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Original article

# Impact of the COVID-19 pandemic on the management of open fractures in a major trauma centre

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ABSTRACT

*Introduction:* The Coronavrius-19 (COVID-19) pandemic has presented the biggest challenge that the National Health Service (NHS) has ever seen. As one of the worst affected regions, Orthopaedic service provision and delivery in London, changed dramatically. Our hypothesis is that these restrictions adversely impacted the care of open fractures in our major trauma unit in London.

*Methods:* This is a prospective case control study comparing the management of patients presenting pre-COVID, to those presenting during the height of the COVID pandemic in London. The pre-COVID, control cohort presented between the 1st October and the November 30, 2019. The COVID cohort presented between the April 1, 2020 and the May 31, 2020. Data was collected that related to the 11 clinical domains of the British Orthopaedic Association Standards of Trauma (BOAST) 4 guidance, as well as early complications.

*Results:* Of the 11 domains, 100 % compliance was achieved in 6 components, across both groups where applicable. During pre-COVID times, the timing to initial debridement was within 12 h for High energy trauma in 16/28 (57.1 %), dropping to 7/22 (31.8 %) during COVID, ($p = 0.004$). Definitive soft tissue closure within 72 h If not achievable at initial debridement dropped from 9/10 (90.0%) to 4/6 (66.7 %), ($p = 0.006$). There was no significant difference in early complication rates.

*Conclusion:* Coronavirus has changed the landscape of healthcare worldwide and impacted open fracture care by increasing time to theatre. This had no effect on early complication rate but longer term effects remain to be seen.

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## 1. Introduction

Coronavirus 2019 (COVID-19) was declared a global pandemic by the World Health Organisation on March 11, 2020. The United Kingdom as a whole, and London in particular, has been heavily affected in the first wave. In mid-June, there had been 8,690,140 confirmed cases of COVID-19 worldwide, including 461,274 deaths.[1] As of February 2021, in the midst of a second wave, there has been a dramatic increase in the number of confirmed cases standing at over 105 million, with over 2.3 million deaths.[1] Of these confirmed cases, 3.49 million have been in the UK, with over 115, 000 deaths, currently the 5th highest death toll worldwide.[1]

The National Health Service (NHS) workforce and infrastructure has had to be radically adapted to cope with the large influx of patients during the COVID-19 pandemic. There has been an unprecedented level of redeployment of surgical and anaesthetic staff of all grades to manage the vast COVID-19 workload. This has had a profound impact on service provision, with complete suspension of elective orthopaedic operating and significant changes to the way in which trauma care was delivered.

The impact on trauma services was recognised by the British Orthopaedic Association (BOA) and guidance entitled 'Management of patients with urgent orthopaedic conditions and trauma during the coronavirus pandemic' was published to help guide resource allocation and management decisions.[2] It identifies the need to balance the optimal treatment of a patient's injuries against clinical safety and resources. A need to reduce non-essential admission and

