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## CLINICAL INFORMATION

### Use of a homemade introducer guide (bougie) for intubation in emergency situation in patients who present with difficult airway: a case series

Felippe Leopoldo Dexheimer Neto\*, Juliana Mara Stormovski de Andrade, Ana Carolina Tabajara Raupp, Raquel da Silva Townsend, Fernanda Santos Neres, Rafael Viegas Cremonese

Unidade de Terapia Intensiva Adulto, Hospital Ernesto Dornelles, Porto Alegre, RS, Brazil

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#### KEYWORDS

Endotracheal intubation;  
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#### Abstract

**Background and objectives:** The incidence of difficult airway reaches 10% of emergency intubations. Although few studies address the use of handmade introducer guides in emergency and intensive care environment, there are descriptions of handmade guides available on the Internet. We describe a case series on the use of a handmade introducer guide (bougie) for emergency intubation in patients with difficult airway.

**Case report:** The handmade introducer guide was used in five consecutive patients with difficult airways, and clinical instability and in the absence of another immediate method to obtain an airway. This technique provided successful intubation and there were no complications.

**Conclusions:** The use of the handmade introducer guide can be a useful option for the management of difficult airways.

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#### PALAVRAS-CHAVE

Intubação intratraqueal;  
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Emergências

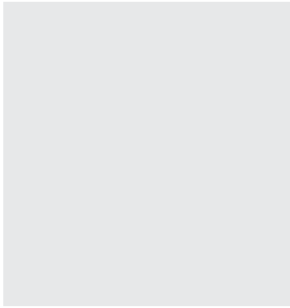
**Emprego de guia introdutor (bougie) artesanal para intubação em situação de emergência em pacientes que se apresentam com via aérea de difícil intubação: série de casos**

#### Resumo

**Justificativa e objetivos:** A incidência de via aérea difícil chega a 10% das intubações de emergência. Ainda que poucos estudos abordem o emprego de guia introdutor artesanal no ambiente de emergência e terapia intensiva, há descrições de guias produzidas de forma artesanal disponíveis na internet. Nosso objetivo é descrever uma série de casos sobre o uso de um

\* Corresponding author.

E-mails: [fldneto@me.com](mailto:fldneto@me.com), [fldneto@tj.rs.gov.br](mailto:fldneto@tj.rs.gov.br) (F.L. Dexheimer Neto).



guia introdutor (Bougie) artesanal para intubação de emergência em pacientes com Via Aérea Difícil.

*Relato de caso:* O guia introdutor artesanal foi utilizado em cinco pacientes consecutivos com via aérea difícil, instabilidade clínica e falta de outro método imediato para a obtenção de uma via aérea. Essa técnica proporcionou sucesso na intubação e não houve complicações.

*Conclusões:* A utilização do guia introdutor artesanal pode ser uma opção útil para o manejo de via aérea difícil.

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## Introduction

The inability to proceed with endotracheal intubation under direct visualization occurs in approximately 10% of emergency intubations. Besides being highly frustrating for the physician, this complication increases the risk to a patient who is already unstable.<sup>1</sup>

For the American Society of Anaesthesiologists, difficult airway is defined as the clinical situation in which an experienced physician has difficulty with face mask ventilation, tracheal intubation, or both.<sup>2</sup> This difficulty is usually related to poor glottic visualization during laryngoscopy, classified by Cormack and Lehane into class III or IV (when the direct laryngoscopy allows only the epiglottis vision, or no vision of the epiglottis, respectively).<sup>1,3,4</sup>

In this context, the use of an introducer guide is well documented for adult patients. It is an experience that comes mainly from the field of anaesthesiology and there are reports of its use in emergency and intensive care unit (ICU) environments.<sup>1,4,5</sup> In addition, there are recent descriptions of handmade production techniques of this instrument – which can be of great value to professionals working in services with limited resources, unfortunately a frequent reality in our country.<sup>6</sup>

## Case series

### Case 1

A male patient, 14 years old, in immediate postoperative of thoracic spine arthrodesis for severe scoliosis and history of asthma developed severe bronchospasm and respiratory failure. After repeated attempts at intubation by different physicians (experienced in airway management), and in face of an inability to visualize beyond the epiglottis, a handmade introducer guide was used at the suggestion of the anaesthetist, allowing the intubation.

### Case 2

A male patient, 73 years old, in postoperative of cholecystectomy for acute cholecystitis, was diagnosed with – diagnosis of difficult airway by the anaesthesia team. He progressed to septic shock and acute respiratory distress syndrome. After 18h of the procedure, there was an accidental extubation. In an attempt to reintubate, only the epiglottis was visualized – indeed, limited by abundant

secretion. In face of a progressive worsening of hypoxaemia, we chose to use the handmade introducer guide, which again resulted in a definitive airway.

### Case 3

A female patient, 90 years old, with morbid obesity (body mass index=42), was transferred to the ICU for acute respiratory failure and decompensated heart failure. Laryngoscopy revealed Cormack III and ineffectiveness in ventilation with bag and mask. Again a bougie was successfully used.

### Case 4

A male patient, 78 years old, with acute renal failure and nosocomial pneumonia developed acute respiratory failure. Laryngoscopy revealed Cormack III. The introducer guide was used to guide the intubation, which allowed obtaining an uneventful definitive airway.

### Case 5

A female patient, 75 years old, was admitted to the ICU for acute ischaemic stroke with sudden sensorial loss by haemorrhagic transformation of stroke. The following presented as predictors of difficult airway: micrognathism and mouth opening of only 2 cm. Laryngoscopy revealed Cormack III and then the bougie was successfully used.

In these cases there was no clinical or radiological evidence of complications related to the use of the introducer guide. The patients had good outcomes, being subsequently discharged from ICU.

## Discussion and conclusion

The introducer guide (described in the literature and in the market with various nomenclatures, such as Bougie, Gum Elastic Bougie, Eschmann Tracheal Tube Introducer®, Macintosh-Venn-Eschmann guide, or Frova®) is an ancillary device, consisting of semi-rigid materials which can be inserted with blind technique into the airway of patients with poor glottic visualization (Cormack-Lehane III or IV) (Fig. 1).

The use of an introducer guide, considered a cheap and easy to use method, is widespread in Europe and North America.<sup>1,4,7,8</sup> Originally described by Macintosh in 1949,<sup>9</sup>

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