

The Airway Gazette

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The Official Publication of the Society for Airway Management



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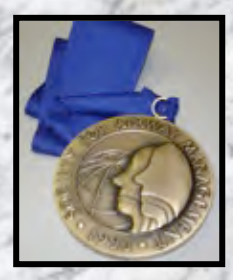
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SAM's Official
Journal !!



The Journal of
Clinical Anesthesia

***The Society for
Airway Management***



***Distinguished
Service Award***

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Please come to the next SAM meeting
Date : September 20-22, 2013
Where ? Philadelphia, PA
with Co-Chairs :
Dr. Irene Osborn / Dr. Valerie Armstead

Editorial Expressions

Dear colleagues,

This issue is replete with interesting articles: the Presidential message by Dr. Richard Cooper, the Chiang Mai, Thailand report by Dr. Lauren Berkow, and an update on expectations for a superb 2013 SAM meeting by Dr. Irene Osborn. These and multiple SAM Forum E-Lights speak for themselves. Rather than comment on them, I am turning my attention to another subject, one that often is ignored.

I vividly recall an attending anesthesiologist's instructions: we must optimize sickle cell anemia patients during induction and the course of general anesthesia; making sure to keep the patients well-hydrated, well-perfused, well-oxygenated, and warm. Practitioners optimize patients with various comorbidities: cardiomyopathy, asthma, etc.

Unfortunately, often attention to optimization is not given to aspects of airway management. In addition, lack of extensive use has made trainees inexperienced in certain areas...especially face mask ventilation (FMV). Fortunately, Dr. Adrian Matioc has had considerable interest in FMV, including development of an ergonomic mask. In this issue, he's authored a Tips and Tricks article on one-handed

FMV for SAM members, to decrease chances of difficult mask ventilation (DMV) due to technique.

DMV is associated with patients having these traits: age >55 yr, snoring, edentulous, body mass index >30, Mallampati ≥ 3 , poor upper lip bite test, bearded, cervical spine immobility, and/or airway-mass. It has an occurrence rate of $\geq 1.4\%$ (Langeron et al, Kheterpal et al, Yildiz et al). When faced with possible DMV after GA induction, practitioners uncommonly think about immediately employing all aids to best serve the patient, including inserting an oral airway, using straps, utilizing back-up/reverse Trendelenberg positions, deciding preemptively to use a superior two-handed, thenar eminence (Fig 1.), jaw-thrust technique (novice providers had improved tidal volumes, up to 140% – Gerstein et al, in press, JCA), and/or having lubricated nasopharyngeal airways ready. The one-handed FMV method is particularly problematic for small-handed practitioners or patients with cervical instability.



Best Regards...
Katherine Gil, MD
Editor-In-Chief



WELCOME NEW SAM MEMBERS!

Dr. Andrew Brainard (Springville, UT)

Dr. Kirstine Harbou (Denmark)

Mr. Jason Lanning (Temcula, CA)

Dr. Jayanand Mekwan (Canada)

Dr. John DaPos (Pittsburgh, PA)

Dr. Yashar Ilkhchoui (Albuquerque, NM)

Dr. Shona Love (England)

Dr. Huafeng Wei (Philadelphia, PA)

Dr. Eric You-Ten (Canada)

**Society for Airway Management
Scientific Meeting and Workshop
September 20 – 22, 2013**

Philadelphia

Save the Date !!!

Philadelphia



SAM PRESIDENT'S MESSAGE

Richard M. Cooper, M.D.
University of Toronto, Canada

The past few months have been busy ones. As reported by Lauren Berkow, elsewhere in this issue, several members participated in a meeting co-sponsored by Chiang Mai University and SAM in Chiang Mai, Thailand. This was the first airway conference that was officially SAM-sanctioned. Judging by its success, it won't be the last. It was organized by SAM member, Wariya Sukhupgragarn, and attended by approximately 400 physicians.

Excitement is growing as the program for the 17th Annual Scientific Meeting and Workshop emerges. The meeting will take place in Philadelphia, September 20-22. The Program Committee, chaired by Irene Osborn and co-chair Valerie Armstead has prepared an exciting meeting around the theme of "Collaboration." Dr. Osborn will be describing the program in greater detail elsewhere in the Gazette and complete details will be available on the SAM website.

We welcome you to submit abstracts to Drs. Ankie Hamaekers and David Wong (no more than 250 words, to be received no later than June 15, 2013), at SAMAbstracts@gmail.com. The top abstracts submitted by trainees will be eligible for an award of \$500. Prior to the meeting, a full-day MOCA Airway Course will be offered by Cooper Medical School of Rowan University, with registration limited to a maximum of 6 individuals, offered on a first-come-first-served basis. Further details can be obtained at amandaburden@yahoo.com from Dr. Amanda Burden.

