Author's Reply: Aerosol Box, an Operating Room Security Measure in COVID-19 Pandemic

Francisco Alberto Leyva-Moraga¹ · Eduardo Leyva-Moraga¹ · Fernando Leyva-Moraga¹ · Abelardo Juanz-González² · Jesús Martín Ibarra-Celaya³ · Jesús Antonio Ocejo-Gallegos¹ · Jorge Arturo Barreras-Espinoza²

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Dear Editor,

We read with interest the letter by Dhvani et al., and we would like to thank the authors for their comments.

The concept of the “Aerosol Box” (AB) was elucidated as a protective measure that provides an additional barrier to airborne particles expelled during high-risk aerosolization procedures. New limitations of the AB's ergonomics have emerged with the progression of the current pandemic, which are mainly related to physician maneuverability. In response to these difficulties, adaptations to the original AB model have been proposed [1], including the concept of a plastic sheet covering a rigid frame, as well as an additional negative airflow that provides constant suction [2]. Furthermore, there is the possibility of adapting this enclosure concept to laparoscopic procedures in order to restart minimally invasive operations.

We recognize the need to improve the ergonomics of the AB. It is undeniable that its rigid design restricts movements that translate to a limited range of motion and increased procedural time. This is especially true when the physician is not familiarized with the gear, thus leading to compromise after use, such as in cleaning and carrying, but more importantly, patient wellbeing.

The design of Cubillos et al. [2] provides a more flexible structure and broader airborne particle management with

the use of negative pressure by suction, in addition to low cost and disposable properties. We believe that these adaptations are promising in addressing these difficulties and have better outcomes during aerosolization procedures.

Although laparoscopic surgery is theoretically a high-risk aerosol exposure, the magnitude of this risk remains in doubt [3]. Adding an extra barrier in this particular setting could represent a challenge that can potentially further compromise patient safety and procedural quality, as it requires exterior manipulation to operate precisely through small abdominal wall incisions and perform precise maneuvers inside the cavity. We believe this is not the best alternative to safely restart these interventions.

To acquire the benefits of minimally invasive procedures, such as reduced length of stay and lower complication rates (which are vital in these times), we encourage users to abide by the following recommendations: making trocar incisions as sufficiently small as possible to insert the ports; using the minimum required pneumoperitoneum; and evacuating CO₂ through active or passive filtration systems before specimen extraction, trocar removal, wound closure, and conversion to open surgery [4].

The current pandemic requires immediate solutions to overcome the continuing challenges that surgical personnel face. Although limited evidence has addressed the capacity of the AB to provide aerosol protection, we felt that the concept of a new and extra barrier in addition to established protocols might be a reasonable precaution measure to decrease aerosol spread in the operating room during aerosolization procedures. New adaptations to this concept are required and should take into account the wellbeing of patients and medical personnel, as well as particle contingency, ergonomics, low costs, and replicable properties. There is a necessity for healthcare workforce to protect themselves with what is available against infection from

✉ Eduardo Leyva-Moraga
leyvamoragaeduardo@gmail.com

¹ Department of Medicine and Health Science, Universidad de Sonora, Av Luis Donaldo Colosio, Centro, Hermosillo 83000, México

² Surgery Department, Hospital General del Estado de Sonora, Hermosillo, México

³ Thoracic Surgery Department, Hospital + Querétaro, Santiago de Querétaro, México

SARS-Cov-2 while better solutions are sought. These solutions should always prioritize the wellbeing of patients and the surgical team.

Compliance with Ethical Standards

Conflict of interest The authors certify that they have no involvement in any organization with any financial or non-financial interest, in the subject matter discussed in the manuscript.

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