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## Special Article

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# Improving styletted oral tracheal intubation: rational use of the OTSU

*[L'amélioration de l'intubation oro-trachéale : l'utilisation rationnelle du SIOT]*

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**Purpose:** To introduce an improved method of styletted oral laryngoscopic tracheal intubation.

**Description of the technique:** The oral tracheal stylet unit (OTSU) is constructed using a commonly available intubating stylet combined with an ordinary endotracheal tube (ETT). The ETT/stylet is created by a series of specific steps to form an OTSU, each with a standard shape and design that allows the tracheal tube to separate freely from the stylet. After construction, every unit is tested to confirm that the frictional resistance created by the tracheal tube, as it slides along the stationary stylet, is at an absolute minimum.

Successful tracheal intubation is based on the following concepts: (a) The j-shaped OTSU, when correctly directed through the airway, passes freely from the mouth to the larynx, the laryngoscopic channel; (b) The tip of the ETT must first be placed between the vocal cords with every intubation. The tracheal tube is then launched and advanced into the trachea by sliding along and off a stationary stylet; (c) Only minimal force is required to propel the ETT during intubation; (d) Resistance to placement, launch or advancement means the tip of the OTSU has come into physical contact with the patient's airway; (e) When the epiglottis obscures the larynx, the tip of the OTSU is used to explore the hypopharynx and identify the glottis. The ability to differentiate where the ETT tip is located depends primarily on interpreting the sensations of touch and pressure transmitted from the bevel of the OTSU to the hand. Successful tracheal intubation is accomplished when all criteria for placement, launch, and advancement are met.

**Conclusion:** Styletted oral tracheal intubation is well known. However, we describe an improvement of the technique, based on solid physical principles and years of experience, that should prove useful both for routine intubations and unexpected difficult airways.

**Objectif :** Présenter une méthode améliorée d'intubation laryngoscopique oro-trachéale avec stylet.

**Description de la technique :** Le stylet d'intubation oro-trachéal (SIOT) est le résultat de la combinaison d'un stylet d'intubation habituellement disponible et d'un tube endotrachéal (TET) ordinaire. Le TET/stylet est créé à la suite d'opérations spécifiques visant à produire un SIOT, chaque opération suivant un modèle et une forme réglementaires qui permettent au tube trachéal de se séparer librement du stylet. Après la construction, chaque unité est testée pour confirmer que la résistance frictionnelle créée par le tube trachéal qui glisse le long du stylet fixe est réduite au strict minimum.

L'intubation trachéale réussie se fonde sur les concepts suivants : (a) Le SIOT en forme de J, lorsqu'il est correctement poussé dans les voies aériennes, passe librement de la bouche au larynx, le canal laryngoscopique; (b) La pointe du TET doit d'abord être placée entre les cordes vocales pour chaque intubation. Le TET est alors introduit et avancé en glissant dans la trachée à distance du stylet fixe; (c) Seule une force minimale est nécessaire pour pousser le TET pendant l'intubation; (d) La résistance à la mise en place, à l'introduction ou à l'avancée signifie que la pointe du SIOT est entrée en contact avec les voies aériennes du patient; (e) Lorsque l'épiglotte masque le larynx, le bout du SIOT est utilisé pour explorer l'hypopharynx et repérer la glotte. La possibilité de savoir où se situe la pointe du TET dépend principalement de l'interprétation des sensations tactiles et de la pression transmises du biseau du SIOT à la main. L'intubation trachéale réussie est celle qui répond à tous les critères de mise en place, d'introduction et de poussée du tube.

**Conclusion :** L'intubation avec un stylet oro-trachéale est bien connue. Toutefois, nous décrivons une amélioration de la technique, fondée sur de solides principes physiques et des années d'expérience, ce qui devrait se révéler utile autant pour les intubations normales que pour les cas d'intubation difficile inattendue.