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**Standards for Practice**

1. Patients with open fractures of long bones, hind foot or midfoot should be taken directly or transferred to a specialist centre that canprovide Orthoplastic* care. Patients with hand, wrist, forefoot or digit injuries may be managed locally following similar principles.
2. Intravenous prophylactic antibiotics should be administered as soon as possible, ideally within 1 hour of injury.
3. There should be a readily accessible published network guideline for the use of antibiotics in open fractures.
4. The examination of the injured limb should include assessment and documentation of the vascular and neurological status. This shouldbe repeated systematically, particularly after reduction manoeuvres or the application of splints. Management of suspectedcompartment syndrome should follow BOAST guidelines.
5. The limb should be re-aligned and splinted.
6. Patients presenting with arterial injuries in association with their fracture should be treated in accordance with the BOAST for arterial injuries.
7. In patients where an initial "Trauma CT" is indicated there should be protocols to maximise the useful information and minimise delay:
   - The initial sequence should include a head to toes scanogram. This should be used with clinical correlationto direct further specific limb sequences during that initial CT examination.
   - There should be a local policy on the inclusion of angiography in any extremity CT related to open fractures.
8. Prior to formal debridement the wound should be handled only to remove gross contamination and to allow photography, thendressed with a saline-soaked gauze and covered with an occlusive film. 'Mini-washouts' outside the operating theatre environmentare not indicated.
9. All trauma networks must have information governance policies in place that enable staff to take, use and store photographs of openfracture wounds for clinical decision-making 24 hours a day.
10. Photographs of open fracture wounds should be taken when they are first exposed for clinical care, before debridement and at otherkey stages of management. These should be kept in the patient's records.
11. The formation of the management plan for fixation and coverage of open fractures and surgery for initial debridement should be undertaken concurrently by consultants in orthopaedic and plastic surgery (a combined orthoplastic approach).
12. Debridement should be performed using fasciotomy lines for wound extension where possible (see overleaf for recommendedincisions for fasciotomies of the leg)
    - Immediately for highly contaminated wounds (agricultural, aquatic, sewage) or when there is an associatedvascular compromise (compartment syndrome or arterial disruption producing ischaemia).
    - within 12 hours of injury for other solitary high energy open fractures
    - within 24 hours of injury for all other low energy open fractures.
13. Once debridement is complete any further procedures carried out at that same sitting should be regarded as clean surgery; i.e. thereshould be fresh instruments and a re-prep and drape of the limb before proceeding.
14. Definitive soft tissue closure or coverage should be achieved within 72 hours of injury if it cannot be performed at the time ofdebridement
15. Definitive internal stabilisation should only be carried out when it can be immediately followed with definitive soft tissue cover.
16. When a decision whether to perform limb salvage or delayed primary amputation is indicated, this should be based on amultidisciplinary assessment involving an orthopaedic surgeon, a plastic surgeon, a rehabilitation specialist, the patient and theirfamily or carers.
17. When indicated, a delayed primary amputation should be performed within 72 hours of injury.
18. Each trauma network should submit appropriate data to the TARN, monitor its performance against national standards and audit its outcomes.
19. All patients should receive information regarding expected functional recovery and rehabilitation, including advice about return to normal activities such as work and driving.

**Fig. 1.** Standards for Practice suggested by the BOAST 4 guidance.[5]

**Table 1**
Summary of clinical markers of BOAST 4 guidance used to assess quality of care in open fractures.

| Administration of IV Abx within 1 h of injury |
|---|
| Documented evaluation of Neurovascular status |
| Injured limb should be realigned and splinted |
| Patients presenting with concurrent vascular injuries should be managed according to BOAST guidelines |
| Photography should be taken of wound |
| Formation of initial plan for fixation and soft tissue coverage should be undertaken by both consultant Orthopaedics and Plastics surgeons |
| Timing to initial debridement a) Immediate for heavily contaminated wounds defined as agricultural, sewage or marine contamination |
| b) Within 12 h for High energy trauma |
| c) Within 24 h for low energy trauma |
| Definitive soft tissue closure within 72 h If not achievable at initial debridement |
| Definitive internal stabilisation should only occur if definitive soft tissue closure is achievable |
| Decision between limb salvage and delayed primary amputation should be in a MDT setting |
| Delayed amputation, if decided upon, should proceed within 72 h |

surgery was reinforced, as well as an acceptance that conventional surgical decision making would have to change, with an increase in cases undergoing delayed reconstruction.

However, life and limb threatening injuries, including open fractures, had to continue being managed with emergent resuscitation and treatment. Open fractures are complex injuries

