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The Laryngeal Mask Airway and Laryngeal Mask Airway Fastrach®: An Objective Structured Clinical Examination for Nurse Anesthesia

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THE LARYNGEAL MASK AIRWAY AND LARYNGEAL MASK AIRWAY FASTRACH®: AN OBJECTIVE STRUCTURED CLINICAL EXAMINATION FOR NURSE ANESTHESIA

by

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ABSTRACT

Patient safety is the primary factor that guides the clinical practice of anesthesia. To optimize patient safety and outcomes, the use of supraglottic airway devices (SAD), like the Laryngeal Mask Airway (LMA) and Laryngeal Mask Airway Fastrach® (LMA Fastrach®), may be necessary to implement within the clinical setting. The utilization of SADs would be appropriate in the following scenarios: a failed attempt to bag-mask ventilate, inability to maintain a patent airway, or use as a bridge for airway management during encounters of difficult airway situations.

At the time the study was conducted, The University of Southern Mississippi (USM) Nurse Anesthesia Program (NAP) had no consistent method to educate, practice, and evaluate via check-off for the LMA and LMA Fastrach® airway management techniques. Creation of an Objective Structured Clinical Examination (OSCE) aims to provide an educational pathway and uniform evaluation for USM Student Registered Nurse Anesthetists (SRNA) on the application of the difficult airway algorithm and implementation of proper treatment methods through the use of the LMA or LMA Fastrach®. With regards to evidence-based practice guidelines, a major goal of the OSCE doctoral project is to encourage proficient practice that enhances clinical knowledge and skill, ultimately improving patient safety and overall patient outcomes.

The OSCE along with a survey were sent to first and second-year USM NAP SRNAs for review and evaluation. The purpose of the survey was to determine the effectiveness, accuracy, and clarity of the proposed OSCE. Survey feedback indicated that the OSCE was of high quality and was well accepted by the SRNAs and CRNA faculty of the USM NAP.

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LIST OF ABBREVIATIONS

AACN	American Association of Colleges of Nursing
ASA	American Society of Anesthesiologists
CRNA	Certified Registered Nurse Anesthetist
DNP	Doctor of Nursing Practice
IRB	Institutional Review Board
LMA	Laryngeal Mask Airway
LMA Fastrach®	Laryngeal Mask Airway Fastrach®
NAP	Nurse Anesthesia Program
OSCE	Objective Structured Clinical Examination
SAD	Supraglottic Airway Device
SRNA	Student Registered Nurse Anesthetist
USM	The University of Southern Mississippi

CHAPTER I - INTRODUCTION

The University of Southern Mississippi (USM) currently does not have a proper educational opportunity and evaluation tool for the insertion of Laryngeal Mask Airway (LMA) and the Laryngeal Mask Airway Fastrach® (LMA Fastrach®). The USM Nurse Anesthesia Program (NAP) administration has made an effort to contact Student Registered Nurse Anesthetists (SRNA) performing a doctoral project to contribute to an Objective Structured Clinical Examination (OSCE) database for this particular subject. The OSCEs for insertion of the LMA and LMA Fastrach® have been developed following the difficult airway algorithm guidelines of the American Society of Anesthesiologists (ASA). Even though there are many difficult airway algorithms, anesthesia knowledge and clinical practice follow closely and accordingly with the ASA standards of care.

Problem Description

The problem statement for the LMA and LMA Fastrach®: Objective Structured Clinical Examination for Nurse Anesthesia doctoral project is, at present, the USM NAP has no consistent method to educate, practice, and evaluate via check-off for the LMA and LMA Fastrach® airway management techniques. The USM NAP administration is highly supportive of building an OSCE database for training SRNAs within the didactic anesthesia program. The OSCE has been overwhelmingly accepted as a clinical skills assessment tool. It is being utilized worldwide to teach and evaluate learners' competency, particularly within the healthcare setting (Ataro et al., 2020). The OSCEs aim to offer the SRNA an educational pathway and uniform clinical evaluation for

proficient practice that enhances clinical knowledge and skill, ultimately improving patient safety and overall patient outcomes.

Purpose and Context

An OSCE can be described as a highly reliable, valid, objective, and powerful tool (Ataro et al., 2020). The overall purpose of the doctoral project is to improve the quality of airway management for patients within a clinical setting. Furthermore, the objective aims to provide an OSCE that will educate SRNAs on the utilization and application of the difficult airway algorithm and implement the proper treatment method through the use of the LMA or LMA Fastrach®. A primary goal of the OSCE development is to instill confidence and preparedness while enhancing the clinical knowledge of SRNAs to guide safe and efficient patient care that improves patient outcomes during encounters of difficult airway management.

Stakeholders and Departments

The primary stakeholders affected by the study will be SRNAs being educated on the difficult airway algorithm guidelines and proper placement of the LMA and LMA Fastrach® devices. SRNAs needing to perfect clinical skills and improve knowledge may be effected through the OSCEs. Additionally, the USM Nurse Anesthesia Program will benefit from the OSCEs by aiding and evaluating the growth of clinical knowledge of current and future SRNAs.

Impacts on Healthcare, Practices, or Outcomes

Objectivity, structure, validity, reliability, validity evidence, and defensibility are all pertinent qualities that embody an adequate assessment (Onwudiegwu, 2018). OSCE is a current method of evaluation that has gained credibility because of its improved

quality over the traditional clinical examination (Onwudiegwu, 2018). The OSCEs will demonstrate advanced healthcare practices discovered through evidence-based research that promote enhanced learning and clinical performance and practices. Outcome objectives for SRNAs include the following: instill confidence; better prepare for clinical practice; achieve more profound and more meaningful learning; facilitate the assessment of psychomotor skills, knowledge, and attitude; and provide a platform for student feedback (Onwudiegwu, 2018). The OSCE doctoral project will aid the SRNA's ability to appropriately apply and implement the guidelines for the difficult airway algorithm within the clinical setting. The objectives set for the OSCE will improve the outcomes of a patient with possible difficult airway management.

Patient Safety

Simulation-based education, like the OSCE, is highly beneficial in two significant ways. First, a simulated form of learning promotes the implementation of competency-focused education by fostering the performance of critical skills and, secondly, incorporation of patient safety for practice and evaluation of the OSCE (Arab et al., 2017). Even more so, such a learning method will encourage cultural awareness to promote the incorporation of safety-oriented practices upon completion (Arab et al., 2017). Patient safety should remain a constant factor that drives the development and implementation of evidence-based healthcare policies and procedures. When patient safety is prioritized, the most appropriate treatment plans can be identified and performed to improve patient outcomes. Therefore, patient safety will serve as a significant focal point for the LMA and LMA Fastrach® OSCEs.

Available Knowledge

Applicable Theory or Framework

To assure that an OSCE doctoral project would be advantageous for clinical outcomes, understanding the most common and valuable learning process in adults became a central focal point. Hoke and Robbins (2005), found that active learning is useful as a hands-on learning method and tends to be most effective in the adult population. Active and cooperative learning is a form of teaching that helps students learn to transfer and use classroom knowledge in the clinical setting (Hoke & Robbins, 2005). "Using holistic, active cooperative learning strategies (faculty role modeling, student interactive, and group learning, and group testing) within a didactic class, the authors found differences in the average clinical grade (87.03%)" (Hoke & Robbins, 2005, p. 1). "Compared to the average clinical grade for students taught using a lecture approach (84.19%)" (Hoke & Robbins, 2005, p.1). Conclusively, through the implementation of an OSCE, the target population of SRNAs will be able to engage in a hands-on learning method that has statistically proven to be beneficial in aiding the learning process for the adult population.

Objective Structured Clinical Examination

The OSCE, developed by Harden and colleagues in 1975 as an alternative to the traditional long case clinical examination, has received global acceptance as an objective form of assessing clinical competencies at the undergraduate and postgraduate levels (Onwudiegwu, 2018). During an OSCE, health professionals are tested on their skills in taking histories, performing clinical examinations, communicating with colleagues, performing procedures, applying clinical psychomotor skills, and interpreting medical

results (Onwudiegwu, 2018). Additionally, an OSCE is more flexible, structured, and objective has a higher level of equity, and can test critical areas not usually amenable to the traditional exam format (Onwudiegwu, 2018).