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**T**HE difficult oral laryngoscopic tracheal intubation remains a perpetual challenge for the practicing anesthesiologist. Difficult intubation may be encountered in a spectrum of clinical situations ranging from immediate rescue of the airway in life-threatening circumstances to problems with placing the endotracheal tube (ETT) at the time of routine surgery. In all cases, the inability to intubate the trachea at initial laryngoscopy may create a variety of problems. Minor injury such as pharyngeal mucosal abrasion or dental damage is possible as are major complications such as laryngeal edema, pulmonary aspiration, hypoxia, and death.<sup>1,2</sup>

Of particular concern is the unsuspected, difficult intubation in a patient whose airway has been evaluated as normal prior to laryngoscopy. Many studies have attempted to predict why seemingly normal-appearing individuals are at risk for unsuccessful oral tracheal intubation. Unfortunately, no study has demonstrated a totally reliable correlation between any clinical technique used to evaluate airway anatomy with the degree of difficulty encountered during subsequent laryngoscopy and tracheal intubation.<sup>3-10</sup> The ability to predict a difficult intubation, therefore, still rests on fallible clinical judgment, with patient injury possible each time tracheal intubation is initiated.

In response to the serious consequences of failed intubation, advances in airway management have focussed extensively on ways of dealing with patients having known difficult airways or on salvaging airways already jeopardized by failed intubation. Examples range from creation of the ASA difficult airway algorithm to the development of sophisticated intubating devices.<sup>11-22</sup> Nevertheless, the clinical dilemma still remains; a small number of patients in diverse clinical settings will be exposed to repeated, but unsuccessful attempts at tracheal intubation. In the presence of complicating clinical factors including full stomach, bowel obstruction, epiglottitis, trauma, burns, obesity or pregnancy, failure to secure the airway may end with tragic consequences. Ideally, the best solution is prevention by accomplishing successful tracheal intubation of every patient at the time of initial laryngoscopy. Unfortunately, with current knowledge and technology this goal is not always attainable. The best practical solution is to employ a method of intubation that fulfills several criteria. The technique should require only simple, universally available equipment. It must be safe and suitable for routine use, and if a difficult intubation is encountered, should maximize successful placement of the ETT during initial laryngoscopy. To date no description of such a technique has appeared in the literature.

The purpose of this paper is to describe a method of styletted laryngoscopic oral tracheal intubation that fulfills several of the above criteria. Mastery of the technique requires an understanding of concepts that form its foundation including: shaping of the oral tracheal stylet unit (OTSU), reasons for testing the OTSU, descriptions of the forehand and backhand methods of manipulating the OTSU, and the one- and two-hand methods of extracting the stylet from the OTSU.

### Description of the material

Figure 1 shows a lateral view of the OTSU and its component parts, using as an example, a 7.5 mm Hi-Lo™ (Mallinckrodt, St. Louis, MO, USA) oral tracheal tube in conjunction with a #3 or #4 curved Macintosh laryngoscope blade. The principles involved in shaping and testing, however, apply equally to most adult-sized tracheal tubes, and with minor changes in construction, to other types of endotracheal tubes. A Satin-Slip™ (Mallinckrodt, St. Louis, MO, USA) intubating stylet is used exclusively and is highlighted in black for easier viewing.

Figure 2 illustrates the OTSU while looking onto the end of the endotracheal tube connector, and along its central axis. An imaginary 6–12 o'clock plane running the length of the ETT serves as a reference for constructing and handling the OTSU. This plane is bordered superiorly by a line projected from the outermost point on the stylet handle to the tip of the ETT. The inferior boundary follows the outer margin of the tracheal tube onto the stylet handle.

