



## LETTER TO THE EDITOR

## How COVID-19 changed our bronchoscopy procedures: A comparison with the Portuguese Pulmonology Society Recommendations



Facing COVID-19 had led the world to face many challenges to limit the spread of the virus and to minimize the risk of saturation of health facilities and intensive care beds. Each country had to consider its epidemiological and economical context, as well as scientific data (variable and evolving scientific knowledge, national and international experts' opinion, and official declarations of the world health organization).

Morocco has taken proactive and effective early decisions namely the general lockdown and the maintain of minimal activity including medical activity. The challenge was to guaranty the access of care and treatment for urgent patients as highly suspected cancer patients. Since lung cancer is known by its delay to diagnosis and its reduced prognosis outside any pandemic situation, we decided to maintain our protocols of care for all patients suspected with lung cancer as needed while changing our bronchoscopy procedures and implementing safety measures.

Bronchoscopy is an aerosol generating procedure with high risk of transmission and contamination.<sup>1</sup> To protect both health care workers and patients, we sought to strictly implement relevant standards for preventing from infections by adapting available resources. We were inspired by several guidelines and recommendations regarding bronchoscopy that were published at the beginning of the pandemic. These were expert opinion derived from observations made during prior respiratory viral outbreaks.<sup>2–6</sup> As the situation evolves, new documents aiming to guide interventional pulmonology were published. The consensus statement for interventional pulmonology from the Portuguese Pulmonology Society provided a set of recommendations and a thorough overview.<sup>7</sup>

How Covid-19 changed our bronchoscopy procedures? In the first three months of declared pandemic, bronchoscopy was essentially limited for highly suspected cases of lung cancer that had no alternate option i.e., percutaneous lung biopsies, pleural biopsy, suspected metastatic site or peripheral lymphadenectomy biopsy. Bronchoscopy was postponed for patients with no urgent situation. All the patients had to be asymptomatic within 2 weeks (they were asked about

symptoms, contacts and travel history). Note that only 10% of the patients had a COVID-19 PCR test performed at this time. The bronchoscopy unit was considered as a high-risk area with limited access, we reduced personnel to one doctor and one nurse performing bronchoscopy and patients were scheduled with different appointment times (1h30 min between each patient). Upon arrival, we checked the temperature of both the patient and his/her accompanying caregiver or relative (limited to one per patient), using non-contact thermometer before being allowed to enter the bronchoscopy area in the attending room with a medical mask put on. A specific place to store, to gown and to remove all items required for personal protective equipment (PPE), according to hospital protocol and standards, was defined close to the procedural suite. For operators (doctor and nurse), the use of an FFP2 (filtering facepiece) respirator was mandatory while performing bronchoscopy as well as disposable gowns and gloves, hoods, boots and face shields.<sup>8</sup>

Bronchoscopy and anesthesia precautions: All patients were under spontaneous ventilation. Oxygen supplementation was done, when needed, through a nasal cannula. Bronchoscopy was performed with local anesthesia as we do in the most cases. We performed flexible bronchoscopy with a transnasal approach. To minimize droplet emission and to reduce the risks of virus aerosolization, we performed a hole in the patient's medical mask where we introduced the bronchoscope, whenever feasible and tolerable for the patient. If not, the medical mask was placed over the patient's mouth. The time of performed procedures was reduced to the shortest possible and with the fewest number of sampling procedures required to achieve the clinical goal.<sup>9</sup> At the end of the exam, surfaces of the endoscopy room were carefully cleaned and disinfected following the disinfection policy. A high-level manual disinfection when using a fiberoptic bronchoscope or an automated endoscope reprocessor when using a video-bronchoscope was realized by the nurse with the supervision of the doctor. The room was ventilated with natural ventilation for at least 45 min after the end of the procedure as a negative pressure room wasn't available throughout the department. All specimens were manually delivered in a dedicated box.

With the extension of screening and detection of coronavirus, the implementation of codified infection control measures and procedures in the endoscopy unit, a second bronchoscopist was assigned to perform the exam with an

<https://doi.org/10.1016/j.pulmoe.2022.07.015>

2531-0437/© 2022 Sociedade Portuguesa de Pneumologia. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

increase of patients' recruitment (namely previously postponed patients) starting from the 15th of June 2020.

On early August 2020, the consensus statement for interventional pulmonology from the Portuguese Pulmonology Society was published.<sup>7</sup> These recommendations comforted us on pursuing our strategy given the similarities especially keeping a well-organized endoscopy unit (administrative issues, physical space preparation) and considering all patients as infected and therefore, contact precautions were a critical point to master (cleaning and disinfecting patient care equipment and operating room, personal protective equipment, safety rules for staff and patients). As stated in this guidance, individual clinical judgment and local resources may lead to alternative perspectives.<sup>7</sup> For example, a negative pressure room wasn't available throughout our department neither a natural ventilation with airflow and duration of at least 160 L/s and 30 min as recommended. Instead, a natural ventilation for 45 min at least after the end of the procedure with all the windows open to create a natural air flow was realized in our operating room associated to rigorous cleaning and disinfection of the patient care equipment and surfaces.

With the launch of rapid screening tests for COVID-19 in the late of November 2020, performing a PCR or rapid antigenic screening for all the patients was then mandatory 24 to 48 h before the scheduled bronchoscopy. Bronchoscopy Protocols Enacted for COVID-19 were maintained despite a negative tests result.<sup>10</sup> We recovered since then the full activity of the bronchoscopy unit with 4 bronchoscopists and recruited as much patients as before the world pandemic.

In total, our activity in the endoscopy unit decreased by 40% in the first year since the beginning of the pandemic (421 bronchoscopies performed from Mars 2019 to February 2020 versus 252 from Mars 2020 to February 2021). Then we registered an increase in the next year with 402 bronchoscopies performed from Mars 2021 to February 2022 that is 95% of the activity compared to the year before the pandemic.

