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Comparison of oral and maxillofacial trauma during the first and third lockdown of the COVID-19 pandemic in the United Kingdom

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Abstract

The incidence and management of maxillofacial trauma was compared between the first and third lockdowns in the United Kingdom due to the COVID-19 pandemic. From 6 January, 2021 to 8 March 2021, the units that had participated in the collection of data during the first lockdown were asked to update their information into the same database for the third. Nine units participated with 929 entries. Compared to the first lockdown, the number of patients whose treatment had been changed due to the pandemic reduced from 7.6% to 0.4% in the third lockdown. In the UK during the third lockdown there were higher numbers infected with COVID-19 and admitted to hospital than in the first lockdown. Despite this OMFS units that participated in the second study were able to continue the management of maxillofacial trauma without the pandemic affecting care.

Keywords: COVID-19; Oral and Maxillofacial Trauma; Management

Introduction

Working in close proximity to known reservoirs of the SARS-CoV-2-virus (nose and nasopharynx) and the increased exposure due to aerosol-generating procedures make oral and maxillofacial surgical practices particularly sensitive to the COVID-19 epidemic.1

The first lockdown (from 26 March, 2020 to 1 June, 2020) and the initial implementation of practices to prevent the spread of the virus saw a complete reduction in elective OMF surgery.2 There was a substantial initial reduction of maxillofacial cases presenting to emergency departments (average 19.7%)3,4 a change in the demographics and characteristics of the injuries and a change of practice, with an increase of non-surgical, conservative treatments.3–5 The pneumonia coronavirus disease (COVID-19) still continues to persist globally with sub-variants evolving. The United Kingdom (UK) has since implemented two more lockdowns: the second from 5 November, 2020 to 2 December, 2020, and the third from 6 January, 2021 to 8 March, 2021.6 A study looking at the management of oral and maxillofacial trauma in the UK was performed during the first lockdown7 and repeated during the third. Comparisons were made between the two episodes.

Methodology

The same methodology was applied during the two iterations of the study.7 Briefly, oral and maxillofacial units in the UK were asked to collect anonymised data on OMF trauma presenting during the third lockdown between 6 January, 2021 and 31 March, 2021 in an electronic database.

Results

Only nine units participated in the repeat of the study with 929 entries compared to 2229 in the first study. Table 1
Table 1  
Comparison of the demographics and aetiology between first and third lockdowns

|                          | First lockdown No. | Third lockdown No. |
|--------------------------|--------------------|--------------------|
| Units participated:      | 29                 | 9                  |
| Entries                  | 2229               | 929                |
| Injuries                 | 2514               | 1180               |

| Gender:                  | %                  | %                  |
|--------------------------|--------------------|--------------------|
| Males                    | 63.0               | 66.1               |
| Females                  | 37.0               | 34.9               |

| Age:                     |                    |                    |
|--------------------------|--------------------|--------------------|
| 0-9                      | 20.3               | 22.7               |
| 10-19                    | 7.9                | 8.8                |
| 20-29                    | 15.9               | 15.6               |
| 30-39                    | 13.0               | 15.4               |
| 40-49                    | 9.7                | 10.3               |
| 50-59                    | 8.6                | 9.4                |
| 60-69                    | 6.2                | 6.3                |
| ≥ 70                     | 16.2               | 11.1               |

| Type of Injury:          |                    |                    |
|--------------------------|--------------------|--------------------|
| Soft tissue              | 51.8               | 45.8               |
| Hard tissues (mandibular injuries) | 12.8       | 13.7               |
| Dental Injuries          | 11.1               | 9.1                |
| Zygomatic complex fractures | 10.1           | 11.7               |
| Isolated orbital floor fractures | 9.6   | 10.8               |
| Nasal bone, LeFort/naso-orbito-ethmoidal fractures | 4.5 | 9 |

| Aetiology of injury:     |                    |                    |
|--------------------------|--------------------|--------------------|
| Fall                     | 38.1               | 42.4               |
| Soft tissue              | 45.7               | 55.7               |
| Dental injuries          | 48.9               | 47.7               |
| Alleged assaults         | 22.9               | 24.5               |
| Fractures                | 80                 | 64.9               |
| Domestic violence        | 6                  | 3.5                |
| Sport related            | 20                 | 13.2               |
| Soft tissue injuries     | 57                 | 50.9               |
| Facial fractures         | 25                 | 33.1               |
| Dental injuries          | 18                 | 16.0               |

and Figure 1 provide the comparisons of the demographics and aetiology of the injuries. Table 2 details the comparisons of the type of injuries and the treatment provided. Due to the effects of COVID-19 on the hospital service, in the first lockdown, 158 (7.6%) cases had their treatment changed (3.3%) or deferred (4.4%). However, in the third lockdown treatment was reported to have been altered only in four cases (0.4%). The injuries were an orbital floor fracture and three soft tissue injuries. Of the latter, treatment was deferred because of lack of theatre, and the patient left before being treated (due to waiting time). A lack of personal protective equipment was not cited as any cause for the altered practice.

Figure 1. Mirror graph of the aetiology and type of injury sustained (2020 vs. 2021)
When asked about COVID-19 symptoms, testing and vaccinations, data were not reported for a lot of patients (31.2%, 32.4%, and 63.0%, respectively). When available, patients did not present with COVID symptoms (68.2%), had been recently tested (43.8%), and just over 6% of patients had had at least one dose of vaccine.

