The impact of COVID-19 on elective otolaryngology surgery in a rural hospital in the United Kingdom

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1 | INTRODUCTION

In the United Kingdom, at the outbreak of the COVID-19 pandemic in March 2020, the national health service (NHS) took the unprecedented step of restructuring all of its services and workforce to cope with the expected influx of infected patients. Following a UK-wide lockdown and implementation of strict government guidelines, rates of COVID-19 infection reduced significantly and there was hope of a return to normal practice. However, the risks of exposure to the Sars-Cov2 virus to patients and healthcare staff remained. These risks were acutely felt amongst otolaryngologists due to the prevalence of the virus in the nose and throat in both symptomatic and asymptomatic patients.

A significant number of extra measures and precautions were introduced to mitigate the potential spread of the virus amongst patients and healthcare staff during surgery. This was predicted to reduce the efficiency of surgical lists and limit the ability of departments to clear the backlog of patients awaiting surgery.

The aim of this study was to investigate whether elective otolaryngology surgical services could return to pre-pandemic levels in an area where cases of COVID-19 infection were expected to, and indeed did, remain far below national rates.

2 | METHOD AND PRACTICE

Retrospective and prospective data were collected for all fixed-term otolaryngology consultants at a single rural hospital during the period of 1 August-28 February for 2019/20 and 2020/21. Data recorded included number of theatre lists, number of planned (PLO) and performed operations (PFO), number of cancellations and reasons for cancellation. Data were also collected regarding the number of COVID-19 infections per week during 2020/21 at local and national levels. Statistical analysis was performed using SPSS statistical software and Chi-squared testing was used to compare categorical data.

Our hospital trust covers a population of approximately 235 000 people with a population density of 8 people/Km². The department normally performs approximately 1500 operations per year. Over the 2-year period, there were three substantive consultants performing surgery in the following sub-specialties: Otology, Rhinology, General ENT, General Paediatric ENT, Paediatric airway and Thyroid and Parathyroid surgery. The department also provides facial plastics services for the removal of all benign and malignant skin lesions from the head and neck under local anaesthetic. All surgical lists were planned and booked in advance by the operating consultant.

At the beginning of August 2020, all ENT elective surgery was allowed to restart. New hospital protocols were introduced for all elective procedures under general anaesthetic (GA). These included patient shielding for a minimum of 2 weeks prior to surgery, a negative COVID-19 PCR test, mandatory FFP3 masks for all aerosol-generating procedures (AGPs) and fallow time following extubation. Our primary objective was to see whether normal ENT elective services could restart to pre-pandemic levels; this was interrupted by a surge in COVID-19 infections in December 2020 as all non-urgent surgery was cancelled. We therefore analysed the period 1 August-30 November (interwave recovery [IR]) and the period 1 December-28 February (second wave [SW]) with the previous year.
3 | RESULTS

There were zero cases of COVID-19 infection reported locally or nationally in August-February 2019/20. In 2020/21, there were 2949 cases of COVID-19 infection in our local authority area. This represents 0.07% of the 3,868,809 cases reported in the United Kingdom over the same period. The trend in the 7-day positive rate during this period at local and national levels is demonstrated in the graph (Figure 1).

From 1 August 2019 to 28 February 2020, there were 123 planned theatre sessions compared to 111 in 2020/21 with the number of operations planned dropping from 4.5 to 4.1 per session. The total numbers of PLO, PFO and local anaesthetic skin procedures (LASP) are demonstrated in Table 1.

In the year prior to COVID-19, 81% of PLO were performed and this was 9% higher than the second year, and this falls to a 5% decrease during the IR period. Overall, there was a 31.2% reduction in the number of PFO, and again, this falls in the IR to a 4.1% (144 vs. 138) decrease year on year. However, there were 1.8 operations performed per session during the IR in 2020/21 compared to 2.2 in 2019/20. There was a significant increase in the number of local anaesthetic skin procedures (LASP) in 2020/21 (p ≤ .00001) and this accounted for 27% of PFO in the IR compared to 6% the previous year. If we exclude LASP, there was a 26.1% decrease in the number of GA procedures performed between August and November year on year.

There was a significant increase in the number of cancelled operations in 2020/21 compared to 2019/20 (p = .011); however, during August-November, there was no significant increase (p = .259). In 2019/20, 19% of PLO were cancelled compared to 28.3% in 2020/21. This percentage drops when analysing the IR (22%) to the same period in 2019/20 (17%). Overall, this represents a 15.5% increase in the number of cancellations and equates to a cancellation every 1.8 operational sessions; however, during the IR, this relates to a cancellation every 2.0 operational sessions. The reasons for cancelled operations are categorised and are shown in Figure 2.

