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Changes In Pattern of Orthopedic trauma during COVID PANDEMIC And Impact On The Outcomes

Dr. Pravin Kumar Sahu, M.S. ORTHO, Associate Professor N.M.C.H. Patna
Associate author – Dr. Om Prakash Kumar, Dr. Kaushlendra kumar, Dr. Raju Kumar.
Author – Dr. Pravin Kumar Sahu, M.S. ORTHO, Associate Professor N.M.C.H. Patna.
Associate author – Dr. Om Prakash Kumar (M.S. ORTHO), Dr. Kaushlendra kumar (M.S. ORTHO), Dr. Raju Kumar.

Abstract:
Study of trauma patterns in covid lockdown period and review and comparison with pre-covid period. How its outcome will affect our preparedness for combating in future, if similar situation arises. This study was conducted in orthopedics department of N.M.C.H., Patna. And Oxygen Trauma and Multispeciality Hospital, Patna. Mechanism and pattern of injuries of 163 patients during lockdown period 24th March, 2020 to August 2020, were compared with the 580 patients in similar duration in 2019. Protocols Followed In treating these patients were reviewed. Significant decrease in Road Traffic Accidents were noted, while there was significant increase in domestic injuries due to slip and fall at home and most complications were due to inadequate and delayed treatment in these period.

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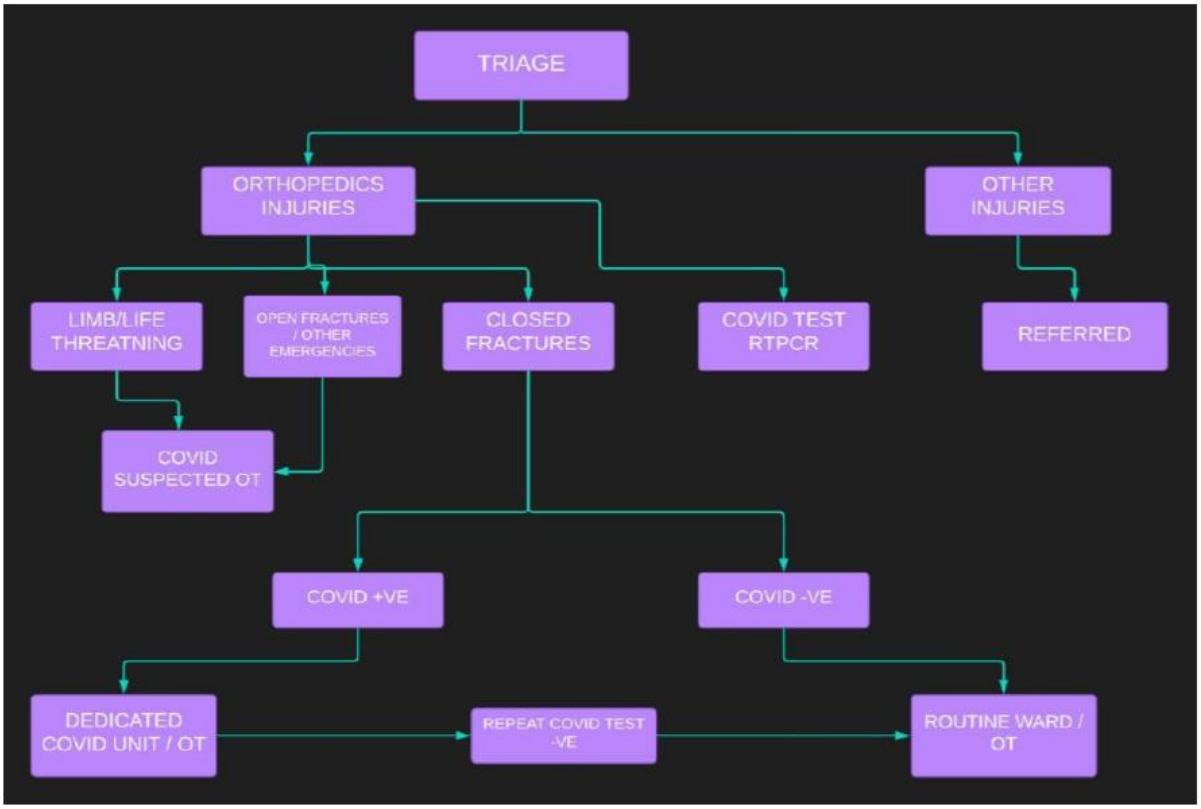
I. Introduction:

