KJA
Korean Journal of Anesthesiology

Tube or not tube in COVID-19 positive patients: that is the question

Pierfrancesco Fusco[1], Laura Pizzorno[2], Valentina Arcangeli[3], Franco Marinangeli[3]

Departments of [1]Anesthesia and Intensive Care, San Salvatore Hospital, [2]Breast Surgery, San Salvatore Hospital, [3]Life, Health and Environmental Science, University of L'Aquila, L'Aquila, Italy

Letter to the Editor

Korean J Anesthesiol 2021;74(6):552-554
https://doi.org/10.4097/kja.21063
pISSN 2005-6419 • eISSN 2005-7563

Received: February 22, 2021
Revised: April 13, 2021 (1st); April 28, 2021 (2nd)
Accepted: April 28, 2021

Corresponding author:
Valentina Arcangeli, M.D.
Department of Life, Health and Environmental Science, University of L'Aquila, Via Vetoio, 67100 L'Aquila, Italy
Tel: +39-3298884088
Email: valentina.arcangeli@graduate.univaq.it
ORCID: https://orcid.org/0000-0002-0114-9507

Managing a patient's airway is essential for adequate oxygenation and ventilation; failure to do so, even for a brief period of time, can be life threatening. In addition, medical literature indicates a significant association between obesity and the rate of difficult tracheal intubation, difficult laryngoscopy, Mallampati scores ≥ 3, and a risk of obstructive sleep apnea (OSA). Regional anesthesia is recommended by the American Society of Anesthesiologists for use in obese patients with OSA, when possible. It is ideal for such patients because it can avoid airway manipulation, the use of cardio-depressant inhaled anesthetics, and the use of respiratory depressant opioids [1]. However, even when regional anesthesia is used, anesthesiologists should always be prepared to obtain airway access in cases requiring conversion to general anesthesia [1].

The treatment of surgical patients with confirmed or suspected coronavirus disease (COVID-19) is a challenge for all anesthesiologists. General anesthesia requiring airway intervention may exacerbate COVID-19 pneumonia, and aerosol generation during airway intervention risks COVID-19 transmission to medical staff. However, regional anesthesia is not an aerosol-generating procedure [2].

Written informed consent was obtained from the patient and the patient described herein consented to the publication of this report.

At San Salvatore Academic Hospital in L'Aquila, Italy, a 65-year-old COVID-19 positive woman, without associated symptoms or evidence of pneumonia, underwent right superolateral quadrantectomy, with regional lymph node dissection, that was not deferrable according to the surgeon. Her height was 175 cm and weight was 140 kg (body mass index: 45 kg/m^2), and she had an American Society of Anesthesiologists physical status of 3. She had several comorbidities, including hypertension, OSA, respiratory insufficiency, diabetes mellitus type 2, dyslipidemia, peripheral neuropathy, and empty saddle syndrome. Arterial blood gas analysis showed a paO_2 of 63 mmHg and pCO_2 of 51 mmHg without oxygen supplementation. The patient fulfilled many criteria used to predict difficulty with intubation or ventilation: Mallampati = 3, STOP-Bang score = 7, El-Ganzouri score = 8, and neck circumference = 43 cm.

Two milligrams of midazolam was administered intravenously at the start. We elected to perform a pectoralis and serratus plane type 2 (PECS-2) block and a parasternal block under sedation and spontaneous breathing, with all equipment needed for difficult airway management at hand. The PECS-2 and parasternal blocks were performed in a block room using ultrasound guidance and a 50-mm needle. The patient was placed in a lateral position to direct any respiratory aerosol droplets away from the operator. In performing the PECS-2 block, the needle was advanced to below the pectoralis minor and above the serratus anterior, and a local anesthetic (20 ml of ropivacaine 0.75%) was deposited into this anatomical space (to cover the medial pectoral nerve and the lateral branches of the

intercostal nerves). In the parasternal block, ropivacaine 0.375% was injected between the pectoralis major and intercostal muscles. Subsequently, the patient underwent surgery wearing a surgical mask, in the operating room, with spontaneous breathing in all procedures. Monitoring included peripheral capillary oxygen saturation, non-invasive blood pressure, electrocardiogram, heart rate, and end-tidal CO_2. Under spontaneous breathing, propofol infusion was administered at 3–4 mg/kg/h, and oxygen was administered at 4 L/min per nasal cannula under the patient's mask.