During an OSCE, the examiner observes the candidate only and does not interrupt or ask questions, unlike the traditional clinical examinations (Onwudiegwu, 2018). Such a method is effective because the candidate has ample opportunity to demonstrate ability or inability while being adequately assessed (Onwudiegwu, 2018). The OSCE, unlike traditional examination methods, is considered to be a much more significant improvement due to the stations can be standardized, which advantages a fairer peer comparison, and complex procedures can also be assessed and evaluated without endangering the health, safety, or outcomes of patients (Onwudiegwu, 2018).

According to Onwudiegwu (2018), there is an OSCE blueprint that defines parameters and characteristics, including the following steps: determine a plan to be examined that prioritizes knowledge or skills to be assessed and differentiate between must know (core issues), important to know and nice to know. Next, determine the available length of time for the entire examination process; determine the number of stations needed and weigh the stations accordingly and appropriately; assess the duration of time for each station. Then select the scoring method (Onwudiegwu, 2018).

The evaluation process for the LMA and LMA Fastrach® OSCEs will be performed through the use of checklists. Checklists usually consist of 10 to 30 items and contain the information, points, items, or tasks expected to be elicited or performed by the examinee (Onwudiegwu, 2018). Marks that are fixed and weighted based on the item's importance, then graded on the checklist, are awarded to the examinee depending

on how adequately the required tasks are performed within the correct order or sequence of the tasks (Onwudiegwu, 2018). Based on the accuracy of a task performed, a candidate may be awarded total points, half of the points, or none at all if the candidate did not complete the task. Furthermore, scores may be graded as very good, satisfactory, poor, or not done and awarded points accordingly (Onwudiegwu, 2018).

OSCE Outcomes

Clinical competence can be defined as embodying "the knowledge and skills for safe and effective practice when working without direct supervision" (Offiah et al., 2019, p. 2). To master clinical skills, it is necessary to educate in an integrated and longitudinal process (Offiah et al., 2019). Furthermore, in some clinical skills, utilization of an OSCE improved learning outcomes compared to some other skills teaching methods, and the acquired skills lasted longer (Ataro et al., 2020). As mentioned, the outcome objectives of the LMA and LMA Fastrach® OSCEs for SRNAs aim to promote the enhancement of clinical competence; instill confidence; better prepare for clinical practice; achieve more profound and more meaningful learning; facilitate the assessment of psychomotor skills, knowledge, and attitude; and provide a platform for student feedback (Onwudiegwu, 2018).

Difficult Airway Algorithm

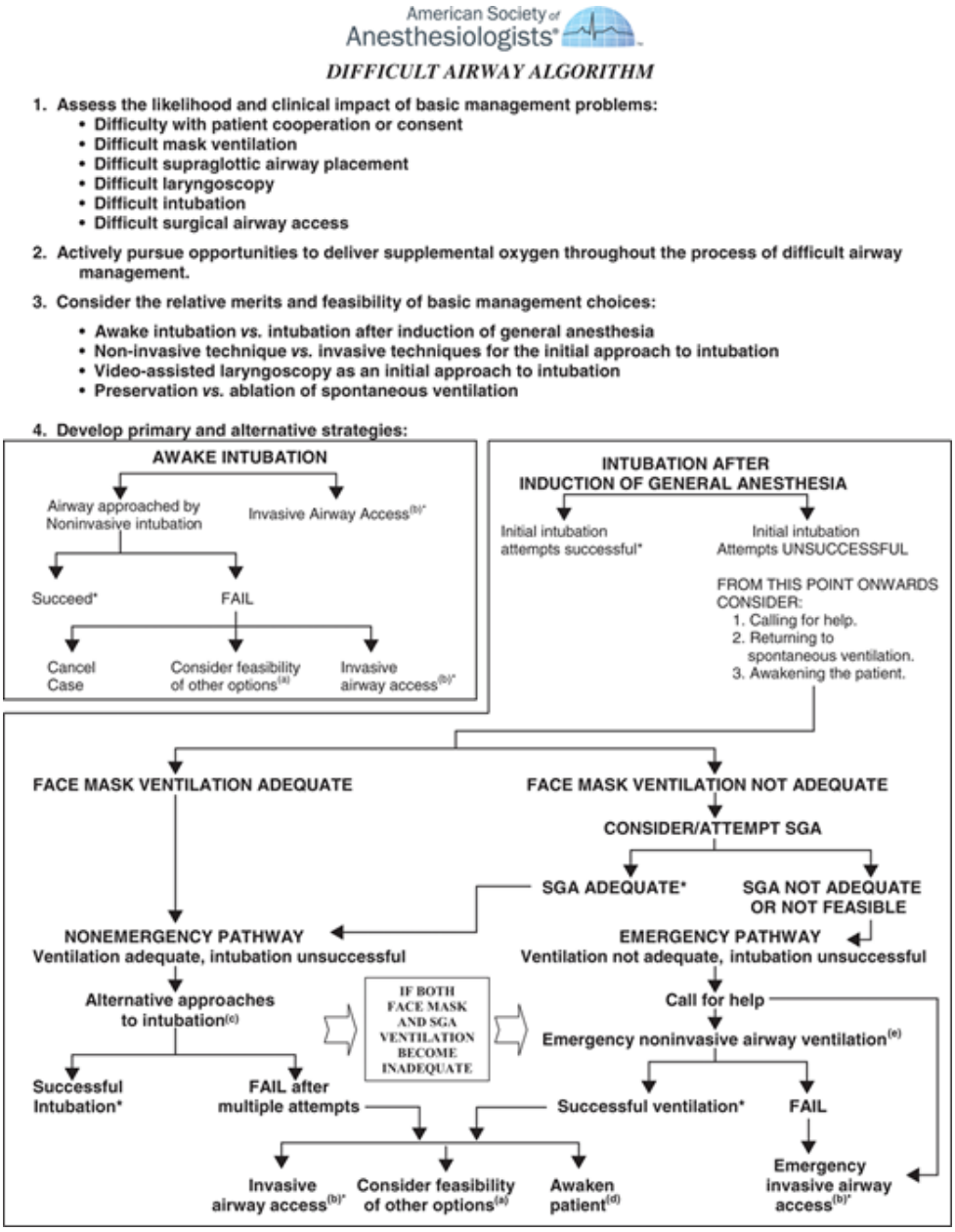


Figure 1. ASA Difficult Airway Algorithm

(Apfelbaum et al., 2013)

The ASA guidelines provide a structured response intended for unanticipated difficult intubations; furthermore, the guidelines take into account current practices and recent alterations in intubation techniques to offer a structured response (Apfelbaum et

al., 2013). A supraglottic airway device (SAD) can be placed even when mask ventilation is possible to aid the anesthesia team to make accurate decisions, limit the number of airway intervention attempts, and prevent a repeat occurrence of failure to secure a patent airway (Apfelbaum et al., 2013).

Supraglottic airway devices, including the LMA and LMA Fastrach®, are vital parts of the difficult airway algorithm. The LMA and/or LMA Fastrach® come into play in the difficult airway algorithm when there is a failed intubation attempt, or the patient is uncooperative, which are characteristics of an unrecognized difficult airway. According to the ASA guidelines, in the difficult airway algorithm, an unrecognized difficult airway is a prime opportunity for the use of the LMA in an emergent situation (Apfelbaum et al., 2013). The recognized and unrecognized difficult airway algorithms offer necessary steps that anesthesia providers can follow when presented with a challenging airway situation.

The algorithm for a recognized difficult airway has multiple avenues that the anesthesia provider could take. The first, and one of the most important steps, is to acknowledge the difficult airway. If the patient is cooperative, the anesthesia provider should continue with the same algorithm. However, if the patient is uncooperative, the anesthesia provider would then continue with the unrecognized algorithm. When a patient has a recognized difficult airway and is cooperative, the following step is to prepare for the patient's airway management (Richtsfeld & Belani, 2017). The next step is trying an awake intubation. In particular, this is where the algorithm can vary. The next step can result in successful intubation, a surgical airway, or a failed intubation. Successful intubation and a surgical airway result in a manageable airway; however, a failed intubation means that the patient does not have a secure airway. The anesthesia provider

can choose from the following options: the second attempt at an awake intubation, transition to general anesthesia with paralysis, decide to do regional anesthesia, or cancel the case altogether and regroup (Richtsfeld & Belani, 2017).