The COVID-19 Pandemic was first reported in Dec19 as a cluster outbreak in China, which spread across various countries and globe. India has its first registered COVID-19 case in January 30th, 2020. WHO called it a global health emergency and called for a combined international effort to suppress the outbreak. Many a countries have adopted a COMPLETE LOCKDOWN, Including India. India enforced this on 24th March,2020 , Which was extended up to 31st May , 2020 , and gradually some relaxation given and still partial Lockdown was there till August 2020. Implementation of lockdown led to remarkable decline in public mobility, which was hypothesized, would affect the epidemiology and profile of trauma patients presenting to the orthopedic department. In this study, we reviewed the demographic data of the patients presenting withorthopedicinjuries to our trauma, emergencies andOPD. Our case study period was from 25th March 2020 to 30th August 2020. And it was compared with the same duration in 2019. This observational study aimed to document the epidemiological profile of patients, type of injuries sustained and common mode of injuries during lockdown phase; to analyze the change in number and pattern of injury from the previous year. The findings from the study could be used for formulation of protocol for management of patients as well as resources in future pandemics.

II. Materials And Methods:

This was a retrospective observational study performed at Orthopedics department of N.M.C.H & Oxygen Trauma and Multispeciality Hospital, Patna, Bihar. Patients presenting to the orthopedic emergency with fresh injuries, or those that were referred for definitive specialized management were included in the study. Patients who presented with injuries more than 3 weeks old, presenting for postoperative follow-ups and patients not requiring admission were excluded from the study. Variables such as demographic profile, nature of injury, mechanism of injury and working diagnosis were collected. The data of 2020 lockdown was compared with data of 2019 for the same duration, when the situation were normal. During the lockdown period all patients requiring admission has to undergo covid testing(rapidand/or RTPCR). Dependingon the level of emergency and covid result patients were sent to designated areas as per the protocol. Data for the corresponding time frames from 2019 (previous year) were taken as the baseline to evaluate the changes in patterns and management protocols. Data collected on Spreadsheet for analysis and Chi-square test was performed to determine the level significance. A p value of < 0.5 was considered statistically significant.

FLOW CHART FOR PROCESS ADOPTED FOR INITIAL MANAGEMENT OF TRAUMA PATIENTS DURING LOCKDOWN:



III. Results:

In lockdown phase (24th march 2020 to 30th August 2020), a total number of 163 patients were admitted of which 143 patients were male and 20 patients were Female (Table No.1). Number of admissions per day was decreased to 1 In comparison to 3.5 during normal days in 2019. Total no. of pediatric patients was 10(16%) while only 6% were pediatrics patients in 2019. The number of elderly patients were 19% in comparison to 26%. Open injuries were 16% in comparison to 28%. Operative interventions were carried out in only 42% cases which was 86 % in normal days. These can be depicted through Table No.1 as below.

TABLE NO.1:- DEPICTING EPIDEMIOLOGY OF PATIENTS DURING THE PHASES OF LOCKDOWN AND IN COMPARISON TO PREVIOUS YEAR:

PARAMETERS	DURING COVID LOCKDOWN (MARCH-AUGUST , 2020)	DURING PREVIOUS YEAR (MARCH-AUGUST , 2019)
Total no. of patients	163	580
Patients per day	1	3-4
Male / Female	143 / 20	400 / 180
Children	10(16%)	96(6%)
Elderly (>60 years)	19%	26%
Open / Closed Fractures	16%	28%
Operative / Non-Operative	42% / 58%	86% / 24%

Road traffic accident (RTA) accounted for 52 cases (32%) during lockdown phase while the number were 412(71%) in 2019. Fall from height accounted for 42 cases (26%) while it was 64 cases (11%). Cases from different mode of injuries in lockdown phase and corresponding period in 2019 were depicted in the Table No. 2.