Please remember that SAM sponsors a research grant, limited to \$5000. Eligible projects should improve our understanding of airway physiology or anatomy, explore innovative methods, or reassess old methods of airway training. An application package can be accessed at www.SAMhq.com and must be submitted by July 1, 2013.

We have entered into an arrangement with The Anesthesia Quality Institute (www.aqihq.org) where-in SAM will serve as the principal resource for the development and interpretation of outcome measures related to airway management and also provide feedback to the ASA on the performance and effective-

ness of the AQI. Optimally, this will help to establish some important benchmarks regarding airway outcomes. As Chair of the SAM Research Committee, I will represent our Society as a member of the AQI Advisory Panel.

I am very happy to report that Felipe Urdaneta has been hard at work on the creation of a new SAM website. This is clearly more attractive and compelling than our existing website but its value will be determined not by its beauty, but by its utility. I am only going to share a few things with you--I would rather you explore it on your own. Let us know what is missing and what we could do better. The website provides us with an opportunity to operate in a more transparent manner. The Minutes of our Board of Directors' meetings will be posted for SAM members to review. SAM's Committee memberships, their projects, and their accomplishments will be listed. Two bibliographic airway databases--one containing the key references in Benumof and Hagberg's Airway Management 3rd ed. (2012) and another listing the publications of SAM members will be included. There will also be special discounts available only to SAM members for several recently published airway textbooks. We anticipate that this could seriously threaten Amazon's cash flow. The address will remain the same--www.samhq.com but we hope that you are impressed by the work Dr. Urdaneta has done. In the near future, we expect to enter into the realm of social media. We are exploring the possibilities offered by Facebook and Twitter.

In May 2013, our official journal, The Journal of Clinical Anesthesia (JCA) will publish six of the top-rated abstracts presented at our 16th annual meeting in Toronto. They will be accompanied by a full-page article describing our Society. In April 2013, the ASA Newsletter provided us with an opportunity to inform ASA members of SAM activities. In addition, we have been invited to contribute several articles to a forthcoming issue devoted to the theme of airway management.

In December, the European Airway Management Society will be hosting the 2nd European Airway

Congress in Istanbul and several SAM members will be playing key roles. In the coming months, we will also be providing preliminary details about a joint venture with the Difficult Airway Society (DAS). In celebration of our respective 20th anniversaries, we will be co-hosting The World Airway Management Meeting in Dublin. Past-Presidents Elizabeth Behringer (SAM) and Ellen O'Sullivan (DAS) are the co-chairs of the Planning Committee.

In the meantime, I would encourage you to remain interested and involved. SAM is not a 2.5-day/year activity. We are open for business year round but we want and need your engagement.

Yours respectfully,

Richard Cooper MD
President, SAM

Society for Airway Management Educational Meeting in Chiang Mai, Thailand 2013

Lauren Berkow M.D.
Johns Hopkins
Baltimore, Maryland



The first SAM Education Meeting in Chiang Mai, Thailand was held January 31 - February 1, 2013. This meeting was planned and hosted by Dr. Wariya (Porsche) Sukhupragarn, from The Department of Anesthesiology, Chiang Mai University and was endorsed by SAM. Over 400 physicians and resident physicians from across Thailand participated, each receiving a syllabus of all the lectures and a hand-crafted bag with the Chiang Mai University mascot, a purple elephant, holding a SAM balloon by its trunk.

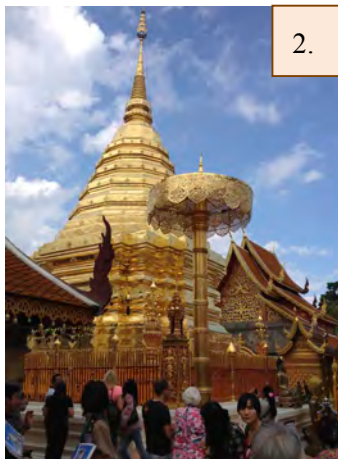


Chiang Mai is located in the mountains of northern Thailand, approximately 1.5 hours by plane from Bangkok. (Fig. 1) Due to the cool climate (by Thailand standards), it is a popular tourist destination during the winter months.

It is also known for the Chiang Mai Zoo as well as Wat Doi Suthep (Fig. 2) a Buddhist temple located at an elevation of 3520 feet, providing a

commanding view of the region.

The two-day meeting began with an opening ceremony in the beautifully decorated Empress Hotel and Convention Center.



The meeting was opened by the Chiang Mai University Dean of Medicine, Dr. Wattana Navacharoen with additional greetings from Dr. Yodying Punjasawadwong, Head of the Department of Anesthesiology and Dr. Wanna Srirojanakul, President of the Royal College of Anesthesiologists of Thailand. SAM President Dr.

