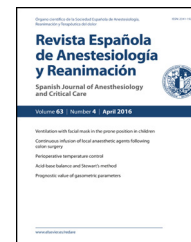




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REVIEW

Review of difficult airway management in thoracic surgery[☆]

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KEYWORDS

Difficult intubation;
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Abstract The management of difficult airway (DA) in thoracic surgery is more difficult due to the need for lung separation or isolation and frequent presence of associated upper and lower airway problems. We performed an article review analysing 818 papers published with clinical evidence indexed in Pubmed that allowed us to develop an algorithm.

The best airway management in predicted DA is tracheal intubation and independent bronchial blockers guided by fibroscopy maintaining spontaneous ventilation. For unpredicted DA, the use of videolaryngoscopes is recommended initially, and adequate neuromuscular relaxation (rocuronium/sugammadex), among other manoeuvres. In both cases, double lumen tubes should be reserved for when lung separation is absolutely indicated.

Finally, extubation should be a time of maximum care and be performed according to the safety measures of the Difficult Airway Society.

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PALABRAS CLAVE

Intubación difícil;
Cirugía torácica;
Aislamiento
pulmonar;
Separación pulmonar

Revisión del manejo de la vía aérea difícil en cirugía torácica

Resumen El manejo de la vía aérea difícil (VAD) en cirugía torácica es muy específico y más complejo que en otras especialidades debido a la exigencia de separación o aislamiento pulmonar y a una mayor presencia de anomalías asociadas a la vía aérea superior e inferior.

Basándonos en el análisis de las evidencias clínicas de 818 artículos indexados en PubMed, presentamos una revisión actualizada y un algoritmo específico del manejo de la VAD en cirugía torácica.

Recomendamos: para la VAD prevista la intubación traqueal con fibronoscopio en ventilación espontánea y el uso de bloqueador bronquial. Para la VAD imprevista, el uso inicial de videolaringoscopios y un adecuado nivel de relajación neuromuscular (rocuronio/sugammadex). Solo se recomienda el uso de tubos de doble luz si hay indicación absoluta de aislamiento pulmonar.

Finalmente, la extubación en este contexto debe ejecutarse con la máxima atención y realizarse según las normas de la Difficult Airway Society.

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Introduction

Difficult airway (DA) is one of the main causes of anaesthesia-related morbidity and mortality. The most serious complications in airway management are bronchoaspiration, failure of tracheal intubation, and extubation problems. Although these complications are uncommon, they are estimated to lead to 5.6 patient deaths per million general anaesthetics, and inadequate airway management occurs in up to 84% of severely ill patients.¹

A turning point in DA management came with the publication of the American Society of Anesthesiology algorithm, which defines DA as the difficulty to ventilate or intubate, promotes the use of tests to predict DA, recommends awake intubation as the first option in patients with DA, encourages anaesthesiologists to ask for help, limits the number of airway manipulations, and prioritises oxygenation.

Although DA management in tracheal intubation has been extensively analysed in the medical literature, the evidence cannot be extrapolated to airway management in thoracic surgery for 2 reasons: First, the need for lung isolation or separation, according to the patient's situation and surgical requirements (single-lung ventilation) and, second, because the anatomy of the upper and lower airway can be altered by the presence of a concomitant oropharyngeal or laryngeal tumour, by previous surgery, by radiotherapy, and by tracheal or bronchial anomalies, and these can complicate intubation. Furthermore, intubation using double lumen tubes (DLT) is more complex and can be difficult even in patients in whom standard intubation would be straightforward.²

Finally, the increased efficacy of video laryngoscopy (VL) in resolving cases of DA has prompted the American Society of Anesthesiology³ and the Difficult Airway Society (DAS) to include these devices at Plan A of their algorithms⁴; therefore, VL can also be considered useful in thoracic surgery.

For all the above reasons, we considered it important to perform a literature review to update the state of the knowledge on the safest and most effective clinical practices in DA management in thoracic surgery. To this end, a search was made of Pubmed using the terms "difficult intubation and thoracic surgery" (822 articles), "difficult intubation and lung isolation" (21 articles) and "difficult intubation and lung separation" (15 articles).

Difficult airway management in lung isolation or separation

The few absolute (life-threatening) indications for lung separation and isolation with TDL are shown in [Table 1](#). However, the absolute priority in difficult-to-intubate patients is to ensure adequate oxygenation and ventilation. In this scenario, lung isolation is a secondary objective whose risks and benefits should be considered. In the context of thoracic surgery, patients with DA who require lung separation generally fall into 4 clinical categories⁵: predicted DA, unanticipated DA, patients with a previous patent tracheostomy,

Table 1 Absolute (life-threatening) indications for lung separation with double-lumen tube.

<i>Lung isolation due to bleeding or infection in the contralateral lung</i>
<i>Control of ventilation distribution</i>
Solution of continuity in the airway (fistula, rupture, or tracheal opening)
Blisters or giant cysts
Severe hypoxaemia due to unilateral lung disease
Lung transplantation
<i>Unilateral bronchoalveolar lavage due to alveolar proteinosis</i>
<i>Need for one-lung ventilation</i>

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