**Table 2**
Demographic data for the pre-COVID and COVID cohorts.

| | | Pre-COVID Group (n = 37) | COVID-Group (n = 31) | *P*-Value |
|---|---|---|---|---|
| Gender | Male | 28 (75.7 %) | 23 (74.2 %) | 0.47 |
| | Female | 9 (24.3 %) | 8 (25.8 %) | 0.89 |
| Mean Age (Years) | | 49 (22–70) | 40 (18–55) | 0.76 |
| Diabetic | | 3 (8.1 %) | 0 (0 %) | 0.032 |
| Smoker | | 17 (45.9 %) | 19 (61.3 %) | 0.17 |
| Mechanism of Injury | *RTC* | 18 (48.7 %) | 12 (38.8 %) | 0.84 |
| | *Fall > 2 m* | 7 (18.9 %) | 6 (19.4 %) | 0.71 |
| | *Fall < 2 m* | 8 (21.6 %) | 6 (19.4 %) | 0.74 |
| | *Sports* | 1 (2.7 %) | 3 (9.6 %) | 0.32 |
| | *Assault* | 0 (0 %) | 1 (3.2 %) | 0.91 |
| | *Other* | 3 (8.1 %) | 3 (9.6 %) | 0.84 |
| Gustillo-Anderson Classification | *1* | 9 (24.3 %) | 6 (19.4 %) | 0.93 |
| | *2* | 10 (27.0 %) | 8 (25.8 %) | 0.55 |
| | *3a* | 6 (16.3 %) | 8 (25.8 %) | 0.67 |
| | *3b* | 11 (29.7 %) | 9 (29.0 %) | 0.89 |
| | *3c* | 1 (2.7 %) | 0 (0 %) | 0.81 |
| Bony Injury | *Radius/Ulnar* | 5 (13.6 %) | 6 (19.4 %) | 0.62 |
| | *Humerus* | 3 (8.1 %) | 5 (16.1 %) | 0.81 |
| | *Femur* | 0 (0 %) | 4 (12.9 %) | 0.87 |
| | *Tibia/fibular* | 27 (72.9 %) | 14 (45.1 %) | 0.0047 |
| | *Foot* | 2 (5.4 %) | 2 (6.5 %) | 0.63 |
| Mean Length of Stay (Days) | | 13.5 (2– 54) | 8 (1–32) | 0.032 |

**Table 3**
Summary of rates of achievement of the 11 BOAST 4 Standards of Practice in assessing quality of care for open fracture patients.

| | Pre-COVID Group | COVID Group | *P*-Value |
|---|---|---|---|
| Administration of IV Abx within 1 h of injury | 37/37 (100 %) | 31/31 (100 %) | 0.42 |
| Documented evaluation of neurovascular status | 30/37 (81.1 %) | 26/31 (83.9 %) | 0.87 |
| Injured limb should be realigned and splinted | 33/37 (89.1 %) | 26/31 (83.9 %) | 0.91 |
| Patients presenting with concurrent vascular injuries should be managed according to BOAST guidelines | 1/1 (100 %) | 2/2 (100 %) | 0.15 |
| Photography should be taken of wound | 24/37 (64.8 %) | 16/31 (51.6 %) | 0.34 |
| Formation of initial plan for fixation and soft tissue coverage should be undertaken by both Consultant Orthopaedics and Plastics Surgeons | 37/37 (100 %) | 31/31 (100 %) | 0.19 |
| Timing to initial debridement | | | |
| a) Immediate for heavily contaminated wounds defined as agricultural, sewerage or marine contamination | a) 0/0 (NA) | a) 1/1 (100 %) | NA |
| b) Within 12 h for High energy trauma | b) 16/28 (57.1 %) | b) 7/22 (31.8 %) | 0.0047 |
| c) Within 24hrs for low energy trauma | c) 3/9 (33.3 %) | c) 4/8 (50.0 %) | 0.073 |
| Definitive soft tissue closure within 72 h If not achievable at initial debridement | 9/10 (90.0%) | 4/6 (66.7 %) | 0.0067 |
| Definitive internal stabilisation should only occur if definitive soft tissue closure is achievable | 37/37 (100 %) | 31/31 (100 %) | 0.67 |
| Decision between limb salvage and delayed primary amputation should be in a MDT setting | NA | 1/1 (100 %) | NA |
| Delayed amputation, if decided upon, should proceed within 72 h | NA | 1/1 (100 %) | NA |

associated with high complication rates including infection, neurological and vascular compromise.[3] While there has been an emphasis to reduce admission and length of stay from the BOA, these complex injuries still require emergency management.[1]

As one of Europe's busiest Major Trauma Centres (MTCs) with a catchment area of 2.5 million and a tertiary referral centre for complex trauma, the burden of major trauma at our unit has remained constant throughout the COVID period.[4]

This paper examines the impact of the constraints of trauma service restructuring on the management of open fractures at our MTC in London, the heart of the UK's COVID-19 pandemic.

Our aim is to assess whether we were able to maintain the highest standards of care in open fracture management during the largest challenge that the NHS has faced since its inception in 1948. Our prediction is that the limitations to our service provision adversely affected the multidisciplinary management of these patients. The null hypothesis is therefore that there would be no difference in care of open injuries between the pre-VOID and COVID study periods.