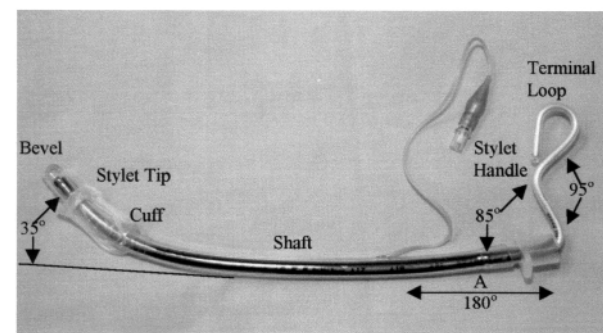


FIGURE 1 The lateral view of the oral tracheal stylet unit (OTSU) shows the stylet handle with its terminal loop, the stylet tip located at the beveled end of the tracheal tube, and various angles at different bends in the stylet. Note - the OTSU in the region of point A, where the connector ends within the lumen of the OTSU, remains straight.

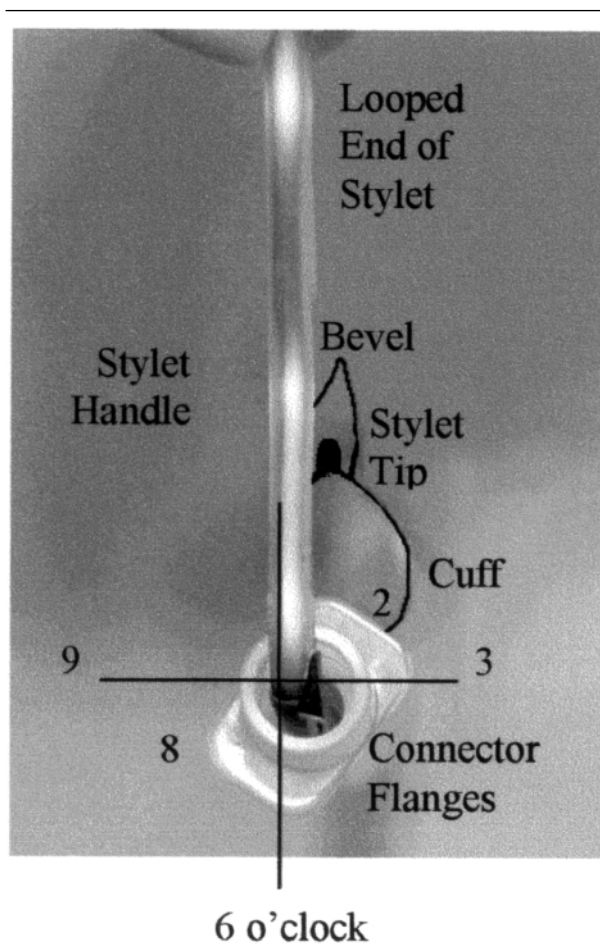


FIGURE 2 The oral tracheal stylet unit (OTSU) is viewed along the central axis of the endotracheal tube (ETT) connector. An imaginary clock, superimposed on the open end of the connector, is used as a reference for locating parts of the OTSU. The beveled tip of the ETT and the stylet handle align at 12 o'clock. The flanges must be located at the 2–8 o'clock position since the 8 o'clock flange will be used as a rest for the thumb during clinical intubation.

#### *Shaping the oral tracheal stylet unit*

STEP 1: The cuffed end of the ETT is left in its sterile package when the OTSU is prepared for clinical use but has been removed from packaging for clearer viewing in the illustrations. The proximal end of the 7.5 mm ETT is cut at the 25 cm mark, the connector moistened with alcohol, and fully inserted such that the flanges are at the 2 and 8 o'clock positions.

STEP 2: A new, lightly lubricated stylet is inserted into the ETT until the stylet tip reaches the open end of the tube bevel. The loop of the stylet is placed and maintained in the 6–12 o'clock plane during subsequent shaping of the handle.

STEP 3: The stylet handle is curved in two stages within the 6–12 o'clock plane. First, the stylet is bent forward over the connector to form an angle of about  $85^\circ$  between the stylet handle and long axis of the connector. Next, the looped end of the stylet is bent in the opposite direction making a  $95^\circ$  angle.

