

Letter: Safety Instructions for Neurosurgeons During COVID-19 Pandemic Based on Recent Knowledge and Experience

To the Editor:

Here, we ask for the opinion of 4 worldwide-known neurosurgeons from 3 different continents and review the evidence from literature and from major relevant societies to provide a guide for the safety of surgical personnel and to reorganize neurosurgical practice during the COVID-19 pandemic and in the subsequent phase. Moreover, we retrieved relevant information from PubMed and from national and international organizations, including Robert-Hooke Institute, Germany, World Health Organization, German Society of Neurosurgery, and World Society of Virology, to develop guidelines.

PROPOSED RECOMMENDATIONS FOR THE MANAGEMENT OF EMERGENCY NEUROSURGICAL PATIENTS DURING THE COVID-19 PANDEMIC

All efforts should be utilized to perform certain emergency procedures under local anaesthesia.

- Endovascular treatment, if possible, especially in neurovascular diseases, should be considered as priority.
- Alternate treatment modalities, such as radiosurgery in certain neuro-oncological conditions, should be considered.
- To avoid any ethical issues, the urgent neurosurgical cases in all neurosurgical subspecialties should be triaged and treated.

PROPOSED MANAGEMENT OF NEUROSURGICAL PATIENTS DURING COVID-19 WITH COVID-19 INFECTION

All patients in emergency rooms (ERs) may be potential carriers of the virus and at least all unconscious patients should be treated as infected. Only 1 case from China and 1 from Japan with COVID-19 meningitis have been reported in the news. In literature, however, there is no single report on COVID-19 meningitis and the presence of virus in the cerebrospinal fluid. Moreover, some patients may present with neurological symptoms (eg, confusion) as the virus may cause hypoxia but still not provoke hyperventilation to compensate. Therefore, we still recommend the surgical personnel to take

complete measures due to the presence of the virus in the blood. Urgent surgical procedures on COVID-19 positive patients should be performed only in dedicated operation rooms. To date there has been no single central nervous system complication reported that needed a neurosurgical procedure, but it is still highly possible that neurosurgical patients who need emergency surgery are COVID-19 positive with a high virus load. We propose the following safety measures for the surgeon and surgical staff during neurosurgical approaches.

PROPOSED PRECAUTIONS DURING SURGICAL APPROACH

- During the pandemic, all neurosurgical procedures should be highly standardized to reduce the operation room time. Use of new materials or instruments and clinical studies should be postponed until the end of the pandemic.
- Whole surgical team should wear the FFP2/FFP3 (FFP stands for “Filtering Face Piece”) mask, eye protection glasses, double gloves, surgical suits, and shoe covers.
- Experienced neurosurgeons beyond their learning curve should perform the surgeries to reduce total exposure time.
- If possible, only a single surgeon should perform the surgery to avoid exposure to the assistant.
- Special care should be taken during craniotomy and drilling (irrigation with heat) to avoid aerosol dispersal and prevent them from reaching nose and eyes.
- Any dispersal of blood during drilling procedures should be avoided.
- Electrocautery power setting or the use of bipolar should be minimized to reduce aerosol dispersal.
- The surgical wound should be covered at the end of surgery.
- Special care should be taken and the powered air-purifying respirator (PAPR) mask should be worn during the endonasal surgery because COVID-19 is known for settling down in the nasopharyngeal room.
- SARS-CoV-2 negative (negative history of COVID-19, negative swab (2 times within 24 h) OR negative CT chest: FFP3 mask and safety glasses should be worn.
- SARS-CoV-2 positive: PAPR mask should be worn.

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