4 | DISCUSSION

Our study shows that there has been a change in ENT elective surgical provision at our hospital since its re-introduction. It is unclear why fewer procedures were planned per list in 2020/21, but may possibly represent the expected delays caused by changes in standard operating procedures in response to the pandemic. These changes have been seen globally with the introduction of donning and doffing of personal protective equipment (PPE), the adaptation of theatres to protect essential apparatus from contamination.
and the refinement of surgical techniques to reduce the risk of transmission.\(^6\)

The 31.2% reduction in PFO during 2020/21 can be mainly attributed to the second wave and the cancellation of all non-urgent surgery from the end of December 2020. During the IR period, there was a 4.1% decrease in PFO; however, on a per-session basis, this equates to an 18.1% reduction. This suggests that during periods of low community COVID-19 transmission, elective services are still unable to return to pre-pandemic levels. The reasons for this are likely multifactorial; however, the impact of wearing PPE during surgery cannot be underestimated, as it is known to affect surgical performance and non-technical skills.\(^7\)

The return of near-normal operating surgical volume during the IR period may be explained by the significant increase in the number of LASP, as this accounted for 27% of all PFO. This significant increase (\(p \leq .00001\)) is important as without LASP, the number of PFO would likely have dropped further, as LASP were not required to isolate pre-operatively or undergo covid-19 PCR testing as were not deemed AGPs. Consequently, last-minute vacancies left by cancellations could be filled at short notice.

We found a significant increase in the number of operations cancelled in 2020/21 (\(p = .011\)). This was expected with a surge of COVID-19 during the winter months, as there was no significant increase in cancellations seen between August and November. We can therefore assume that during periods of low community transmission, hospital capacity is not affected and patients are willing to undergo surgery despite the extra safety and shielding requirements.

4.1 | Implications of our study

Despite low numbers of community infections, necessary safety protocols have reduced the efficiency of surgical lists and their ability to adapt to change. The current NHS elective waiting list currently stands at over 4.5 million patients\(^8\) and previous studies have estimated that clearing a backlog of cases created by the pandemic may take 84 weeks, but this assumes activity returning at 110% of pre-pandemic levels.\(^9\) Our study suggests that this level of activity would be difficult to attain in otolaryngology and therefore we would expect clearance of waiting lists to take significantly longer. We suggest extensive triaging of patients on long waiting lists to ensure that procedures are still clinically indicated, as it is likely that in some cases, such as otitis media with effusion, criteria for intervention may no longer be met. However, we recognise that sufficient time will need to be provided to clinicians in order to facilitate this effectively.

4.2 | Training concerns

Surgical trainees across all specialties have been adversely affected by the pandemic with a significant reduction in operative experience and a greater than 50% reduction in logbook numbers.\(^10\) This has resulted in GMC-approved curriculum derogations by the joint committee on surgical training (JCST) to enable the progression of trainees at all levels.\(^11\) Our study has demonstrated that a rapid return to pre-pandemic activity is unlikely in the near-term even as rates of COVID-19 infection fall following a successful vaccination programme. The challenges trainees have faced in gaining sufficient operative experience will likely continue, although improve from present. This is important to acknowledge, as it will have implications for trainees attaining Certification of Completion of Training (CCT) this year and in the future.

### TABLE 1

| Procedure Type | 2019–2020 | 2020–2021 |
|----------------|-----------|-----------|
| Total number planned operations (PLO) | 305 | 237 |
| 1 August–30 November | 174 | 177 |
| 1 December–28 February | 131 | 60 |
| Total number performed operations (PFO) | 247 | 170 |
| 1 August–30 November | 144 | 138 |
| 1 December–28 February | 103 | 32 |
| Total number local anaesthetic procedures (LASP) | 20 | 47 |

**FIGURE 2** Showing the different reasons for cancelled operations

**TABLE 2** Showing the total number of PO, PFO, core procedures, advanced procedures and local anaesthetic cases

**FIGURE 3** Showing the different reasons for cancelled operations
The study has its limitations. A lower-than-average number of COVID-19 cases cannot be assumed to have had less of an impact on the hospital providing ENT elective services. A smaller population and a smaller number of hospital beds available would mean even small increase in the 7-day positive rate could potentially impact the hospital’s ability to provide elective surgery. Due to a lack of full-time substantive consultants, we were only able to compare a small number directly year to year. Our hospital was also without a full-time head & neck consultant during the second year and this meant sending patients to other centres in order to facilitate their care. The policies and guidelines implemented prior to restarting elective surgery were based on the best practice at that time and may not reflect advances in knowledge and the impact vaccination may have on future elective services.

CONCLUSION

Low rates of COVID-19 infection do not necessarily mean that ENT elective services can return to pre-COVID levels. Implementation of new safety protocols to protect patients and staff has reduced the efficiency and speed at which elective ENT surgery can be delivered. This is likely to continue to impact waiting lists at a time when surgical activity is needed to exceed pre-pandemic levels. It is likely that workloads will increase, as extra theatre lists become more commonplace; however, in order to clear the backlog, NHS trusts will need to become more innovative in their approach.

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ETHICAL APPROVAL

This study took the form of an audit, so National Research Ethics Service approval was not required. The local audit department approved the study.

AUTHOR CONTRIBUTIONS

Sam Arman: Project lead involved with design, data collection and data analysis. Michael Hopkins: Involved with data analysis, editing and proofing final submission. Simon McKean: Project supervisor, involved with editing final publication

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CONFLICT OF INTEREST

None.

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