Richard Cooper (Toronto General Hospital and University of Toronto) was the first speaker at the meeting, discussing "New developments in airway management." Dr. Lauren Berkow from Johns Hopkins School of Medicine, followed with a lecture on "Anesthesia for morbidly obese patients" and SAM Immediate Past-President Dr. Maya Suresh from Baylor College of Medicine, spoke on "Avoiding airway catastrophes in obstetrical patients" and "Extubation and PACU issues in obstetrical patients." The after-

noon session featured two lectures on pediatric airway management by SAM member Dr. Paul Stricker from Children's Hospital in Philadelphia, "Pediatric difficult airway management: The state of the art" and "Clinical dilemmas in children with difficult airways."

That evening, the speakers were treated to a pool-side Thai dinner at the Rati Lanna Hotel, where we were joined by the anesthesia residents of Chiang Mai University as well as Program Director Dr. Wariya Sukhupragarn and the Head of the Department of Anesthesiology. (Fig. 3)



SAM Secretary Lauren Berkow led off the second day with a lecture on "Airway fires during anesthesia" followed by SAM Past-President Dr. William Rosenblatt from Yale University School of Medicine, who presented lectures on "Management of patients with airway pathology" and "Airway management of patients with cervical spine injury." Dr. Cooper gave the final talk on "Extubation of the patient with a difficult airway."

After an excellent Thai luncheon, 50 conference participants attended a 3-hour hands-on workshop on retrograde intubation, cricothyrotomy, videolaryngoscopy, fiberoptic intubation, Fastrach LMA, and Lightwand intubating stylets.

The SAM speakers were treated to a tour of the Chiang Mai region including a ride down the river on a bamboo raft and a bumpy trek on the back of an elephant. We also attended an elephant show where the elephants danced, kicked soccer balls, shot three-pointers with basketballs, struck poses, and even painted with water-colors. We were taken to a camp where members of several hill tribes of Northern

Thailand displayed their crafts and their ways of living, including the Long Neck Karen Tribe. (Fig. 4)



Women of this tribe are distinguished by the heavy brass rings that they wear around their necks and legs. As they age, more neck rings are added, with the record being 28 rings.

All the speakers concurred that these women would definitely be a difficult direct laryngoscopy because of reduced mouth opening and cervical extension and an impossible surgical airway!

The speakers were also fortunate to be able to attend the Chiang Mai Flower Festival, which opened on the evening following the conference. This festival occurs only once a year for two days, and fills several city streets with extravagant flower displays, crafts and local food, including fried bugs, which none of us was adventurous enough to try. (Fig. 5)



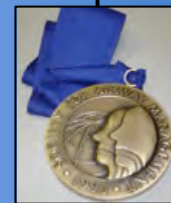
Overall, the SAM Education Meeting in Chiang Mai, Thailand was a great success. It was well attended, appreciated by both attendees and speakers, and enjoyed excellent vendor support including an espresso machine, which made Dr. Cooper quite happy. We extend our appreciation and congratulations to Dr. Wariya (Porsche) Sukhupragarn and colleagues for their outstanding organization and hospitality.

**Want to experience the most enjoyable, unique learning experience possible?
Come to the next Society for Airway Management Scientific Meeting!**

Speak with the experts, friends, experienced airway specialists on the SAM Forum

Distinguished Service Award - 2012 Medalist Dr. Carin A. Hagberg

The University of Texas Medical School at Houston
Houston, Texas



The Society for Airway Management presented Dr. Carin A. Hagberg with its highest honor, the Distinguished Service Award, at its 16th Annual Meeting, held in Toronto, Canada in 2012.

An enthusiastic international crowd gathered at the Teck Suite of Galleries in the Royal Ontario Museum for the Annual Meeting's Award Ceremonies and Cocktail reception. Amidst rare and unique gems and minerals, they applauded Dr. Hagberg's incredible list of accomplishments and contributions to SAM and the realm of airway management.

A native of Massachusetts, Dr. Hagberg graduated cum laude from the University of Massachusetts in 1982 and received her M.D. from the University of Texas (UT) Medical School at Houston (1988). She completed her residency in Anesthesiology and in 1991-1992, served as Chief Resident at the UT Southwestern Medical School, Parkland Memorial Hospital in Dallas, Texas. In Dallas, Dr. Hagberg successfully completed a Mini-Fellowship in Cardiovascular Anesthesia at Methodist Hospital (1991) and another in Neuroanesthesia at Zale Lipshy University Hospital (1992).

She returned to the University of Texas Medical School at Houston where her initial appointment as Program Director of Undergraduate Education quickly led to another appointment as Residency Program Director in 1996. In this role, she developed an airway rotation at UT Houston's main teaching hospital, Memorial Hermann Hospital. Dr. Hagberg's aptitude and love of teaching were evident early in her career, as evidenced by her receiving numerous teaching awards. In 2007, she became Vice Chairman of the Department of Anesthesiology. Since 2008, Dr. Hagberg has served as the Joseph C. Gabel Professor and Chair of her Department. She is a mentor and educator of countless residents, fellows, and colleagues in this rigorous academic environment.

