Orthopaedic Association (BOA) emergency COVID-19 and the National Health Service England (NHSE) guidelines to manage urgent orthopaedic and trauma conditions pragmatically balancing optimum treatment of patients against clinical safety with resource utilization. 56,57 Non-Operative Management of Paediatric Fractures and Dislocations during Coronavirus Crises: 56,57

6 Conclusion

The COVID-19 pandemic has substantially led to decrease in operative management of trauma, in order to optimize medical resource allocation and also to help prevent the spread of COVID. The coronavirus crises has led to depletion in the surgical volume, and preference of non-operative management of trauma over operative.

On the contrary, orthopaedic surgeons must remain vigilant all the time and be prepared to provide optimal care to the injured patients.

7 Conflict of Interest: None

Author Contribution: All authors have equally contributed for completion of this manuscript.

7 CONFLICT OF INTEREST: NONE

				Metatarsal Fractures	Patella Fractures
				Phalanx Fractures	Talar Fractures
					Calcaneous with gross displacement
					Lis Franc Injuries
Limb injuries in children and adolescents III.		Preferred Indications			Peri-prosthetic Fractures
					Equivocal Indications
					Pathological Fractures
Hand Trauma	Limb	Clavicle Fractures			Displaced Fractures.
		Proximal humerus fractures			Eg. Supracondylar humerus, lateral condyle humerus
		Shaft-humerus fractures with angulation of less than 45°S		Dislocations	
		upracondylar	fractures		Fracture-dislocation
		(Undisplaced/ displaced)	minimally		Compartment Syndrome
		Extra-articular fracture	distal radius		
		Hand Fractures			
		Reducible dislocations			
Lower Trauma Pelvic Acetabular Limb Trauma Non-Operative Management of Fractures and Dislocations i					
Upper limb Injuries in Adults Limb and Spinal		Clavicle fractures AC joint dislocations Scapula fractures F			

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