


follow-up of chronic disease among nursing-home residents. The lessons from the COVID-19 epidemic about the advantages (and possible disadvantages) of this technology must be taken to heart, to inform future telemedicine policy, and ensure that the actual end-users are included in the planning and implementation of telemedicine in any future crisis scenarios.

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## CASE REPORT

# Double lumen endotracheal tube, flexible lightwand and ultrasound to safely carry out percutaneous tracheostomy

Dear Editor,

We read with great interest the article by Boran *et al.* about the comparison of the applicability of surgical tracheostomy and percutaneous dilatational tracheostomy (PDT) in geriatric patients admitted to intensive care units.<sup>1</sup> We read that the PDT was carried out with the use of ultrasounds to: (i) identify the space between the second and the third cartilage rings; (ii) detect the presence of vascular formation under the chosen site; and (iii) evaluate the distance between the skin and anterior tracheal wall.<sup>1</sup> Furthermore the authors inserted a flexible lightwand, previously marked to reach the root of the cuff, inside the endotracheal tube (ETT) with the aim to withdraw the ETT until the light was located at the level of the thyroid cartilage.<sup>1</sup>

We appreciate this promising method to carry out a PDT in critically ill geriatric patients; however, we have some concerns. First, the authors declared that the use of the flexible lightwand inside an ETT with a minimum internal diameter of 7 mm did not

affect the ventilation resistance.<sup>1</sup> Fiberoptic bronchoscope (FBS) during PDT was used by 70% of intensive care unit physicians participating in a worldwide survey.<sup>2</sup> The most used FBS during PDT had a diameter of 5 mm.<sup>2</sup> Inserting a FBS of 5 mm inside the ETT increases the resistance to gas flow during simulated mechanical ventilation.<sup>3</sup> We previously calculated that the cross-sectional area of different ETT was reduced by at least 50% by inserting a FBS of 5 mm.<sup>3</sup> The author should declare the external diameter of the lightwand used inside the ETT to assess its potential effect on the ventilation resistance.

Second, neck ultrasound was used more frequently in situations where other neck structures were considered to be at increased risk of injury.<sup>2</sup> The use of ultrasound to assess the distance between the skin and the anterior tracheal wall did not avoid the accidental puncture of the posterior tracheal wall.<sup>2</sup> To our knowledge, only the double lumen endotracheal tube, equipped with an upper channel that allows passage of a

bronchoscope and a lower channel exclusively, dedicated to patient ventilation, centrally positioned on the posterior tracheal wall with its distal cuff positioned just above the carina, might protect the posterior tracheal wall.<sup>4</sup> Furthermore, the presence of the lower channel of the double lumen endotracheal tube exclusively dedicated to the patient's ventilation might ensure proper oxygenation and facilitate the airway management during the PDT.<sup>4</sup>

Desaturation during PDT is the third intraprocedural complication.<sup>5</sup> Interestingly, the authors did not report the incidence of desaturation and other intraprocedural complications during the tracheostomies. This might be an important point to be addressed, as tracheostomies are procedures involving the airway.

We support the promising PDT proposed by the authors; however, we suggest improving this PDT technique by using the double lumen endotracheal tube with ultrasound and flexible lightwand to achieve a completely safe procedure in critically ill geriatric patients.

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## COMMENTS

# Snoring is a pathogenic symptom: A need for its objective assessment

**Keywords:** Japan Gerontological Evaluation Study, objective, sleep, snoring.

Dear Editor

We appreciate the epidemiological data regarding the association between snoring intensity and cardiovascular diseases, as noted by Najjin *et al*.<sup>1</sup> As there are various aspects of snoring, we agree with the claim by Najjin *et al*. that both the frequency and intensity of snoring are essential and independent factors to predict future cardiovascular disease. We confirmed the association between snoring and the development of diabetes by recently reviewing publications regarding diabetes and sleep apnea.<sup>2</sup> Furthermore, a recent study showed that snoring intensity and frequency are independent predictors of sleep apnea.<sup>3</sup> We found both frequency and intensity in questionnaires, such as the Berlin Questionnaire and STOP-Bang. Collectively, we should ask about both the frequency and the intensity of snoring as pathogenic symptoms in the clinical setting to identify those with a high risk for sleep apnea and subsequent cardiovascular disease.

However, there seems to be various issues that need to be addressed, in association with the epidemiological approach based on subjective questions. First, the evidence has been established based on middle-aged populations,<sup>1–3</sup> whereas it is unknown if snoring is a pathogenic symptom in the older population. Second, at the individual level, we are unable to determine whether there really is a difference between individuals who claimed to snore 5 nights a week and those who snored every night. Third, it is very difficult to collect information on snoring in the older population

aged ≥65 years, who might live alone, have no bed partner or live with a spouse who suffers from hearing loss. We presented the evidence for the first issue and concluded that snoring is a pathogenic symptom in the older population, based on the Japan Gerontological Evaluation Study (JAGES), the representative cohort of the older population in Japan.<sup>4,5</sup> Two issues still remain. To address them, objective and handy measures need to be urgently established, especially in Japan, a super-aging society. For example, a monitor used in one study, which detects the tracheal sound and analyzes it, using the deep neural network approach, can predict an Apnea-Hypopnea Index ≥5 with high sensitivity and specificity.<sup>6</sup> This type of device will process the combined objective information of both the frequency and intensity of snoring for a night or two, and give cut-off values, over which each component should be pathogenic. One day in the future, these devices will give an objective diagnosis based on snoring, even for older people who live alone. Then, we might be able to finally claim that snoring is a very simple and pathogenic symptom. We believe that our data surely provide encouraging evidence for that.<sup>1,4</sup>

## Disclosure statement

The authors declare no conflict of interest.