Letters to the Editor

“Black Box” Warning on Droperidol: A Report of the FDA Convened Expert Panel

To the Editor:

On November 18, 2003, the FDA convened an expert panel of the Anesthetic and Life Support Drugs Advisory Committee. The committee consisted of anesthesiologists, cardiologists, pharmacologists, and patient representatives. The purpose of the meeting was for the committee to provide advice and recommendations regarding the assessments and management of risk related to QTc prolongation by droperidol. On December 5, 2001, the FDA issued a “black box” warning on droperidol, a popular antiemetic for the treatment and/or prevention of postoperative nausea and vomiting (PONV) (1,2). Droperidol previously carried a warning regarding the potential for sudden cardiac death at high doses (>25 mg) in psychiatric patients. The revised warning cautioned the use of even small doses of droperidol.

I represented the Society of Ambulatory Anesthesia (SAMBA) membership and presented during the open public hearing session, to express the view that FDA’s “black box” warning is unwarranted for the antiemetic doses of droperidol, and that the warning has effectively removed one of the most efficacious drugs for the management of PONV for our patients. I presented evidence that droperidol is a cost-effective antiemetic and its safety profile when used in antiemetic doses is excellent. We have previously reported the 10 cases in the FDA database in which serious cardiovascular events were possibly related to the administration of droperidol at doses of 1.25 mg or less. A review of these case reports shows that there are many confounding factors that make it impossible to establish the precise cause of the adverse cardiac events. Many concomitant drugs with the potential of causing QTc prolongation were administered around the time of droperidol (3). Of note, since droperidol was approved in 1970, there has not been a single case report in a peer-reviewed journal where droperidol in doses used for the management of PONV has been associated with QTc prolongation, arrhythmias, or cardiac arrest (1).

The meeting opened with the representatives from the FDA presenting the background information of the droperidol approval process and the impact of the “black box” warning. Close to 10 million vials of droperidol were sold in 2001 before the “black box” warning, and it was estimated that its use was reduced by 90% following the warning. It was recognized that there is a significant lack of data for the small doses of droperidol causing QT prolongation. Recently, the FDA conducted a healthy human volunteer study (8 patients) investigating the effect of 0.625, 2.5 and 5 mg bolus doses of IV droperidol on QT interval. The study was prematurely terminated due to adverse events (restlessness, anxiety, and difficulty concentrating) seen in the larger doses. In addition the study was underpowered to detect the primary outcome. The option for further studies to address this issue was explored. However, it was concluded that a large-scale randomized study will be difficult to perform in view of the relatively low event rate and the enormous cost involved.

The panel heard evidence from an expert cardiologist on the frequency of drug-related QTc prolongation and the complexity of measurement of the QT interval. The following preoperative drugs have been reported to cause QTc prolongation: inhaled anesthetics (4,5), serotonin antagonists (6), thiopental (7), propofol (8), neuromuscular reversal drugs (9), metoclopramide (6), succinylcholine (7,10), terfenadine (11), macrolide antibiotics (11), among others.

Measurement of QT interval is not an exact science. The relationship between the duration of cellular action potentials and the QT interval recorded at the body surface is complex. As a result, the QT interval is difficult to measure with precision. First, there is inherent imprecision in identifying the end of the T wave because of incomplete understanding of the recovery process and its projection on the body surface. Second, significant variation both in the onset of the QRS complex and the end of the T wave among some ECG leads provides different QT values depending on the leads selected for measurement. Third, technical factors such as paper speed and sensitivity influence QT measurements with higher paper speed leading to shorter interval values and higher sensitivity resulting in QT prolongation (12,13). The above problems do not appear to be solved by automatic QT measurement techniques, which have been found to be less accurate in cardiac patients than in healthy controls. Calculation of QT interval corrected for heart rate is again ambiguous; as there are numerous different formulae, each produces different results. The mathematical form of the different formulae is arbitrary and is not based on any physical or biological basis (14–16). In addition, QT interval is only a surrogate measure for Torsade de Pointe, which is what concerns clinicians.

At the end of the day, I did not get a sense that the FDA is closer to reversing the “black box” warning on droperidol. The FDA claimed that the approved minimum dose of droperidol is 2.5 mg and the use of smaller doses is outside the label and hence beyond the jurisdiction of the FDA. The panel was unanimous in recommending that more information is needed in order to make an intelligent decision, although it is not clear the nature of the evidence that would convince the FDA to reverse the “black box” warning. For more information about the meeting, you may visit the FDA Web site at http://www.fda.gov/oc/advisory/acdrugs.html.

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References


Bariatric Surgery and the Prevention of Postoperative Respiratory Complications

To the Editor:

We have appreciated the recent papers focusing on anesthesia in morbidly obese patients as well as the ensuing dialogue in the Letters to the Editor section (1–4). In our university hospital setting, we have performed approximately 2,000 laparoscopic procedures for morbid obesity over the past 4 years. Internally, we have modified our policies and procedures regarding the care of these patients.

Since 1999, we have required that two attending anesthesiologists be present at all inductions of anesthesia in morbidly obese patients that are not preceded by an awake intubation. The second attending anesthesiologist must agree with the primary attending that induction of general anesthesia is reasonable or an awake intubation is performed. Having a second qualified individual present in the operating room provides an additional measure of safety in the event of airway difficulty. We have been very fortunate in avoiding airway disasters upon induction of anesthesia in this patient population since this policy became effective.

