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Where did all the trauma go? A rapid review of the demands on orthopaedic services at a U.K. Major Trauma Centre during the COVID-19 pandemic.

Abstract

Aims

This retrospective study aims to quantify the early impact of the COVID-19 pandemic on trauma and orthopaedic surgery at a Major Trauma Centre (MTC) in the United Kingdom. We hypothesise that the social restrictions placed on the public by the government will reduce the amount of trauma presentations and operations performed.

Methods

A database of all trauma patients at the MTC was retrospectively reviewed from start of social restrictions on 16th March 2020, to 22nd April 2020 inclusive. Referrals to the orthopaedic team were identified and included; these were sub-classified into major trauma patients, fragility hip fractures and paediatric trauma. All patients undergoing surgical intervention were identified. The outcome measures were the total number of referrals and trauma operations performed in the time period. This was compared to the corresponding dates of the 2019.

Results

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There was an overall decrease in the number of referrals to the orthopaedic team from 537 in 2019 to 265 in 2020 (50.7% reduction). The number of trauma operations carried out at the trust decreased from 227 in 2019 to 129 in 2020 (43.2% reduction). The number of paediatric referrals decreased from 56 in 2019 to 26 in 2020 (53.6% reduction), and the number of major trauma patients reduced from 147 in 2019 to 95 in 2020 (35.4%). Fragility hip fracture referrals remained similar, with 52 in 2019 compared to 49 in 2020.

Conclusion

The COVID-19 pandemic has had a profound effect of the provision of trauma and orthopaedic surgery. We report a significant decrease in all orthopaedic referrals during the pandemic, leading to a greatly reduced number of trauma operations performed. This has allowed for reallocation of staff and resources. We must plan for the lifting of social restrictions, which may lead to an increase in patients presenting with trauma requiring operative intervention.

Keywords: Trauma; Orthopaedics; COVID-19, coronavirus, Major Trauma

What is already known about this topic?

The COVID-19 pandemic has put unprecedented strain on health care provision globally. To respond, staff and resources have been redeployed to prevent systems from becoming overloaded. Consideration must also be given to the safe provision of emergency trauma care, including urgent life and limb saving operations.

Usual trauma presentation rates are well documented and subsequently are planned for both at locally and nationally through trauma networks. In contrast, little is known about the rate of traumatic presentations to secondary care when social restrictions are in place.

What does this article add?

This article adds a rapid review of presentation numbers and subsequent trauma operations performed with social restrictions in place. As governments around the world continue to enforce social distancing measures, this article provides insight into the level of trauma care that is still required. To maintain patient safety, this level of trauma must be accounted for alongside redeployments.

Where did all the trauma go? A rapid review of the demands on orthopaedic services at a U.K. Major Trauma Centre in the coronavirus pandemic.

Introduction

Lancashire Teaching Hospitals Foundation Trust provides specialist care as the regional major trauma centre to 1.8 million people around Lancashire and South Cumbria¹. Since the outbreak of the global pandemic caused by the novel Coronavirus (SARS-CoV-2) healthcare services have had to adapt to avoid being overwhelmed.

Measures taken by the UK government included the implementation of social distancing on 16th March 2020^{2,3}, and escalated to advising the general population to stay at home if possible on 23rd March 2020 (“Lockdown”)⁴. In response to this, national bodies, such as the British Orthopaedic Association and the Surgical Royal Colleges of the United Kingdom and Ireland have issued guidance for surgeons working during the pandemic. This includes patients presenting with urgent orthopaedic conditions and trauma. The guidance included adult and paediatric trauma, and presentations requiring early operative intervention, such as fragility hip fractures⁵⁻⁸. In accordance with this, our institution has adapted its approach to the management of such patients.

As a major trauma centre, we have experienced a decline in trauma and orthopaedic admissions during the “lockdown” period, including operative cases, major trauma, paediatric trauma and fragility hip fractures.

This retrospective study aims to quantify the early impact of the pandemic, as well as the Government and national body response on care provision in trauma and orthopaedic surgery at Lancashire Teaching Hospitals. We hypothesise that the social restrictions associated with “lockdown” have decreased trauma presentations and orthopaedic trauma/emergency operations.