STEP 4: The distal one third of the ETT is placed across the separated fingers of the left hand, resting the 12 o'clock portion of the ETT on the fingers and locating the thumb at the 6 o'clock position near the upper edge of the cuff. The ETT is then compressed by a series of pinching and releasing movements between the thumb and fingers while the thumb is moved towards the end of the ETT. A smooth curve is formed beginning above the cuff, ending approximately 1 cm from the bevel, and with a radius of curvature, the tangent of which forms an approximate  $35^\circ$  angle with the shaft of the ETT. A final slight bow is added to the shaft, giving the OTSU a shape that resembles the letter j.

#### *Testing the OTSU*

Every OTSU is tested for several reasons. Testing duplicates many of the hand movements needed for clinical intubation and with repeated practice trains the operator to perform the same manoeuvres at the time of clinical intubation. A key step for correctly using the OTSU is to understand how the ETT separates from the stylet. The stylet is always kept stationary, never moving from its initial position; it is the ETT that moves, first by launching and then advancing along and off the end of the stylet. The force propelling the endotracheal tube originates from the thumb resting on the endotracheal tube connector, and the thumb, by moving through its range of motion, pushes the ETT forward. The ability to duplicate the appropriate thumb action is essential for clinical intubation.

During testing, the degree of effort needed to propel the ETT depends upon the frictional resistance generated between the stylet and inner wall of the ETT. The higher the internal frictional resistance (IFR), the greater will be the force needed to initiate and sustain motion of the tube along the stylet. The ability to judge the degree of resistance is learned through subjectively evaluating changes in touch and pressure originating in the hand holding the OTSU. With experience the operator learns to recognize the smallest force exerted by the thumb on the connector that first starts and then moves the tracheal tube along the stylet. The tracheal tube should launch and glide with only slightly more effort than felt when the same movement is practiced using the bare hand. Need for more force during testing indicates the stylet is kinked or too sharply bent and should be reformed or discarded.

Every unit used for clinical intubation must function identically. Sameness is the rule where all endotracheal tubes slide smoothly and easily off the stylet thereby eliminating the OTSU as a cause for any abnormal resistance encountered during clinical intubation. Rather, detection of resistance while manipulating the OTSU within the patient's airway or on attempting to separate the ETT from the stylet unequivocally indicates the tracheal tube is in physical contact with some part of the patient's airway.

#### *Forehand technique for manipulating the OTSU*

The forehand technique of testing consists of three steps: 1) holding the OTSU; 2) placing the endotracheal tube tip; and 3) launching and advancing the ETT.

##### 1) HOLDING THE OTSU

The right hand is extended as if one were reaching for a small book. The OTSU is then held as shown in Figure 3A.

##### 2) PLACING THE ENDOTRACHEAL TUBE TIP

It is essential that the operator learn to direct and then deliberately place the bevel of the OTSU in a specific location. The OTSU is held in standard fashion and the tracheal tube tip guided near the intended target. Precise delivery follows with small, corrective movements involving both the wrist and hand. For example, radial/ulnar flexion at the wrist alters the position of the endotracheal tube tip primarily in an anterior/posterior direction. The action between the thumb and opposing fingers directs the OTSU through a seamless combination of side-to-side, and back-to-front movements. As well a small arc-like motion may be produced at the tracheal tube tip by rolling the connector slightly between the thumb and index finger.

##### 3) IFR LAUNCH AND ADVANCEMENT

Testing launch and advancement simultaneously checks the IFR within each OTSU while reproducing essential hand movements required for clinical intubation (Figure 3B). The thumb, by moving across the palm of the hand, pushes the ETT on average 4–5 cm beyond the end of the stylet while the index finger, on which the stylet handle rests, remains motionless at its initial position. The natural tendency is to pull back the index finger while attempting to propel the ETT, thereby accidentally backing the stylet out of the tube. One should avoid this action as it merely withdraws the stylet without moving the tube forward. Remember! the *goal* is to drive the ETT forward while leaving the stylet at its starting position.

