

# INTERNATIONAL TRAUMA LIFE SUPPORT

## UTILIZATION OF THE BOUGIE CRICOTHYROTOMY TECHNIQUE FOR A SURGICAL AIRWAY IN ADULTS

The guidelines and references contained in this document are current as of the date of publication and in no way replace physician medical oversight.

### INTRODUCTION

The purpose of this document is to update International Trauma Life Support (ITLS) instructors and providers of the position of ITLS in regard to securing a surgical airway for adult patients who cannot be intubated or ventilated (i.e., failed airway), utilizing the open 3-step cricothyrotomy or bougie cricothyrotomy procedure.

### BACKGROUND

The current 8<sup>th</sup> edition ITLS Provider manual refers to advanced airway management skills that can be deployed in adult trauma patients with a difficult airway, often known as CICO (“cannot intubate cannot oxygenate”) scenario. To supplement the Airway Management and Airway Skills chapters, performing an open 3-step bougie cricothyrotomy procedure is described. Literature review yielded only case reports and small prospective studies, likely due to difficulty in designing a double-blind prospective study for cricothyrotomies and the limited number of surgical airways performed and reported.<sup>1</sup>

### CONSIDERATIONS

Cricothyrotomy is a rare but lifesaving procedure that many prehospital and emergency clinicians have little or no experience performing in vivo. However, it is necessary to understand how to perform the procedure. The National Emergency Airway Registry (NEAR) II database has a record of > 800 ED intubations, and surgical airways were performed in only 0.84% of all cases; however, this rate was doubled (1.7%) in trauma cases. In newer NEAR data (as yet unpublished), it appears that the use of cricothyrotomy has decreased even more.<sup>2</sup>

Indications for cricothyrotomy are:

1. When BMV fails to provide critical oxygenation and ventilation, and EGD placement or intubation are not possible.<sup>3</sup>
2. Following a failed intubation when a supraglottic airway device has failed or is predicted to fail.<sup>3</sup>



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3. When unanticipated difficulties lead to a failed airway requiring immediate intervention.<sup>3</sup>

Contraindications to a surgical airway are few and relative with one exception. They are:

1. Children under the age of 10 (absolute contraindication) due to a small, mobile, and pliable larynx and cricoid cartilage (needle cricothyrotomy recommended instead).<sup>4</sup>
2. Preexisting laryngeal or tracheal pathology such as tumor, infections or abscess.<sup>4</sup>
3. Hematoma or other destruction of the anatomic landmarks rendering the procedure difficult or impossible.<sup>4</sup>
4. Coagulopathy.<sup>4</sup>
5. Lack of operator expertise.<sup>4</sup>

Complications of surgical airway management include hemorrhage, pneumomediastinum, laryngeal/tracheal injury, cricoid ring laceration, barotrauma, infection, voice change, and subglottic stenosis.<sup>4</sup>

There are 2 main techniques that have commonly been used, as well as the newer bougie cricothyrotomy.<sup>1,3,5,6,7</sup> The most common techniques are the open or 4-step cricothyrotomy technique and the Seldinger technique.<sup>1,3,4</sup> The open technique calls for use of a scalpel, tracheal hook, Trousseau dilator and tracheostomy tube, most of which are not available to EMS providers. The Seldinger technique, using a pre-packaged catheter set, is also unlikely to be available in most EMS systems.

Therefore, a preference would be for the bougie-aided surgical approach using a scalpel, bougie, and 6-0 endotracheal or tracheostomy tube<sup>3,5</sup>. The bougie cricothyroidotomy combines the best of both the 4-step surgical approach and the Seldinger techniques, without using any special equipment except a gum-elastic bougie. This technique is simpler, easier to learn and retain, and potentially safer than alternative techniques, because it reduces the risk of a misplaced cricothyrotomy. Further validation and comparison between techniques is warranted<sup>5,8</sup>.

Detailed video instruction of the bougie cricothyrotomy is available online.

## PROCEDURE

With deference to local protocols, performing a surgical airway in adult trauma patients with a failed airway utilizing bougie cricothyrotomies can be a life-saving procedure.



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## MEDICAL OVERSIGHT

Medical oversight should continue to review pertinent current literature and develop proper prehospital EMS protocols and training in regard to the appropriate use of bougie cricothyrotomies. Implementation should be monitored and supervised through a quality assurance program.

## CONCLUSION

It is the position of ITLS to supplement the Airway Management and Skills chapters in the 8<sup>th</sup> edition ITLS Provider manual regarding performing bougie cricothyrotomies in adult trauma patients requiring an advanced airway in the context of a failed airway situation where maintenance of an airway and ventilation is not possible by other means.

## REFERENCES

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# *Current Thinking*

## **Utilization of the Bougie Cricothyrotomy Technique for a Surgical Airway in Adults** International Trauma Life Support

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### **Abstract**

This is the current thinking of International Trauma Life Support (ITLS) with regard to the role of bougie cricothyrotomy technique for a surgical airway in adults in the pre-hospital setting.

### **Current Thinking**

It is the position of International Trauma Life Support that:

1. There is sufficient evidence to support the use of bougie cricothyrotomy in the management of a difficult airway in adult trauma patients.



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