

## Impact of Covid-19 Pandemic on Neurosurgery Practice

Rami Ahmad Shahrer<sup>1</sup> and Safwan Alomari<sup>2\*</sup>

The coronavirus disease 2019 (COVID-19) pandemic has brought enormous suffering and a substantial risk on neurosurgeons and their patients. Surgical intervention requires a direct and close contact with the patients, which might be significantly limited through telemedicine. Hence, surgeons and sub-specialized clinical workers face numerous challenges during the pandemic.

Neurosurgeons often addressed surgical emergencies to reduce neurological morbidity and impairments. Health care systems have established strict guidelines for pre-operative evaluation to help identify cases that require urgent surgical intervention and therefore, cannot be deferred. These guidelines take in consideration the underlying pathology, the expected risk to patient's life, the possibility of impending neurological impairment and subsequent clinical and cost burden, and COVID-19 status of the patient. Cases with the following condition are considered as eligible for urgent neurosurgical intervention:

1. Severe cranial injury/infection cases: TBI, depressed skull fractures, space-occupying lesions, empyema/abscess. For example, surgical stabilization of a traumatic subdural hematoma is crucial to preserve neurological functions.
2. Cranial tumors cases: pituitary apoplexy, tumor with significant mass effect.
3. Cranial vascular cases: intracranial hemorrhage resulted from ruptured aneurysm, and AVM.
4. Cranial CSF diversion cases: shunt obstruction, acute hydrocephalus
5. Hardware-Related cases: hardware infections, sudden DBS battery failures.
6. Severe spine cases: spinal tumors without myelopathy, decompression of the spinal cord, acute cauda equine, severe myelopathy from degenerative disease

As a result of such criteria, the performance of elective neurosurgical cases

<sup>1</sup>Department of Anesthesiology and Center for Shock, Trauma and Anesthesiology Research (STAR), University of Maryland, School of Medicine, Baltimore, MD 21201, USA

<sup>2</sup>Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA

\* **Corresponding author:** Safwan Alomari, Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA.

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has been widely reduced or hold in many hospitals. A recent multicenter study conducted in the northeastern Italian region showed that head and spinal trauma admission decreased by 25% and 35%, respectively [1]. The study showed that the neurosurgical interventions declined by 19% for head trauma and 26% for spinal trauma. Another consequence of the applied criteria and protocols to determine surgical intervention's urgency is lost revenue for health care systems and neurosurgeons.

As the pandemic is still evolving, and the third wave affects many countries at the

time of writing the current article, it is unclear how neurosurgeons and/or health care providers will resume the usual work flow that was feasible before the pandemic. Given the long standing and profound effect of the pandemic on the health care systems, it is not strange that the covid-19 crises will drastically reform the neurosurgery practice. There is unmet need for the health care policy makers and government officials to establish uniformed guidelines for addressing the current pandemic.

## References

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