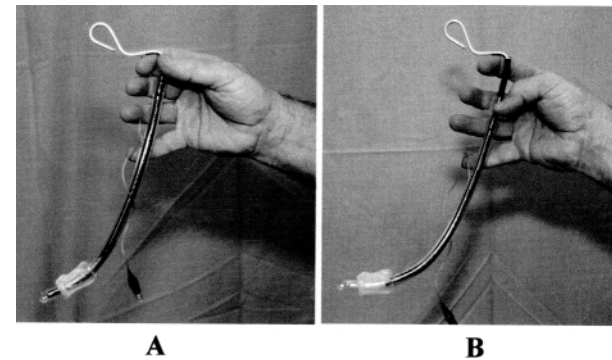


FIGURE 3 Forehand technique - Holding (A) and testing (B) the oral tracheal stylet unit (OTSU). A, the handle of the OTSU is first suspended across the distal IP joint of the index finger. The connector is then pinched between the partially-flexed thumb resting on the 8 o'clock flange and the index and middle fingers above, and below, the 2 o'clock flange. The shaft of the endotracheal tube (ETT) falls across the fourth digit and is supported by the distal phalynx of the little finger as it applies pressure to the shaft. All fingers are slightly flexed, with the fourth and fifth digits also separated. The operator by appropriately adjusting the forces applied to the connector and ETT shaft controls movement and position at the distal end of the OTSU. B, the thumb launches the ETT by pressing on the 8 o'clock flange as the middle finger simultaneously pulls away from the 2 o'clock flange. Continued pressure by the thumb propels the ETT forward, and off the stylet which is kept stationary by the index finger. The fourth and fifth digits serve to correct any lateral drift of the ETT. Note - the stylet remains in the *same* location because the index finger, which supports the stylet handle, has been kept stationary. The forehand manoeuvre requires repeated practice to properly deliver the tracheal tube during clinical intubation.

#### *Backhand technique for manipulating the OTSU*

##### 1) HOLDING THE OTSU

The OTSU is held as shown (Figure 4A).

##### 2) IFR PLACEMENT, LAUNCH AND ADVANCEMENT

IFR may be assessed using the technique shown in Figure 4B. When the arm is placed in the position used for clinical intubation, appropriate movements at the shoulder, elbow, wrist and hand control the location of the endotracheal tube tip. Note that, after the tube has been fully advanced, the stylet tip appears near the upper end of the tracheal tube cuff but has not moved from its initial site. It is the ETT that is advanced forward along the stylet.

#### *Removing the stylet following intubation*

Complete withdrawal of the stylet from the ETT takes place at the time of clinical intubation. It is removed by one of two methods:

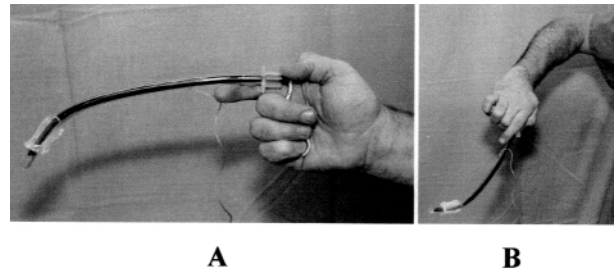


FIGURE 4 Backhand method - holding (A) and testing (B) the oral tracheal stylet unit (OTSU). A, the OTSU is held as follows: the third, fourth, and fifth digits grasp the stylet handle while the index finger, extended along the 9 o'clock position of the shaft, supports the tracheal tube. The flexed thumb rests on the end of the connector. B, one method of testing places the arm in the position used for clinical intubation. The forearm is pronated approximately 180° from the anatomical position while the elbow is flexed and raised by abducting the shoulder 80–90°. The OTSU tip is aligned towards the target while maintaining the wrist in a neutral position. Extending the thumb fully advances the endotracheal tube (ETT) 3–4 cm past the tip of the stylet. Note - this method appears awkward but is quite simple to use clinically.