Dr. Hagberg specializes in both Neuroresthesiology and Advanced Airway Management, while focusing her research efforts in these areas. Her educational achievements include numerous peer-reviewed journal articles, Letters to the Editor, book chapters, and books addressing a variety of subjects concerning

the field of advanced airway management. Nationally and internationally, she is a highly sought-after lecturer and has travelled the globe while instructing others in state-of-the-art airway management.

Dr. Hagberg is Editor of the internationally renowned textbook, *Benumof and Hagberg's Airway Management: Principles and Practice* (Elsevier, 2012), third edition, and has recently co-edited another book, *The Difficult Airway: A Practical Guide* (Oxford University Press, 2013).



After attending the inaugural meeting of SAM in Atlanta, Georgia in 1995, she quickly and enthusiastically gave support and tireless hard work towards the growth and promotion of SAM. She served in multiple leadership positions within the organization: Secretary (1999-2004), Vice President (2004-2005), President-Elect (2005-2006) and President (2006-2007). Dr. Hagberg was elected the second Executive Director of SAM in 2008, a position held by SAM Founder, Dr. Andranik Ovassapian. In this capacity, she remains vitally involved in SAM's growth as an educational, research, and training society.

Dr. Hagberg united SAM with the *Journal of Clinical Anesthesia* and presented the concept of the SAM-Forum to enhance membership benefits. She developed three new funds for the society, including the Ovassapian Lecture Fund, the Research Fund, and the International Physician Sponsorship fund. These should continue to grow and help SAM in achieving its objectives. She increased resident involvement within SAM by establishing a Resident Committee and establishing the former 'Resident's Review' corner of the Airway Gazette. One of Dr. Hagberg's most recent achievements includes her contribution to the latest iteration of the American Society of Anesthesiologists' Task Force on *Practice Guidelines for Management of the Difficult Airway* (2013).

Dr. Hagberg and her wonderful husband, Steve, are parents to five beautiful children, Brady, Rebecca, Alessandra, Ellie and Catherine, and have one grandchild, Evalina. The Society for Airway Management is honored to have such a talented, dedicated and remarkable person as our latest DSA award winner!

Elizabeth Behringer, M.D.

Upcoming S.A.M. Annual Meeting 2013

September 20 – 22

Philadelphia, Pennsylvania

The Society for Airway Management will be holding its 17th annual scientific meeting on September 20-22 in Philadelphia, Pennsylvania. Following last year's successful meeting in Toronto, SAM 2013 will remain on the east coast and we hope to attract participants with an exciting program of lectures, workshops, round-table discussions, and debates. The meeting will take place at the Loews Philadelphia Hotel, conveniently located in Central City.

New this year is a pre-congress MOCA simulation course for those seeking to maintain or renew their certification requirements for anesthesia practice. The course will be conducted at nearby Cooper Medical School, a certified and experienced MOCA center. Registration is limited and those interested should apply soon.



The 2013 meeting carries a theme... "Collaboration."

The plenary sessions will begin with an update by Dr. Carin Hagberg on the new ASA difficult airway guidelines. Other speakers will reflect on the role of collaboration in management of the emergency airway and we're delighted to have experts from emergency medicine and critical care. Collaboration in clinical research will be discussed by Dr. Michael Aziz, and includes a debate on the merits of using simulation in research.

In response to last year's evaluations several topics in pediatric airway management will be presented including a debate on the role of muscle relaxants in the management of the difficult pediatric airway. Roundtable sessions and workshops also provide hands-on experience including new airway devices for children and infants.

International speakers include Drs. Eric Hodgson, Peter Groom, and Paul Baker. Dr. Hodgson is well-

known to those on the SAM listserv and will discuss "Management of Difficult Airways with Limited Resources". The Ovassapian lecture will be delivered by Dr. Robert Mabry of the US Army, who will present "Lessons from the Battlefield: Airway Casualties and Preparedness." From "across the pond," Dr. Peter Groom will be the DAS speaker discussing "Management of the Anticipated Difficult Airway".

A variety of round table discussions will address topics such as "Organizing an Airway Rotation in Your Department," "Ketofol: Is It Safe to Use for Intubation?" and "Recording and Archiving Your Airway Cases." Concurrently, there will be walk-around poster discussions led by SAM faculty. Saturday evening will showcase a lively event at the WHYY public television studios and a chance for participants to relax and enjoy meeting new friends.

On Sunday, we will resume the popular clinical debates with audience-response voting. Topics include the role of videolaryngoscopy vs. direct laryngoscopy in pre-hospital airway management. Several speakers this year will address airway management, equipment, and teaching during medical missions. Please see the full brochure with more details on the new, updated SAM website.



Philadelphia offers a wide variety of affordable activities for accompanying family members. There are numerous parks, museums, restaurants, and historical sites within the vicinity of the hotel. Philadelphia has been called "the

city of brotherly love," and we look forward to seeing you there in September!

