

Guidance for undertaking otological procedures during COVID-19 pandemic

The following provides guidance for clinicians involved in the care of patients with otological disease in light of the current COVID-19 pandemic. The situation is rapidly evolving and guidance may change over time.

Mastoid surgery

- 1) Significant aerosolisation of bone and other tissues occurs during mastoid drilling¹. Whilst the main route of transmission of the COVID-19 virus is through the respiratory system, there is some evidence of blood-borne transmission, although this risk is likely to be low^{2,3}. Similarly, there is evidence that corona viruses are present in the epithelium of the middle ear during upper respiratory tract infections, although there is no specific evidence, to date, in COVID-19 specifically^{4,5}. As a result, there may be a significant risk of viral transmission when undertaking this type of surgery in patients infected with COVID-19 virus. It is not possible to prevent drill-induced aerosolisation and although FFP3 masks prevent inhalation of particles, standard eye protection may not adequately prevent ocular exposure. Mastoid surgery should therefore be avoided unless there is a life-threatening urgency to proceed.
- 2) Urgent indications may include:
 - acute mastoiditis
 - otogenic intracranial sepsis
 - operable temporal bone malignancy.
- 3) Vestibular schwannoma surgery should not be regarded as urgent unless there is life-threatening brainstem compression. A retrosigmoid, rather than translabyrinthine approach, should be used to minimise drill time, and exposure to middle ear mucosa.
- 4) The duration of the COVID-19 pandemic period is unclear but, assuming a 3-month period before normal practice can resume, cholesteatoma surgery and auditory implantation, including in children, should not be regarded as urgent. Further guidance will be offered in the event that ongoing precautions will be required beyond 3 months.
- 5) Testing for COVID-19 is unlikely to be helpful as sensitivity of throat/nose swabs has been reported to be as low as 32%. In addition, long turnaround times make testing impractical. All patients should therefore be presumed to be positive.
- 6) If mastoid drilling is unavoidable, drilling should be kept to a minimum and PPE including FFP3 mask, close fitting eye protection (glasses are preferable to a visor), waterproof gown and gloves should be used as a minimum whilst not using the microscope (subsequently referred to as full PPE).

- 7) Use of the microscope may offer some degree of eye protection during drilling but drilling should still be kept to a minimum. If possible, the surgeon should continue to wear eye protection.
- 8) Some clinicians may feel more comfortable using a hazmat suit with external filtration if undertaking mastoid surgery, particularly if the patient is confirmed as COVID-19 positive. The decision to use this level of protection lies with the clinician.
- 9) A rigid otoscope with camera may be used instead of the microscope, accepting the limitations of single-handed surgery if the PPE equipment makes use of the microscope difficult.
- 10) All unnecessary staff should leave theatre and those that remain should wear PPE as above.
- 11) For acute mastoiditis, curettage should be carried out rather than mastoid drilling, if possible.
- 12) If drilling is required, slowing drill speed, reducing irrigation volume and using effective suction may reduce aerosolisation.
- 13) Good hypotension will minimise bleeding and may also reduce aerosolisation.
- 14) Surgery should be carried out by the most experienced otological surgeon available.

Other otology procedures

Most otology procedures should be deferred until after the COVID-19 pandemic has passed. Urgent cases (e.g. biopsy of suspected neoplasia) will need to be assessed on a case-by-case basis.

Full PPE as per mastoid surgery should be used.

Additional guidance for microsuction

Significant aerosolisation of biological materials may occur during microsuction, particularly with fenestrated suction. The risk of COVID-19 transmission with microsuction is, however, low, particularly with wax clearance in the absence of inflammation. Nevertheless, full PPE as outlined above is recommended. Unfenestrated suction probably reduces the risk of aerosolisation.

Steroid use for treatment of otological conditions

Within otological practice, steroids are commonly used to treat Meniere's Disease, Sudden Sensorineural Hearing Loss (SSNHL) and idiopathic facial palsy (Bell's palsy).

Current opinion is that high dose steroid use, whether to manage Covid 19 infection or to treat an unrelated condition, may be associated with a worse outcome^{6,7}. The use of high dose oral steroids is therefore not recommended to treat either Meniere's Disease or Sudden Sensorineural Hearing Loss (SSNHL). The systemic dose of steroid following intra-tympanic treatment is significantly lower than that of oral treatment, and it is therefore likely that the impact on COVID-19 outcomes will be less. It is therefore preferable to use intra-tympanic steroid to treat these conditions. There is, however, no evidence base for this assumption, and the potential impact on outcome of COVID-19 infection following intra-tympanic steroid use should be discussed with the patient and informed consent obtained prior to proceeding. Whether or not to proceed should be decided on a case-by-case basis.

If undertaking intra-tympanic treatments, it has been usual practice to ask the patient to spit and not swallow for 20 minutes after the injection. This should be avoided during the COVID-19 pandemic as spitting generates aerosol containing viruses.

In idiopathic facial palsy, the use of oral steroids should be discussed with the patient. Evidence from the Scottish Bell's Palsy study suggests that the use of oral steroids improves recovery from 85% to 96%⁸. The potential risks and benefits of oral steroid use during the current pandemic need to be made clear and a balanced decision made. For patients with known COVID-19 infection the balance may weigh towards avoiding steroids. For those not believed to be infected the balance of risk may weight towards treatment with steroids.

Necrotising Otitis Externa

The fundamental management of necrotising otitis externa should not be affected by COVID-19. Patient's should, however, have their peripherally inserted central venous catheter inserted as early as possible and they should be discharged back to the community as soon as possible.

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3. Chang et al. Coronavirus Disease 2019: Coronaviruses and blood safety. *Transfus Med Rev* (2020).
4. Heikkinen et al. Prevalence of various respiratory viruses in the middle ear during acute otitis media. *N Eng J Med* (1999) 340:260-4.
5. Wiertsema SP et al. High detection rates of nucleic acids of a wide range of respiratory viruses in the nasopharynx and the middle ear of children with a history of acute otitis media. *J Med Virol* (2011) 83:2008-17.
6. Russell et al. Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury. *The Lancet* (2020); 20:30317-2.
7. The Faculty of Pain Management guidelines.
8. Sullivan FM et al. A randomised controlled trial of the use of aciclovir and/or prednisolone for the early treatment of Bell's palsy: the Bell's study. *Health Technol Assess.* 2009;13(47): iii-130.

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