Quite recently, we introduced a modification of our morbidly obese patient airway patient policy that is directed towards the last stages of anesthesia care. This policy is limited to patients with BMI >60 kg/m². The following conditions must be met before the patient may undergo extubation of the trachea in the operating room at the end of surgery:

1. Two anesthesiology attendings must be present;
2. A nonrebreathing face mask must be used to administer high concentrations of oxygen following extubation; and
3. The patient must be observed for at least 5 minutes postextubation prior to transport to another location.

If any of these three conditions cannot be met for any reason at any time of the day or night, the patient must be transported from the OR to the PACU or ICU with the endotracheal tube in place. Extubation in the PACU or ICUs may proceed according to normal extubation criteria.

One of the theories behind the adoption of this policy is that placing the patient in the supine position may be associated with hypoventilation and hypoxemia. While we use a special device, HoverMatt® (HoverTech International, Bethlehem, PA), to facilitate the moving these patients to PACU beds. We seek to delay the obligatory supine positioning until the patient’s trachea has been extubated for several minutes, with adequate respiratory parameters or delay tracheal intubation until the patient has been transferred to the PACU bed, where he/she can be maintained in the semirecumbent position without interruption.

Until the questions posed by Jones (4) and others have been answered, it behooves us to “raise the bar,” and treat these patients at an even higher standard of care to prevent potentially catastrophic complications of anesthetic care in this high-risk population.

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References

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In Response:

We thank Dr. Rosenblatt and colleagues for their comments and applaud them on development of internal policies that assist their department in meeting the needs of their morbidly obese patient population.

At our institution, we do not have such a policy despite the fact that we perform more than 200 bariatric procedures a year and provide anesthesia for a variety of surgical procedures in a patient population that has a high percentage of morbidly obese and super-obese patients. In our practice, we rely on history (particularly previous anesthetic experiences), thorough physical and airway examination, and “proper positioning” (1,2) to successfully orally intubate the trachea of patients who do not

Figure 1. Illustration of the Walter Henderson maneuver. 1 = Patient Transfer Device (PTD®), a.k.a. patient roller; 2 = patient tilted to slip roller under; 3 = roller slipped under patient; 4 = table tilted to roll patient downhill onto bed; 5 = patient rolled onto bed.
receive an awake fiberoptic intubation. We perform awake fiberoptic intubation in a small percentage of obese patients. We practice in an anesthesiology care team environment where at least two individuals (one faculty and a house staff or CRNA) are present.

Postoperatively, we do not routinely place our morbidly obese patients in the supine position as this may be detrimental to their ventilatory efforts, especially at a time when pain contributes significantly to decreased ventilatory efforts.

At the end of surgery, we combine the Walter Henderson maneuver* (see note and illustration) with the patient transfer device (PTD®; AliMed, Dedham, MA) to move our morbidly obese patients onto their beds. The majority of our patients are transferred to their particular postoperative bed and are then extubated in the semirecumbent position. We then continue to maintain them in the semirecumbent position while administering adequate oxygen by ventimask or nonbreathing mask.

Patients that receive excessive amounts of fluid, undergo prolonged operations or those with severe cardiopulmonary disease are left intubated postoperatively if this is deemed beneficial in the opinion of the anesthesiologist.

*Note: Walter Henderson maneuver (see Fig.1, steps 2–5): Named after the head of our patient transport team. Basically, the operating table is raised higher than the patient’s bed and tilted 20 to 30 degrees to the side where the patient’s bed is positioned, which then allows the patient to be safely and gradually rolled downhill over a PTD® (a.k.a. patient roller).

References


In Response:

I thank Drs. Rosenblatt, Reich, and Roth for their great suggestions. Their extubation conditions have been incorporated into our new algorithm that we have been creating over the last year. The initial questions I posed to Dr. Ogunnaie and colleagues (1) concerned “open” Roux-en-Y procedures. Our cases lasted 4 to 6 h and were difficult in every aspect of care. Fortunately the cases have become shorter and some issues were resolved.

After any airway issues, the next challenge of the intraoperative management has been the IV fluid algorithm. We have maintained the required minimal urine output to 0.5 mL/kg/h of lean body weight (120% IBW). If this has not occurred, then placement of central line for more extensive monitoring would be done. The fluid deficit and maintenance is based on LBW and the 3rd spacing is calculated 2–6 mL/kg/h; added to any blood loss this becomes the baseline fluid management if not contraindicated.

One other major change was a weight limit moratorium (i.e., 550–600 pounds) until more information is available. Clearly, “super morbid” obese patients have substantial obesity-related comorbidities and are considered high-risk surgical patients (2).

For the super morbid obese, I wonder if a strict program of dieting prior to surgery will ever fall into favor?

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References


Financial Disclosure

To the Editor:

Dr. Udelsman’s editorial (1,2) questions the structure and objectivity of the Division of Management Consulting at the University of IA’s Department of Anesthesia.

