



THE EFFECTS OF NATIONAL LOCKDOWN ON TRAUMA ADMISSIONS AND SURGICAL CASES AT OUR TERTIARY CARE CENTER

Surgery

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ABSTRACT

Aims & Objectives: The aim of this study is to gain a greater understanding of the impact lockdown has had on the rates, mechanisms and types of injuries together with their management across a regional trauma service.

Materials & Methods: Data was collected from our trauma centre of Swaroop Rani Nehru Hospital, Prayagraj. Data collection included patient demographics, injury mechanism, injury type and treatment required. Time periods studied corresponded with the 41 days leading up to lockdown in India and the 41 days during the lockdown (25 March to 3rd May, 2020).

Results: There was a 72% (612 vs 171) reduction in total accident and emergency (A&E) admissions during lockdown compared to pre-lockdown period. The number of patients with fragility fractures requiring admission almost remained similar (12 patients pre-lockdown vs 08 patients during lockdown; $p > 0.05$). Fall from Height were the commonest cause of major trauma admissions during lockdown. There was a significant reductions in RTA cases during lockdown (248 vs 20) which can be deduced to be most fruit-full outcome from the lockdown, as far as trauma cases are concerned.

Conclusion: The national lockdown is designed to limit the spread of COVID-19. Due to the guidance measures in place it has had a secondary impact of reducing trauma requiring admission in our region by 72%. The mostly affected mode of injury due to lockdown remains to be the RTAs and the most common mode of injury leading to major trauma during lockdown proves to be fall from height.

KEYWORDS

Introduction

On 11 March 2020, the World Health Organization (WHO) declared the outbreak of the SARS-CoV-2 (COVID-19) virus a global pandemic. The rising number of new cases and hospital admissions in the India resulted in increased pressures on hospitals within the NHS. In a pre-emptive response to this, the Indian government released measures to try and reduce pressures on the NHS. These included social distancing and advising people to avoid busy public venues. The requirements for an Indian national lockdown were issued on 25 March 2020, whereby people were told that they should only go outside to buy food or other essential supplies.

The COVID-19 pandemic has led to all non-urgent elective surgery in the hospitals being postponed for the foreseeable future. NHS have released guidance to advise on management of trauma during these unprecedented times. The guidance favours non-operative management of non-emergent cases where appropriate. The goal of this is to reduce the demand on anaesthetic services during the pandemic and to minimize patient exposure to COVID-19 in a hospital setting. Furthermore, this reduces the risk of disease transmission to staff through aerosol-generating procedures (AGP), such as intubation and extubation of patients for general anaesthesia. Similarly, surgical techniques such as the use of high-speed drills and reamers are classed as aerosol-generating due to their potential to aerosolise blood particles thus increasing risk of transmission.

To ensure optimal patient flow, reduce the risk of viral transmission and allow for healthcare workforce shortages due to viral infection, all non-urgent elective surgery clinic lists were either reduced or changed to telephone/video consultations where appropriate. These measures have enabled surgical staff to be redeployed to help our colleagues in

accident and emergency (A&E) departments, medical inpatient wards and intensive therapy units (ITUs) where the intensity of work has significantly increased while caring for patients with COVID-19.

Despite these actions, trauma admissions and cases continue to present to orthopaedic & surgery departments. The exact effects of social distancing and lockdown on the trauma workload within the India remains unknown.

The aim of this study is to gain a greater understanding of the impact that a nationwide lockdown has had on the rates, mechanisms, and types of injuries together with their management across a regional trauma service.

Aims & Objectives

The current global pandemic due to COVID-19 is generating significant burden on the health service in India. On 25 March 2020, the Indian government issued requirements for a national lockdown. The aim of this regional study is to gain a greater understanding of the impact lockdown has had on the rates, mechanisms and types of injuries together with their management across a regional trauma service.

Methods

Retrospective data for the study was collected from our trauma center within our swaroop rani Nehru hospital campus, Prayagraj, Uttar-Pradesh. Data on attendances and trauma admissions were collected over 41-day periods before and during the national level lockdown for COVID-19, i.e. 25 March 2020 to 3rd May 2020, after which Liquor Shops & intra state movements were allowed (Phase 1 & 2 of Indian National Lockdown).