The algorithm for the unrecognized difficult airway is shaped more for emergencies. The first choice is to use general anesthesia with paralysis. If mask ventilation is possible as well as intubation, then the airway is managed. On the other hand, if mask ventilation is not possible, the LMA, Combitube, or Tracheal Jet Ventilation may be used (Richtsfeld & Belani, 2017). If none of these procedures are successful, then a surgical airway is placed and confirmed. If intubation is successful with or without issue, confirmation of placement is done.

The primary reason for the difficult airway algorithm is to reduce the occurrence of airway complications that can frequently result in morbidity and mortality. Secondly, the difficult airway algorithm is used as a tool that can help anesthesia providers navigate through difficult airway management situations. Patient outcomes may become very poor when the difficult airway algorithm is not adequately followed or if the anesthesia provider cannot secure a patent airway. The occurrence of a difficult or failed intubation is a pivotal contributor to patient morbidity and mortality, including possible preventable adverse outcomes such as airway trauma, brain damage, or even death (Joffe et al., 2019). Respiratory events account for 17% of Closed Claims outcomes, in which 27% of those respiratory events are primarily due to difficult intubation (Steadman et al., 2017). Additional significant contributors to patient harm include inappropriate airway management pertaining to the failure to use a supraglottic airway device as a bridge, perseveration, inability to plan for difficult airway management on induction, delay or

absence in calling for a surgical airway, and inadequate airway evaluation preoperatively (Crosby et al., 2020).

Several studies have emphasized the need to improve practitioner skills and systems response during times of compromised or unsuccessful intubation, which lead to the creation of the OSCE doctoral project (Joffe et al., 2019). During situations of difficult airway management, "complications increase 7-fold after the second and third laryngoscopy attempts" (Pacheco-Lopez et al., 2014, p. 1007). The large increase in complications after multiple intubation attempts makes the SAD a useful tool to provide oxygen during inadequate mask ventilation and unsuccessful intubation (Joffe et al., 2019). Unfortunately, anesthesia providers often seem reluctant to include supraglottic airway devices like the LMA or LMA Fastrach® into practice when airway management becomes difficult, which can further lead to poor patient outcomes.

Laryngeal Mask Airway

The LMA, designed by Brain, received Food and Drug Administration (FDA) approval in 1991 for anesthetic airway management (Jannu et al., 2017). The LMA is considered a mask airway that sits above the vocal cords. When general anesthesia is being used, a primary advantage of the LMA is the ability to establish and maintain a secure airway (Jannu et al., 2017). The LMA is part of the difficult airway algorithm and can be used to provide adequate oxygenation to the patient when an endotracheal tube cannot be placed.

According to Jannu et al., 2017, the recommended standard insertion technique for the LMA consists of the following steps: "the patient be in the sniffing position with the neck flexed and the head extended; the cuff should be fully deflated; the back of the

mask lubricated; the inner bowl (mask) of the airway should be free of lubrication because this may result in either irritation of the airway (e.g., laryngospasm) or obstruction of either the respiratory tract or the aperture opening in the LMA; the posterior surface of the mask is pressed against the palate following the curvature of the pharynx and pushed posteriorly into the hypopharynx until firm resistance is felt, and when the cuff is inflated a seal is formed around the laryngeal perimeter. Inflation of the cuff results in a slight cephalad displacement of the LMA and a slight bulging of the soft tissues overlying the thyroid and cricoid cartilage." (Jannu et al., 2017, p. 225).

Laryngeal Mask Airway Fastrach®

Similar to the LMA, the LMA Fastrach® is part of the Difficult Airway Algorithm and is considered a mask airway that sites above the vocal cords; however, there is a particular component of the device. "The modified LMA has an epiglottis elevator bar at the mask aperture and a curved shaft to guide placement of the endotracheal tube into the trachea" (Shyam et al., 2017, p. 9). Upon initial placement of the LMA Fastrach®, a bougie can be inserted by placing the tip into the trachea (Modir et al., 2017). After removing the LMA, an endotracheal tube is passed over the bougie into the trachea, providing a secure airway (Modir et al., 2017). On the other hand, the LMA can remain in place, and the endotracheal tube can be inserted directly into the trachea through the LMA without the assisted guidance of a bougie. The purpose of such a feature is to establish a more secure airway. Intubation through a supraglottic airway device is only appropriate in a stable clinical situation where oxygenation is possible via the device, and the anesthetist is trained in the proper placement technique (Apfelbaum et al., 2013).

Rationale

The difficult airway algorithm, LMA, and LMA Fastrach® are commonly used in clinical practice within the field of anesthesia. Numerous factors contribute to poor outcomes associated with poor airway management, such as judgment, communication, planning, equipment, and training (Apfelbaum et al., 2013). The application of evidence-based practice through current research can be directly linked to enhanced patient safety and overall improved patient outcomes. Incorporating evidence-based practice guidelines and research best practices will provide a means to guide appropriate and specific patient care via the ASA difficult airway algorithm. This algorithm will further the depth of clinical knowledge on implementing each of the supraglottic airway devices through means of an OSCE.

Specific Aims

Determining the most effective treatment plan may be taxing when using the difficult airway algorithm. Furthermore, it can be challenging to decipher between an LMA's utilization and the LMA Fastrach®. While many brands and types of supraglottic airway devices have been introduced in the field of anesthesia for emergencies (An et al., 2017), each serves to promote a safe and secure airway.

Even experienced anesthesia providers may have to acquire new skills and practice regularly to use the difficult airway guidelines, which will require familiarity with the equipment and techniques described (Apfelbaum et al., 2013). The USM Nurse Anesthesia Program currently offers no consistent method to improve education, clinical application, or evaluation via check-off for the two specific airway management techniques. The LMA and LMA Fastrach® OSCEs aim to deliver an educational pathway

and uniform clinical assessment for the SRNAs to encourage a professional clinical practice that enhances clinical knowledge and skill, ultimately improving patient safety and overall patient outcomes.

The specific aims of the doctoral project are to provide an OSCE module and video for SRNA education related to 1) traditional LMA insertion and 2) LMA Fastrach® insertion. Literature reviews have shown that the utilization of these supraglottic airway devices during difficult airway management can improve patient outcomes; however, it is pivotal to incorporate proper education and training to resultantly have successful application of the educational tools within the clinical setting. Upon the creation of the OSCE, it is assumed that the SRNA has acquired a basic understanding of the LMA and LMA Fastrach® placement and a general understanding of the difficult airway algorithm. Through the OSCE module and video, SRNAs will be better prepared to process and incorporate the difficult airway algorithm into practice when an airway is deemed difficult or not patent. Even more so, SRNAs can become further familiarized and confident in the appropriate and effective techniques for placement of the LMA and LMA Fastrach®. Additionally, clinical instructors and USM NAP staff can utilize the doctoral project to evaluate the SRNAs' readiness to apply such concepts into direct patient care.

Conclusion

An airway management plan, staff, instruments, and medications should be assembled in advance of a difficult airway encounter, so that an airway management plan can be efficiently developed and implemented (Goto et al., 2019). During the event of unexpected failure to intubate, the American Society of Anesthesiologists, Difficult

Airway Society, and Obstetric Anesthetists' Association recommends the use of SADs as an airway management technique to establish and maintain a patent airway as well as the other use for tracheal intubation (Anand et al., 2019). “Extraglottic devices can be used as a transitional device until a definitive airway is established when intubation cannot be successfully achieved or the patient has a difficult airway” (Goto et al., 2019, p. 342). The evidence-based policy development for utilizing the difficult airway algorithm and incorporating SADs such as the LMA or LMA Fastrach® into clinical practice aims to enhance patient quality care and improve patient outcomes. The process and methodology for the development of the OSCEs are introduced in a step-by-step format that will offer an educational advantage to SRNAs who will apply the acquired knowledge into clinical performance.

Summary

The USM NAP has no current method for education, practice, and evaluation for insertion of the LMA and LMA Fastrach®. The OSCE teaching method is used worldwide in training medical personnel and is highly recommended for training purposes; therefore, the authors of this doctoral project developed an OSCE for each of the supraglottic airway devices. The LMA and LMA Fastrach® are essential components of the difficult airway algorithm. The OSCEs were developed in accordance with the ASA standards of care through the incorporation of the organization’s guidelines for the difficult airway algorithm. To prioritize patient safety and patient outcomes, it is crucial for SRNAs to obtain the knowledge and skills needed to properly navigate the difficult airway algorithm and implement supraglottic airway devices into clinical practice. The

OSCEs were developed with the purpose of advancing SRNA education and hands-on learning experiences to improve patient safety within the clinical setting.

