

Intros™ Pocket Bougie 101

OVERVIEW AND HISTORY

The gum elastic bougie or better known today as the bougie is an adjunct for difficult ET intubations when the laryngeal inlet cannot be completely visualized during direct or video laryngoscopy. Prior to 1940's bougies were used in several areas of medicine. The medical terminology for a bougie originally described any flexible, small diameter, dilator device that was inserted into a body orifice for examination. The current gum elastic bougies are not gummy or elastic, but are in fact rigid. Over the last 60 years anaesthesia has claimed the name Bougie. Since 1950 research has proven that airway clinicians can improve ET intubation success rates and decreased time required for intubation when using a bougie versus a traditional stylet and ET tube¹. The success with Bougies is associated with their smaller diameter versus the diameter of an ET tube.

The bougie was first used for airway management by Robert Macintosh in 1943. At this time Robert Macintosh had written numerous articles about difficulties visualizing the vocal cords of a "difficult airway"². Popularity of the bougie increased in 1949 when Robert Macintosh started to advocate the clinical use of a bougie. Further support occurred simultaneously during the Second World War when field medics and field hospitals successfully used bougies for the "difficult airway". Bougies were commercially manufactured for oral intubation in the later part of 1949. The first to start manufacturing was the British firm of Eschmann Healthcare which is now known as SIMS Portex. The early design of the Eschmann did not have a curved tipped angle set at 38° angle. As bougies continued to gain popularity amongst the airway specialists a 38° tip referred to as a coude tip was added. There is still considerable debate as to who first suggested that this angled tip was beneficial, but regardless it was a major advancement in bougie technology.

The original reusable version of the Eschmann was a fiberglass core covered in a resin and measured 60 cm in length. As the Eschmann Company gained experiences with the Bougie and its clinical significance became evident, the Eschmann Company re-designed the Bougie with the distal tip having a 38° bend. In the last 3 decades there has been a full proliferation of the Bougie in North America and it is now used extensively in the pre hospital, emergency department and operating room setting.



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PREDICTING THE DIFFICULT ET INTUBATION

The pre airway evaluation assists in determining if a patient may present with a difficult airway.

HISTORY AND EXAMINATION

- Suspected spinal cord injury (requiring manual c-spine stabilization)
- Rheumatoid disease and/or degenerative diseases of the spine
- Inability to open the mouth from obesity, deformity, injury
- Pregnant patients (third trimester, increased body mass)
- Oral and/or upper airway tumours
- Facial and/or maxillary trauma
- Short, fat necks (bull neck)
- Protrusion of the mandible
- Abnormally shaped face
- Small mandibles
- Morbidly obese
- Oral infections
- Broken teeth
- Overbite

GRADING THE AIRWAY

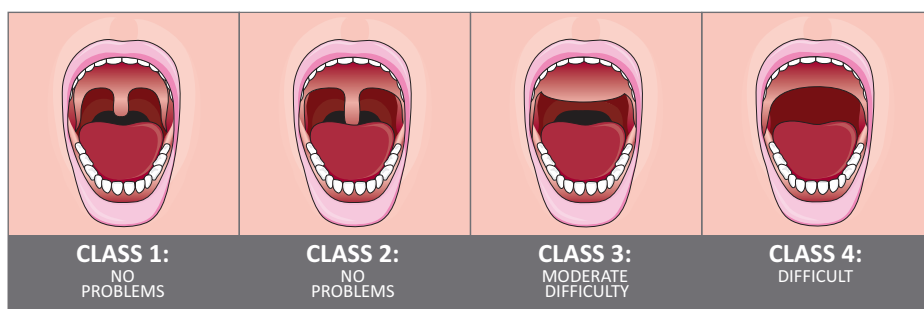
The three main causes of respiratory issues related to intubation are:

- inadequate ventilation
- difficult tracheal intubation
- or oesophageal intubation

When reference to the airway is made, this is typically in reference to the extra-pulmonary airway passage. This includes the structures starting at the nasal and oral cavities and extending to the right and left bronchi. Approximately 28% of anaesthesia related deaths is due to the inability to maintain or achieve an adequate airway.

TESTS DESIGNED TO PREDICT A DIFFICULT AIRWAY

- **THYROMENTAL DISTANCE**
Measured from the upper edge of the thyroid cartilage to the chin with the head extended. The shorter the distance, the less room within the oral pharynx. Less than three fingers may suggest a difficult intubation.
- **MOUTH OPENING**
Should be a minimum of two fingers width opening
- **MALLAMPATI TEST**
Patient opens their mouth, extending their tongue. Based on the view that is seen by the clinician may indicate the difficulty in ET intubation.



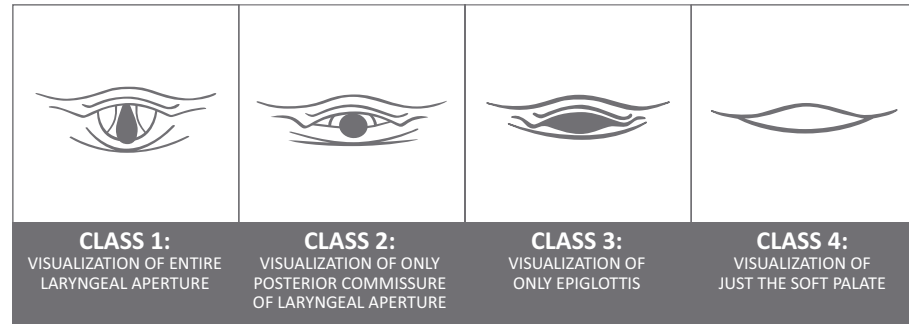
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• **CORMACK AND LEHANE CLASSIFICATION**

This test is based on visual inspection with a traditional or video laryngoscope. The views are graded between I – IV. As the number increases the difficulty in the intubation increases.