Methods

Patient data was collected from Bluespier (Bluespier Clinical Systems, Droitwich, UK) which is a database used by the Orthopaedic department to track referrals and operations. Patients are documented on Bluespier, which are referred via the Emergency Department, the local Urgent Care Centre and also as

polytrauma patients from local trauma units. The database was retrospectively reviewed from the date of implementation of social distancing on 16th March 2020, to 22nd April 2020. All patients that were referred to the orthopaedic team in this time period were included. These patients were subdivided into general trauma/emergency patients, fragility hip fracture patients, paediatric trauma patients and major trauma/polytrauma patients. All orthopaedic trauma/emergency operations during the time period were identified. This data was compared to the corresponding dates of the previous year (2019). The end date of study was chosen to be inclusive of Easter Bank Holidays 2019, to ensure the school/public holidays were comparable for both groups. No elective operating was performed during the period of study in 2020, therefore, all elective procedures were excluded from the 2019 data. Paediatric trauma was defined as any case with a patient below the age of 16. We also reviewed the number of referrals and trauma operations in the two weeks prior to our study across both years. Fractured neck of femur data was collected from the National Hip Fracture Database (NHFD). Major trauma data was collected from the Trauma Audit and Research Network (TARN).

Ethics approval was not required due to retrospective analysis of data already collected on a secure database. No patient identifiable data was collected during the data collection, and local information governance procedures were followed.

Results

During the period of study, the overall number of referrals to the orthopaedic on call team was 537 in 2019 and 265 in 2020, a reduction of 50.7%. The median number of referrals per day was 14 in 2019 compared to 6 in 2020 (Figure 1). There was also a drop in the number of trauma operations performed, from 227 in 2019 to 129 in 2020, a reduction of 43.2%. The median number of trauma operations performed per day was 6 in 2019 compared to 2.5 in 2020 (Figure 2). In the two-week period prior to our study date (2nd March to 15th March), in 2020 there were 206 referrals to the orthopaedic team with 93 operations performed. This is comparable to the corresponding dates in 2019, with 200 referrals and 86 operations and is included in Figures 1 and 2.

The number of paediatric referrals also decreased during the lockdown period, from 56 in 2019 to 26 in 2020, a drop of 53.6%. There was a reduction in overall major trauma patients from 147 in 2019 to 95 in 2020 (35.4%). Fragility hip fracture referrals remained similar between the two periods of study, with 52 in 2019 compared to 49 in 2020. This is shown in Figure 3. There was only one total hip replacement performed for fragility hip fractures in 2020, which was a decrease from 7 in the study period in 2019.

More fragility hip fracture operations were performed within 36 hours of presentation in 2020 (79.6%) compared to 2019 (67.3%).

Discussion

The global COVID-19 pandemic has had a profound effect on all aspects of society. Social restrictions have been implemented to reduce transmission of the virus. Healthcare providers must rise to the increased challenges on services, whilst maintaining a safe practice for urgent presentations such as trauma.

During the period of “lockdown”, we experienced a dramatic reduction in overall referrals received by the department, including paediatric trauma. The cancellation of sporting events, social gatherings and the closure of pubs and restaurants across the country have led to people staying at home, and a reduction of associated accidental injuries. Patients sustaining minor household injuries, such as those involving DIY, may be avoiding hospital due to the well documented pressures on the healthcare services or possibly due to fears of contracting COVID-19.

The reduction in referrals contributed to an overall drop in trauma operations, with a 43.2% reduction from 2019 to 2020. All elective activity at the trust was suspended on 16th March 2020 to enable the reprioritisation of staff and resources. Interestingly, 48.7% of trauma referrals underwent an operative procedure in the 2020 time period; this is in fact an increase from 42.3% in 2019. This could suggest that those with minor injuries are indeed not presenting to the department, and we are therefore only seeing the more serious injuries, which do require surgical intervention, despite the impact of the pandemic. This also takes into account that the number of fragility hip fracture patients remains high, and these, as per the British Orthopaedic Association guidelines, require surgical intervention. In the two-week period prior to lockdown, we have demonstrated that our trauma referrals and operative numbers remained at an expected level for the time of year.

As a major trauma centre, Lancashire Teaching Hospitals accepts trauma from a large geographical area. Not surprisingly, we have seen a reduction in major trauma patients from 147 in 2019 to 95 in 2020. There was no change in referral policy across the trauma network during the study period. No major trauma transfers from trauma units were refused or diverted. Major trauma patients often have multiple injuries, requiring intervention from a number of surgical specialities, with possible extended stays in intensive care. The reduction in these cases, which coincide with the implementation dates of social restrictions, has freed up theatre time and bed space for COVID-19 patients at our institution.