CHAPTER II - METHODOLOGY

As a requirement for the USM College of Nursing and Health Professionals, the American Association for Colleges of Nursing Doctor of Nursing Practice (DNP) Essentials must be met for all doctoral projects. Within the doctoral project, four DNP Essentials were met, including Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking, Essential III: Clinical Scholarship and Analytic Methods for Evidence-Based Practice, Essential IV: Information Systems/ Technology for the Improvement and Transformation of Healthcare, and Essential VIII: Advanced Nursing Practice (American Association of Colleges of Nursing [AACN], 2006). The four DNP essentials that were met further prompt the enhancement of clinical knowledge while exemplifying the correct placement technique of the LMA and LMA Fastrach®. The development of such an OCSE will aid in promoting and furthering the skill set of SRNAs using the informative learning tool. The OSCE doctoral project was submitted to the USM Institutional Review Board (IRB) for approval. A letter of authorization is found in Appendix B (IRB-21-338).

Table 1

DNP Essentials

DNP Essentials	Clinical Implications
Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking	The goal of the doctoral project is to improve the use of the LMA and LMA Fastrach®.
Essential III: Clinical Scholarship and Analytic Methods for Evidence-Based Practice	Synthesis and analysis of literature for recognition of pertinent data

Table 1 (continued).

Essential IV: Information Systems/ Technology for the Improvement and Transformation of Healthcare	The doctoral project aims to implement an OSCE evaluation tool for the insertion of the LMA and LMA Fastrach®. The authors developed the doctoral project from evidence gathered through research to improve patient outcomes
Essential VIII: Advanced Nursing Practice	A Certified Registered Nurse Anesthetist (CRNA) or SRNA will be responsible for perfecting the use of the LMA or LMA Fastrach®.

The authors completed a literature review to establish best-practice guidelines for safe and effective placement of both the LMA and LMA Fastrach®. Proper placement of these supraglottic airway devices is an essential part of the difficult airway algorithm. It should be mastered by all primary stakeholders, including practicing anesthesia providers such as SRNAs, CRNAs, and Anesthesiologists. Since the adequate placement of the two devices is crucial in the anesthesia provider's clinical performance, the development of an OSCE is highly beneficial as an educational tool for the training of SRNAs.

SRNAs were asked to survey the OSCE as well as the best-practice guidelines stated within the doctoral project. An email was sent to the prospected panel upon recruitment of willing anesthesia providers to participate in the study. The evaluators must provide informed consent for survey participation. The LMA versus LMA Fastrach® OSCE, best-practice guidelines, along with a questionnaire, will be included in the email for the volunteering participants. Additionally, the OSCE will provide a formal evaluation tool for instructors to determine the readiness of SRNAs to diligently incorporate the use of the LMA and/or LMA Fastrach® into clinical practice.

For the LMA and LMA Fastrach® OSCEs, a mixed-methods study was utilized to accumulate qualitative and quantitative data. The qualitative data consisted of the comments received from the survey, while the quantitative data was the total number of survey responses. The survey includes a total of nine questions that aid in determining the clinical practicality, effectiveness, accuracy, and clarity of each OSCE. Of the nine questions, there are eight "yes" or "no" questions and one open-ended question. The purpose of the open-ended questions is to provide participants with a place to comment regarding overall feedback, concerns, and suggestions for the OSCE being evaluated. Question one asked: Do you agree to the informed consent provided? This question is asked to make sure the person is willing to participate in the study. Question two asked: Does the OSCE clearly define its purpose? This question is asked to identify if the OSCE was clear in its instructions. Questions three asked: Does each OSCE meet current practice standards? This question determines if each OSCE provided is accurate and usable in practice. Question four asked: Are the practice standards evidence-based? This question's purpose is to confirm the use of the evidence-based practice guidelines in the OSCE. Question five asked: Is each OSCE's document complete and includes all the proper steps? This question is used to check the clarity and conciseness of the OSCE. Question six asked: Is each OSCE easy to follow? This question's purpose is to confirm the clarity of the instructions and steps of the OSCE. Question seven asked: Have these OSCEs been helpful for you to learn how to insert the LMA and LMA Fastrach®? This question is asked to ensure the OSCE is easy to follow. Question eight asked: Do you have any additional recommendations or comments for the LMA or LMA Fastrach® OSCE? Question nine offers an available space for comments.

Design

OSCE Development

Following the IRB approval for the doctoral project, the LMA and LMA Fastrach® OSCEs were then constructed and developed. Current research, including evidence-based practice and best-practice guidelines, was highly integrated into completing the OSCEs. The authors designed the OSCE template, found in Appendix C and D, to include information pertaining to the overall background and purpose, a step-by-step method to complete the LMA and LMA Fastrach® insertion, simulated patient information, as well as a grading rubric including crucial steps that must be met to pass the OSCE. The authors filed the correctly completed OSCEs for placing an LMA and an LMA Fastrach® as guidance. Once entirely constructed, the OSCE was evaluated by the evaluation committee, which consisted of USM CRNA faculty and first and second-year SRNAs in the Nurse Anesthesia Program at USM. Additionally, a grading rubric was developed and approved by the evaluating committee.

Participant Recruitment

The first and second-year SRNAs of the USM NAP were recruited via email. Only first and second-year nurse anesthesia students were selected to evaluate the OSCEs because they are currently gaining didactic knowledge and are beginning hands-on clinical experience with supraglottic devices as well as difficult airway situations. Also, these SRNAs have access to the USM simulation lab, further increasing the ability to practice the OSCE material hands-on. Exclusion criteria consisted of third-year SRNAs since they have had greater exposure to hands-on practice in the clinical setting.

The authors sent two individual recruitment emails for each OSCE, including a questionnaire, the templates for each OSCE, the informed consent, and the videos for each OSCE (Appendix E). The emails requested feedback regarding the OSCE and the provided guidelines for placement of the LMA and LMA Fastrach®. A disclaimer was supplied for confidentiality regarding the data being collected. The informed consent for the survey to assure that participation in the study would remain completely voluntary, and declination of participation would not result in negative feedback.

Evaluation

The authors executed an evaluation that included the first and second-year USM NAP SRNAs. The selected evaluators were given proper materials to correctly assess the effectiveness, equity, and rationality of the developed OSCE. A survey was created and uploaded to (Qualtrics™). The link to the survey was sent to evaluators via email. After evaluation of the OSCE, the selected evaluators were asked to answer the completely anonymous survey. A place for questions, comments, or recommended changes was also provided to the survey evaluators to facilitate best-practice techniques that enhance the overall learning process.

The evaluators were given a time frame of one week to answer and submit the survey. Following completion of the survey, acquired results were collected and analyzed. Based on the survey results, no changes were needed to the OSCE or OSCE template for final submission to the evaluation committee.

Implementation

Upon approval from the evaluation committee, the finished OSCE was proposed to the USM NAP administration to adopt the program's curriculum. The completed

doctoral project was presented to the public during the Fall 2021 USM School of Leadership and Advanced Nursing Practice DNP Scholarship Day.

Summary

After receiving approval from the IRB (IRB-21-338), literature reviews and evidence-based guidelines were implemented into the development of the OSCE on LMA and LMA Fastrach® placement. The first and second-year NAP students were asked to evaluate and survey the OSCE via email. Data collected from the surveys were analyzed so that the authors could add proper alterations to the OSCE. After the necessary changes were made, the final OSCE template was proposed to the evaluation committee for final review. The finalized LMA versus LMA Fastrach® OSCE was presented to the USM Nurse Anesthesia Program's administration for potential incorporation into the program's OSCE curriculum.

CHAPTER III - RESULTS

The author's goal for the doctoral project was to create an OSCE for educational purposes and hands-on experience regarding the LMA and LMA Fastrach®. The OSCE for inserting the supraglottic airway devices is also being used as an educational tool for the nurse anesthesia students at USM. An OSCE template was developed using evidence-based literature and practice; the OSCE was evaluated by the first and second-year USM NAP students. The committee chair of the doctoral project sent the recruitment emails to offer participation in this study. The emails included the following: 1) informed consent, 2) the OSCE templates, 3) the OSCE videos, and 4) the link to a Qualtrics™ survey concerning the steps and information in the OSCE (Appendix E). The evaluation committee consisted of CRNA faculty for the Nurse Anesthesia Program at USM. First and second-year USM NAP students were asked to evaluate the OSCE. Total survey results received for the LMA and LMA Fastrach® OSCE were 25 and 24, respectively. All results were conclusive to be 100% beneficial for the outcomes of each OSCE. The results concluded to be 100% in achieving the outcomes set for each OSCE. The statistics from the surveys are included in Figures 2 and 3.

