

AFNI Advisory on Performing Emergency Neurosurgical Procedures During the COVID-19 Pandemic

The Academy of Filipino Neurosurgeons, Inc.

As a continuation of AFN Advisory No. 1, the following are additional recommendations for doing neurosurgical procedures during this time of the COVID-19 Pandemic:

1. The AFN supports the PCS general advisories in performing surgery during the COVID-19 Pandemic (please refer to the PCS Advisories dated March 22, 2020 “PRECAUTIONARY MEASURES FOR EMERGENCY SURGERY DURING COVID PANDEMIC” and March 26, 2020 “PCS Guideline on Personal Protective Equipment (PPE) For Surgery During COVID-19 Pandemic”). These guidelines can be adapted by neurosurgeons to their particular setting.
2. Minimal OR team as much as possible¹. No observers, no students, and no non-surgical team members should be allowed in the operating room.
3. Prefer use of face shields with protective goggles rather than protective goggles alone. Surgical methods such as use of irrigated high-speed drills and thermal cautery appears to promote generation of viral-containing aerosols and should be used with caution.^{2,3,4}
4. There are few non-emergency and non-urgent procedures, so it is better to classify the urgency of the patient’s surgical condition (see Advisory 1) for judicious use of the Operating Room and other hospital facilities.
5. In the absence of standard PPEs and PAPRs, may use improvised PPEs⁵ for emergency procedures, preferably of non-woven, non-permeable materials. For individuals at institutions that are unable to provide N95 masks to all members of the OR team, all surgeons and other personnel who are not wearing N95 mask must evacuate the OR during intubation, extubation, and other procedures that may generate aerosolized small particles.⁶

While PPEs are in short supply, depending on the local situation of neurosurgical practice (i.e. number of practicing neurosurgeons, number of capable hospitals), neurosurgical operations are better limited to hospitals that can provide complete or near complete PPEs, as well as PAPRs and full face respirators with P100 (HEPA) filters when needed by the particular case.

6. Since most hospitals by now have devised their own individual guidelines for admitting surgical patients during this COVID-19 Pandemic, as well as procedures on handling these patients postoperatively, neurosurgeons are advice to follow these guidelines (e.g. some hospitals require all patients to be admitted must be seen by the Infectious Disease Specialist prior to admission).

7. **Transnasal Surgery.** These are procedures which require special precaution. A Transcranial approach to the lesion, where a transnasal approach is ordinarily favored, should always be considered. Although the risk of infectivity is still unclear, procedures through the nasopharyngeal area poses an inherent danger of COVID-19 transmission due to the high detectable viral titers in the said location.⁷

At this time of COVID-19 pandemic, surgery through the nasal cavity (endoscopic and non-endoscopic) should be done only for urgent or emergency cases. Endonasal surgery creates clouds of droplets and aerosols which may permeate the operating environment.¹ Preoperative

COVID-19 testing should be done on all patients who will undergo endoscopic transnasal surgery, whether symptomatic or not. If the test is negative and the patient is asymptomatic, use N95 mask and full PPE. If the test is positive, defer surgery as much as possible until the infection is cleared, verified by repeat testing¹ (following DOH protocols).

When endonasal surgery cannot be postponed (urgent) in a COVID-19 positive patient, utilize a PAPR or full-face respirators with P100 (HEPA) filters for everyone in the operating room.¹ If possible, perform two COVID-19 tests 24 hours apart while the patient is on quarantine, and perform the surgery only if the results of the 2 tests are negative.

In uncommon situation when one is dealing with pituitary apoplexy and surgery must be done as soon as possible, assume all patients are COVID-19 positive. Take a swab for COVID-19 testing as part of preoperative preparation. Consider the transcranial approach. If endonasal approach is utilized, the use of PAPR or full-face respirators with P100 (HEPA) filters is recommended for everyone in the operating room. In its absence, well-fitted N95 masks, eye protection (goggles/full face shield), with full PPEs should be used.⁸

8. Non-transnasal Endoscopic Procedures. The aerosol-generating effect of neurosurgical endoscopic procedures is not well-established, although there is a recommendation to avoid non-neurosurgical endoscopic procedures (e.g. gastroscopy). Therefore, these are better avoided unless the benefits of these procedures far outweigh the traditional non-endoscopic approaches.

9. Avoid direct exposure to high risk areas of the hospital and make good use of virtual technology for referrals/consultations. The emergency room/admitting section frontliners can do the workup of patients under the guidance of the neurosurgical team who may just see the patient in the operating room, ICU or at the wards.

10. For emergency spine surgeries, all patients should be considered COVID-19 positive unless proven otherwise. All operating theatre personnel should wear proper protective equipment and hospital protocols for disinfection should be practiced.

Aside from taking a preoperative specimen for COVID-19 testing, the following strategies should be kept in mind:

- (a) Consider using minimally invasive spine surgery and minimize the scope of surgery to shorten the operative time
- (b) Prefer prone position to avoid transmission of respiratory droplets
- (c) Reduce the use of electrotomes and use suction devices with caution to reduce aerosol diffusion
- (d) Perform surgery with care, avoiding body fluid spatter and injury from sharp instruments
- (e) Limit the traffic in and out of the operating theatre⁹

11. If feasible, neurosurgeons in a given locality may organize themselves to see patients or do surgery on rotation basis among themselves. This is to minimize exposure and viral load transfer from asymptomatic COVID-19 positive patients.

12. Depending on availability of tests and urgency of the case, it is recommended to do rapid antibody testing and/or RT-PCR prior to surgery for emergency cases. At the very least, samples for covid testing should be collected prior to surgery.

References

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