The Division of Management Consulting is a Division of the Department of Anesthesia, analogous to the Divisions of Obstetrical Anesthesia, Hyperbaric Medicine, and Surgical Intensive Care. The Department of Anesthesia’s billing office charges for the Division’s efforts.

Franklin Dexter does not receive any funds personally other than his salary from the State of Iowa, including no travel expenses or honorarium. He has tenure and no incentive program assuring that there are not undesirable financial incentives related to his work.

The Division’s responsibilities include education, research, and service. The consulting is not just internal, but external for companies, hospitals, and anesthesia groups. The consulting revenues support the Division’s education and research activities.

In addition, since each hospital and anesthesia group is an n = 1, only by teaching and consulting at many hospitals can experience be gained to foster the next generation of research in the science of OR management. In these times of scarce perioperative resources for many academic centers, we believe we all need to understand better the science that is associated with our practices.

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Dr. Udelsman does not wish to respond.

References


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BIS Sensor Electrodes Can Cause Skin Lesions: Case Report

To the Editor:

BIS monitoring has become increasingly popular over the past decade and has become more sophisticated with the introduction of the A-2000 monitoring system (Aspect Medical Systems, Newton, MA) which promised a more reliable monitoring system, designed to make artifact recognition easier and faster. In addition, several types of BIS sensors have been introduced, all based on the Zipprep® technology (Aspect Medical Systems; Compatible with Ag-AgCl electrodes printed on a polyester substrate with adhesive foam backing), which should be connected with better signal recognition. The manufacturer stresses the importance of the use of its specialized electrodes to optimize the signal quality, even if more simple electrodes provide the same results (1). We present a case where the BIS sensor (BIS standard, Aspect Medical Systems) caused reversible skin lesions in a patient undergoing surgery of 90 min to make the reader aware of potential side effects of the Zipprep® technology.

A 38-year-old patient (58 kg, 160 cm) underwent partial mastectomy under general anesthesia to remove a malign lesion of the right breast. Prior to surgery, the patient received chemotherapy for
Figure 1. Skin lesions due to contact with BIS sensor. Sensor was applied for 90 min of surgery; a moisturizing cream was applied to the sites. Lesions disappeared completely within 24 h after surgery.

several months with an apparent impairment of her general well being due to intermittent nausea and vomiting. She had lost her hair due to the chemotherapy. Her general physical status according to the ASA classification was grade 1 with no history of allergies or skin disease. Her skin status prior to surgery was normal, she did not wear any make-up, nor had she used any exfoliants prior to surgery; she was on tamoxifen solely. Anesthesia was induced using a continuous infusion of remifentanil 0.15 µg/kg/min for 2 min, followed by propofol 2 mg/kg. After loss of consciousness, a laryngeal mask airway (size: 4, inflated with 30 mL of air, The Laryngeal Mask Company, LTD, Oxon, UK) was inserted facilitated by rocuronium 0.2 mg/kg. After induction, the BIS sensor was applied to the forehead in routine fashion: at the forehead and left temporal area. The first BIS reading, approximately 4 min after injection of propofol, was 38; the columns for signal quality and EMG activity showed optimal signal quality and no EMG activity, respectively. Anesthesia was maintained using remifentanil 0.15–0.2 µg/kg/min and sevoflurane administered to maintain a BIS of 40; positive pressure ventilation was set to maintain an end-tidal $PCO_2$ of 30–40 mm Hg. BIS levels stayed between 40 and 55 throughout 90 min of surgery without any trace of poor signal quality or artifacts. Recovery was rapid, spontaneous respiration returned 90 min of surgery without any trace of poor signal quality or artifacts. Recovery was rapid, spontaneous respiration returned within 3 min after the end of surgery at a BIS of 76, and the LMA airway was removed 5 min after the end of surgery with a cooperative, alert, and pain-free patient. The BIS sensor was removed in the operating theater.

Immediately after removal of the sensor, round skin lesions were noted with tiny bleeding spots where the Zipprep® foam was applied (Fig. 1). The patient was transferred to the postoperative recovery room (PACU); after installation of routine monitoring in the PACU, a moisturizing cream was applied to the lesions. It was explained to the patient that the skin lesions were connected with the monitoring electrodes used during anesthesia, would be temporary and disappear soon. On the postoperative visit 24 h after surgery, all tiny bleeding areas had disappeared. The patient was discharged.

The skin lesions were solely limited to the contact areas with the Zipprep® foam. Although the patient had no known skin disease, she had undergone chemotherapy probably making her skin more sensitive for irritation.

Skin lesions have been described after different types of electrodes (3–6), including electrodes based on the Zipprep® technology (3).

The clinical importance of these lesions is related to the increased use of BIS monitoring increasing the chances of occurrence. In addition, skin lesions due to BIS monitoring are highly visible since they occur on forehead or temporal area. Patients might be surprised or anxious when they wake up and have either erythematous areas or even bleeding sites in the face.

Electrodes using Zipprep® technology might cause skin lesions; especially in patients with sensitive skin or skin disease, extra care should be used when these electrodes are used.

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References

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One View Is No View

To the Editor:

Chan et al. (1) recently investigated the use of “state of the art” ultrasound equipment for ultrasound-guided supraclavicular brachial plexus block. They were able to demonstrate impressively the usefulness and benefits of ultrasound guidance.