With this in mind, lifting of social restrictions could lead to a surge in trauma cases, from potentially delayed presentations of injuries sustained during “lockdown”, or due to overzealous return to normal activities, such as playing sports after a long period of postponement. Social restrictions have not reduced the number of presenting fragility hip fractures presenting to our institution. Most fragility hip fractures are low energy injuries, many of which happen in the patient’s normal place of residence, and therefore remain unaffected by the “lockdown”^{9, 10}. The amount of total hip replacements performed for fracture neck of femurs had decreased. This is in line with BOAST guidance, which recommends hip hemiarthroplasty over total hip replacement to reduce operative time, acetabular reaming and the required use of power tools to reduce aerosol generating procedures⁸. Only one total hip replacement was performed in the 2020 study period. The facilitation of early surgery is further represented by the increase in operations for fragility hip fractures meeting the best practice tariff requirement of time from presentation to surgery of less than 36 hours (67% to 79.6%)¹¹.

The overall decrease in trauma and orthopaedic cases at our institution has allowed redeployment of junior staff to other departments, such as general medicine, and has reduced the amount of operations we have performed.

Limitations

This is a rapid review of trauma presenting to our institution, and there may be differences across the country, particularly in more densely populated areas. We believe that “lockdown” will have an effect on trauma numbers across the country, but further research on a national scale is needed. Locally, we plan to assess trauma numbers following the lifting of social restrictions and the potential increased capacity required to cope.

Conclusion

The COVID-19 pandemic has had a profound effect of the provision of trauma and orthopaedic surgery. We have shown a significant decrease in referrals, both general, major trauma and paediatrics. This has translated to greatly reduced number of trauma operations performed when compared to the same period the previous year. Whilst the reallocation of staff and resources is necessary during the pandemic, we have maintained a safe practice for patients who continue to present requiring intervention from the orthopaedic team, such as those presenting with fragility hip fractures. We must also plan for the future lifting of social restrictions and a possible associated increase in traumatic presentations.

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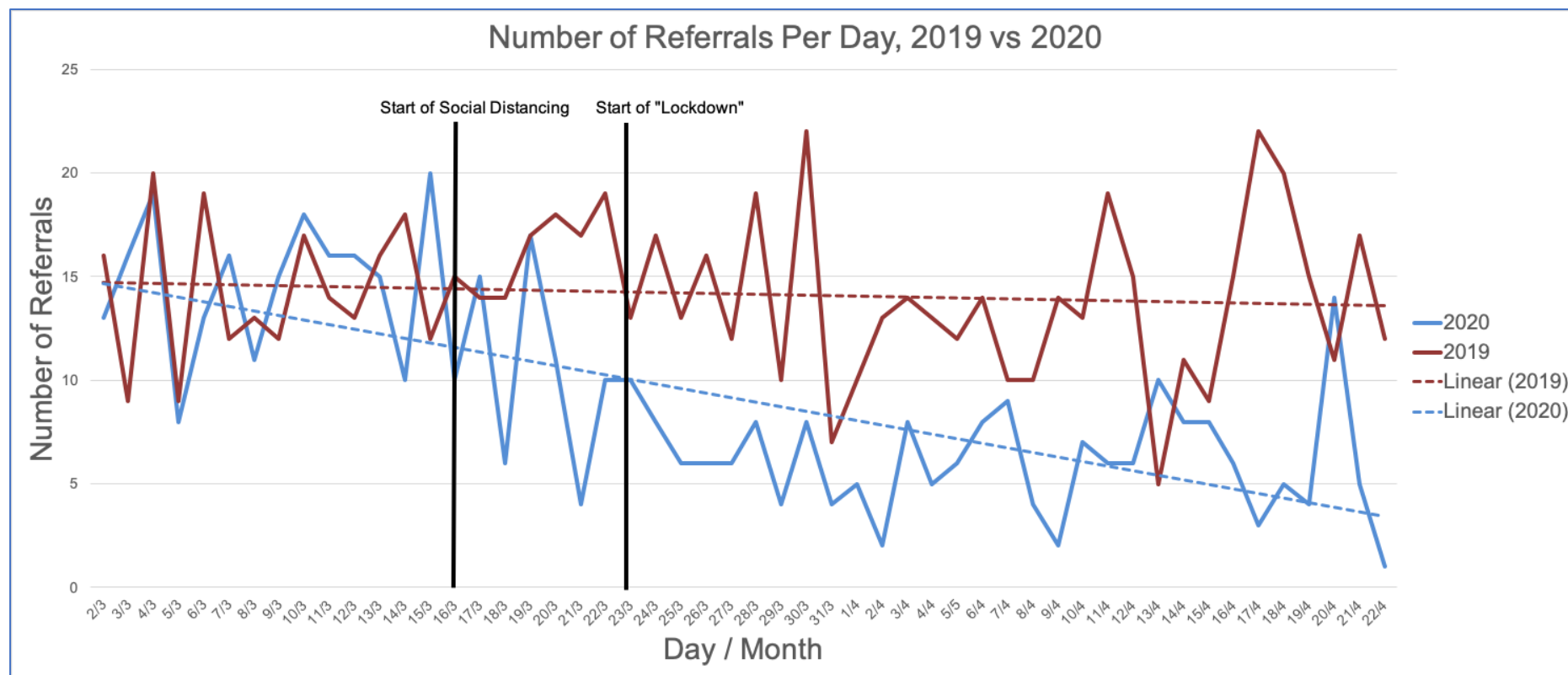