## 2. Methods

This is a prospective case control study comparing the management of patients presenting pre-COVID, to those presenting during the height of the COVID pandemic in London. For ease of terminology, we have used the terms pre-COVID cohort and COVID cohort, to reflect the time at which patient's presented. The pre-COVID cohort presented in a 2 month window between the 1st October and the November 30, 2019. The COVID cohort presented during an equivalent 2 month window between the April 1, 2020 and the May 31, 2020, corresponding to the strictest Lockdown period in the UK. The pre-COVID group was considered as a control group, as these patients were managed at a time when our trauma service was functioning at normal, full capacity.

In 2009, The British Orthopaedic Association (BOA) and the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS) published joint standards for the management of open fractures known as the BOAST 4 guidelines.[5] These guidelines were rapidly adopted as the gold standard of open fracture

**Fig. 2.** Initial injury clinical photographs showing gross contamination of wounds.

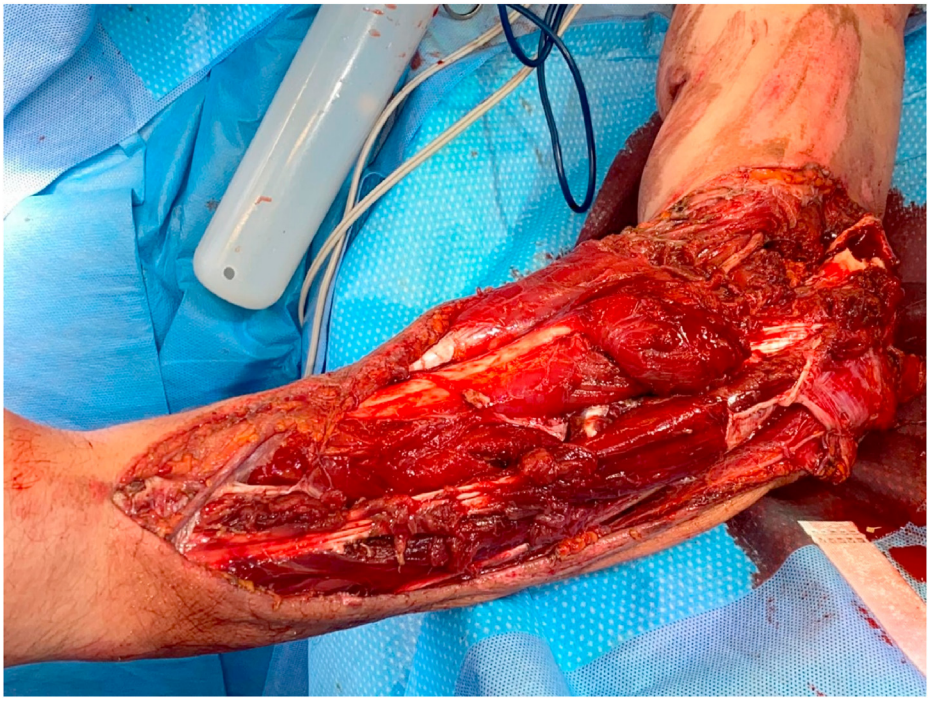

**Fig. 3.** Images post initial immediate debridement.

management care in the UK. Adherence to BOAST 4 guidance, with a major aim to reduce time to definitive fixation and soft tissue coverage, is associated with improved outcomes and reduced infection rates.[6–11]

BOAST 4 sets out 19 standards of practice which were used in this study to assess the standards of care achieved in our 2 cohorts. These have been summarised in Fig. 1 below.

Patients were identified prospectively with data collected from the individual's electronic patient record. Electronic theatre records were also accessed to evaluate details of individual surgical episodes. Inclusion criteria were a minimum age of 18 years, the presence of an open fracture of long bones, hindfoot or midfoot and full medical and imaging records for the in-patient episode. Open Injuries of the hand, wrist, forefoot and digits were excluded to reflect BOAST 4 guidance.

Adherence to the BOAST 4 guidance was compared across both groups. For the purposes of this study, 8 of the 19 BOAST Standards of Practice were deemed administrative, the remaining 11 directly related to clinical care of the injured patient and are summarised in Table 1. The 8 administrative standards (1,4,7–9,13 and 18–19) largely referred to presence of hospital-based guidelines.