Nevertheless, the authors ignored one of the golden rules of sonographic imaging: never make an interpretation of anatomy in only one view (2). In their study the supraclavicular region was visualized in a transverse view, hence the three fascicles of the brachial plexus appeared as hypoechoic nodules (3). Although their topographical position suggests correspondence with neural structures (Figure 1 in their article), this may lead to a misinterpretation. For instance, lymph nodes also appear as hypoechoic nodules of the same size (if they are not enlarged) and are numerous in the mentioned region. In a longitudinal view the fascicles of the brachial plexus appear as hypoechoic bands bordered by hyperechoic striations (3). This “fascicular” pattern represents one of the typical sonographic features of peripheral nerves (3) and, in combination with the “honeycomb” pattern obtained in a transverse view (3), rules out any misinterpretations of anatomy.

This has to be emphasized, because paying attention to the basic principles of sonographic imaging is mandatory for safe and successful ultrasound-guided peripheral nerve blocks.

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References

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In Response:

We thank Kirchmair et al. for their interest in our paper (1). They raise concerns that brachial plexus anatomy may be misinterpreted when ultrasound imaging only obtains a transverse view of the plexus in the supraclavicular location. Hypoechoic nodules seen in this location may be lymph nodes. To avoid misinterpretation, we have also applied electrical stimulation for nerve confirmation in the study (1), not relying on topographical cues alone. We believe that combining ultrasound imaging with nerve stimulation adds accuracy and safety during brachial plexus blocks.

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Reference

Spinal Anesthesia in Severe Preeclampsia

To the Editor:

We were interested in the study by Aya et al. (1) showing less hypotension after spinal anesthesia in patients with severe preeclampsia than in healthy parturients. The paper by Assali and Prystowsky (2) from more than 50 years ago supports this study. In a nonrandomized study, these authors administered 0.2% procaine via a continuous subarachnoid catheter to nonpregnant females, normotensive pregnant patients, and toxemic pregnant patients. In their brief results showed:

a) Negligible fall in the blood pressure of normotensive nonpregnant and toxemic subjects.

b) Marked hypotension with bradycardia and shock-like condition in the prepartum periods of normal term pregnancy.

Admittedly, uterine displacement was not used and was probably not yet described at the time. Since neither Aya et al. (1) nor the accompanying editorial by Santos and Birnbach (3) referenced this article, we thought that readers who are unaware of its existence would enjoy reading it if only for historical interest.

Interestingly, the early 1950s must have been the dark ages for modern practice of spinal anesthesia in obstetrics, as many colleagues still believe that obstetric anesthesiologists will change their mind concerning the use of spinal anesthesia in obstetrics. As a result, obstetric anesthesiologists were advised against the administration of spinal anesthesia (3) in preeclamptic patients in textbooks until the 1990s. Therefore, many colleagues still believe that preeclamptic patients are at a greater risk of hypotension when given spinal anesthesia than normotensive women. Fortunately, data are accumulating to show that the risk of spinal-induced hypotension is not greater and may be lower in preeclamptic patients compared with normotensive women. While the study by Assali and Prystowsky (2) should be used, at least for historical interest as suggested by Lee and Harding, studies from the late 1990s to date should have a greater impact and it can be expected that, in a near future, obstetric anesthesiologists will change their mind concerning the use of spinal anesthesia in the setting of severe preeclampsia.

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Dr. Birnbach does not wish to respond.

References

Unsuspected Mechanical Airway Obstruction in Obstructive Sleep Apnea Syndrome

To the Editor:

Uvulopalatopharyngoplasty has been an alternative choice of surgical procedure used to treat adult patients (1–3). We report an unusual and life-threatening case of upper airway obstruction in an obstructive sleep apnea patient undergoing uvulopalatopharyngoplasty. An ASA II, slightly overweight (BMI = 28 kg/m²), 56-year-old man, with polysomnography-confirmed obstructive sleep apnea was admitted to the operating theater as an outpatient. His hypopnea-apnea index was between 10–30, which confirmed his obstructive sleep apnea symptoms. Although he was hypertensive for about 5 years, he had no specific cardiac problems. He was taking regular antihypertensive medication. When he was taken to the operating room, he had no stridor, or rebreathing embarrassment, but he was a heavy smoker and had a thick, short neck. His blood pressure was 148/90 mm Hg, SaO₂ 94%.

Anesthesia was induced with propofol, and ventilation via a bag mask was confirmed easily. He was then paralyzed with vecuronium. Anesthesia was maintained with a stepwise target-controlled infusion of propofol. A size 7.5 Mallinckrodt flexible tracheal tube was used for nasotracheal intubation. His Mallampati score was 2. His trachea was intubated without any difficulty. Crowe-Dawis mouth gag (Fig. 1) was attached to the patient to obtain a better surgical view of the pharynx. This device is used regularly during uvulopalatopharyngoplasty. Hemodynamic variables (heart rate, noninvasive blood pressure, SaO₂) were stable during the procedure. The surgery ended without complication. The trachea was extubated when he was fully awake and the oxygen saturation was ≥ 94%. Methylprednisolone (250 mg) was given to prevent glottic edema before his trachea was extubated.

