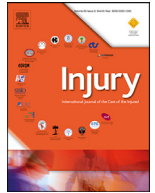




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## Editorial

## The Evolving COVID-19 Effect on Hip Fracture Patients



## Introduction

Countries around the world have had to implement measures to reduce the spread of COVID-19 in order to stop their health services from becoming overwhelmed and to save life. In the UK, protocols have been put in place to protect staff and patients, often drawing upon the experience of countries already affected.

Orthopaedic teams have played a vital role in both inpatient and outpatient settings, often outside their area of expertise. Following British Orthopaedic Association (BOA) guidance [1], elective surgery was halted, clinics were cut and only necessary trauma theatres have continued. Patients are increasingly treated as day case admissions and non-operative management initiated where possible. In many hospitals and within our own trust, wards have merged to facilitate the creation of COVID-19 and non-COVID-19 areas with separate teams allocated to each to reduce cross infection between staff members and patients. Early patient discharge has allowed an increase in available bed space and reallocation of clinical staff to enable capacity and ensure patient safety standards across the whole hospital.

As a society, social distancing and travel restrictions have reduced emergency department admissions to an all time low [2]. Patients presenting with trauma have significantly reduced in volume, but hip fractures in the elderly are still being seen generally at an unchanged rate.

In our own institution, patients admitted via the Emergency Department (ED) are swabbed on arrival and held in a single room on a neutral ward before transfer to a green zone or red zone ward dependent on their swab result. Interval testing of patients with routine re-testing on day 5 of an in-patient stay has also been supported. Personal Protective Equipment (PPE) and measures to reduce cross-infection of patients in wards have been implemented consistently. Despite this, we have had outbreaks of COVID-19 infections in green zone wards, most notably in our elderly hip fracture patients who tested negative on admission but then became COVID positive in the days after surgery.

## The COVID-19 effect

Early observations and a departmental audit of hip fracture patients admitted during March and April of this year (surgically stabilised) demonstrated a trend to higher 30-day mortality in patients who subsequently tested COVID positive after surgery compared to those who did not. Optimising and improving surgical consent in at risk groups is paramount [3]. Further research into

this patient cohort is required to both confirm this trend and research the likely aetiology. Concluding that COVID-19 is a main determinant of increased mortality may seem obvious, but other factors should also be considered. Early surgical intervention can improve outcome in patients optimised for surgery. Conversely, prolonged operative time can increase the risk of complications [4]. During the coronavirus pandemic, surgical teams operating on COVID-19 positive patients were subject to stringent personal protective equipment (PPE) protocols in theatre. All steps of the surgical pathway have been affected and, on average, delayed. An increase in the overall operative time has occurred and the result that this has had on common patient outcome measurements such as 30-day mortality and surgical site infection rates remains uncertain.

In the U.K. the use of the best practice tariff in hip fracture patients has significantly reduced 30-day mortality [5]. This includes having an early orthogeriatric review, receiving surgery on the day of, or the day following admission, a specialist falls assessment and a multidisciplinary approach to rehabilitation [5]. As these services are usually located and focused on the hip fracture unit, they are less accessible to the relocated COVID-19 positive patients. The likely reduced specialist input and reduced surgical specialty review may effect outcome and logistically reviewing and optimising care of these remote patients from the hospital green zone has proved challenging.

## How have patients become positive during admission and how can this be minimised/prevented?

Given the likely increased mortality associated with COVID-19, it is essential that we ensure vulnerable patient groups such as hip fractures continue to receive optimal care regardless of infection status. Identifying the route and cause of acquired infection can also help understand the ways in which this can be prevented.

It can be concluded that patients who present to hospital with a hip fracture and have an initial positive COVID-19 test contracted the virus prior to admission. These patients are transferred to the COVID-19 ward and their entire in-patient journey occurs within the COVID positive red zone of the hospital. The route of infection in patients who initially had a negative swab, but later went on to become positive is less clear. A false negative sample on admission; an infected patient who is in the incubation period or a patient contracting the virus whilst awaiting the result of the first swab would all allow patients with the disease to be transferred to the green zone wards, risking cross infection to patients and staff.

Isolation of these patients on admission and two negative swabs prior to transfer helps prevent this route of transmission. However, the value of the second swab depends on the sensitivity of the COVID-19 test used. In our own institution, we initially performed two swabs but eventually moved to a single swab as we found the second swab added very little extra information. However, if using a test with lower sensitivity then a second test would likely be more useful.

Research from Japan demonstrated that a large proportion of infected individuals could be carriers of the virus whilst being entirely asymptomatic [6]. This likely means that patients and staff on our wards are at risk of cross infection and is something that must be considered across all organisations. This also has issues for informed consent as elective services are re-started and we try and resume normality in the admission and surgical management of injured patients, especially frail/elderly fragility fractures. Protocols are in place to limit the transmission of infection in this way with appropriate use of PPE. All patients now have interval testing with further swabs after theatre, regardless of whether they are symptomatic or not. If they are found to be positive they are transferred to COVID-19 ward and continue their in-patient journey in that zone of the hospital.

## Conclusion

Whilst the initial peak and plateau in COVID-19 cases may have passed, attempting to get back to normal or a 'new normal' will take time and many of the clinical adaptations that have been implemented will need to remain in order to protect both patients and staff. As social restrictions are eased there is likely to be an increase in the volume of trauma coming through our emergency department. Given that COVID-19 protocols will remain in place, this

will put considerable additional pressure on orthopaedic departments. When we are planning our services in the coming weeks and months it is essential to determine how we will manage the increase in trauma whilst adhering to the stringent COVID-19 protocols. We need to remain aware of the likely increased mortality for patients who become COVID positive during hospital admissions and take all precautions necessary to reduce patient and staff exposure and increase the specificity and sensitivity of testing procedures. This issue is not going away anytime soon and it is imperative that our optimal way forward delivers specialist multi-disciplinary team input and care to any outlying patients.

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