Figure 1 Line chart showing the number of daily referrals to the orthopaedic on-call service, 2/03/2019 to 22/04/2019 and 2/03/2020 to 22/04/2020. Markers indicate the start of social distancing and “lockdown” periods.

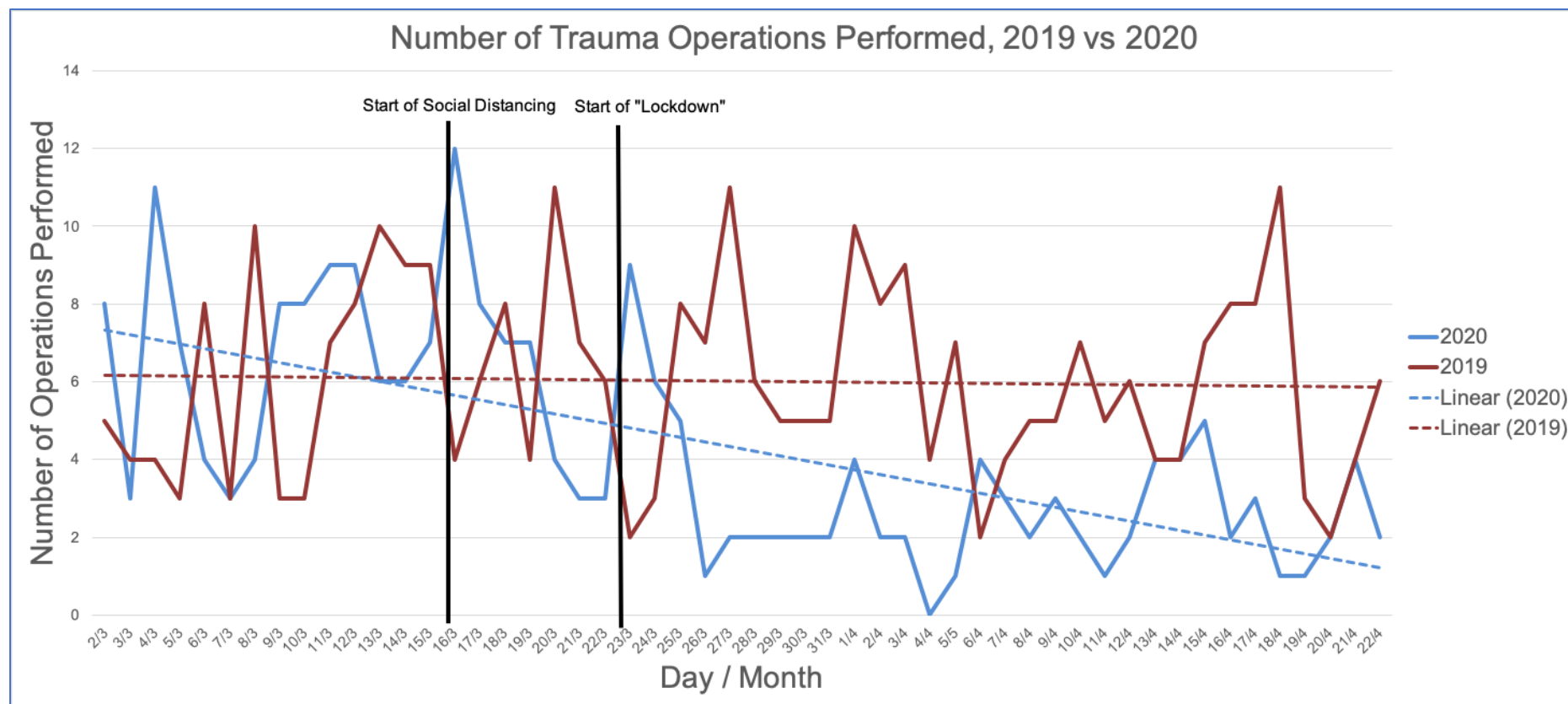


Figure 2 - Line chart showing the number of daily trauma operations performed, 2/03/2019 to 22/04/2019 and 2/03/2020 to 22/04/2020. Markers indicate the start of social distancing and “lockdown” periods.