Having been extubated, the patient complained of difficulty in
Dexmedetomidine in Pediatrics: Controlled Studies Needed

To the Editor:

Clonidine, an alpha-2 agonist, is widely used for pediatric pain and neuropsychobehavioral therapy (1). Although not approved for pediatric use by the Federal Drug Administration, dexmedetomidine, 8 to 10 times more specific than clonidine, has been administered to 48 pediatric patients for perioperative, pain, or behavioral management at Phoenix Children’s Hospital with the approval of the Pharmacy and Therapeutics Committee. All patients received an initial dose of 0.5 μg·kg⁻¹·h⁻¹ over 15 min, followed by an infusion of 0.25–1.25 mg·kg⁻¹·h⁻¹. Duration of administration was 12 to 144 h. Outside the operating room all patients were monitored in an intensive care unit. The patient’s ages ranged from 10 mo to 19 yr. Diagnoses included congenital muscular dystrophy, spinal muscular atrophy, myasthenia gravis, Rett syndrome, opioid-augmented respiratory failure, recurrent pancreatitis, pectus excavatum, Henoch-Schönlein syndrome, familial polyposis, severe neuropsychobehavioral disorders, congenital heart disease, and 14 cases of idiopathic scoliosis.

Dexmedetomidine was effective for all selected indications. Patients with pulmonary compromise from muscular or neuromuscular disorders undergoing a thoracotomy or spinal fusions maintained spontaneous ventilation postoperatively, avoiding mechanical ventilation. Patients with severe neuropsychobehavioral disorders remained calm and responsive postoperatively. A patient with recurrent pancreatitis pain refractory to all analgesics including ketamine and epidural catheter placement, demonstrated dramatic analgesia. A ventilator dependent patient receiving infusions of opioids and benzodiazepines was extubated within 40 h after initiating dexmedetomidine. Dexmedetomidine also helped to differentiate severe inflammatory abdominal pain from a noninflammatory etiology.

Although all patients were monitored in an intensive care unit, dexmedetomidine was safe. Hypotension was the most significant side effect and only occurred with inadequate fluid replacement unless desired intraoperatively. We hope this letter will encourage controlled studies of dexmedetomidine in academic centers so its pediatric surgical and medical applications can be better delineated.

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References

Continuous Monitoring of the End Tidal CO₂ Ensures that the Endotracheal Tube Remains in Place During the Removal of the LMA

To the Editor:

I read with interest the report of Muraika et al. (1) on their technique for intubating the trachea of a child with a difficult airway through a laryngeal mask airway (LMA). I would like to call the writers’ attention to this author’s and others’ (2,3) reports of using an endotracheal tube one-half smaller as an extender for removing the LMA. We have described this technique and the advantage that nothing must be cut or modified, and that continuous monitoring of the end tidal carbon dioxide ensures that the endotracheal tube remains in place during the removal of the LMA.

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References

In Response:

Variations of the technique Dr. Mayhew mentioned for removing an LMA while maintaining endotracheal tube position has been used with success. It seems that most authors either wedged two tubes of...
the same internal diameter together (1–3) or used the technique you described and inserted an ETT one half to one size smaller into the desired intubating tube (4). As you pointed out in your letter, our technique does involve the additional step of cutting the endotracheal tube connector. However, we feel not only does the use of the cut endotracheal tube connector make our arrangement unique, but it might also prove to be a more secure connection and prevent the endotracheal tube of smaller or similar diameter from slipping out of its mate.

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References
1. Reynolds PT, O’Kelly SW. Fiberoptic intubation and the laryngeal mask airway. Anesthesiology 1993;79:5.

“Quick Look” Direct Laryngoscopy to Avoid Cannot Intubate/Cannot Ventilate Inductions

To the Editor:
It amazes me that multiple attempts at direct laryngoscopy continue to result in situations such as that described by Muraika et al. (1), where “mask and bag ventilation became more difficult…” Have we not learned anything over the last 12 years since Benumof’s “Management of the Difficult Airway” (2)? Furthermore, and as a practical matter, by not commonly employing alternative techniques, anesthesiologists squander the opportunity to become intimately familiar with, practiced, and speedy at all their backup options.

In case of any significant doubt at all, my own technique is induction with a standard dose of propofol, and one, gentle “quick look” with direct laryngoscopy. If the quick look shows little promise of success with that or an alternative blade, direct laryngoscopy is abandoned for another technique. No anesthetic other than propofol is given before the quick look—especially no opioid—so that rapid return of spontaneous ventilation is assured.

Curiously, the quick look is not described in the ASA difficult airway algorithm despite its popular familiarity, and 100% reliability (its definition) in avoiding the kind of attempting intubation involving multiple direct laryngoscopies, that turns into a cannot intubate/cannot ventilate scenario. Moreover, the quick look is easily employed, costs nothing, and takes only seconds, thereby causing no delay in the induction process. The surgeons don’t even notice. I use it frequently and without hesitation.

One caveat in regards to pediatric cases; a quick look under propofol anesthesia may predispose to laryngospasm upon airway stimulation. A safer avenue may be a sevoflurane inhalation induction with spontaneous ventilation to an end-tidal concentration almost sufficient to cause apnea, followed by the quick look.