No outbreaks occurred within the staff and no patients were known to have developed COVID-19 after a procedure during 2 years since declared pandemic in our country (March 2nd, 2020, until March 1st, 2022). Indeed, no COVID-19 symptoms were developed among health workers (in total 4 doctors and 2 nurses). For patients that underwent bronchoscopy, they were either still hospitalized for at least 1 week after the procedure, either seen on consultation 2 weeks later. They were asked about symptoms and a PCR or rapid antigenic tests were realized when COVID-19 was suspected (9 hospitalized patients, tests negatives).

Bronchoscopy is considered with high risk of transmission and contamination and could appear scary to perform especially at the beginning of the pandemic where the safety of this procedure was questioned, where scientific knowledge about the COVID-19 was weak and where PCR tests were performed at this time to just few patients. But, as many remarkable healthcare workers throughout the world, we believed in the concept of optimizing resources, using correctly protective equipment, focusing on core values, fulfilling and honouring the Hippocratic Oath. Our main goal was to develop an adapted strategy in a context of evolving reorganization of procedures according to the evolution of the epidemiological situation, scientific knowledge and

advances, the availability of diagnostic means and local resources. This guaranteed the safety of both health care workers and patients without impacting the quality of our healthcare services and guaranteed the access of diagnostic procedures without delays to all highly suspected lung cancer patients.

## Funding

This work did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Declaration of Competing Interest

The Authors declare that there is no conflict of interest

## References

1. Jackson T, Deibert D, Wyatt G, Durand-Moreau Q, Adishes A, Khunti K, et al. Classification of aerosol-generating procedures: a rapid systematic review. *BMJ open respir res.* 2020;7(1). <https://doi.org/10.1136/bmjresp-2020-000730>.
2. [Expert consensus for bronchoscopy during the epidemic of 2019 novel coronavirus infection (Trial version)]. *Zhonghua Jie He He Hu Xi Za Zhi.* 2020;43(3):199–202. <https://doi.org/10.3760/cma.j.issn.1001-0939.2020.03.012>.
3. Lentz RJ, Colt H. Summarizing societal guidelines regarding bronchoscopy during the COVID-19 pandemic. *Respirology.* 2020;25(6):574–7. <http://doi.org/10.1111/resp.13824>.
4. Wahidi MM, Shojaee S, Lamb CR, Ost D, Maldonado F, Eapen G, et al. The use of bronchoscopy during the coronavirus disease 2019 Pandemic: CHEST/AABIP guideline and expert panel report. *Chest.* 2020;158(3):1268–81. <http://doi.org/10.1016/j.chest.2020.04.036>.
5. Pritchett MA, Oberg CL, Belanger A, De Cardenas J, Cheng G, Nacheli GC, et al. Society for advanced bronchoscopy consensus statement and guidelines for bronchoscopy and airway management amid the COVID-19 pandemic. *J Thorac Dis.* 2020;12(5):1781–98. <http://doi.org/10.21037/jtd.2020.04.32>.
6. Luo F, Darwiche K, Singh S, Torrego A, Steinfors DP, Gasparini S, et al. Performing bronchoscopy in times of the COVID-19 pandemic: practice statement from an International Expert Panel. *Respiration.* 2020;99(5):417–22. <http://doi.org/10.1159/000507898>.
7. Guedes F, Boléo-Tomé JP, Rodrigues LV, Bastos HN, Campinha S, de Santis M, et al. Recommendations for interventional pulmonology during COVID-19 outbreak: a consensus statement from the Portuguese Pulmonology Society. *Pulmonology.* 2020;26(6):386–97. <https://doi.org/10.1016/j.pulmoe.2020.07.007>.
8. Ippolito M, Vitale F, Accurso G, Iozzo P, Gregoretti C, Giarratano A, et al. Medical masks and respirators for the protection of healthcare workers from SARS-CoV-2 and other viruses. *Pulmonology.* 2020;26(4):204–12. <https://doi.org/10.1016/j.pulmoe.2020.04.009>.
9. Leung NHL, Chu DKW, Shiu EYC, Chan KH, McDevitt JJ, Hau BJP, et al. Respiratory virus shedding in exhaled breath and efficacy of face masks. *Nat Med.* 2020;26(5):676–80. <https://doi.org/10.1038/s41591-020-0843-2>.
10. Steinfors DP, Herth FJF, Irving LB, Nguyen PT. Safe performance of diagnostic bronchoscopy/EBUS during the SARS-CoV-2 pandemic. *Respirology.* 2020;25(7):703–8. <https://doi.org/10.1111/resp.13843>.

A. Jniene<sup>a,b,\*</sup>, A. Rhanim<sup>a</sup>, L. Herrak<sup>a</sup>, L. Achachi<sup>a</sup>,  
M. El Ftouh<sup>a</sup>

<sup>a</sup> *Department of Pulmonology, Ibn Sina Hospital, Ibn Sina University Hospital Center, Faculty of Medicine and Pharmacy, Mohammed V University, Postal address: abderrahim bouabid avenue, 10100, Rabat, Morocco*

<sup>b</sup> *Exercise Physiology and Autonomic Nervous System Team “EPE-SNA”, Laboratory of Physiology, Faculty of Medicine*

*and Pharmacy, Mohammed V University, Postal address: impasse souissi, 10100, Rabat, Morocco*

\* Corresponding author.

*E-mail address:* [a.jniene@um5r.ac.ma](mailto:a.jniene@um5r.ac.ma) (A. Jniene).

Received 30 June 2022; Accepted 30 July 2022

Available online 15 August 2022