Discussion

The demographic characteristics and the type and aetiology of the injuries were relatively similar between the first and third lockdowns. There were, however, some notable differences. The incidence of injuries in the above 70 years-of-age group, the number of soft tissue injuries, of facial fractures resulting from an alleged assault and of sports related injuries decreased by 5%, 6%, 15.1%, and 6.8%, respectively. In contrast, the number of falls resulting in a facial injury increased by 4.3%. It is difficult to interpret if the weather had any impact on the changes with the first lockdown being in the late spring and summer whilst the third lockdown was in the winter months.

In the UK, at the height of the first lockdown (16 April 2020) 21,687 patients had been admitted into hospital with COVID-19, of these 3,325 patients were on mechanical ventilation. In comparison, at the height of the third lock down (19 January 2021) 39,254 patient were admitted with 4,076 patients on mechanical ventilation. This represents an increase of 81% and 22%, respectively. Thus, it would be expected that this increase in admissions rates would have diverted more resources (both equipment and staffing) and further restricted the management of non-COVID-19 patients. Despite this, from the data collected, it would appear that management of oral and maxillofacial trauma had returned to similar treatment principles as prior to the pandemic. In the third lockdown, a higher percentage of mandibular fractures were treated with an open approach (ORIF); conversely the proportion of fractures that were treated via a closed approach decreased by half. There was also a notable increase in surgical management of fractured zygomas and orbital floors, which had also been noted by Blackhall et al between the first and second lockdowns in the UK. This is also re-emphasised as the length of stay of mandibular fractures decreased from two days during the first lockdown to a median of zero in the third lockdown.

Why was the management of OMFS trauma able to return to pre-pandemic principles?

By the time of the third lockdown, a number guidance documents had been published at local and national levels resulting in multiple standard operating procedures (SOPs) that Trusts and surgical specialities could follow to mitigate the risks of viral transmission and those associated with aerosol generating procedures. Moreover, the availability of rapid swab testing within hospital and the provision of adequate personal protective equipment (with most clinicians having been fit tested with filtering face piece (FFP) masks level 3 or higher) could also partially explain this return to ‘normal’. Assessments of adequate air exchange, ventilation frequencies and fallow times would have been complied with and allowed further guidance. As elective activity would still have been reduced, qualified clinicians would have been available to operate on trauma patients more effectively.
Conclusion

Despite the significant increase in admissions of patients into hospital with COVID-19 and on mechanical ventilation during the third lockdown the principles of the management of OMF trauma returned to that of the pre-pandemic era. There was a significant drop in the number of patients whose OMF management was altered as a result of COVID-19. OMFS units have been resilient by maintaining the primary principles of trauma management through this difficult time with little compromise.

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Ethics statement/Confirmation of patients’ permission

Neither ethics approval nor patients’ permission was required.

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References

1. Tran K, Cimon K, Severn M, et al. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: a systematic review. *PLoS One* 2012;7, e35797.

2. Ahmed A, Evans K, Rajapakse S. How has COVID-19 affected surgical practice in Oral and Maxillofacial Surgery in the East Midlands, UK? *Surgeon* 2021;19:e276–e280.

3. Wyatt S, Mohammed MA, Fisher E, et al. Impact of the SARS-CoV-2 pandemic and associated lockdown measures on attendances at emergency departments in English hospitals: a retrospective database study. *Lancet Reg Health Eur* 2021;2100034.

4. Blackhall K, Downie IP, Walsh S, et al. Comparison of provision of maxillofacial emergency service during the two COVID-19 national lockdowns in the United Kingdom. *Br J Oral Maxillofac Surg* 2021;59:716–719.

5. Hoffman GR, Walton GM, Narelda P, et al. COVID-19 social-distancing measures altered the epidemiology of facial injury: a United Kingdom-Australia comparative study. *Br J Oral Maxillofac Surg* 2021;4:454–459.

6. Institute for Government 2021. The Timeline of UK government coronavirus lockdowns. Available from URL: https://www.institute-forgovernment.org.uk/sites/default/files/timeline-lockdown-web.pdf (last accessed 24 February 2022).

7. Puglia FA, Hills A, Dawoud B, et al. Management of oral and maxillofacial trauma during the first wave of the COVID-19 pandemic in the United Kingdom. *Br J Oral Maxillofac Surg* 2021;59:867–874.

8. Coronavirus in the UK. The official UK government website for data and insights on coronavirus (COVID-19). Available from URL: https://coronavirus.data.gov.uk/details/healthcare (last accessed 24 February 2022).

9. Royal College of Surgeons of England. COVID-19: Good Practice for Surgeons and Surgical Teams. Available from URL: https://www.rcseng.ac.uk/standards-and-research/standards-and-guidance/good-practice-guides/coronavirus/covid-19-good-practice-for-surgeons-and-surgical-teams/ (last accessed 24 February 2022).

10. Dental standard operating procedure: Transition to recovery A phased transition for dental practices towards the resumption of the full range of dental provision. Document first published: 4 June 2020 updated: 16 July 2021. Available from URL: https://www.england.nhs.uk/coronavirus/publication/dental-standard-operating-procedure-transition-to-recover (last accessed 24 February 2022).