Demographic data, mechanism of injury, details of the open injury and the patient's COVID status was also collect for patients presenting on the COVID group. Adherence to the remaining 11

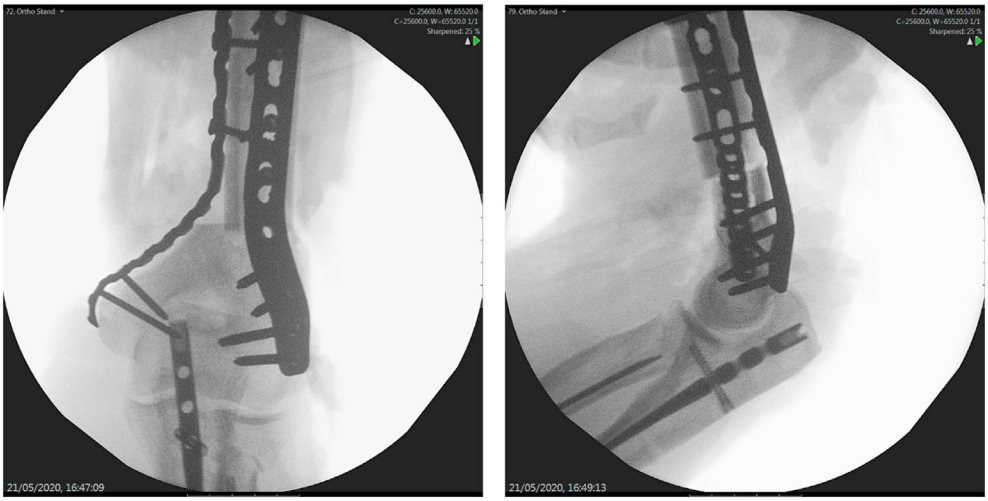


**Fig. 4.** Final fixation construct with humeral shortening due to bone loss.

Standards of Practice in BOAST 4 were noted and these are summarised in table one below.

### 2.1. Statistical analysis

Descriptive statistics were used to present means, SD, and ranges. Kolmogorov Smirnov tests were used to check normal distribution of the data. Mann-Whitney test was used for skewed data. Chi-squared tests were used for categorical data and independent-samples *t*-test for continuous data, with significance set at $p < 0.05$. Statistical analysis of results was conducted using IBM SPSS Statistics.

## 3. Results

A total of 68 patients were included in the study. The pre-COVID group contained 37 patients and the COVID group 31 patients. All patients were consecutively recruited. Demographic data for each group are shown in Table 2. Statistically significant reductions in the number of diabetic patients ($p = 0.032$) and number of tibia/fibular fractures ($p = 0.0047$) were noted. All other demographic data showed no statistical difference between the two groups. Table 3 summarises the levels of adherence to the 11 chosen domains of BOAST 4 guidance pre and post COVID.

Within the group of patients presenting during COVID lockdown, 3/31 (9.7 %) tested positive on antigen testing, 20/31 (64.5 %) were negative and 8/31 (25.8 %) were not tested.

A member of the Plastic Surgery team was present at initial debridement in 26/37 (70.3 %) Pre-COVID and in 14/31 (45.3 %) during COVID ($p = 0.08$). In terms of seniority for decision making, an orthopaedic and plastics surgery consultant was always involved in the formulation of an initial plan for management.

One patient had a heavily contaminated open fracture in the COVID cohort and was immediately taken to theatre from resus (Figs. 2–5). There were no heavily contaminated wounds in the pre-COVID group. Within the COVID cohort 22/31 (70 %) patients were identified as high energy injuries and out of these 7/22 (31 %) were taken to theatre within 12 h. Within the pre-COVID group 28/37 (75 %) were high energy with a corresponding 16/28 (57.1 %) being debrided in 12hrs. This was a statistically significant reduction ($p = 0.004$). Within the COVID cohort 8/31 (30 %) had low energy injuries and 4/8 (50 %) were debrided within 24 h vs the pre-COVID group of 9/37 being low energy and 3/9 (33 %) had debridement with 24hrs ($p = 0.073$).

Figs. 2–5: Clinical images of the heavily contaminated open fracture patient presenting in the COVID group. Gross contamination with industrial materials including oil and grease. This gentleman suffered multiple upper limb fractures with segmental bone loss, requiring shortening procedures in the final fixation.

