

Covid-19 intraoperative management recommendations for neurosurgeons

- Consider alternatives to [general anesthesia](#) whenever possible to minimize the risk of [aerosolization](#) associated with [endotracheal intubation](#) and [extubation](#)
 - For awake surgeries, use a facemask
 - If intubation is required, keep all unnecessary personnel outside of the room during the induction
 - If intubation is required, use neuromuscular blockers to avoid cough
- Consider surgical approaches avoiding the sinuses and mastoids
 - If exposing the nasal or oral mucosa, consider intranasal povidone iodine preparation (especially in endonasal approaches) and chlorhexidine or hydrogen peroxide mouth rinse
 - Avoid postoperative nasal endoscopy and nasal sprays
- Given the current uncertainty on the potential of viral transmission through aerosolized blood or other particles such as bone, consider limiting the use of aerosol-generating instruments:
 - Avoid using drills whenever possible:

Choose rongeurs, curettes, or chisels instead of burrs, especially when in the vicinity of sinuses or mastoid cells. Perform burr holes using a Hudson brace or twist drill rather than a perforator. For spinal decompression and stabilization, perform bony removal using rongeurs rather than a burr and use manual, tactile pedicle probes to facilitate the placement of pedicle screws.

When drilling is required:

- Consider drilling at lower speed
- Stop the drill when irrigating
- Use large suctions to try and aspirate all airborne particles
- Try isolating the drilled area using a transparent adherent film (eg, Opsite™) “tent” or gauzes to limit the spread of airborne particles
- Try minimizing the amount of drilling required in spine procedures by using navigation and considering minimally invasive approaches, such as endoscopic procedures and percutaneous instrumentation
 - Avoid using unnecessary electrocautery
 - Avoid using lasers
 - Avoid using ultrasonic aspirators
 - Consider performing VP shunts open rather than laparoscopically to minimize pneumoperitoneum-

induced aerosolization

- Protect the surgical field with towels when hammering to minimize aerosolization
- Irrigate with large volumes at low pressure rather than low volumes at high pressure ¹⁾.

Tan et al. recommendations:

The surgical strategies were decided preoperatively. Operations should be performed in special negative pressure suction room. The operation room was assumed to be polluted/infected area. On that day of surgery, neurosurgeons performed strict sterilization and wore third level protection, then entered the operative room with anesthesiologists and perioperative nurses for preparation of subsequent surgical procedures. Meanwhile, patients were applied to necessary protection by special medical assistant and then transferred to the waiting room of operative unit, where the patients were handed over to perioperative nurses. After anesthetic intubation, surgical sterilization was performed by neurosurgeons. All surgical clothes, surgical kit and surgical shields should be disposable items. Senior neurosurgeons were preferred to shorten the operation duration. For complicated operations, one or two neurosurgeons should be backed up for rotation. Double surgical gloves were recommended for neurosurgeons to avoid infection due to glove ruptures. We suggested that the speed of drilling should be slowed to reduce skull bone aerosols. All surgical procedures should be accomplished according to preoperative strategies to reduce intraoperative bleeding and to shorten the operation duration. After the operations were finished, the patients were transferred to the waiting room of operative unit, where the special medical assistant took over and subsequently transferred the patients back to the neurosurgery ward. All postoperative patients should be regarded as suspected cases and should be quarantined for at least 2 weeks ²⁾.

References

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