CSF Rhinorrhoea After Endonasal Intervention To The Skull Base: Impact of COVID-19

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Introduction

During the COVID-19 pandemic, there has been a particular concern about the increased risk of perioperative mortality for patients with COVID-19, and the viral transmission risk to healthcare workers, particularly during endonasal neurosurgical operations.

These concerns led to a decrease in neurosurgical operations, particularly in pituitary surgery., during the first wave of the pandemic.

In order to manage risks and move towards normal service provision (Figure 1), the Professional Education Committee of the Pituitary Society produced a set of comprehensive recommendations to guide contemporary neurosurgical practice during the COVID-19 era.

We sought to assess neurosurgical practice and COVID-related morbidity and mortality during the first wave of the pandemic.

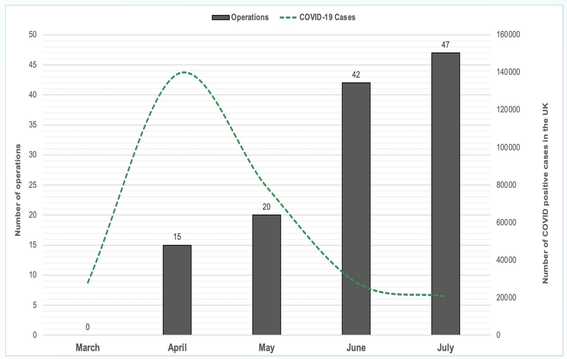


Figure 1: Number of operations per month with overlay of number of COVID-19 cases in the UK during the study period (data extracted from Public Health England database). There were no operations reported from March 23rd to March 31st.

Methods

A multicentre, prospective, observational cohort study design was conducted at twelve tertiary academic neurosurgical units in the UK and Ireland.

Data were collected from March 23rd, 2020 to July 31st, 2020 inclusive.

Data points collected were patient demographics, pre-operative COVID-19 testing, intra-operative operative modifications, and 30-day COVID infection and mortality rates.

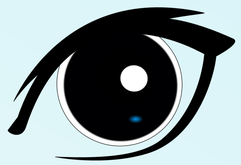
Results

Data were collected on a total of 124 patients, with the number of operations lowest in March and highest in July.

Mean age: 50.5 years

59 female patients

65 male patients



Visual loss was present in 83 patients preoperatively

116 patients (n=116/124, 94%) underwent COVID-19 testing pre-operatively.

One patient (n=1/116, 1%) tested positively for COVID-19 pre-operatively, requiring a delay of operation until the infection was confirmed as resolved. Asides from transient diabetes insipidus; no other complications were reported for this case.

At 30 days postoperatively, there was no evidence of COVID infection (no symptoms and/or no positive result on testing) in our cohort, and no mortality.

Intraoperatively, theatre staff wore at least level 2 PPE. There was considerable heterogeneity in the PPE worn, but the PPE items worn in most cases were FFP3 masks (n=99/124, 80%), and eyeglasses (n=74/124, 60%).

Adaptations to surgical techniques included minimising drilling, draping modifications, and using nasal iodine wash., as listed in Table 1.

Table 1: List of additional measures taken by neurosurgical centres to reduce the risk of airborne transmission of COVID-19

Additional Measures Taken to Reduce the Risk of Airborne Transmission	
Pre-operative modifications	Patients isolated 2 weeks preoperatively
	Reduction in the number of staff in the theatre room
	Most theatre staff restricted from entering theatre until 10 minutes after intubation
Intra-operative modifications	Patient covered with clear plastic cover over regular drape
	Instruments sealed with tape and plastic drapes
	Apron use under gowns
	Use of 9 ml of 0·5% povidone-iodine (PVP-I) solution for skin and mucous membranes as mouth wash
	Instillation of 0.3 ml of 0·5% PVP-I solution for skin and mucous membranes in each nostril
	Change from fluoroscopy to Stealth to decrease movement of equipment through multiple theatres
	Minimisation of bone drilling
Post-operative modifications	Nasal packing avoided where possible
	Most theatre staff were not present during extubating

Discussion

There are few existing papers that provide data on patients who have undergone pituitary surgery during the COVID-19 pandemic:

(1) A case report from Wuhan, China that described a patient developing COVID-19 within the first week post-endoscopic endonasal pituitary surgery, although pre-operative swab screening was not reported so it unclear whether this was a pre- or postoperative infection.
(2) A case series from Cambridge, UK reported that none of 9 consecutive patients undergoing pituitary surgery or skull base surgery between 30th March and 28th April contracted COVID-19 following the adoption of a risk-mitigation protocol

Our international, multi-centre study supports the findings of this latter paper, as we did not find a greater risk to patients of acquiring COVID-19 if they underwent endonasal surgery during the course of this pandemic.

Our results also suggest that a standardised, risk-mitigation strategy that takes earlier guidance into account may allow for normalisation of activity.

Our results joins a growing body of literature that shows that surgery is safe for patients with negative SARS-CoV-2 preoperative tests in a COVID-19 free surgical pathway.

However, resumption of full elective workloads will depend on wider national and international factors that protect patients from becoming infected with SARS-CoV-2, and therefore avoid delays to their surgery.

The non-COVID-19 morbidity of patients with pituitary pathology is an increasing concern, and our results may go some way in allaying concerns about performing surgery during this period.

Thank you to the collaborative