Medical records and electronic trauma handover lists were used to identify patients who had been referred to each of the individual units over these time points.

All patients admitted in trauma center, including surgical team as well as the orthopaedic team were included in the study, irrespective of the treatment received. Patients who were not seen by the accepting team but had telephone advice provided were not included. Likewise, patients seen in the minor injuries department and not admitted under surgery or orthopaedics were excluded from the study, as the aims of the study were specifically to gain an understanding on trauma admissions and surgical cases.

Demographic data were collected along with nature of injury, mechanism of injury, treatment provided and whether it was a fragility-related injury. Any patients with incomplete data for analysis were excluded from the study.

Patients were grouped into three broad categories including adult orthopaedic trauma (hip fracture, upper limb injury, lower limb injury, spinal trauma), Neurosurgical trauma (contusions, EDH, SDH, SAH, Depressed fracture) and General surgical trauma (Blunt trauma abdomen, penetrating injuries, gunshot or other medico-legal injuries).

Mechanism of the injury was subcategorized into fall (including slip, trip), Self injury, animal related, assault (including documented punching), accidental laceration, crush injury, road traffic accidents (RTAs), sports-related injury. Patients who presented as a major trauma to the regional major trauma centre were also analyzed independent of adult trauma admissions.

Treatment given was subcategorized into surgical intervention in theatre, antibiotics as primary treatment, further surgical investigation, splintage or casting, wound care or minor procedure out of theatre, and transfer of care to a different speciality or another unit.

Results

There was a reduction in the total number of patients who attended trauma center during lockdown. The total number of patients across dropped from 612 patients before lockdown in 41 day time frame to 171 patients during the lockdown period, representing a 72% reduction.

Total number of cases presenting to the trauma center in the time period pre-lockdown, and during lockdown.			
Department	Pre-lockdown	Lockdown	% decrease pre-lockdown vs lockdown
orthopaedic trauma	198	43	78.3%
Neurosurgical trauma	270	96	64.5%
General surgical trauma	144	32	77.8%
Total	612	171	72%

The total number of orthopedic trauma cases decreased from 198 patients pre-lockdown, to 43 patients in lockdown.

Although we have seen a dramatic decrease in the volume of orthopedic trauma during the first two weeks of lockdown, the incidence of fragility fractures (Hip fracture) remains almost constant with 12 fractures seen in pre-lockdown compared to 08 during lockdown. Apart from this, the incidence of all other forms orthopaedic injuries has been decreased drastically, as illustrated in following table.

Orthopedic admissions by injury type.			
	Pre-Lockdown	Lockdown	% decrease pre-lockdown vs lockdown
Hip Fractures	12	08	33.3%
Upper Limbs Fractures	64	12	81.25%
Lower Limbs Fractures	104	19	81.73%
Spinal Fractures	18	04	77.8%
Total	198	43	78.3%

The total number of Neurosurgical trauma cases decreased from 270 patients pre-lockdown, to 96 patients in lockdown, amounting to 64.5% reduction in total admitted cases.

Neurosurgical admissions by radiological types			
	Pre-Lockdown	Lockdown	% decrease pre-lockdown vs lockdown
Contusions	74	26	64.9%
EDH	42	10	76.2%
SDH	48	12	75%
SAH	44	20	54.5%
Depressed Fracture	62	28	54.8%
Total	270	96	64.5%

The total number of general surgical trauma cases decreased from 144 patients pre-lockdown, to 32 patients in lockdown, amounting to 77.8% reduction in total admitted cases.

General surgical admissions by types			
	Pre-Lockdown	Lockdown	% decrease pre-lockdown vs lockdown
Blunt Trauma Abdomen	64	10	84.4%
Penetrating Injuries	22	4	81.8%
Gunshot/Foreign body injury	58	18	68.9%
Total	144	32	77.8%

Mechanism of injury differed between time periods. During Lockdown, trauma admission due to fall from height almost remains similar to that of pre-lockdown values, with % reduction of less than 16.3 %, Whereas the % reduction in trauma admissions due to all other causes are affected significantly comprising mostly of RTA with % reductions of more than 91%, owing to less liquor consumption by people.