Within the high energy fracture subsets, medical issues precluded access to theatre within 12 h in 4/28 (14.3 %) in the pre-COVID group and in 2/15 (13.3 %) in the COVID group ($p = 0.67$). Similarly, in the lower energy fracture subsets, medical issues causing delay to theatre of more than 24 h were 1/9 (11.1 %) in the pre-COVID group and 1/8 (12.5 %) in the COVID group ($p = 0.09$).

One patient required an amputation in the COVID group. This patient was appropriately discussed in the MDT setting with Orthopaedic, Plastics, Vascular Surgeons and Therapies support and the amputation was appropriately undertaken within a 72 h time window.

There were a larger number of early complications (defined in this context as occurring within 1 month of injury) in the pre-COVID group – 8/37 (21.6 %) versus 5/31 (16.1 %), a non-statistically significant difference ($p = 0.17$). The complications are summarised in Table 4.

## 4. Discussion

Coronavirus has changed the landscape of healthcare worldwide. The UK went into formal lockdown on the 23rd March, as we approached the peak of the first wave of Coronavirus cases. At the time of writing this paper, we are now 12 weeks on and as the NHS begins the initial stages of the recovery phase, it is clear that we faced an unprecedented challenge that led to significant disruptions to service provision across all specialities. Our elective services were suspended and emergency service provision heavily constrained. With the need for Personal Protective Equipment (PPE) for all surgical cases, the modified patient pathways, significant levels of redeployment and the new theatre cleaning regimens, theatre efficiency was severely affected. Pre-COVID would often see between 3 and 4 orthopaedic trauma theatres running synchronously. During the most intense parts of the COVID crisis, we saw several specialities sharing access to just two theatres, with only one major case performed at any one time.

Despite this and despite a strict lockdown in London, our trauma workload persisted and, as we have demonstrated in this study, our open fracture workload remained similar to pre-COVID times.[12,13] The prediction was therefore, that the quality of care for open

**Fig. 5.** Images following definitive soft tissue coverage at 2 weeks post-op.

fractures was compromised due to the number of pressures placed on our service provision.

The emergency BOA COVID guidelines encouraged emphasis on managing patients with non-operative strategies and minimising outpatient visits. There was an increased drive towards conservative management and understanding that delayed reconstruction would potentially be necessary in some patients. What was clear, however, was that compromise in open fracture management could not be accepted and these patients needed expedient management. The aim of this prospective study was to assess whether we were able to maintain the highest standards in open fracture management care and minimise patient complications.

**Table 4**
Early complications (defined as within 1 month of open injury).

| | Pre-COVID Group | COVID Group | *P*-Value |
|---|---|---|---|
| Superficial Infection | 4 (10.8 %) | 4 (12.9 %) | 0.19 |
| Deep Infection | 0 (0 %) | 0 | NA |
| Skin Graft Failure | 1 (2.7 %) | 0 | 0.48 |
| Coverage Flap Failure | 1 (2.7 %) | 0 | 0.91 |
| Metalwork Revision | 2 (5.4 %) | 1 (3.2 %) | 0.71 |
| **Total** | **8 (21.6 %)** | **5 (16.1 %)** | **0.17** |

Adherence to BOAST 4 guidance, the focus of which aims to reduce time to definitive fixation and soft tissue coverage, is associated with improved outcomes and reduced infection rates.[6–11] The BOAST 4 guidance is the gold standard of open fracture management in the UK.

Of the 11 Standards of Practice assessed in this study, 100 % compliance was achieved in 6 components, across both groups where applicable. Of the remaining 5 components, documentation of neurovascular status and realigning and splinting of the limb was generally performed in most cases. Photography was poorly performed across both groups.

There were statistically significant reductions in initial debridement for high energy trauma within 12 h and definitive soft tissue cover within 72 h if not achieved at initial debridement.

Time to initial debridement revealed that, although seemingly a challenge pre COVID, getting those high energy open fractures to theatre within 12 h was significantly more difficult during COVID times. With the described impacts on service provision and theatre availability, this was perhaps to be expected. This difference was present at various time points. In total, regardless of energy, 26/37 (70.3 %) pre-COVID and 18/31 (58.1 %) in the COVID group were taken to theatre within the first 24 h of admission. It should be appreciated that comorbidities precluding fitness for surgery, such as concurrent hemodynamic instability or raised intracranial pressure, might have stopped a proportion of these patients being eligible for primary debridement even when theatre space was available. The percentages of medical delays to theatre was equivalent in both arms. In our major trauma unit, major reconfiguration of both workforce and service structure was necessary to deal with the high volumes of patients see at the COVID peaks. Although operating rooms were available, near all of the anaesthetic teams were redeployed to intensive care. All theatre staff were also redeployed to COVID wards. Our usual guaranteed access to multiple daily theatres was lost. This may account for the resultant delays.