No opioid or vasopressor medications were used. The surgery lasted approximately 1 h. The patient was then monitored for 30 min, and paracetamol at 1 g/8 h was scheduled. No rescue therapy was necessary, and no nausea, vomiting, or cardiac or respiratory complications were encountered postoperatively.

Regional anesthesia may have some advantages over general anesthesia in COVID-19 patients who have difficulty in airway [2].

The incidence of difficult intubation ranges from 1% to 8%, and the incidence of failed intubation ranges from 0.05% to 0.35% [1]. These findings highlight the importance of considering regional anesthesia techniques as alternatives to general anesthesia in COVID-19 patients who have difficulty in airway.

Moreover, regional anesthesia is associated with lesser postoperative complications such as deep vein thrombosis, pulmonary embolism, pneumonia, and cardiac events [3], as well as decreased overall hospital stay (and thus, economic cost). Obese patients who underwent regional anesthesia have similar pain scores (at rest), opioid requirements, incidence of postoperative nausea and vomiting, post-anesthesia care unit length of stay, and rate of unplanned hospital admission when compared to normal-weight patients [4]. Moreover, the use of regional anesthesia can reduce admission to the intensive care unit (ICU) after surgery; since the benefits of direct ICU admission after major elective noncardiac surgery remain unclear.

In a study conducted in our hospital center [5], ultrasound-guided pectoral nerve block type 2 provided anesthesia of the lateral thorax, from dermatomes T2 to T6, and ipsilateral parasternal block provided anesthesia of the medial area from T2 to T6. No supplemental opioids were used during the surgical procedure of quadrantectomy, and no perioperative complications were recorded.

The choice between general and loco-regional anesthesia, in obese patients with difficult airway and COVID-19 positive, remains a challenge for anesthesiologists. Literature suggests the use of regional anesthesia for surgery in patients with known or predicted difficult airway; however, data are insufficient regarding the use of fascial block in these patients. We propose this anesthesiologic approach in cases of anticipated airway management difficulty, especially in patients with COVID-19, recommending the use of a fascial block and trusting in future works that could validate our approach.

Acknowledgements

We want to give our acknowledgments to healthcare personnel, to nurses, to nurse aides, to technicians, and to environmental services of the San Salvatore Hospital, L'Aquila, Italy.

Funding

None.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

Author Contributions

Pierfrancesco Fusco (Supervision; Validation; Visualization)
Laura Pizzorno (Data curation; Formal analysis; Investigation; Project administration; Visualization)
Valentina Arcangeli (Software; Writing – original draft)
Franco Marinangeli (Methodology; Project administration; Supervision; Validation; Visualization)

ORCID

Pierfrancesco Fusco, https://orcid.org/0000-0001-5342-3654
Laura Pizzorno, https://orcid.org/0000-0002-1584-2142
Valentina Arcangeli, https://orcid.org/0000-0002-0114-9507
Franco Marinangeli, https://orcid.org/0000-0002-4931-7717

References

1. Ye YA, Feng TR, Doyle DJ. Using regional anesthesia in difficult airway patients. Anesthesiology News 2018; 87-93. Avaliable from https://www.anesthesiologynews.com/download/Regional_ANAM18_WM.pdf
2. Hotta K. Regional anesthesia in the time of COVID-19: a minireview. J Anesth 2021; 35: 341-4.
3. Dhir S. Regional anesthesia for the high-risk patient. In: Anesthesia for the High-risk Patient. 2nd ed. Edited by McConachie I:

Cambridge, Cambridge University Press. 2009, pp 109-19.
4. Ingrande J, Brodsky JB, Lemmens HJ. Regional anesthesia and obesity. Curr Opin Anaesthesiol 2009; 22: 683-6.
5. Fusco P, Scimia P, Marinangeli F, Pozone T, Petrucci E. The association between the ultrasound-guided Serratus Plane Block and PECS I Block can represent a valid alternative to conventional anesthesia in breast surgery in a seriously ill patient. Minerva Anestesiol 2016; 82: 241-2.

https://doi.org/10.4097/kja.21063