Although certainly worthy of appropriate respect, just like patients with any number of other severe diseases, the patient with the “difficult intubation” should no longer be considered a rarity, something that requires “special” attention and facilities. We have the technology to intubate the trachea via so many techniques other than conventional direct laryngoscopy. We should equally have the familiarity and the facility to use them, with complete ease, and without considering it something out of the ordinary.

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References

Bullard Laryngoscope Proven Useful in Difficult Intubations in Children with Treacher Collins

To the Editor:
We read with interest the article by Lisa Muraika et al. (1) concerning their technique of fiberoptic tracheal intubation through a laryngeal mask airway (LMA) in a child with Treacher Collins syndrome. Prior to using an LMA to intubate the child with Treacher Collins syndrome, the authors state that they attempted direct laryngoscopy with both the MacIntosh and Miller blades, the light wand, and with fiberoptic bronchoscopy, all of which failed to reveal the vocal cords (1).

We were recently presented with a child with Treacher Collins syndrome for a laparoscopic appendectomy. Under a satisfactory level of general anesthesia, the trachea was intubated without difficulty using a Bullard laryngoscope. There were no complications, and the child tolerated the procedure well.

The Bullard laryngoscope has proven useful in difficult intubations in children with Treacher Collins syndrome (2–5).

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References


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In Response:
Thank you for your interest in our case report. During my adult training, I, like you, have proceeded in accordance with Dr. Benumof’s difficult airway algorithm when having been faced with a difficult airway. However, the pediatric patient is not, and cannot be treated as a small adult. Using a pediatric difficult airway algorithm (1), our approach to intubation of the child with Treacher Collins syndrome follows standard options and methods outlined in this algorithm. Your “quick look” technique after a bolus of propofol is omitted both from the ASA’s difficult airway algorithm and the difficult pediatric airway algorithm. Although you have found success with your “quick look” approach in the adult population, I would not recommend it in the pediatric setting for the following reasons. If a suboptimal dose of propofol is given and intubation is attempted, laryngospasm is likely to occur. On the other hand, if too large a dose of propofol is given, the patient may lose spontaneous respirations. Your suggestion of performing a “quick look” after sevoflurane induction of anesthesia is reasonable; however, we feel that this technique of deep inhalation manipulation or intubation without muscle relaxation may predispose the child to laryngospasm. A safer alternative is to check your ability to ventilate during spontaneous respirations, and then give a short acting muscle relaxant before attempting direct laryngoscopy.

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Reference
The distal 2-cm portion of the 0.018-inch diameter radius of curvature of a tool to failed central venous access in infants. As they discussed, the We agree with Nakayama et al. (1) that curved-end guidewires contribute to failed central venous access in infants. As they discussed, the radius of curvature of a "J-wire" is often larger than the vessel being cannulated. In addition, these wires are stiff, and their introduction can distort the vein. This combination leads to the too common tale of, “I had good blood return; I just couldn’t thread the wire.”

Our solution to this problem is use of an extremely flexible, relatively straight wire (Fig. 1). We use a 0.018-inch diameter soft-tip wire (Argon Medical, Athens, TX; Ag’s-Hertogenbosch, the Netherlands). We initially used this wire when difficulty was encountered. As we gained experience, we progressed to primary selection of this wire when the vessel was small (<3 or 4 mm diameter by ultrasound). We now use this wire as our first choice in obtaining internal jugular access in any infant weighing <4 kg, and for femoral access in any infant weighing <8 kg.

In Response:

Thank you for pointing out the usefulness of intubating a difficult airway with the Bullard laryngoscope. It is especially exciting to us that the child you described also had Treacher Collins syndrome. The Bullard laryngoscope certainly should have been included in our list of alternative intubation techniques, especially with the advent of a pediatric version (1). This scope would prove most useful if it reliably succeeded in intubating patients with a difficult airway on the first attempt. This might eliminate airway trauma and swelling which often occurs after multiple laryngoscopies.

Unfortunately, we do not have a Bullard laryngoscope at our institution. It seems, however, that it would be a useful addition to our difficult airway cart.

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Reference

A Tale of Two Wires

To the Editor:

We agree with Nakayama et al. (1) that curved-end guidewires contribute to failed central venous access in infants. As they discussed, the radius of curvature of a “J-wire” is often larger than the vessel being cannulated. In addition, these wires are stiff, and their introduction can distort the vein. This combination leads to the too common tale of, “I had good blood return; I just couldn’t thread the wire.”

Our solution to this problem is use of an extremely flexible, relatively straight wire (Fig. 1). We use a 0.018-inch diameter soft-tip wire (Argon Medical, Athens, TX; Ag’s-Hertogenbosch, the Netherlands). We initially used this wire when difficulty was encountered. As we gained experience, we progressed to primary selection of this wire when the vessel was small (<3 or 4 mm diameter by ultrasound). We now use this wire as our first choice in obtaining internal jugular access in any infant weighing <4 kg, and for femoral access in any infant weighing <8 kg.

This wire costs our hospital under $9 U.S. This investment is more than offset by saved operating room time and increased success rate.