TABLE NO.2:- DEPICTING MODES OF INJURY DURING THE PHASES OF LOCKDOWN IN COMPARISON TO PREVIOUS YEAR:

MODE OF INJURY	LOCKDOWN PHASE	CORRESPONDING PERIOD 2019
RTA	32%(52 cases)	71%(412 cases)
Fall from Height	26%(42 cases)	11%(64 cases)
Machine Cut Injury	12%(20 cases)	7%(40 cases)
Assault	11%(18 cases)	3%(18 cases)
Slip and Fall	14%(22 cases)	6%(34 cases)
Firearm Injury	2%(4 cases)	1%(6 cases)
Others	3%(5 cases)	1%(6 cases)
Total No. of Cases	163 Cases	580 Cases

IV. Discussion:

Lockdown is defined as "Security measure taken during an emergency to prevent people from leaving or entering a location". Government of India very actively took this security measure against the spread of corona virus from 24th March, 2020. This led to a fear of overflow of the hospitals with patients, and shortage of healthcare facilities. Most hospitals, including ours, had plans in place where even orthopedic surgeons would have to work in areas needing intensive care. But, as the lockdown continued, production and distribution of essential commodities had slowed down drastically and using up resources would deplete them further. It was tough time for the government and was left with difficult task of fine-tuning the balance between a slowing down of the economy and dealing with the pandemic health crisis. Subsequently, following the pattern all over the world, there were various conditional relaxations in the application of lockdowns from 4th May 2020 onwards. The purpose of this study was to evaluate any changes in the epidemiological profile of the trauma patients presenting to orthopedic trauma center during various stages of the lockdown. Although, the RTA cases still higher in comparison to other causes, there was significant reduction in overall RTA cases (3.5 times less). RTA remained a major cause of trauma admissions; this implied that sufficient traffic was plying despite government guidelines in both phases of the lockdown. On specifically evaluating the change in incidence of trauma due to fall, a reduction in overall cases was noted, although as a percentage of cases presenting it was higher in both phases especially in phase 1 ($p<0.05$). Pediatric trauma also followed similar trend as trauma due to fall but it was not statistically significant. Forthe elderly, the patternwasthe same, but in boththe agegroups, this was not statistically significant, implying that falls of children and elderly continued to occur, despite people not venturing out of their homes. As per the guidelines of various orthopedic societies, an effort was made to reduce operative intervention where possible. Our data showed that operative interventions were reduced to some extent, the change was statistically significant. We could manage many cases conservatively, which were earlier managed by operative intervention. Under pandemic conditions, where resource utilization needs to be optimal, it becomes important for orthopedic surgeons to understandthe epidemiological patternof the patients who present to the trauma centers; this allows them to be better prepared and use the available resources wisely. Non-operative management protocols maybe used in some cases as per the recommendation of national bodies. Elective surgeries were almost stopped, as were routine out patients services and only emergency O.P.D and I.P.D services were functional.

FRACTURE HUMERUS UNITING WELL CONSERVATIVELY:

Clinical Photograph Showing Good Functional Union :

LIMITATIONS:

Under pandemic conditions, where resource utilization needs to be optimal, it becomes important for orthopedic surgeons to understand the epidemiological pattern of the patients who present to the trauma centers; this allows them to be better prepared and use the available resources wisely. Non-operative management protocols maybe used in some cases as per the recommendation of national bodies. The pandemic scenario is expected to stay with us for quite some years, and our experience with trauma admissions and alteration of standard management protocols that we have followed, may provide administrators and surgeon's information about what to expect in a crisis like this, so that we are better prepared for future circumstances.

COMPLIANCE WITH ETHICAL STANDARDS:

Conflict of interest: The authors declare that they have no conflict of interest.

Ethical standard statement: This article does not contain any studies with human or animal subjects performed by the any of the authors.

Informed consent: For this type of study informed consent is not required.

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