There is several more airway tests designed to predict the airway that have been left out. No single test can provide the clinician with a definitive prediction of successful intubation. Therefore, multiple tests and past experiences often guide clinicians through the intubation procedure. With pre-formulated airway plans and experience the majority of patients with a difficult airway are successfully managed.



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STEPS FOR USE OF THE INTROES™ POCKET BOUGIE

The Introes™ Pocket Bougie may be used in the patient with an identified or pending difficult airway. Identifying the difficult airway may be identified from past history, pre operative exam, an unsuccessful ET intubation attempt or an anticipated difficult airway. Once it is determined that an Introes™ is needed, remove it from the package. The special blend of PTFE is designed so that it is self lubricated and avoids the need to add a lubricant to aid in the insertion. Studies have shown that curved Bougies are significantly more effective that straight bougies in allowing clinicians to successfully place ET tubes. The Introes™ has been specifically packaged so that when opened, it is anatomically shaped to the airway to aid in the immediate insertion. Approximately half of all clinicians currently shape their bougies prior to use and curved bougies significantly decrease the time to place an ET tube.

Once the sterile package of the Introes™ has been opened, create the desired shape and bend the distal end if required to form a coude tip. Perform Video laryngoscopy or direct laryngoscopy in the traditional manner to view the patient’s vocal cords. If the vocal cords are not completely visible (Grade III or Grade IV), insert the distal end of the bougie with the bend facing up into the oropharynx and attempt to place the Introes™ into the larynx. It should be carefully and slowly advanced. The malleable nature of the Introes™ has been designed to limit the potential of inadvertent laceration or perforation of the trachea. Numerous studies have highlighted the risk with rigid bougies which could be potentially catastrophic due to their stiff and unforgiving design^{3, 4}. The Introes™ has been manufactured to include innovative Tactiglide™ technology. The blend of PTFE’s, provide the added benefit of exceptional tactile sensation of the tracheal click method which is further confirmation of correct placement of the introducer¹².

CLASSIC BOUGIE INTRODUCER TECHNIQUE

Once the Introes™ is past the vocal cords the clinician can leave the laryngoscope in place as assistant threads the ET tube over the Introes™. When the ET tube clears the distal tip of the Introes™, the ET tube is advanced past the vocal cords. If at any point the ET tube is held up at the inlet of the larynx or vocal cords, perform a slight counter

clockwise rotation of the ET tube and the tube should continue to advance. Once the ET tube is in the correct position the ET Tube is securely held in place while the assistant slowly removes the Introes™. Final steps will consist of removing the laryngoscope. Inflate the cuff, and confirm and secure the ET tube.

PRE-LOADED BOUGIE INTRODUCER TECHNIQUE

Another common method of using the bougie is to “load” the ET tube over the Introes™ prior to the intubation. The Introes™ can act as an introducer and a stylet simultaneously and is used in conjunction with video or traditional laryngoscopy. In this technique, a two handed technique is used to slightly advance the Introes™ past the cords first and then the ET tube. This technique is somewhat cumbersome and requires an assistant that can assist with moving the ET tube and Introes™ upon command while watching the ET tube pass the vocal cords.

BLIND INTRODUCE INSERTION TECHNIQUE

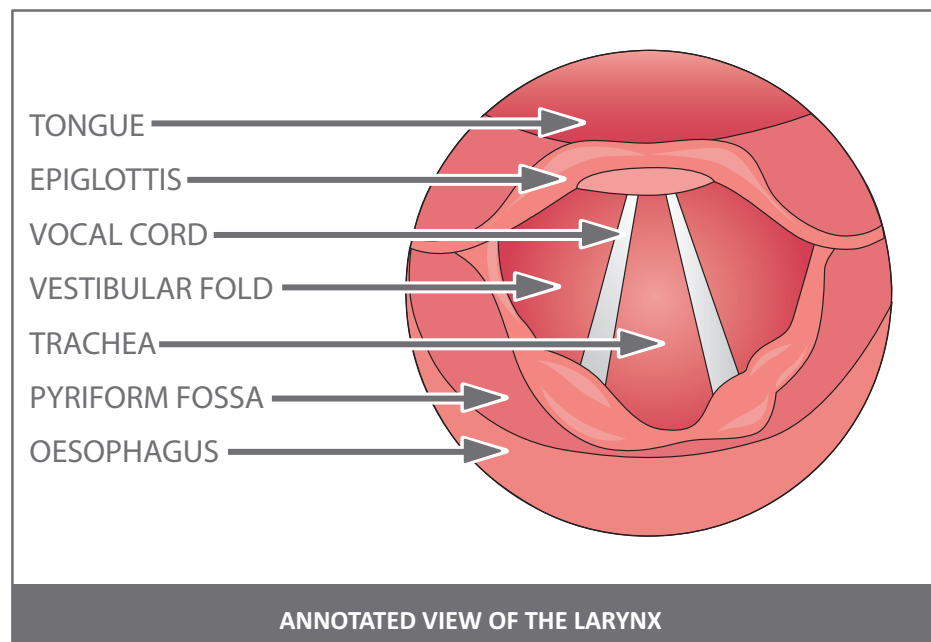
The Introes™ may also be inserted blindly into a patient’s airway¹³. Slide the bougie into the patient’s airway. If tracheal clicks and/or a distinct hang-up are felt, an ET tube can be “railroaded” over the bougie without the aid of a laryngoscope. This is very rarely performed in the hospital setting but is sometimes used in pre hospital in challenging positions where patients are trapped and awaiting extrication.



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