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Reference

In Response:

We thank Auden et al. (1) and appreciate their interest and comment on our letter regarding central venous cannulation in neonate. Actually, we often encounter difficulty in threading a guidewire into small vessels (<3 or 4 mm diameter) despite good blood return. In such cases, we used to choose a straight end by reversing the opposite side of a J-shaped tip guidewire. Since the straight wire has been implicated in perforation of vessel walls, we also prefer to use a flexible, slightly angled wire.

The course of the right internal jugular vein has been shown to be almost straight (2). We agree with their comments of using a flexible, relatively straight wire as a first choice in obtaining internal jugular access for small infants. However, when we access tortuous veins such as external jugular, antecubital, or basilic veins, the J-shaped tip has advantage over the straight tip. The smooth convexity of the J-shaped tip may enable the wire to pass corners easily.

As we mentioned in the letter (1), the J-shaped guide wire bends introducer catheter excessively. The angle shaped wire can also bend the catheter slightly. We would like to emphasize that the catheter material affects the distortion. Catheters made of Teflon, polyethylene, or polypropylene are relatively stiff so that they are difficult to bend with J-shaped guide wire insertion. Although new catheters made of polyurethane have superior mechanical properties (tensile strength and wearing resistance), the catheter is softer than the older materials. Hence it is not recommended for insertion of J-shaped guidewire. The introducer catheter should be used only for cannulation. Therefore, relatively stiff catheters may be desirable.

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References

Ease Placement of LMA ProSeal with a Gastric Tube Inserted

To the Editor:

The insertion of the PLMA needs more skill that the standard LMA (1), but it is safer because isolate the glottis of the esophagus when is placed correctly. Brain et al. (2) describe two possible malpositions: the first one takes place when the PLMA is not placed deeply enough in the pharynx, staying the tip in the medial pharynx; the second one occurs when the tip of the PLMA faces the glottis, obstructing the airway and facilitates the air leak up the drainage tube. The recommended test of malposition identify both situations and to correct the placement.

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References
Brimacombe et al. (3) describe a third malposition in which the tip of the PLMA cuff is folded posteriorly avoiding the drainage tube to perform its intended functions. The PLMA likelihood for this malposition is higher than standard LMA (3) This malposition may have no effect on seal or ventilatory function, offering fail safe to the anesthesiologist and putting the patient at increasing risk of gastric insufflation, regurgitation, and aspiration, because the glottis is not isolated of the esophagus. Likewise, this malposition obstructs the drainage tube avoiding to insert a gastric tube as is recommended when the PPV is used.

Our experience in 305 cases of utilization of the PLMA (size 4/5 appropriate patient weight) in adults (ASA I and II, fasted), for laparoscopic surgery, was detecting unsuccessful gastric tube insertion at the first attempt in 27 patients, despite negative malposition test (1–4). To facilitate its placement, the PLMA drainage tube was primed with a lubricated 18-gauge gastric tube with the end at the straight tip, prior to insertion into the pharynx. In 252 cases using this technique for the placement of the PLMA, the gastric tube was successfully inserted into the esophagus at the first attempt in all cases.

The placement of the PLMA with gastric tube inserted technique, avoid the tip of the cuff folded posteriorly (fold-back tip), malposition described by Brimacombe (Fig. 1), as well as the “gum-elastic bougie-guided” insertion described by Howath et al. (4). However, laryngoscopy and “bougie” interchange is not necessary with this technique, which allows, in a single maneuver, to insert up to a 18-gauge gastric tube into the esophagus for gastric emptying.

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References

In Response:

Martínez-Pons and Madrid report easier gastric tube insertion through the ProSeal™ laryngeal mask airway (PLMA) if the drain tube is primed with an 18-gauge gastric tube prior to PLMA insertion (first attempt success rate improves from 91% to 100%). The authors also claim that this will prevent the distal cuff folding over. We would like to make six comments.

First, while a gastric tube may reduce the frequency of the foldover malposition, it cannot prevent it altogether, as it is insufficiently rigid. Second, increasing the stiffness of the drain tube may increase the risk of pharyngeal trauma, as it will allow greater shearing forces to be applied during PLMA insertion. Third, the authors used an 18F gastric tube for the size 4 PLMA. Though there are subtle differences in the external diameter and shape of same-sized gastric tubes, the size 4 PLMA can only accommodate a 16F gastric tube or a 14F Salem sump tube. A disadvantage of using a large gastric tube is that the drain tube is blocked and fluid or gas in the esophagus cannot be vented unless it returns to the stomach. Fourth, Drolet and Girard (1) described a similar priming technique in which the gastric tube protruded by 5 cm from the distal end of the drain tube to function as an insertion guide (if the gastric tube enters the esophagus it will direct the distal cuff to its correct position in the hypopharynx). Fifth, the authors provide no data indicating whether PLMA insertion is easier using their priming technique, although the title of their letter suggests it does.

Finally, we consider the best technique to ensure easy gastric tube placement and prevention of the foldover malposition is to use laryngoscope-guided, gum elastic bougie-guided insertion of the PLMA, first described by Howarth et al. in 2002 (2). This allows perfect alignment of the drain tube and esophagus (easy gastric tube insertion) and avoids resistance at the back of the mouth (eliminates the cause of the foldover malposition). In addition, the gum elastic bougie is too rigid to be folded over. We have not experienced failure to insert a gastric tube or the foldover malposition in over 3000 uses of this technique. A recent study showed that this technique has a higher success rate than the digital or introducer tool insertion techniques (3).