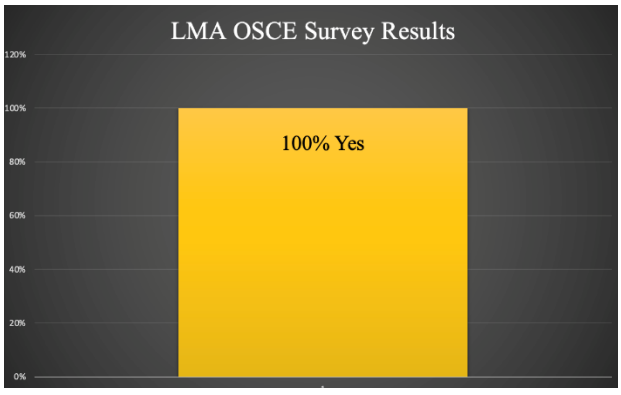


Figure 2. Survey Statistics for LMA OSCE

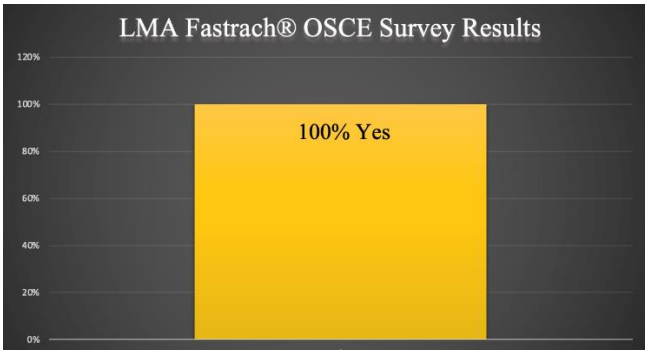


Figure 3. Survey Statistics for LMA Fastrach® OSCE

The survey included nine questions to determine the effectiveness, accuracy, and clarity of each OSCE. Question one asked: Do you agree to the informed consent provided? This question is asked to make sure the person is willing to participate in the study. Question two asked: Does the OSCE clearly define its purpose? This question is asked to identify if the OSCE was clear in its instructions. Question three asked: Does each OSCE meet current practice standards? This question determines if each OSCE provided is accurate and usable in practice. Question four asked: Are the practice standards evidence-based? This question's purpose is to confirm the use of the evidence-based practice guidelines in the OSCE. Question five asked: Is each OSCE's document complete and includes all the proper steps? This question is used to check the clarity and conciseness of the OSCE. Question six asked: Is the OSCE easy to follow? This question's purpose is to confirm the clarity of the instructions and steps of the OSCE. Question seven asked: Have these OSCEs been helpful for you to learn how to insert the LMA and LMA Fastrach®? This question is asked to ensure the OSCE is easy to follow. Question eight asked: Do you have any additional recommendations or comments for the LMA or LMA Fastrach® OSCE? Question nine offers an available space for comments. The final two questions' purpose is to provide participants with a place to comment on

their concerns or recommendations. The results of the survey can be seen in Tables 2 and 3.

Table 2

Survey Results for LMA OSCE

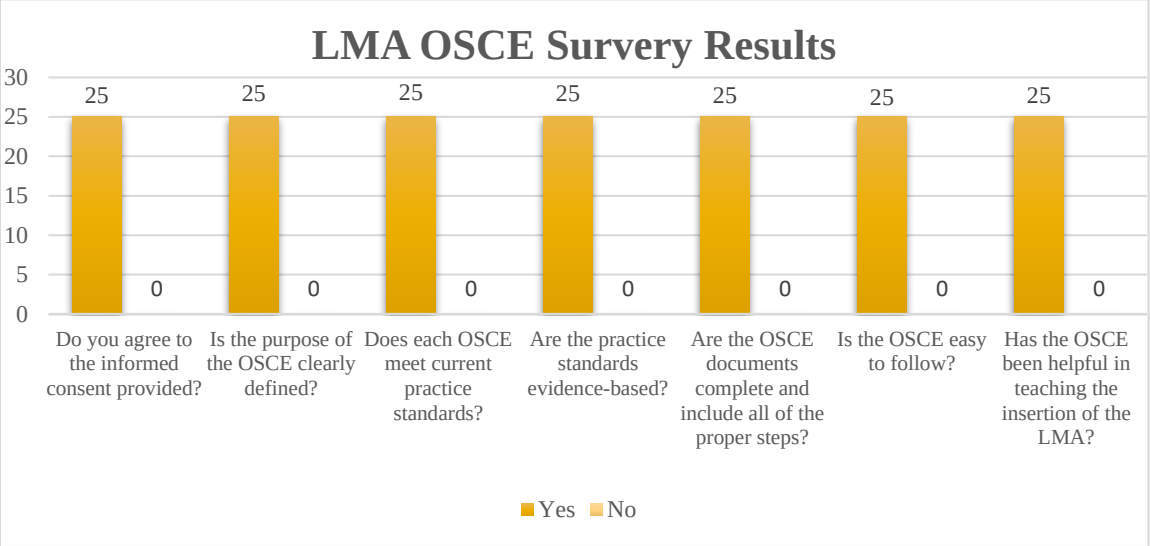
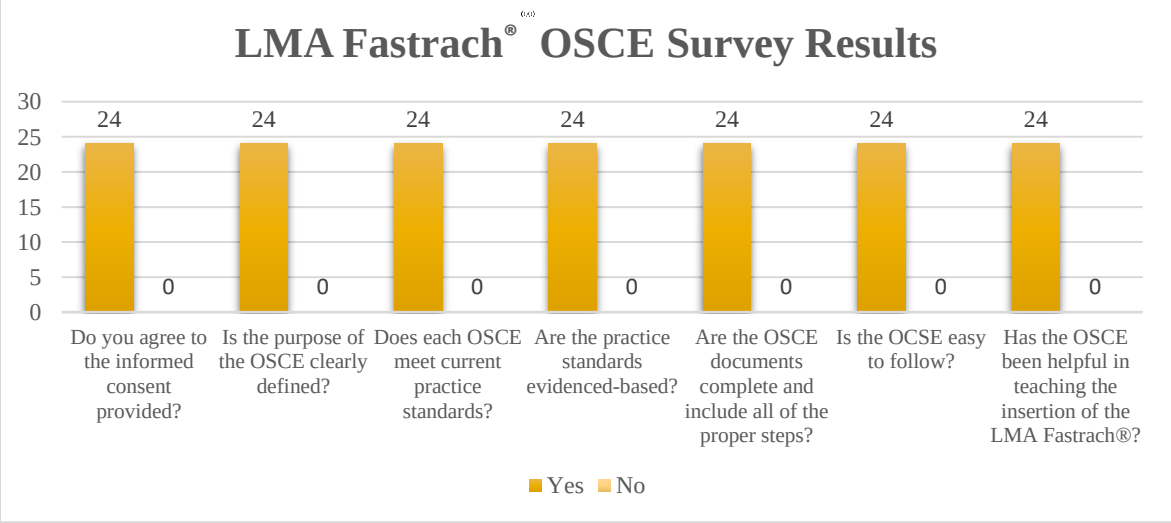


Table 3

Survey Results for LMA Fastrach® OSCE



Feedback

Overall, the survey provided the desired feedback and comments of the proposed OSCE. The comment received for the LMA Fastrach® included the following: “Straight forward video that makes an LMA Fastrach® seem like a very good option for airway management.” The comment received for the LMA included the following “Very Helpful. Great video.”

Summary

An OSCE was developed to serve as an educational, training, and evaluation tool for the USM NAP students regarding the insertion of the LMA and the LMA Fastrach®. The OSCE was presented to the evaluation committee and the first and second-year USM NAP students. The evaluators were asked to complete a survey to determine the effectiveness, accuracy, and clarity of the proposed OSCE. The survey feedback indicated that the OSCE was of high quality and would be well accepted by the students and instructors of the USM NAP.