#### TWO-HAND METHOD

This technique utilizes both hands: the left hand stabilizes the ETT while the right hand withdraws the stylet. With the laryngoscope blade removed from the mouth, the endotracheal tube is grasped firmly between the thumb and index fingers of the left hand while the right hand pulls the stylet out of the tube. The two-hand method is most conveniently used with forehand intubation.

#### ONE-HAND METHOD

The one-hand technique requires only the right hand to withdraw the stylet and is carried out with equal ease following either method of endotracheal intubation.

Stylet extraction following *backhand intubation* commences once the ETT has come to rest in the trachea. Removal begins with the right hand already in proper position after advancement of the ETT. The fingers continue with a series of smooth, repetitive movements, withdrawing the stylet in increments, until it is completely “walked out” of the ETT (Figure 5).

During removal, the operator may unintentionally change the position of the tracheal tube within the trachea. This may occur under the following circumstances: one, accidental motion at the upper arm and shoulder of the hand holding the OTSU may move the ETT in or out of the mouth. Deliberately holding

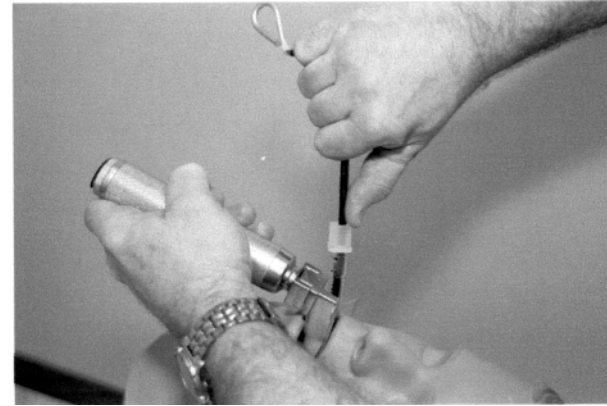


FIGURE 5 Stylet removal - one-hand technique. Using only the right hand, the stylet is “walked out” of the endotracheal tube (ETT) through a series of repetitive movements between the thumb positioned on the ETT connector and the fingers which pull back the stylet. The thumb by remaining extended and pressing on the connector stabilizes the position of the ETT. The fingers, by sequentially grasping, pulling back, and re-grasping the stylet four to five times, extract it from the ETT.

the arm motionless after the endotracheal tube is placed within the larynx avoids displacement of the OTSU. Two, the ETT may be accidentally withdrawn from the trachea along with the stylet. Removal of the tube is prevented by maintaining continuous counterpressure with the extended thumb on the tube connector in a direction opposite to the pull produced by the hand on the stylet. Three, the ETT may be accidentally advanced down the trachea if the thumb is repeatedly flexed and extended while applying counterpressure on the connector during the “walking out” process. Unintentional advancement is avoided by maintaining the thumb in full extension as the stylet is extracted.

One-hand stylet removal may be quickly and conveniently used with the *forehand* technique of *intubation*. After the ETT has seated in the trachea, the thumb of the right hand simply pivots on the connector placing the hand and arm into the position required for backhand removal. The stylet is then “walked out” as described in the previous section.

#### Intubating with the OTSU

Consistent success with oral laryngoscopic tracheal intubation remains an elusive goal despite ever-changing modifications to anesthetic techniques and equipment. At present safe and rapid intubations are carried

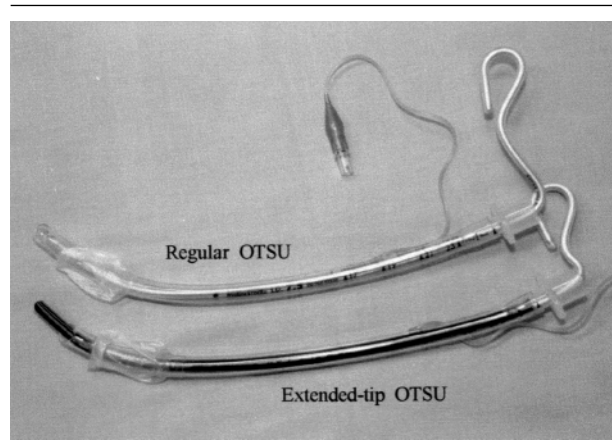


FIGURE 6 Oral tracheal stylet unit (OTSU) - regular and extended tip. The proportions and curvature at the distal ends of the OTSUs are identical for both. The bevel constitutes the distal tip of the regular OTSU. In its modified form, the slightly curved end of the stylet extends about 1.25 cm beyond the ETT bevel and substitutes for the bevel tip.

