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## Orthopaedic services during COVID-19 lockdown at Patan Hospital, Nepal

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### Abstract

**Introduction:** The COVID-19 pandemic has paralyzed the world, including elective health care services. To prevent the spread of infection, most countries have gone into lockdown and adjustments have been made to provide urgent medical care, including Orthopaedic services. In accordance with the guidelines from worst affected countries and neighboring India, Patan Hospital followed instructions from Ministry of Health and Population to provide only urgent and semi-urgent Orthopaedic services. This study aims to audit the patient profile during lockdown so as to have a clearer picture, which will enable us to be prepared for similar epidemic in the future.

**Method:** All patients admitted to the Orthopaedic ward of Patan hospital from 24 March to 27 April 2020, during the lockdown, were included. Clinical profile, including cause of admission, management, hospital stay were descriptively analyzed. Ethical approval was obtained.

**Result:** Out of 44 admissions, there were male 27 and female 17. Trauma cases were 38, and 18 were in age group 20-26 years. Admission due to infections were four. Conservative management were done in seven while 33 were treated surgically, out of which 30 accounted for trauma. Average 6.14 days hospital stay, range 1-22 days.

**Conclusion:** Trauma comprised of major bulk of patients seeking urgent Orthopaedic care. Hospital needs to be prepared with necessary measures to ensure safety of health care workers and yet provide urgent Orthopaedic services.

**Keyword:** COVID-19, lockdown, orthopaedics

**Introduction**

Corona Virus Disease-19 (COVID-19) has hit out as a pandemic paralyzing elective medical services. Most of the world is affected by lockdown measures.<sup>1,2</sup> Healthcare services are now struggling with containing and treating COVID-19 patients, at a compromise for elective healthcare services.<sup>2</sup> To deal with the pandemic, to protect health care workers and yet provide services, several adjustments in Orthopaedic services have been made.<sup>3</sup>

With looming threat of community spread of COVID-19 infection, neighboring South Asian countries also went into lockdown from Mid-March, halting all elective medical services.<sup>2,4</sup> Nepal implemented lockdown from 24 March 2020, stopping all non-emergency consultations, investigations and surgeries.<sup>5</sup> Patan Hospital services are in accordance with the directions from Nepal Medical Council and Ministry of Health and Population.<sup>6</sup>

This study aims to analyse the Orthopaedic admission and surgeries during the lockdown to help us better prepare ourselves in times of such disaster.

Orthopaedics and Trauma Surgery, Patan Hospital, Patan Academy of Health Sciences (PAHS), Nepal, during 24 March to 27 April 2020, during COVID-19 lockdown. Ethical approval was obtained from Institutional Review Committee of PAHS.

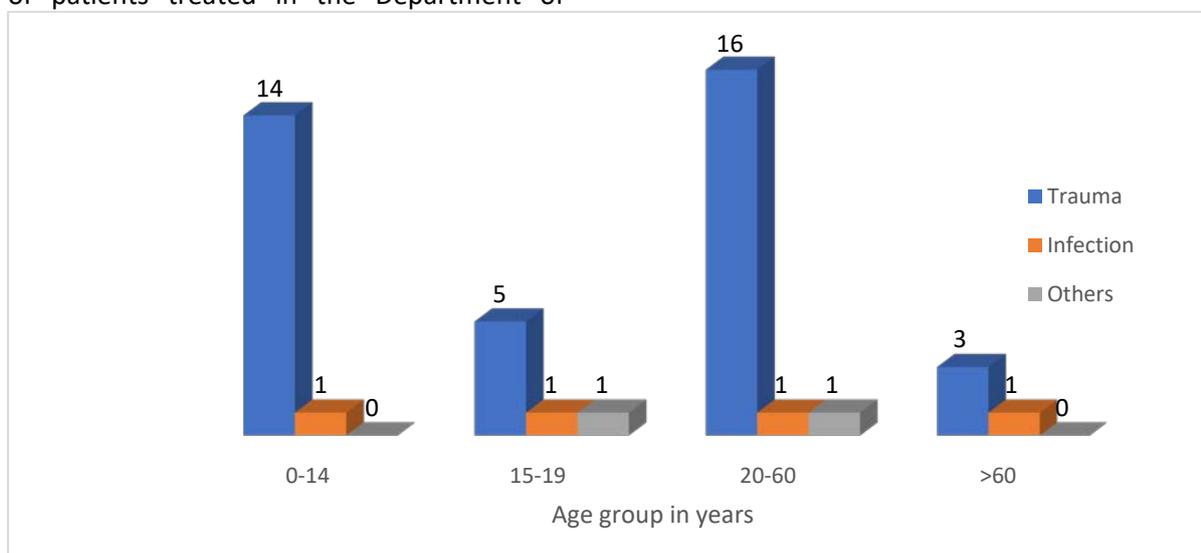
Files of patients admitted during this period of lockdown were retrieved from the record section. Data were collected in terms of age, sex, diagnosis (trauma, infection, others), treatment (surgery, conservative), the number of days of admission before surgery and total days stayed in the hospital. A descriptive analysis was performed.