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References

Proteinaceous Material on Routinely Cleaned Laryngeal Mask Airways

To the Editor:

In a study published earlier in 2003 (1), use of erythromycin does not lead to more effective removal of proteinaceous material from reusable laryngeal mask airways (LMA). Systematic cleaning and scrubbing leads to effective but not complete removal of proteinaceous material from surfaces other than the grid area of the LMA, and that ultrasonic cleaning is more effective than other methods in removing proteinaceous material from the those areas of the mask most inaccessible, such as the grid (1). These results confirmed those of Miller et al. (2), and is now confirmed by Clery et al. (3). None of the methods used in these studies achieved optimal cleaning of LMAs.

Cley et al. do not mention whether LMAs in their study had been subjected to the vigorous cleaning method described from the onset of use, neither do they mention how many of these vigorous cleaning cycles the LMAs had been subjected to. It is not known what the
effect of autoclaving or drying is on the residual protein. Neither is it known whether the LMA surface becomes more susceptible to proteins with repeated use.

The theoretical risk of transmission of spongiform encephalopathies has led to an editorial where it is mentioned that the Working Party of the Association of Anesthetists of Great Britain and Ireland is investigating methods to reduce the risk of cross-infection in patients undergoing anesthesia, ideally by single-use equipment where practical (4). As Tordoff and Scott (5) point out, what should we tell our patients when we use a second-hand laryngeal mask? If there is a risk of transmission of BSE, we might only know in 20 years time.

Clery et al. (3) is supported in their observation that work is required to determine the risk of infection, but I feel that perhaps more than routine cleaning and autoclaving is needed to render the LMA free of proteinaceous material, and that the current studies have merely pointed out the inadequacy of current methods.

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References

In Response:

We would like to thank Dr Coetzee for his comments about our article, and for bringing attention to his excellent study comparing cleaning methods for reusable LMAs (1). We did not document the number of uses of the LMAs before testing; however, we recently found that the average number of uses of an adult-sized classic LMA in circulation at our institute is 37. All our LMAs would have undergone the same cleaning and sterilization processes described in our study from the outset, as these processes have been the standard of practice at our institute for many years. Interestingly, Stone et al. (2) found that there is no correlation between number of uses and the level of contamination for the ProSeal laryngeal mask airway.

While agreeing that most studies have merely pointed out the inadequacy of current cleaning methods, we should take cheer in the fact that more effective cleaning is possible. Coetzee himself (1) showed that systematic cleaning and scrubbing, and ultrasonic cleaning facilitated removal of protein deposits; and Laupu and myself (3) showed that potassium permanganate 2 mg/L removes 91% of residual protein. We are optimistic that a method will eventually be found to eliminate protein deposits from reusable LMAs. We only hope that when this Holy Grail of prion disease eventually be found to eliminate protein deposits from reusable laryngeal mask airway. Anaesth Intensive Care. In press.


Should the Conventional Method for Routine Tracheal Intubation Be Questioned?

To the Editor:

Juvin et al. (1) support the opinion that difficulty with intubation and view of the larynx during laryngoscopy are independent events (2) and that tracheal intubation is more problematic in the obese. They further suggest the cause of difficult intubation will eventually be discovered by identifying as yet unknown risk factors inherent in obese individuals: that is, the etiology of “difficult intubation” is patient-centered. However, their results indicate the opposite may be true. Failure at initial laryngoscopy in a small, but significant number of patients points to a flaw in the conventional intubating process itself. This study does not recognize that tracheal intubation is complex, involving, in part, two essential and interdependent factors: the physical characteristics of the patient’s airway, and the technical procedure used to guide the endotracheal tube through the laryngoscopic channel. Legitimate and crucial concerns thereby remain overlooked rather than discussed. First, has the chosen method of intubation been critically assessed in its entirety, and, second, is there a better approach to routine intubation that is more effective during difficult laryngoscopy? If an improved method exists, then the term “difficult intubation” becomes a relative one dependent upon the skills of the operator and the format of the intubating process. Consequently, when a single technique of intubation is used, the results are applicable only to that style of intubation and cannot be generalized to all patients.

An obvious question arises. Is there a novel method of routine intubation that will safely improve success rates in a diverse patient population, and if the answer is “yes,” why is it more effective? One practical alternative does exist. It is a method of styletted endotracheal intubation comprised of well-defined steps that follow the rules governing tracheal intubation (2). This technique mandates use of a specifically shaped, styletted endotracheal tube and ultimately allows the operator to intentionally guide the endotracheal tube into the glottis when grades I–III views are produced at laryngoscopy. The complete technique, refined from thousands of successful routine intubations, has been consistently effective in a broad cross-section of patients, and its use constitutes improved management during “difficult tracheal intubation.”

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References

In Response:

We would like to thank Dr Coetzee for his comments about our article, and for bringing attention to his excellent study comparing routinely cleaned masks with three alternative cleaning methods. Anaesthesia 2003;58:346–353.


References