out daily in thousands of patients worldwide, but once problems are encountered, individual techniques recommended for salvaging airways in life-threatening situations may not always be effective. Clearly, prevention by routinely using a technique of intubation with the potential for improving tracheal tube placement at initial laryngoscopy is one solution that should be explored. Incorporating styletted oral tracheal intubation into everyday practice is such an option that allows for rapid and safe intubation of the normal patient, while, at the same time, readies the operator for the difficult intubation. As with any new technique, success requires knowledge of rules governing its use as well as practical experience in performing the individual manoeuvres making up a multi-step system. Key concepts for understanding the 'whys' and 'how-tos' of styletted oral tracheal intubation include: shaping the OTSU/exposure of the larynx, placing, launching and advancing the ETT, and planning for the difficult intubation.

#### *Laryngoscopy/shape of the OTSU*

If the endotracheal tube is to successfully reach the larynx, it must travel from the mouth to the vocal cords without physically contacting any structure forming the laryngoscopic channel. Achieving unhampered movement within the airway is only possible when the shape of the ETT corresponds to the contour of the passage in which it is placed. If the shapes of the endo-

tracheal tube and airway do not match, contact will occur, e.g., at the incisor teeth. When an attempt is made to alter the position of the endotracheal tube tip, the teeth will prevent corrective movement originating at the proximal end of the OTSU from being transmitted to the distal tip. If further force is applied, the tube will simply bend on the teeth. The solution is to eliminate contact by tailoring the shape of the ETT to that of the channel formed during laryngoscopy. A stylet placed within the ETT provides the practical means to create and maintain a shape to the tracheal tube that matches the configuration of the airway imposed by laryngoscopy.

An OTSU with the standard j-shape is suitable for routine use in most patients. The j-shape facilitates two essential manoeuvres. Initially, it allows the OTSU to pass from the mouth to a location near the larynx without touching any part of the airway. Next, the j-shape permits the endotracheal tube tip to move freely within the laryngopharynx as it is manipulated and advanced towards the glottis.

#### *Direction of travel through the airway*

To avoid touching the airway, the OTSU must also travel in a direction that follows the contour of the laryngoscopic channel. In most cases unimpeded passage is achieved by introducing the unit through the right side of the mouth while pointing the tip of the OTSU towards the larynx and simultaneously supinating the hand 30–40° from the vertical. However, given differences in anatomy between patients, the appropriate direction for a specific individual may vary. If needed, adjustment to the angle of entry is easily made by moving the connector end of the OTSU towards, or away from the patient's midline, and/or supinating or pronating the hand. The degree of adjustment becomes intuitive with clinical experience.

#### *Placement, launch and advancement*

Placement of the OTSU occurs when the bevel of the ETT passes from the supraglottic larynx to its new location between, and just beyond, the vocal cords. In routine cases, placement is achieved by simply guiding the tracheal tube tip between the vocal cords under direct vision. If laryngoscopy produces a view of only the *posterior cartilages*, the tip is aimed at a point between and anterior to the cartilages and carefully advanced in that direction. The OTSU should move freely forward as placement occurs. However, if resistance is detected, it is likely the tube tip has contacted a vocal cord and must be pulled back several millimetres, then its direction readjusted slightly. The OTSU is again moved forward to advance easily into the larynx.