Chairman: Irene Osborn, M.D., Mt. Sinai, New York
Co-Chairman: Valerie Armstead, M.D., Cooper Medical School of Rowan University, New Jersey

Send in your TIPS and TRICKS ... E-mail: k-gil@northwestern.edu



17th Annual

**Society for Airway Management
Scientific Meeting and Workshop**

SEPTEMBER 20 – 22, 2013

**Loews Philadelphia Hotel
1200 Market Street
Philadelphia, PA 19107**

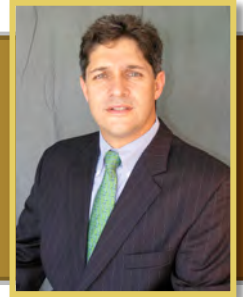


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DL = direct laryngoscopy DL
VL = videolaryngoscopy
SAD = supraglottic airway device
LMA = Laryngeal Mask Airway
ETT = Endotracheal tube
OR = Operating room

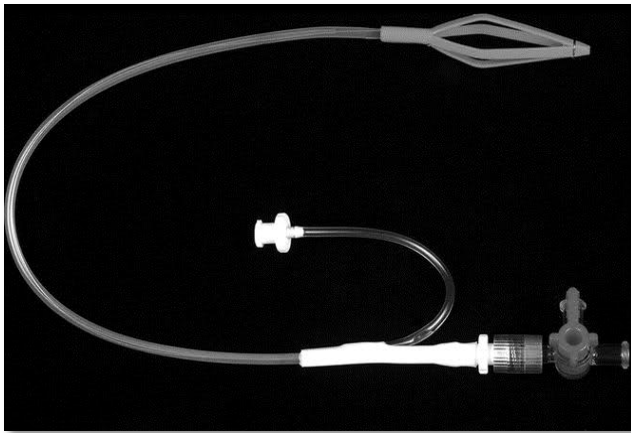
E-LIGHTS OF THE SAM FORUM

Felipe Urdaneta, M.D.
MRVAMC/University of Florida



§§§ I have a question for those using the Hunsaker and/or other mid-tracheal jet tubes: What is your technique or method of placing them? Initially I used to induce anesthesia (most often via inhalation technique) place the tube by DL or occasionally by VL, but found the tubes too floppy to handle. Then I often struggled to keep them in place as we turned the table for the surgeons to work. Now I perform an inhalation induction with the bed already turned and I let the surgeon place the tube when they perform suspension laryngoscopy. At the end the surgeon pulls everything out and we mask until awake. I do the same for our invasive pulmonary people, except they are using jet ventilation via the rigid bronchoscope.

Dr. Will Rosenblatt



Hunsaker Mon-Jet ventilation tube

A) We do the same you do except:

I. We always turn the bed *prior to* induction, so that everything is already in place when the pt. is asleep (ear, nose, and throat (ENT) team masks the patient (pt) while we "squeeze the bag");

II. The surgeon places the Hunsaker tube *after* the suspension laryngoscope is in place and he/she has confirmed proper "alignment of the axes" and view of the glottis;

III. We generally insert a LMA or a small ETT as a "bridge to extubation" rather than "masking until

awake" (we gain free hands and better airway protection, or at least we think we do). Dr. Laura Cavallone

B) We also use the Hunsaker tube. We induce anesthesia with table turned in the surgical position. Our voice surgeons use it as an opportunity to train their fellows the proper precautions in the placement of these tubes. We have performed plenty of these tube insertions without difficulty.

Dr. Andy Herlich

§§§ Patients represent a big challenge when admitted to the Emergency Department (ED) from the field, with King Airways placed by EMS providers, and needing airway exchange for endotracheal tubes (ETT). I believe a multi-specialty approach is in order since these patients usually have had multiple intubation attempts in the field before the King Airway is placed. Any recommendations on how to best accomplish the exchange?

Dr. Maxine Lee

A) These cases should be handled by those experienced in these matters; in my institution "anesthesia" would be the right team to do it since they have knowledge and direct experience with most SAD. So long as the patient is adequately ventilating, FOB would be used to assess the laryngeal view and whether an exchange would be easy to accomplish. Either a FOB/Aintree or FOB/Arndt wire set can be used. I always teach residents (and anyone else who will listen) "don't ever take out a functioning airway unless you have no other option." I am sure there are those that think that exchanging these tubes with VL will be the way to go. I am aware of two cases in the last two years where a working device was taken out and the airway was lost in the process leading to poor outcome.