Despite the deterioration in time to first debridement, it is interesting to note that this does not seem to have impacted complication rate. This supports the concept that early antibiotic administrations remains a key intervention in the management of open fractures.[14]

Another key finding is the decrease in availability in plastic surgery availability at initial debridement. Attendance dropped from 70.3 % to 45.3 % during the COVID group. This is no doubt caused by the large scale redistribution of surgical specialities to assist in the overwhelming Emergency Department and Intensive Care workloads. Consultant grade input into planning was ensured through the use of virtual MDTs, enabling members all of all teams to provide valuable input remotely even while isolating/shielding.

This also reduced the need for high volume staff presence in the hospital. We recognise that extent and grading of soft tissue injury is only apparent at actual debridement and that photographs are not substitutes for physically presence in theatre. The merits of remote team meetings which allows connectivity from virtually any part of the world, however, cannot be understated and is something that out department will be continuing as a key part of future collaborative working. We found virtual attendance at meetings was extremely high, ensuring the most senior input at all planning stages.

The reduction in number of wound photographs taken may reflect a reluctance to take out ones phone or camera to prevent transmission of the virus. Also, the increased PPE adds a challenge to unlocking modern mobile devices with facial recognition, fingerprint identification and typing on a touch screens.

Our data unequivocally shows delays in getting open fractures to theatre in our unit. The subsequent question is where this has impacted patient outcome. In terms of early complication rate, this was actually lower in the group presenting during COVID. This may reflect avoidance of complicated reconstruction techniques and adhering to simple and safe treatments, with a view to reducing in patient stay and recurrent surgical procedures. In fact, our mean length of stay for patients presenting during COVID was 5.5 days less than the pre-COVID group, a statistically significant result. This significant drop in length of stay may also indicate that length of stay in open fracture patients during non-pandemic times can be optimised, without compromising the rate of complications.

There was one amputation performed in a patient presenting in the COVID group. This gentleman was involved in an industrial accident, suffering significant multi-level crush injuries to the lower limb. Extensive Consultant led discussions assessed both bony and reconstructive options, with likely multiple theatre visits for debridement and washout. Presenting at the peak COVID presentation in London, the decision was taken for early amputation to establish a definitive treatment pathway. This decision was supported by the BOA COVID guidance, which expressly raises that we should 'Consider early amputation in patients for whom limb salvage has an uncertain outcome and is likely to require multiple operations and a prolonged inpatient stay.' This gentleman's treatment was directly influenced by the peak of the COVID-19 pandemic.

The study does have its limitations. The small cohorts are reflective of the time frame included, which were selected to highlight the impact on treatment during the worst parts of the initial COVID-19 phase. However, no power study was performed to find the ideal sample size. Impact of longer term outcomes is currently unknown but will be identified in due course.

It should be noted that the COVID cohort had no diabetic patients and far fewer open tibia/fibula fractures. These patients are may be more prone to complications both from a comorbidity and soft tissue standpoint, especially in combination, and this may skew the data and artificially understate wound-healing issues and infections complications.

The results of this study support the findings of other recent publication on the same subject.[13] The clear impact on open fracture management will no doubt be reflected in all aspects of trauma management and further studies looking into this will contribute to service planning for future COVID-19 waves or new disease pandemics.

## 5. Conclusion

COVID-19 impacted the trauma service provision in our major trauma centre. Resources were restricted and there was a resultant delay to the initial treatment of open fractures. Workforce redeployment challenged our normal MDT protocols and joint working. Although no apparent impact on early complication rates, the long term ramifications of COVID-19's impact remain to be seen.

This knowledge will help to plan for further pandemic situations and support treatment decisions that are different to those made in non-pandemic times.

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None.

## Conflicts of interest/Competing interests

None.

## Declaration of competing interest

The authors declare that they have no conflict of interest.

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