Successful tracheal intubation when the location of the larynx is known but the epiglottis obscures visualization relies heavily on interpreting the sensation of touch generated in the hand during placement. When the tracheal tube tip makes contact with the airway behind the epiglottis, the operator notes increasing resistance as pressure is applied to the OTSU, and immediately interprets this change to mean the bevel is in direct contact with some part of the airway. The correct response is to pull back the tip by a small increment, readjust its location slightly, and proceed with another attempt at placement. This process may be repeated several times until the OTSU moves effortlessly forward several centimetres indicating the tracheal tube tip has passed into the glottis. Launch and advancement then proceed with minimal effort, the same as applied during testing.

A common mistake made by an inexperienced operator is to use an improperly styletted ETT and repeatedly prod at the larynx with the intent of forcing the ETT past the obstructing tissue, and hopefully into the glottis. However, once contact has been made with the airway, applying more force will not slide the tracheal tube into the glottis; it will simply embed the tip deeper into the tissue. Repeating such attempts will eventually produce bleeding and swelling that further compromises an endangered airway.

#### *A planned approach to the difficult intubation*

The ability to intubate the trachea becomes a true test of skill when the operator sees only the *tip of the epiglottis* without other clues that hint at the actual location of the larynx. In this circumstance, the glottis lies somewhere behind the epiglottis but its position beyond, anterior to, and to the side of the epiglottis is unknown. For intubation to succeed it is essential that the shape of the OTSU allows the tip to pass behind the epiglottis and then move freely within the supraglottic region of the larynx. The j-shape of the OTSU provides the proper contour in most cases. However, in the occasional patient with a more anterior larynx, it may be necessary to quickly increase the degree of distal curvature to better match the patient's anatomy.

Exploration begins by guiding the end of the ETT past the epiglottis and into the hypopharynx where the tip is directed anteriorly and to one side, usually the right. The OTSU is moved gently forward until resistance is felt, indicating contact with tissue around the larynx. Next, the OTSU is pulled back several millimetres, redirected slightly towards the left, and moved forward. If resistance is again encountered, the process of withdrawing, relocating, and advancing the unit in small increments is repeated until, during one

attempt, the bevel of the ETT aligns with the vertically oriented glottic opening. When the tube tip is then moved forward, it will travel 1–2 cm beyond the point where tissue resistance was previously met, indicating successful placement. Launch and advancement follow and should require no more force than needed for normal intubation. As with every intubation, if the final resting location of the ETT within the larynx cannot be confirmed visually, esophageal intubation must always be suspected.

#### **Special configuration of the OTSU**

Conditions unique to the patient's airway may require alterations to the OTSU by extending the end of the stylet 1–1.25 cm beyond the endotracheal tube bevel (Figure 6). The final shape and proportions at the distal curve are usually maintained, but the degree of curvature may be increased to meet the anticipated clinical circumstance. The modified OTSU, then used in a manner similar to a regular one, has several advantages. The stylet tip may be used to lift the epiglottis for access to the hypopharynx, it more readily transmits the feel of contact with the airway and, because of a small diameter, passes easily between the vocal cords to act as a guide which the ETT follows. Caution! If the end of the stylet is extended too far and bent too acutely, a problem delivering the tracheal tube into the glottis could occur. The stylet tip will pass between the vocal cords; however, as the ETT is slid forward along the stylet, the tube bevel may contact the posterior region of the larynx due to the large difference in size between the stylet and lumen of the ETT. As increasing force is applied to the ETT connector, the tip will embed more firmly into the contacted tissue without advancing into the glottis.

#### *Choosing between forehand and backhand methods*

Although appearing awkward, the backhand method of endotracheal intubation is quickly learned and is simple to use for routine intubation. Through repetition the operator gains practice and experience in manipulating the OTSU within the upper airway and in sliding the endotracheal tube along, and off, the stylet - a necessary first step to learn the forehand technique. The forehand technique, although technically more difficult, allows the operator finer control in directing the endotracheal tube tip within the hypopharynx and provides better tactile feedback when tissue resistance is encountered. It is the technique of choice for difficult intubations. Becoming skilled in its use should be the ultimate goal.

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