Dr. Aaron Joffe

B) My preference to exchange the King LT is the Arndt Airway Exchange Catheter (*Set*)* ("wire technique"). Although it has more steps than the Aintree technique it simplifies the insertion as the Fiber-optic bronchoscope

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(FOB) does not have to enter the glottis: the wire can be inserted under direct visualization "from a distance" without inserting the FOB in the glottis. That may be important when the suboptimal position of the LT (field, transport) may generate a distorted view of the glottis. I recommend to train for this technique in the controlled setting like in the OR. Dr. Adrian Matioc
*[Ed. added (*Set*) per Dr. Joffe/s comments next page]

C) First and foremost, these cases must always be regarded as difficult airways, regardless of the local EMS management policy/sequence. We manage King LT exchanges with endoluminal approach if possible. My preferred technique is to use a wire-guided exchange and an FOB/Arndt exchange catheter set (AECS) combination. It allows continued ventilation/ oxygenation through a packaged circuit/bronch adapter for the majority of the exchange procedure and has a longer working length for exchange compared to the FOB/ Aintree Intubation Catheter (AIC) combination. We've used this technique safely on 10+ ED patients with only one that could not be completed because the glottis opening could not be visualized through the food-clogged ventilation port. Luckily the Glidescope enabled intubation.

My second best approach is to use a FOB/AIC guided-exchange. Similar to the FOB/AECS combination, it maintains relative airway control during the exchange procedure; however, it has a shorter working length (possible increased chance for dislodgement) and no ventilation adapter. Additional equipment is needed to provide ventilation/oxygenation while navigating the King LT lumen. Additionally, the FOB/AIC does not fit easily through the proximal ventilation port of the King LT-D, and requires exit through the distal port for this device model. If you use the FOB/AIC, you also need to know about the technical differences between the King LT-D (no gastric port) and LTS-D (gastric port). They relate to the position of the main ventilation ports (more distal for the LT-D model). If you are exchanging an LT-D using an FOB/AIC guided technique, you may have to pull the device back a bit to be able to visualize the glottic opening through the distal port.

Regardless of the technique used, before starting, assess the device for malalignment/rotation and correct it if present. I always suction the gastric port (if pre-

sent) with a separate suction catheter. I suction the ventilation lumen as well to remove and debris/blood that might obscure the view. Dr. Richard E. Galgon

D) Another option to exchange a King LT is using channeled devices like an Aitraq or King Vision; in order to do this the King is partially deflated (enough to maintain ventilation) and to allow insertion of the channeled device. Once you visualize the cords, advance the tube, check the position and remove the King LT. It does gets crowded in the mouth and to top things off visualization may be difficult due to the presence of blood and other secretions. Dr. Bettina Schmitz

E) My practice would be different if the prehospital airway experience in my community was more robust, but it is not. As such, rescue with the King is fairly common and relates quite often to inexperience. I don't exchange these catheters. I find that this takes too long. I take out the King LT and then intubate via V.L



Left = advancing tip
Right = other end of AEC

(Glidescope or Storz). I don't understand the fear of losing a functional airway. You have to lose it eventually, and you can always place the SGA back in. The patient can go into laryngospasm or aspirate, but these risks persists with any exchange technique in my opinion.

Dr. Michael Aziz

F) Regarding the exchange via FOB/Arndt exchange catheter set (AECS) combination, my institution's yellow Cook exchange catheters are not called Arndt catheters they are called simply "exchange catheters" and rather the Arndt ones are the endobronchial blockers. We also have the green colored extra firm Cook catheters made for double lumen ETT'. If there is an "Arndt" exchange catheter, this implies there is more

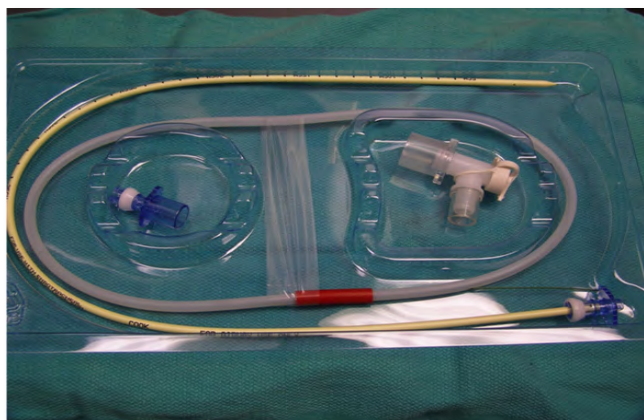
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View committees at <http://www.samhq.com> and/or contact committee Chairs.

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than two exchange catheters made by the same company and to me this is confusing. Dr. Felipe Urdaneta

G) To clarify, there is not an Arndt exchange catheter, but a catheter exchange **set**. The Arndt exchange catheter set has multiple components: catheter, wire, airway connector and rapifit adapters. The catheter is slightly different, however, in that it has a tapered tip design and is shorter than the "exchange" catheter.

Dr. Aaron Joffe



Cook Medical: Arndt Airway Exchange Catheter Set

H) You are correct. Cook makes multiple exchange catheters. Their nomenclature is confusing. This is why institutions get "fixated" on a device and will not try any other.