Mechanism of trauma admissions			
	Pre-Lockdown	Lockdown	% decrease pre-lockdown vs lockdown
Fall from Height	98	82	16.3%
Road Traffic Accident	248	20	91.9%
Assault/Other medico-legal cases	104	46	55.7%
Self-Induced	48	04	91.6%
Sports Related	96	15	84.4%
Animal Related	18	04	77.8%
Total	612	171	72.05%

We also observed that a higher proportion of patients admitted to hospital required surgical intervention during the lockdown period. Out of total 171 patients admitted in trauma center during lockdown, 110 patients were managed operatively (64.3%) and 61 were managed conservatively (35.7%) as compared to pre-Lockdown period in which out of 612 admitted patients, only 286 (46.7%) patients required surgical intervention.

Discussion

Attendances to the emergency department in our trauma center have decreased considerably since lockdown began.

This study demonstrates that the enforced Indian national lockdown has so far led to a 72% reduction in total trauma admissions in comparison to the same time period prior to Lock-down. This reduction in volume has been invaluable to the NHS, allowing surgical staff to become available for redeployment to help hospital departments struggling with COVID-19. The reduction in trauma, along with cancellation of elective workload, has allowed for increased presence of senior surgical clinicians in minor injuries units, which in turn has diminished the requirement for new patient outdoor clinics. Early senior decisions and interventions are also likely to be contributory towards reduced admissions during the lockdown period. We saw an increase in the proportion of patients admitted who required surgical intervention (64.3% lockdown vs 46.7% pre-lockdown), but a reduction in patents requiring non-operative intervention. We postulate that this is multifactorial, due to early senior decision-

making, reduction in injuries sustained during lockdown and a possible reluctance of patients to present to hospitals during the COVID-19 pandemic.

Although we have seen a dramatic reduction in trauma admissions, the amount of fragility fractures, predominantly proximal femoral fractures, has remained constant. There are clear benefits to performing early surgery in patients with hip fractures, delaying surgery in these patients increases the number of serious complications encountered, increases length of stay and mortality. It is therefore important that despite the significant pressures on anaesthetic and theatre departments there should still be urgent provision to manage patients with fragility fractures.

There has been a reduction in major trauma cases presenting to our trauma center as part of the regional major trauma network. The predominant mechanism prior to lockdown was RTAs, leading to multiply injured patients, all of whom required extensive surgical intervention. There is a significant morbidity and mortality associated with multiply injured patients secondary to trauma, it also places a significant burden on the health system with prolonged surgical times, inpatient stay and increased risk of complications. This compliments the governments advice that travel by road should only be for essential trips.

The significant reduction in trauma cases due to RTA has also resulted from less consumption of alcohol based beverages by the people. This also compliments the governments to close or regulate the supply of liquor even after the lockdown as it may also significantly reduce morbidity & mortality, as depicted by our study.

Although the large drop in trauma admissions have been invaluable in helping the NHS during this pandemic, it is probable that the dramatic drop seen may only be partly due to the national lockdown measures. There are unquestionably concerns that patients may be refraining from presenting to the hospitals due to fear of catching COVID-19. This may have future implications and hidden burdens on the NHS while dealing with delayed presentations of a multitude of medical and surgical conditions.

This study does have limitations. The study includes a relatively small numbers of patients. By performing a multicentre study we could achieve adequate numbers to achieve our aims of demonstrating the effects the national lockdown has had on trauma workload. The retrospective nature of the study leads to potential difficulties in the data collection, however, given hospital records are stored electronically in each unit we believe this possibility to be small and our data set to be complete. This study examines the changes in trauma workload throughout a single region within the Uttar Pradesh. However, we anticipate similar trends will have been experienced in all trauma departments throughout the country. This study only accounts for the first 41 days of lockdown until liquor shops were closed. It is not yet known how long it will go on for and how long the public remain compliant with the advised measures.

Conclusion

The national lockdown is designed to limit the spread of COVID-19. Due to the guidance measures in place it has had a secondary impact of reducing trauma requiring admission in our region by 72%. Appropriate provision in theatres should remain in place to ensure these patients can be managed as a surgical priority. Road traffic accidents are still the main mode of injury that is reduced significantly as a result of lockdown, which is most fruitful outcome of lockdown owing to less alcohol consumption.

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