CHAPTER IV – DISCUSSION

Inserting an LMA or LMA Fastrach® is a clinical skill that an anesthesia provider should consistently implement into practice. It is of utmost importance that anesthesia providers have an adequate knowledge base on the correct insertion of these airway management devices. The difficult airway algorithm is a staple in the anesthesia provider's clinical career; additionally, both of these supraglottic airway devices are instruments that can be used as a bridge to manage airway patency during difficult airway situations. The LMA has a crucial role in acute airway management in anesthetic emergencies (Jannu et al., 2017). The focus of the doctoral project was to create an OSCE that could educate and evaluate nurse anesthesia students on the insertion of the LMA and LMA Fastrach® as well as to aid students in preparation for clinical anesthesia practice. The finished OSCE was submitted to the School of Leadership and Advanced Nursing Practice administration for adoption into the OSCE curriculum of the USM NAP.

Limitations

The authors only provided the OSCEs and surveys to the first and second-year NAP students at USM. Exclusion criteria consisted of third-year SRNAs due to the fact that they have had a greater amount of exposure to hands-on practice in the clinical setting. There were no other anesthesia programs included in this study, which could pose a limitation to this study. The size of the USM CRNA faculty also limits the amount of input and suggestions that were made to perfect the OSCE. A larger population size would allow for more feedback and could provide more advancements for the proposed OSCEs and doctoral projects.

Considerations

LMA and LMA Fastrach® insertion is a foundational skill for the anesthesia provider. Learning the proper skill and technique of inserting these two devices could provide substantial expertise in the anesthesia career field. These OSCEs offer a tool to assist in the knowledge and advancement of the nurse anesthesia student's career. As students work through these OSCEs, skills will be learned and soon mastered to be successful providers.

Summary

The doctoral project aimed to create OSCEs that educate, train, and evaluate the USM NAP students on the insertion of the LMA and LMA Fastrach®. Both OSCE templates and videos were developed using evidence-based research and practice guidelines. The first and second-year nurse anesthesia students at USM reviewed the OSCEs and an evaluation committee of CRNAs and USM NAP faculty. Data was gathered from an anonymous survey, and the statistic shows that the OSCE met the intentions and aims defined by the doctoral project. The LMA and LMA Fastrach® OSCE doctoral project was well accepted by the students who participated in the survey and the USM NAP faculty.

APPENDIX A – DNP Essentials

DNP Essentials	Clinical Implications
Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking	The goal of the project is to improve the use of the LMA and LMA Fastrach®.
Essential III: Clinical Scholarship and Analytic Methods for Evidence-Based Practice	Synthesis and analysis of literature for recognition of pertinent data
Essential IV: Information Systems/ Technology for the Improvement and Transformation of Healthcare	This project aims to implement an OSCE evaluation tool for the insertion of the LMA and LMA Fastrach®. The authors developed this project from evidence gathered through research to improve patient outcomes
Essential VIII: Advanced Nursing Practice	A Certified Registered Nurse Anesthetist (CRNA) or SRNA will be responsible for perfecting the use of the LMA or LMA Fastrach®.

APPENDIX B –IRB Approval Letter

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5125 • HATTIESBURG, MS | 601.266.6576 | USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER: IRB-21-338
PROJECT TITLE: Laryngeal Mask Airway and Laryngeal Mask Airway Fastrach
SCHOOL/PROGRAM: Leadership & Advanced Nursing
RESEARCHER(S): Kayla Williamson, Nina McLain, Katie Busby

IRB COMMITTEE ACTION: Approved
CATEGORY: Expedited

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

PERIOD OF APPROVAL: August 25, 2021

Donald Sacco Jr.

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX C - LMA OSCE Template

ANESTHESIA OBJECTIVE STRUCTURED CLINICAL EXAM

Laryngeal Mask Airway

LEARNER OUTCOMES:

1. Appropriate navigation and implementation of the difficult airway algorithm
2. Assess for the intended uses and need for an LMA
3. Performance of the proper LMA insertion technique

DOMAINS: Assessment- pre/intra/post-op, clinical skill, critical thinking, evaluation of teaching

PURPOSE: Student clinical skill practice and formal Summative Examination

LEARNER OBJECTIVES:

1. Identify a difficult airway and/or other instances for LMA use
2. Demonstrate proper placement of the LMA
3. Appropriately analyze clinical skill and self-evaluate the technique

INDIVIDUAL OR GROUP OSCE: Individual

REQUIRED READING and ASSOCIATED LECTURES:

1. Nagelhout 5th edition: Chapter 22- Airway Management (LMA pages 449 - 452)
2. https://airwayjedi.com/2013/01/27/tricks-for-lma-insertion/
3. https://www.ncbi.nlm.nih.gov/core/lw/2.0/html/tileshop_pmc/tileshop_pmc_inline.html?title=Click%20on%20image%20to%20zoom&p=PMC3&id=5887586_tsaco-2017-000113f01.jpg

REQUIRED VIDEO:
https://www.dropbox.com/s/11zvqe433qhyp1z/LMA%20OSCE%20Final%20.mp4?dl=0

REQUIRED PARTICIPANTS: SRNA volunteer, NAP examiner, clinical simulation staff

VENUE: USM NAP clinical skills lab

STUDENT LEVEL OF OSCE: First and second-year SRNAs

TIME ALLOTED: 10 minutes

SEQUENTIAL PRACTICE & TESTING: Independent

RECOMMENDED PRACTICE PRIOR TO EXAMINATION: 10 minutes x 6 attempts = 60 minutes total

CONTEXT

CONTENT OUTLINE

You are assigned to a robotic hysterectomy. On the preoperative evaluation of the 42-year-old patient, a major contributor for a difficult airway includes morbid obesity. The patient has a full range of motion of the neck, positive TMJ, Mallampati 3, and a thyromental distance of 2 fingerbreadths. Health history is significant for hypertension, type 2 diabetes mellitus, controlled GERD, sleep apnea with non-compliant use of CPAP. She is 5'4", 112.7 kg, with a BMI of 42.5. She has been NPO for 8 hours. Vital signs include: HR 68, BP 138/ 84, RR 18, SPO2 97% on room air, Temperature 98.2, ASA 3.

The anesthetic plan includes a general anesthetic with rapid sequence intubation. However, due to the patient's body habitus and significant health history, a difficult airway should be anticipated.

Once the patient arrives in the operating room, monitors are applied, and the patient is pre-oxygenated and induced adequately. There is a failed attempt to bag-mask ventilate, but oxygen saturation is maintained at 99%. Direct laryngoscopy is attempted without success. Navigation through the difficult airway algorithm suggests preparation for the insertion of an LMA as a bridge to maintain airway patency.

EQUIPMENT& SUPPLIES:

Laryngeal Mask Airway (size appropriate for the patient)
Gloves
Tongue blade
Water-soluble lubricating jelly
20 mL syringe
1" plastic tape
Stethoscope

SITE SELECTION: Airway

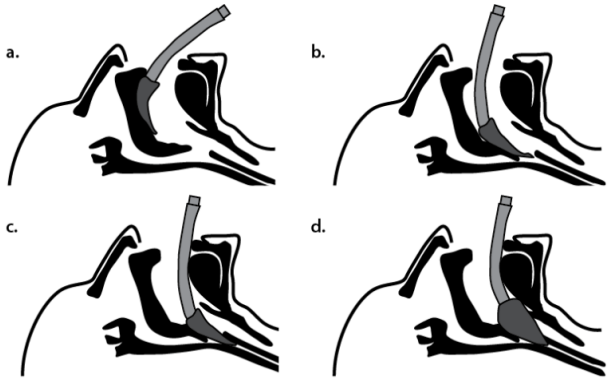
TASK STATEMENT: Your task is to demonstrate an understanding of the difficult airway algorithm, properly identify the need for the placement of an LMA, and appropriately insert the LMA during a simulated OSCE.