**Result**

Total admission were 44, male and female comprised of 27 and 17 respectively. Trauma accounted for 38, of which 18 were among 20-26 year age group, acute infections four (each one of iliopsoas abscess, leg cellulitis, knee abscess, hip septic arthritis), and others two (each one of back pain and knee reactive synovitis), Figure 1. In 38 trauma cases, 19 were upper limb, Figure 2.

**Method**

This is retrospective analysis of clinical profile of patients treated in the Department of

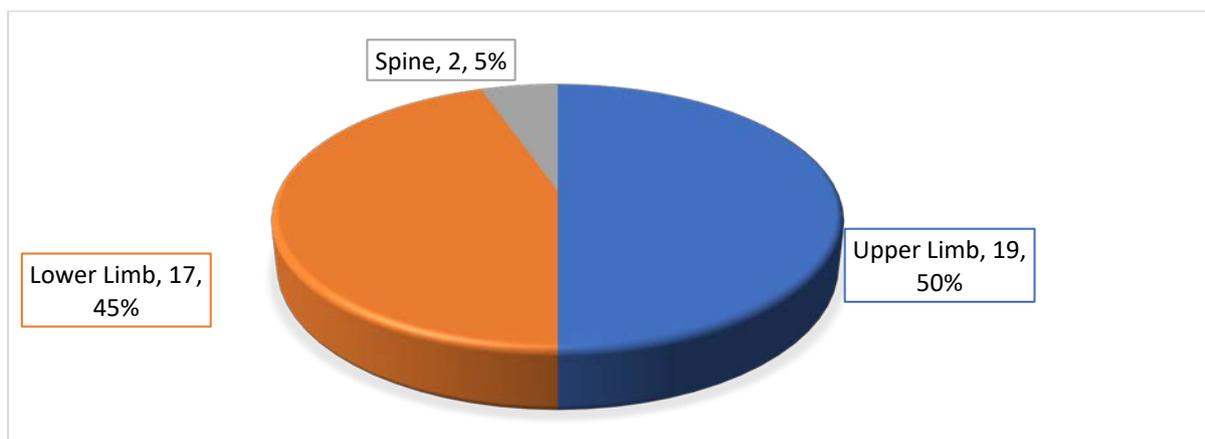


**Figure 1. Cause and number of Orthopaedic admissions at Patan Hospital during COVID-19 lockdown, N=44**

**Table 1. Series of cases admitted and treated in Orthopaedic ward during lockdown (24 March to 27 April) at Patan Hospital, N=44**