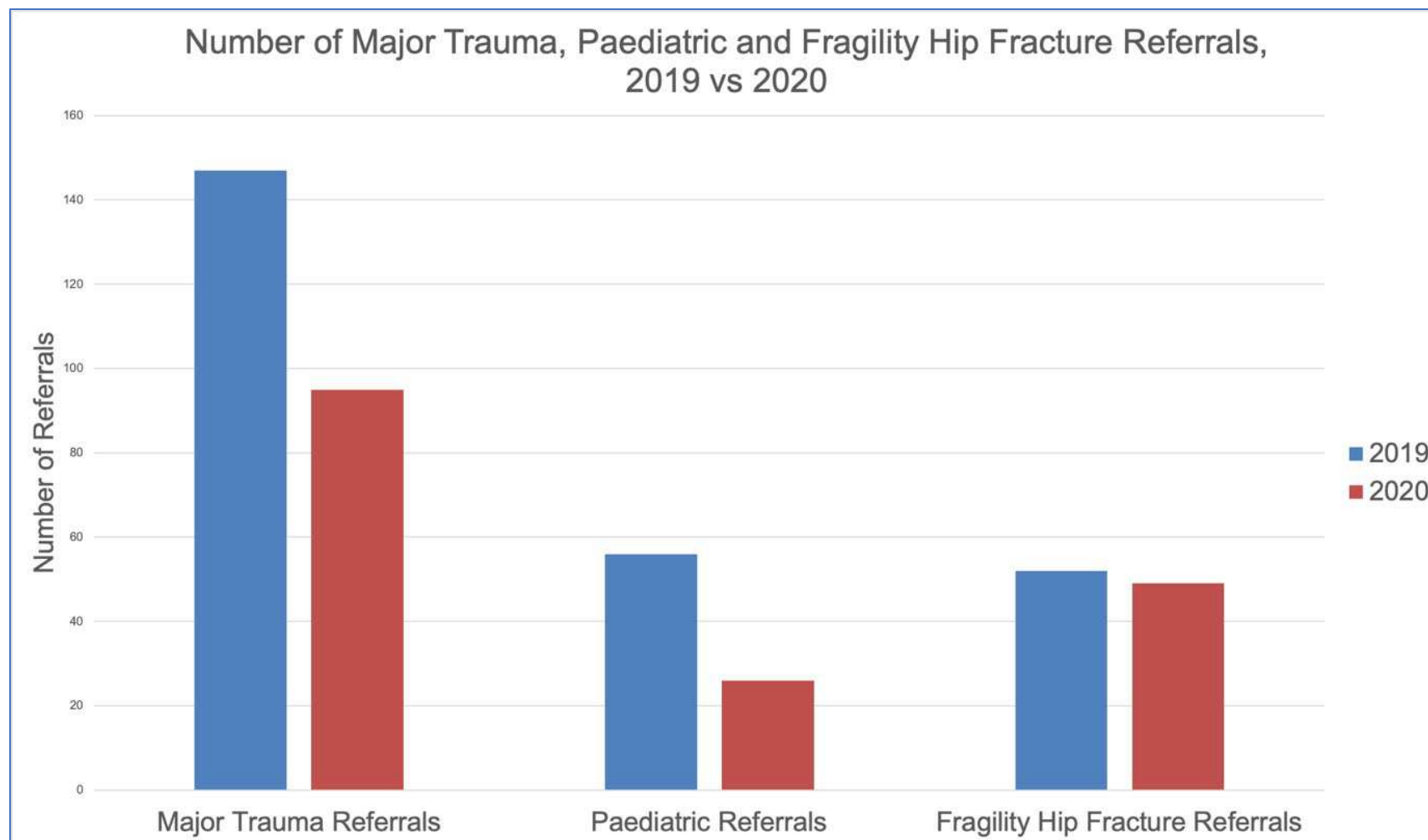


Figure 3 - Bar chart showing the number of major trauma, paediatric and fragility hip fracture referral from 16/03/2019 to 22/04/2019 in blue and 16/03/2020 to 22/04/2020 in red.