PROCESS:

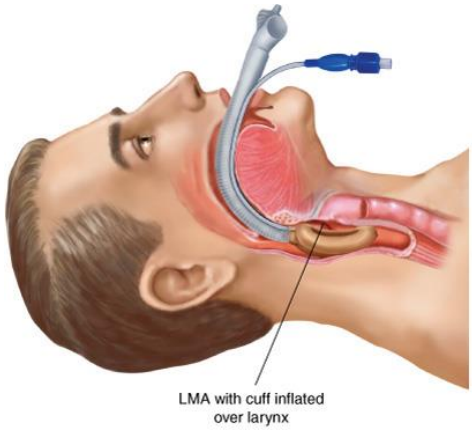
1. Gather supplies and equipment
2. Apply water-soluble lubricant to the posterior side of the LMA
3. Preoxygenate and sedate adequately

4. Open this patient's mouth using the scissor technique
5. Insert tongue blade to depress the tongue
6. Insert LMA into the oropharynx
7. Once seated, remove a tab from the balloon inflation port
8. If needed, inflate with air until LMA is seated and sealed appropriately (recommended mL listed on each LMA package)
9. Attach ventilator circuit to LMA
10. Auscultate breath sounds, visualize chest rise and fall, verify ETCO2
11. Tape LMA into place

IMAGES:



https://airwayjedi.com/2013/01/27/tricks-for-lma-insertion/



https://accessanesthesiology.mhmedical.com/content.aspx?bookid=414&sectionid=41840252

DEBRIEFING FORM:

1. Can you properly recognize a difficult airway?
2. How would you describe your ability to navigate through the difficult airway algorithm?
3. Do you have a proficient knowledge base of when the LMA should be incorporated into clinical practice?
4. Do you feel confident in your clinical skills for LMA insertion to maintain a patent airway?
5. How could you improve your LMA insertion technique through the incorporation of this OSCE?
6. Do you feel this OSCE offers adequate educational information for the LMA insertion technique?

ASSESSMENT

RUBRIC FOR LARYNGEAL MASK AIRWAY PLACEMENT

QUESTION & DEMONSTRATION STATION:

	TASKS	PASS	FAIL	COMMENTS
*	1. Prepares and selects appropriate equipment			
	2. Lubricates the posterior surface			
*	3. Slight flexion of the head and neck			
*	4. Hold the LMA appropriately in one hand			
*	5. Open the mouth wide with the other hand using the scissoring technique			
*	6. Insert LMA until seated			
*	7. Caution position of the tongue upon insertion			
	8. Addition inflation to cuff may be needed			
	9. Watch the LMA tube and neck during inflation to verify proper seating			
*	10. Verify ventilation immediately			

Steps with * Must be properly completed. All steps must be completed/passed to receive a passing grade.

The OSCE by the student demonstrates foundational knowledge and correct placement of the LMA: (Circle one) **PASS FAIL**

Does the student need to repeat this OSCE at a later date to satisfy learning requirements? (Circle one) **YES NO Date to return for evaluation: _____**

EXAMINER: _____ DATE: _____

APPENDIX D – LMA Fastrach® OSCE Template

ANESTHESIA OBJECTIVE STRUCTURED CLINICAL EXAM

Laryngeal Mask Airway Fastrach®

LEARNER OUTCOMES:

4. Proper implementation of the difficult airway algorithm
5. Asses when the use of an LMA Fastrach® necessary
6. Intended use of the LMA Fastrach®
7. Appropriate insertion of the LMA Fastrach®

DOMAINS: Assessment – pre/intra/post-op, clinical skill, critical thinking, evaluation of teaching

PURPOSE: Student clinical skill practice and formal Summative Examination

LEARNER OBJECTIVES:

4. Identify a difficult airway
5. Demonstrate proper placement of LMA Fastrach®
6. Appropriately analyze clinical skill and self-evaluate the technique

INDIVIDUAL OR GROUP OSCE: Individual

REQUIRED READING:

4. Nagelhout: Chapter 22- Airway Management (LMA Fastrach® pages – 451- 452)
5. http://www.lmaco-ifu.com/sites/default/files/node/332/ifu/revision/4086/ifu-lma-fastrach-pac2100001buk.pdf
6. https://www.ncbi.nlm.nih.gov/core/lw/2.0/html/tileshop_pmc/tileshop_pmc_inline.html?title=Click%20on%20image%20to%20zoom&p=PMC3&id=5887586_tsaco-2017-000113f01.jpg

REQUIRED VIDEO:
https://www.dropbox.com/s/3rmvmmd5sk9e78n/LMA%20Fastrach%C2%AE%20OSCE%20MW.mp4?dl=0

REQUIRED PARTICIPANTS: SRNA volunteer, NAP examiner, clinical simulation staff

VENUE: USM NAP Clinical Skills Lab

STUDENT LEVEL OF OSCE: First and second-year SRNAs

TIME ALLOTED: 10 minutes

SEQUENTIAL PRACTICE & TESTING: Independent

RECOMMENDED PRACTICE PRIOR TO EXAMINATION: 10 minutes x 6 attempts (60 minutes total)

CONTEXT

CONTENT OUTLINE

You are assigned to a robotic hysterectomy. On the preoperative evaluation of the 42-year-old patient, a major contributor for a difficult airway includes morbid obesity. The patient has full range of motion of neck and positive TMJ, Mallampati 3, and a thyromental distance of 2 fingerbreadths. Health history is significant for hypertension, type 2 diabetes mellitus, controlled GERD, and sleep apnea with non-compliant use of CPAP. She is 5'4" and 248 lbs (112.7 kg) with a BMI of 42.5. The patient has been NPO for 8 hours. Vital signs include HR of 68, BP 138/84, RR of 18, SPO2 of 97% of Room Air, Temperature of 98.2 F. ASA 3.

An anesthetic plan includes a general anesthetic with a rapid sequence induction. However, due to the patient body habitus and significant health history, a difficult airway should be anticipated.

Once the patient arrives in the operative room, monitors are applied, and the patient is adequately oxygenated and induced adequately. There is a failed attempt to bag-mask ventilate, due to unable to maintain a proper seal on the face with a mask. However, the oxygen saturation was maintained at 99%. Direct laryngoscopy is attempted without success. Navigation through the difficult airway algorithm suggests preparation for the insertion of an LMA Fastrach® as a bridge to maintain airway patency.

EQUIPMENT& SUPPLIES:
LMA Fastrach® (ETT and holder specific for this device and circuit adapter)
Gloves
Tongue blade
Water-soluble lubricating jelly
20ml syringe
10ml syringe
1" plastic-type
Stethoscope

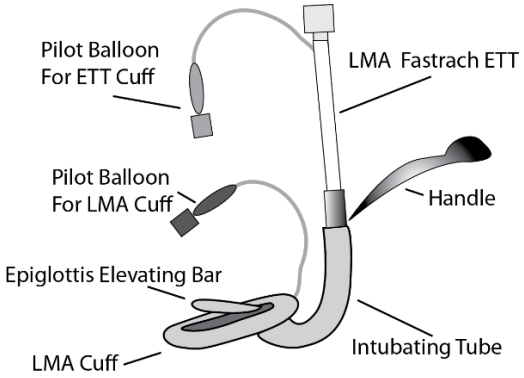
SITE SELECTION: Airway

TASK STATEMENT: Your task is to demonstrate an understanding of the difficult airway algorithm, properly identify the need for the placement of an LMA Fastrach® and appropriately insert an LMA Fastrach® in the simulated OSCE.

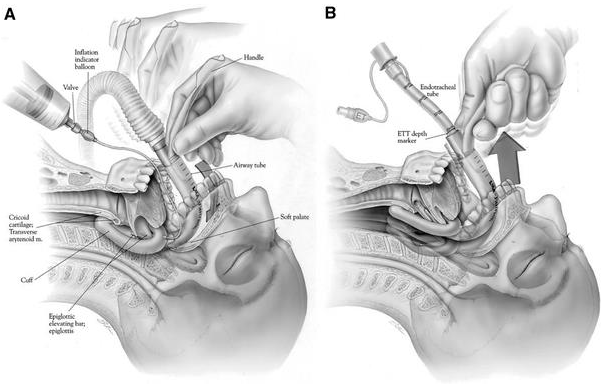
PROCESS

1. Prepare appropriate equipment
2. Place lubrication on the back device
3. Preoxygenate patient for an adequate time frame and sedated patient
4. Insert tongue blade to depress the tongue
5. Insert LMA Fastrach® with use of a handle
6. Inflate the balloon with a 20ml syringe until LMA Fastrach® is seated appropriately
7. Insert Fastrach® ETT and use the ETT holder
8. Inflate ETT balloon with 10ml syringe
9. Remove LMA Fastrach®
10. Attach Ventilator Circuit to ETT
11. Auscultate breath sounds, and visualize chest rise and fall and ETCO2
12. Tape ETT to secure

IMAGES:



https://airwayjedi.com/2015/03/17/tips-for-mastering-the-lma-fastrach/



http://www.anesthesia.webservices.utoronto.ca/edu/cme/courses/m10/m10p06.htm

DEBRIEFING FORM:

1. Can you properly recognize a difficult airway?
2. How would you describe your ability to navigate through the difficult airway algorithm?
3. Do you have a proficient knowledge base of when the LMA Fastrach® should be incorporated into clinical practice?
4. How do you feel like you can improve your LMA Fastrach® insertion technique through the incorporation of this OSCE?
5. Do you feel like this OSCE offers adequate educational information for the LMA Fastrach® insertion technique?

