

In Reply: Safety Considerations for Neurosurgical Procedures During the COVID-19 Pandemic

To the Editor:

We read with much interest the Correspondence by Daci and colleagues¹ in which they expose some safety considerations about neurosurgical procedures during the COVID-19 Pandemic. Among other recommendations, they suggest to avoid the execution of awake neurosurgical procedures. A similar argument is made in the Recommendations from the Society for Neuroscience in Anesthesiology and Critical Care.²

While we agree that the unique setting of awake surgery may pose an increased risk of contamination due to the patient's breathing, talking and possibly coughing and sneezing, we would like to bring attention to the fact that, if necessary, awake procedures can be safely performed even in confirmed COVID-19 positive patients and share our experience in doing so.

Our patient was diagnosed with mixed-type invasive lung adenocarcinoma in 2017, she underwent surgery and adjuvant chemotherapy. In February 2020, she complained paraphasias and mild left upper limb weakness. Therefore, she underwent a brain magnetic resonance imaging, which demonstrated a contrast-enhancing mass in the posterior inferior gyrus of the left frontal lobe (close to the *pars opercularis*), which was provisionally diagnosed as a single brain metastasis with surrounding edema.

Hence we elected to perform surgical removal and, given the tumor location and the symptoms, we deemed necessary for the surgery to be performed under awake anesthesia.³

As our Region, Lombardy, was struck by the COVID-19 pandemic before the patient could undergo surgery, the procedure was postponed and the patient was given class A priority (patients to be operated within one month).⁴ Steroid therapy was instated.

Because of a confirmed COVID-19 positive close contact in March, she underwent a nasopharyngeal swab, which turned out positive. The surgery was thus further postponed and the patient, who remained asymptomatic for the infection, was re-tested multiple times. Sadly, nasopharyngeal swabs remained positive during the following 12 wk.

By June, the patient's neurological symptoms had progressively worsened and she complained frequent episodes of paraphasia and speech arrest and significant right-sided weakness. Therefore, we decided that surgery could no longer be deferred.

Sacco Hospital, a National institution in treating Infectious Diseases has a dedicated operating room that was adapted for neurosurgery.

The patient was admitted to a specialized Infectious Diseases ward. Perioperative and intraoperative patient management followed a protocol similar to the one detailed by Coccolini and

colleagues⁵ for surgery in COVID-19 patients, with the obvious differences due to the procedure being performed under awake anesthesia. Specifically, all the personnel who was in contact with the patient or was present in the operative rooms wore FFP3 masks, visors, gowns, 2 pairs of gloves, and calf-length shoe covers. The surgical team wore waterproof disposable aprons under the surgical gown.

The patient wore a standard surgical mask. Above and on the sides of the patient's head, a tent-shaped structure made of sterile drapes was constructed with the intent of limiting respiratory droplets spreading. The language testing was performed by means of picture naming tasks and reading of written phrases displayed on a slideshow presentation automatically looping on a laptop located in front of the patient. The surgery was uneventful with no surgical nor anesthesiological issues. In the postoperative period, the patient developed a slight dysphasia which resolved spontaneously within 24 h. The following days were uneventful and the patient was discharged on the seventh postoperative day. To date she remains neurologically intact. The histologic examination confirmed the metastatic nature of the lesion and the patient was sent to receive whole brain irradiation therapy.

Weeks after the procedure no member of the surgical staff developed any COVID-19-related symptom.

While we agree awake surgery in proven or suspect COVID-19 positive patients poses unique challenges, it is indeed feasible and, with proper precautions, safe for both the patient and the surgical staff. As an added benefit of the awake procedure, intubation and extubation were not necessary, thus avoiding highly aerosolizing procedures.^{5,6}

The patient gave consent for the surgery and for the use of her anonymized data for research purposes.

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