S.N.	Age	Sex	Diagnosis	Treatment	Wait	Stay
1	20	F	Lt trimalleolar fracture	ORIF	6	9
2	33	M	Rt distal tibia fracture	MIPO	2	5
3	53	M	Cut injury dorsum rt ankle & tendon injury	Exploration and tendon repair	2	9
4	32	F	Rt trimalleolar fracture	ORIF	4	8
5	10	F	Open dislocation of lt middle finger distal phalanx	Debridement, K-wire fixation and delayed primary closure	1	4
6	10	M	Lacerated wound over rt axilla	Debridement and closure	1	3
7	22	F	Low back pain	Conservative management		2
8	8	M	Both bone fracture lt forearm	CRIF with TENS	1	3
9	18	M	Cut injury thenar aspect rt hand	Debridement and closure	1	8
10	86	M	Rt leg cellulitis	Debridement	16	19
11	58	M	Fracture shaft of Femur rt	SIGN nailing	3	8
12	47	F	T12 burst fracture	Posterior instrumentation with pedicle screw fixation	7	22
13	7	F	Lt distal radius fracture	CRPP	1	2
14	70	F	Open fracture rt distal forearm both bone with rt posterior elbow dislocation	1.Debridement elbow relocation, 2. ORIF Plating radius and rush nailing ulna, 3. Secondary closure	1	10
15	7	M	Rt Monteggia fracture dislocation	MUA-POP	1	2
16	5	M	Rt lateral condyle fracture of humerus	ORIF with K-wires	2	4
17	23	M	Crush injury lt foot with greater toe gangrene	1.Debridement K-wire fixation, 2. Debridement 1 <sup>st</sup> MTP disarticulation, 3. 1 <sup>st</sup> metatarsal amputation debridement with talo-navicular K-wire fixation	0	**
18	8	M	Open fracture and dislocation of distal phalanx of lt ring finger	Sterile needle fixation and closure	0	2
19	19	M	Reactive synovitis lt knee	Conservative management		2
20	60	F	Comminuted IT fracture rt	HRA	10	
21	8	M	Both bone fracture rt forearm	MUA-POP	1	1
22	15	M	Dog bite lt hand with tendon injury	Debridement; Exploration and tendon repair (extensor indices communis)	3	10
23	32	F	Lt Shaft of humerus fracture	ORIF	1	5
24	67	M	Lt neck of femur fracture	HRA	3	12
25	36	F	L1 Burst fracture	Posterior instrumentation with pedicle screw	12	**
26	6	F	Rt shaft of femur fracture	ORIF with TENS	2	10
27	17	M	Lt patella fracture	ORIF with TBW	6	8
28	7	F	Rt supracondylar fracture of humerus	CRPP	1	2
29	34	F	Open fracture proximal phalanx rt middle finger 2 <sup>nd</sup> metacarpal shaft fracture extensor tendon injury	Debridement with K-wire fixation and tendon repair	0	3
30	60	M	Rt iliopsoas abscess	Incision and drainage, debridement	3	**
31	47	F	Lt distal tibia and fibula fracture	Calcaneal Traction	2	**
32	9	M	Both bone fracture rt forearm	MUA-POP	1	2
33	18	M	Rt distal femur osteomyelitis with abscess	Incision and debridement with Biopsy	4	**
34	8	M	Rt supracondylar fracture humerus	CRPP	1	2
35	2	M	United lt humerus supracondylar fracture with implant in-situ	Implant removal	1	1
36	86	F	Lt IT fracture	HRA	1	**
37	18	M	Rt medial malleolar transphyseal fracture	ORIF with K-wire	1	**
38	30	M	Lt Subtrochanteric Fracture with ipsilateral Pilon Fracture	*	*	**
39	51	M	Lt iliac wing fracture	Conservative management		**
40	9	F	?Lt hip septic arthritis	Conservative management		**
41	38	F	Lt distal tibia and fibula fracture	ORIF Fibula, MIPO Tibia	1	**
42	53	M	Rt distal radius fracture	*	*	**
43	5	M	Rt lateral condyle fracture of humerus	*	*	**
44	19	M	Rt ankle subluxation	*	*	**

Rt: right; Lt: left; ORIF: Open Reduction and Internal Fixation; MIPO: Minimally Invasive Percutaneous Osteosynthesis; TENS: Titanium Elastic Nails; TBW: Tension Band Wiring; HRA: Hemi Replacement Arthroplasty; CRPP: Closed Reduction and Percutaneous Pinning; MUA-POP: Manipulation Under Anesthesia and Plaster of Paris application, \*Awaiting surgery; \*\*Waiting for Discharge; Wait: Wait time in days for surgery



**Figure 2. Number of Orthopaedic trauma cases by site, admitted at Patan Hospital during COVID-19 lockdown, N=38**

Among seven cases treated conservatively, four were trauma (three children with upper limb fractures managed with cast immobilization, and one adult undisplaced iliac wing fracture) and three non-trauma (one each of suspected septic arthritis of the hip, low back pain and synovitis of the knee), Table 1.

Among 33 patients who underwent surgical management, 30 were for trauma, with an average waiting time of 3.12 days (0-16 days). Four cases with trauma admitted on the last two days of data collection were awaiting surgery for displaced fractures, Table 1.