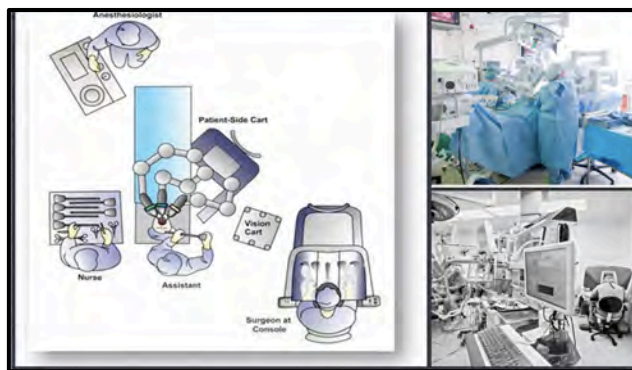
Dr. Adrian Matic

§§§ Our hospital will be starting Robotic Airway Surgery. I have done robotics but not ENT or neck procedures. My understanding is they want the bed turned 180 degrees. Any helpful tips, and advice?

Dr. Lorraine Foley

A) Anesthesia-wise, there is nothing different than our usual concerns for prolonged suspension laryngoscopy and standard laser precautions. Having said this, one important challenge is that you may have to negotiate OR real estate with the ENT team. The Robotic equipment is massive, and requires careful arrangement of the device, base, arms, as well as the screen, in relationship with OR instruments table, and your anesthesia machine and IV poles.

Dr. Basem Abdelmalak



B) You may require some simulation time, with a mannequin if possible, prior to starting with actual cases; this will permit you the opportunity to determine the "Feng-Shui" and logistics of the anesthesia machine, IV poles and tubing position, also would allow to establish a plan for the direction of the bed turn. You'll need extra extension sets on the IV for sure. Also have a backup ventilation plan in case of extubation, fire or explosion. It's only funny until someone loses an airway (or an eye).

Dr. James DuCanto

C) We do Robotic ENT and Head and Neck surgery. In our experience we turn the bed 90 degrees and not 180; obviously the table position depends on the size of the OR and the placement of the robot. I just want to add that the anesthesiologist must pay attention to the patient's tongue because de retractors in place can make the tongue very edematous and "blue" and since these procedures are usually lengthy, this may become a problem.

Dr. Daniel Perin

D) With this valid point in mind, would it be useful for the anesthesiologist to monitor the tongue, if possible, with a disposable-flexible pulse oximeter wrapped lightly around the tongue, by monitoring tongue perfusion with the pulse oximetry signal/waveform? This is a described technique in ICU patients, and also in veterinary medicine. Some devices may give a perfusion index as well. To use this technique, a malleable metallic strip such as the one you can obtain by removing the one available in disposable facemasks can be used to give structure to the pulse oximeter probe. Just a thought.

Dr. James DuCanto

E) Nice observation. I think this is possible and I will try it in my next case.

Dr. Daniel Perin

(SIC)

TIPS and TRICKS! • Clinical Case Presentations • Reviews on Aspects of Airway Management Letters to the Editor • Research Papers • GET PUBLISHED IN THE GAZETTE!!!

Tips and Tricks

Optimizing One-Handed Face Mask Ventilation

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The "E-C" one-handed face mask ventilation (FMV) technique was never validated as an optimal positive pressure ventilation method. The following is a 4-step approach to analyze and optimize this technique.

Step 1: Optimize the seal with a Power Grip

The "E-C" grip was historically used for spontaneous FMV inhalational anesthesia and is reinforced today by the presence of strap holder spikes. (Fig 1) These are



Fig 1. The "E-C" FMV.

Red = E shape: digits 3, 4, 5

Yellow = C shape, digits 1, 2

present mainly in many operating rooms (OR) and less so on face masks (FM) used with resuscitator bags. This may explain why the "E-C" technique is more prevalent in the OR but not in the prehospital situation (objectively observed).

The "C" (digits 1

and 2 on the dome) of the "E-C" technique does not allow control of the whole FM with gas leak occurring especially on the right side. Digits 3, 4, and 5 form an "E" while attempting to lift the mandible (Fig 1). To optimize the FM seal on the face with the left hand, implement an ergonomic Power Grip: After removing the spiked strap holder, place the web of the left hand, between digits 1 and 2, around the ventilation connector. (Fig 2)

Reach across to the right side of the FM while keeping digits 3, 4 and 5 toward the front of the chin.¹ This controls all sides of the FM: digits 1 and 2 control the right side (where gas leak usually occur), digits 3, 4, and 5 control the front, the hypothenar area puts pressure on the left and the thenar eminence presses down on the cephalad side of the mask. Optimize the seal by squeezing the whole FM on the face and moving it from side to side as needed: a power grip allows the control

of the whole mask.

