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Letter to Editor

A Novel Approach for Securing Endotracheal Tubes in Patients Undergoing General Anesthesia in the Prone Position

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Endotracheal intubation (ETI), typically performed using direct laryngoscopy, is one of the most common methods for securing the airway during general anesthesia. This technique is particularly beneficial for patients positioned in ways other than supine, such as in the prone or lateral positions. The single-lumen tube (SLT) is the most widely used device for airway management [1]. Endotracheal intubation is a high-risk procedure. Due to potential side effects and errors during this intervention, irreversible complications may occur. Therefore, using a safety checklist and taking necessary precautions are recommended [2-3]. After intubation, several important measures must be performed to ensure proper placement and functioning of the tracheal tube. These measures include: 1. Verifying the correct insertion of the tracheal tube. This can be done using capnography, taking a chest X-ray, auscultating breathing sounds, and observing chest movements 2. Connecting the tracheal tube to a ventilator and an oxygen source. 3. Fixing the tracheal tube in place to prevent dislodgment [2]. The primary purpose of endotracheal tube fixation is to prevent accidental dislodgement of the tube, which is usually performed using a tube holder, bandage, or tape [4]. Securing the tracheal tube in patients positioned prone is significantly more difficult than in the supine position. One drawback of using adhesive tape for this purpose is that it can loosen because of airway secretions or unintended movement of the tracheal tube [5]. While the use of bandages or new tube holders is required to be placed all over the patient's neck, this work, especially in neurosurgery, leads to compression of the jugular vein and impaired venous drainage [6].

Challenge

We are facing a challenge. Consider a situation where a patient undergoing cervical disc surgery requires positioning in the prone position. The surgeon has requested that the anesthesia team avoid using any bands around the patient's neck. What is your management strategy for securing the endotracheal tube in this scenario? It may be helpful to start by considering the use of adhesive tapes. As mentioned earlier, when a patient is in the prone position, the increase in oral secretions can lead to adhesive tape coming loose and accidental extubation. Our research team utilizes an innovative method that will be detailed in case of a challenge like the one mentioned above.

To perform the procedure, follow these steps carefully:

1- It is essential to maintain hand hygiene and sterile techniques throughout the procedure. Begin by gathering all necessary equipment for this method: sterile gloves, Magill forceps, laryngoscope, scissors, surgical sponge,

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phenylephrine drops, lubricant gel, and an extension tube (Figure 1).

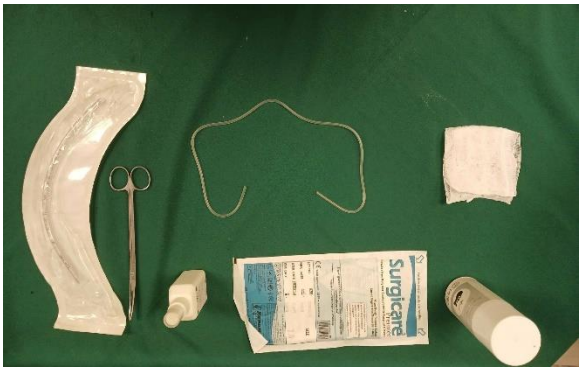

Figure 1- Essential Equipment for the Procedure

2- Using scissors, carefully sever the proximal and distal ends of the extension tube, creating a segment approximately 20 cm in length (Figure 1). In the absence of contraindications for the administration of phenylephrine, instill one to two drops into the nostril corresponding to the side of the tracheal tube and apply a thin layer of lubricant gel to the nostril.

3- Gently insert the constructed tube through the patient's nasal passage, advancing it similarly to the method used for inserting a nasogastric tube. Using a laryngoscope and Magill forceps, carefully retrieve the distal end of the tube from the patient's oral cavity. Once extracted, ensure the tube is thoroughly dried with a sterile surgical sponge (Figure 2).

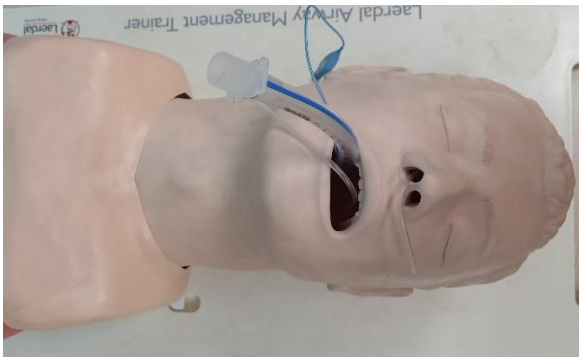

Figure 2- Placement of the proximal and distal ends of the constructed tube

4- To secure the endotracheal tube, first wrap the distal end of the constructed tube clockwise around the tracheal tube and fasten it with a knot at the designated location. Subsequently, tie the proximal and distal ends of the constructed tube together, ensuring that this portion is positioned over the patient's upper lip sponge (Figure 3).

By doing this method, you have actually made a loop between the nasopharynx, oropharynx, and endotracheal tube.

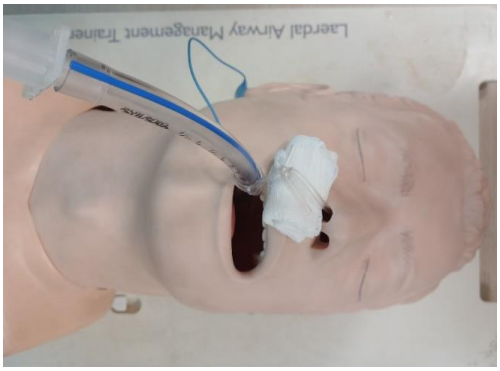

Figure 3- Tying the distal end of the constructed tube around the endotracheal tube and connecting it to the proximal part

Disadvantages

The method of securing the endotracheal tube has several disadvantages. First, it is an invasive technique, which limits its applicability for patients with a fractured skull base or obstructed nasal passages. Additionally, the procedure carries an increased risk of epistaxis, or nosebleeds.

Advantages

Despite the problems mentioned, this method has advantages over methods such as adhesive tape and tracheal tube holders. For example, this method is not affected by airway secretions, especially in the prone position. A key consideration when employing this technique is to avoid exerting pressure on the jugular veins, which could impede venous drainage from the neck.

The research team has successfully employed this method for cervical disc surgery performed in the prone position. We believe it can be safely applied to patients in this setting. However, it is important to emphasize that, like any scientific research, this method must undergo validation through clinical trials before it can be recognized as a standard approach for widespread use.

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