The hospital stay ranged from 1 to 22 days (average 6.14 days), while 15 patients were awaiting discharge, Table 1.

## Discussion

Total number of Orthopaedic admissions were 44, in five weeks during the lockdown (continuing as of 27 April when the data were analyzed). This was only a third of more than 100 orthopaedic admissions per month during normal days at Patan Hospital. The less number of cases were because of the lockdown, and closure of general non-urgent services in the hospital.<sup>6</sup> Similar recommendations of minimizing Orthopaedic admissions and non-urgent surgeries from many countries have been reported.<sup>7-12</sup> Safety measures of both the patients and health care

workers are of primary concern during the outbreak. Reports from China and Italy have shown increased number of infection among healthcare workers performing non-urgent Orthopaedic procedure, chiefly due to the generation of aerosol while reaming and using drills, hammering etc.<sup>7,8</sup> This is further verified by a study from India.<sup>12</sup>

During lockdown, trauma cases admitted in the department of Orthopaedics and Trauma Surgery accounted for majority (84.1%), followed by acute infections (9.1%). It is no surprise that there were no admissions with road traffic accidents due to lockdown. Most of the trauma cases were as a result of fall from same height while walking or taking stairs. There is lack of reporting in literature in this regard (analysis of type of admission and surgeries), so we cannot compare our findings. However, we presume that the guidelines recommended by professional associations/ councils/ organizations/ health departments/ ministries/ authorities, regarding changes in health care services during COVID-19 pandemic and lockdowns to concentrate efforts to deal with the disaster and minimize spread of virus, have resulted in similar decline in number of admissions and surgeries.<sup>10,12-15</sup>

Average wait for surgery was 3.12 days (0-16 days). Most of the surgeries were performed within the first two days of admission. The long wait for surgery observed in a few cases were either because of local swelling/edema or because of co-morbidities which needed

optimization before surgery. The longest hospital stay of 22 days was of a spinal fixation who was unable to return home to her village after surgery because of lack of transportation during lockdown. Difficult terrain, difficulties in accessing proper follow up of specialized health care services in rural areas and financial reasons are often the reasons for delay in discharge from hospital. In this case, it was complicated by the lockdown and lack of transportation.

Although COVID-19 has not reached an epidemic level in Nepal, it is still wise to learn from countries which have been hit hard by the pandemic and follow some precautionary measures against COVID-19 infection. Preparing for surge is an issue we have to consider, but even before that we need to be aware of the mode of its transmission and take precautionary measures, not just to identify the patients and treat them, more so to prevent the community spread and also to prevent health care workers from contracting the disease, which will lead to further depletion of workforce. Diagnostic criteria for COVID-19 patients vary, and it is generally known to be transmitted readily by symptomatic patients; what is more alarming is the transmission via asymptomatic carriers which has been documented to be between 25-50%.<sup>16</sup>

General precautionary measures to prevent contracting virus and transmission have been recommended by WHO, which include frequent hand washing and/or sanitization, social distancing, mask, screening, isolating, treating early etc.<sup>17</sup> Use of personal protective equipment (PPE), and peri-operative care have been in use, also at our hospital, as per the guidelines from affected countries like Italy, Spain and China, during the outbreak.<sup>7-9</sup>

In India, where the number of infected cases have not reached an alarming level and testing each patient going to the hospital for urgent/semi-urgent care is not possible due to lack of mature healthcare infrastructure, which is similar to Nepal, recommended guidelines are followed in both the countries to limit the number of surgical cases, and follow strict measures if the patient is symptomatic and

have tested positive. The current guidelines recommend performing surgeries for trauma, infection, dislocation, compartment syndrome, open fractures in an urgent or semi-urgent basis with all the precautions in place, and suggest expanding indications for conservative treatment of fractures.<sup>12,14,18</sup> This corresponds to the recommendations made by other affected countries.<sup>8,9,13,19</sup> This is in line with the policy for admission and surgery of Orthopaedic cases, and others in our hospital.

## Conclusion

Our findings show, emergency cases of trauma were major bulk, followed by acute infection seeking urgent Orthopaedic care. During a pandemic, hospital needs to be prepared with necessary precautionary measures for treatment of urgent and semi-urgent conditions while safeguarding the well-being of healthcare professionals and patients.

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## Conflict of Interest

None

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None

## Author contribution

All authors agreed in initial concept, read and approved final draft; NMSP- concept, design, write up and is the guarantor of this work.