Step 2: Optimize FMV technique by applying a Chin Lift/Head Tilt Maneuver

The chin lift/head tilt (cervical spine extension) and the

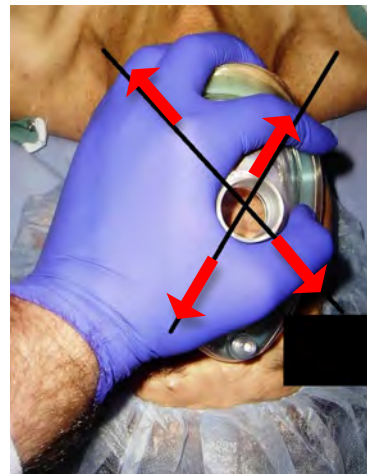


Fig 2. Power grip: Arrows along "X" indicate four areas of face mask dome control.

jaw thrust (mandibular advancement) were validated as airway maneuvers only for (expired air) resuscitation by Elam and Safar in the late 1950s: both methods used two handed techniques.² With E-C one-handed FMV technique, there is confusion regarding which airway maneuver is applied: in an internal survey of 36 anesthesia providers: 18% described it as "jaw thrust," 18%



Fig 3. Yellow = spine extension
Red = mentum-sternum line

as "chin lift/head tilt," and 64% as "both" (communication noted at SAM Meeting, 2005, Washington D.C.).

Chin lift/head tilt and jaw thrust maneuvers can be quantified. The maximum cervical spine extension generated by a chin lift applied according to resuscitation guidelines in conscious, supine men and women is 42°.³ This is translated anatomically into maximal stretching of anterior neck structures. (Fig 3) Objective

marker indicates maximum cervical spine extension; clinical marker indicates stretching of the anterior neck structures (mentum-sternal line). In normal adults, the maximum jaw thrust or mandibular advancement (positioning the mandibular teeth in front of the maxillary ones) during anesthesia is 1.68 +/- 0.32 cm.⁴

The "E" grip places digits 3 and 4 +/- 5 on the mandibular ramus for a unilateral support of the mandible. This may not be optimal chin lift and, as demonstrated by Safar, may be insufficient for the maintenance of a patent airway.⁵ The inability to generate or maintain a measurable (symmetrical) mandibular advancement, using digit 5 at the mandibular angle disqualifies the jaw thrust as a component of the E-C technique.

The one-handed "power grip" FMV method directs digits 3, 4, and 5 toward the chin in position anteriorly for a chin lift and with the ability to generate and keep head tilt during inspiration and expiration. (Fig. 4)



Fig 4. Dotted = E-C technique
Solid = power grip method
(anterior mentum-sternum line)

Step 3: Assess your FMV Technique Effectiveness with tidal volume and airway pressure analysis.

In the OR the effectiveness of the FMV technique is evaluated clinically by the feel of the ventilation bag, airway pressure (AP), oxygen saturation (S_pO_2), exhaled tidal volume (TV), and end-tidal CO_2 tracing. The need for an objective evaluation of the airway management is emphasized in the 2013 ASA Practice Guidelines for Management of the Difficult Airway ("Descriptions that can be categorized or expressed as numerical values are particularly desirable...") and demonstrated by Wood et al. (6, 7) Implementing this type of analysis in our teaching and practice will allow a timely and objective definition of "easy," "difficult," and "failed" FMV. For example, a TV of 50 cc and AP of 40 cm H_2O may be considered a failed attempt even when S_pO_2 is 100%. A routine adult TV of 300-400 cc, with an AP of ~ 20-25 cm H_2O and a respiratory rate of 10-12 breath/min is a safe target to avoid hypoventilation and gastric inflation.

Step 4: Optimize the use of Airway Accessories.

Commonly, the oropharyngeal airway (OPA) is used

after the first FMV attempt fails. There are specific situations where the OPA should be used during the first FMV attempt: the obese, obstructive sleep apnea, edentulous, difficult airway, or fixed cervical spine (pathology, cervical collar, halo) patients. In the first two situations, the OPA will open the airway and bypass obstruction (that does not respond to airway maneuvers), in the next it will help expand intraoral structures to prevent inward collapse of cheeks, and in the last two situations, it increases chances of improved ventilation.

Conclusion

The one-handed method for FMV is historically the oldest and the least improved airway management technique. Some techniques developed in the OR to optimize FMV (e.g. ventilator assistance) cannot be applied in critical airways at other sites (recovery room, ICU, ER, prehospital) where airway management failure is the highest. While an optimized FMV technique may not be 100% successful, it will allow the practitioner to quickly achieve a best attempt and to accept failure in a timely manner.

Further efforts are needed to optimize the practice and teaching of the one-handed FMV technique such as training with mannequins that allow ventilation only when airway maneuver benchmarks are achieved. Before comparison with two-handed FMV technique, rightly considered optimal as it applies a validated airway maneuver (jaw thrust) and seals the whole mask or other ventilation techniques, there is a need to standardize/optimize/validate the one-handed technique.

COI: Inventor of the *Ergonomic face mask; and Advanced oropharyngeal airway management device.*

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