## Reference

1. World Health Organization. WHO announces COVID-19 outbreak a pandemic. World Health Organization [Internet]. 2020 Mar 12; Health topics. [Weblink](#)

2. Wikipedia. National responses to the 2019-20 coronavirus pandemic. En.wikipedia.org [Internet]. 2020. [Weblink](#)
3. Tahmasebi MN, Nabian MH. How to continue essential orthopedic services during COVID-19 crisis? Arch Bone Jt Surg. 2020;8(S1):295-6. [GoogleScholar](#) [PDF](#) [Weblink](#)
4. Wikipedia. 2020 coronavirus pandemic in South Asia. En.wikipedia.org [Internet]. 2020. [Weblink](#)
5. Wikipedia. 2020 coronavirus pandemic in Nepal. En.wikipedia.org [Internet]. 2020. [Weblink](#)
6. Ministry of Home Affairs, Government of Nepal. Press release. Moha.gov.np [Internet]. 2020. [Weblink](#)
7. Guan W, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med. 2020. [Epub 2020 Feb 28] [DOI](#) [PubMed](#) [GoogleScholar](#)
8. Giacomo P, Damiano S, Elena D, Giulia B, Vincenzo S. CoViD-19 and ortho and trauma surgery: the Italian experience. Inj. 2020. [Epub ahead of print] [DOI](#) [PubMed](#) [GoogleScholar](#) [PDF](#)
9. Gómez-Barrena E, Rubio-Suárez JC, Fernández-Baillo N, Antuña S, Cruz-Pardos A, Blanco M, et al. Limiting spread of COVID-19 in an orthopaedic department - a perspective from Spain. J Surg Case Rep. 2020;2020(4):rjaa095. [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)
10. Randelli PS, Compagnoni R. Management of orthopaedic and traumatology patients during the Coronavirus disease (COVID-19) pandemic in northern Italy. Knee Surg Sports Traumatol Arthrosc. 2020. [Epub ahead of print] [DOI](#) [PubMed](#) [GoogleScholar](#) [PDF](#)
11. Chang Liang Z, Wang W, Murphy D, Po Hui JH. Novel coronavirus and orthopaedic surgery: early experiences from Singapore. J Bone Joint Surg Am. 2020. [Epub ahead of print] [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)
12. Jain VK, Vaishya R. COVID-19 and orthopaedic surgeons: the Indian scenario. Trop Doct. 2020. [Epub ahead of print] [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)
13. Sarac NJ, Sarac BA, Schoenbrunner AR, Janis JE, Harrison RK, Phieffer LS, et al. A review of state guidelines for elective orthopaedic procedures during the COVID-19 outbreak: J Bone Joint Surg Am. 2020. [Epub ahead of print] [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)
14. Indian Orthopaedic Association. COVID-19 IOA guidelines. Ioaindia.org [internet]. 2020 Mar 25. [DOI](#) [PubMed](#) [GoogleScholar](#) [PDF](#) [Weblink](#)
15. Stinner DJ, Lebrun C, Hsu JR, Jahangir AA, Mir HR. The orthopaedic trauma service and COVID-19 – practice considerations to optimize outcomes and limit exposure. J Orthop Trauma. 2020. [Epub ahead of print] [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)
16. Catalanotti JS, O'Connor AB, Kisielewski M, Chick DA, Fletcher KE. Association between nocturnist supervision and perceived overnight supervision adequacy among internal medicine residents in the US. JAMA. 2020;323(14):1407-9. [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)
17. World Health Organization. Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations: scientific brief. World Health Organization [Internet]. 2020 Mar 29. [Weblink](#)
18. Vaishya R, Vaish A. Roles and responsibilities of the orthopaedic community and the society during COVID-19 pandemic. Indian J Orthop. 2020;1-2. [Epub ahead of print] [PubMed](#) [GoogleScholar](#) [PDF](#)
19. Awad ME, Rumley JC, Vazquez JA, Devine JG. Peri-operative considerations in urgent surgical care of suspected and confirmed COVID-19 orthopedic patients: operating rooms protocols and recommendations in the current COVID-19 pandemic. J Am Acad Orthop Surg. 2020. [DOI](#) [PubMed](#) [GoogleScholar](#) [Weblink](#)