ASSESSMENT

RUBRIC FOR LMA FASTRACH® INSERTION

QUESTION & DEMONSTRATION STATION:

	TASKS	PASS	FAIL	COMMENTS
	11. Prepares and selects appropriate equipment			
*	12. Lubricates the posterior surface			
*	13. Slight flexion of the head and neck			
*	14. Hold LMA Fastrach® appropriately in one hand by handle.			
*	15. Open the mouth wide using scissoring technique or use of tongue blade			
	16. Insert LMA Fastrach® until seated			
	17. Caution the positron of the tongue upon insertion			
*	18. Additional inflation of cuff may be needed			
	19. Monitor the LMA Fastrach® and the neck during inflation of the cuff to verify seating			
	20. Verify ventilation immediately			

Steps with * Must be properly completed. All steps must be completed/passed to receive a passing grade.

The OSCE by the student demonstrates foundational knowledge and correct use of the LMA Fastrach®: (Circle one) **PASS FAIL**

Does the student need to repeat this OSCE at a later date to satisfy learning requirements? (Circle one) **YES NO Date to return for evaluation: _____**

EXAMINER: _____ DATE: _____

APPENDIX E – Recruitment Email

THE LARYNGEAL MASK AIRWAY AND LARYNGEAL MASK AIRWAY FASTRACH®: AN OBJECTIVE STRUCTURED CLINICAL EXAMINATION FOR NURSE ANESTHESIA

The survey presents no more than minimal risk of harm to subjects and involves no procedures for patients or participants. Data being collected is confidential and anonymous, and 100% voluntary with no repercussions for non-participation.

This study has been approved by the USM Institutional Review Board ID #IRB-21-338

Dear SRNA or CRNA participants,

Our names are Katie Busby and McGuire Williamson, DNP students of the Nurse Anesthesia Program at the University of Southern Mississippi, who are asking for volunteers to help in the completion of our objective structured clinical evaluation (OSCE) doctoral project. Volunteers will be asked to review a document describing the proper placement of a laryngeal mask airway (LMA) and an LMA Fastrach® as well as a rubric for grading students on performance. Then, volunteers will be asked to fill out an anonymous and confidential survey related to the OSCEs as well as to provide additional comments to guide any necessary revisions of the OSCE project. Participation in this survey is completely voluntary and should take no more than 5-10 minutes to complete. However, agreement to the informed consent is required. There are no repercussions for

non-participation. Your feedback will help strengthen our study. If you have any questions, please contact one of us with the information provided below.

Thank you so much for your time and participation!

Katie Busby [redacted] [redacted]

McGuire Williamson [redacted] [redacted]

Before beginning the questionnaire, please review the attached files:

- Informed Consent
- OSCE tool for LMA Insertion
- OSCE tool for LMA Fastrach® Insertion
- OSCE Video

OSCE Video Link:

LMA Fastrach®

https://www.dropbox.com/s/y3q823hehk6rcit/LMA%20Fastrach%C2%AE%20OSCE%20MW.mp4?dl=0

LMA

https://www.dropbox.com/s/1eucuemx581ny1z/LMA%20OSCE%20KB%20.mp4?dl=0

Questionnaire Link:

To maintain anonymous participation, please avoid including identifying information in the questionnaire comments, such as name, role in the program, or title.

The survey can be found at:

https://usmep.co1.qualtrics.com/jfe/form/SV_2fok1CBIrxJqfGe

APPENDIX F – LMA Survey Questionnaire

1. Do you agree to the informed consent provided? Yes No

2. Is the purpose of the OSCE clearly defined? Yes No

3. Does the OSCE meet current practice standards? Yes No

4. Are the practice standards evidence-based? Yes No

5. Is the OSCE document complete and includes all proper steps? Yes No

6. Is the OSCE easy to follow? Yes No

7. Has the OSCE helped teach the insertion of the LMA? Yes No

8. Do you have any additional recommendations or comments for the LMA OSCE?

   Yes No

9. Comments

APPENDIX G – LMA Fastrach® Survey Questionnaire

1. Do you agree to the informed consent provided? Yes No

2. Is the purpose of the OSCE clearly defined? Yes No

3. Does the OSCE meet current practice standards? Yes No

4. Are the practice standards evidence-based? Yes No

5. Is the OSCE document complete and includes all proper steps? Yes No

6. Is the OSCE easy to follow? Yes No

7. Has the OSCE helped teach the insertion of the LMA Fastrach®? Yes No

8. Do you have any additional recommendations or comments for the LMA Fastrach® OSCE? Yes No

9. Comments

REFERENCES

American Association of Colleges of Nursing (AACN). (2006). *The essentials of doctoral education for advanced nursing practice*. https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

An, J., Nam, S. B., Lee, J. S., Lee, J., Yoo, H., Lee, H. M., & Kim, M. S. (2017). Comparison of the i-gel and other supraglottic airways in adult manikin studies: Systematic review and meta-analysis. *Medicine*, *96*(1), e5801. https://doi.org/10.1097/MD.0000000000005801

Anand, L., Singh, M., Kapoor, D., & Singh, A. (2019). Comparative evaluation of ambu aura-I and fastrach intubating laryngeal mask airway for tracheal intubation: A randomized controlled trial. *Journal of Anaesthesiology, Clinical Pharmacology*, *35*(1), 70–75. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6495629/

Apfelbaum, J. L., Hagberg, C. A., Caplan, R. A., Blitt, C. D., Connis, R. T., Nickinovich, D. G., Benumof, J. L., Berry, F. A., Bode, R. H., Cheney, F. W., Guidry, O. F., & Ovassapian, A. (2013). Practice Guidelines for Management of the Difficult Airway. *Anesthesiology*, *118*(2), 251–270. https://doi.org/10.1097/aln.0b013e31827773b2

Arab, A., Alatassi, A., Alattas, E., Alzoraigi, U., AlZaher, Z., Ahmad, A., Albabtain, H., & Boker, A. (2017). Integration of simulation in postgraduate studies in Saudi Arabia: The current practice in anesthesia training program. *Saudi Journal of Anaesthesia*, *11*(2), 208–214. https://doi.org/10.4103/1658-354X.203059

Ataro, G., Worku, S., & Asaminew, T. (2020). Experience and challenges of objective structured clinical examination (OSCE): Perspective of students and examiners in

a clinical department of Ethiopian university. *Ethiopian Journal of Health Sciences, 30*(3), 417–426. https://doi.org/10.4314/ejhs.v30i3.13

Crosby, E. T., Duggan, L. V., Finestone, P. J., Liu, R., De Gorter, R., & Calder, L. A. (2020). Anesthesiology airway-related medicolegal cases from the Canadian Medical Protection Association. *Canadian Journal of Anesthesia/Journal Canadien D'anesthésie*, *68*(2), 183–195. https://doi.org/10.1007/s12630-020-01846-7

Goto, T., Goto, Y., Hagiwara, Y., Okamoto, H., Watase, H., & Hasegawa, K. (2019). Advancing emergency airway management practice and research. *Acute Medicine & Surgery*, *6*(4), 336–351. https://doi.org/10.1002/ams2.428

Hoke, M. M., & Robbins, L. K. (2005). The impact of active learning on nursing students clinical success. *Journal of Holistic Nursing*, *23*(3), 348–355. https://doi.org/10.1177/0898010105277648

Jannu, A., Shekar, A., Balakrishna, R., Sudarshan, H., Veena, G. C., & Bhuvaneshwari, S. (2017). Advantages, disadvantages, indications, contraindications, and surgical technique of laryngeal airway mask. *Archives of Craniofacial Surgery*, *18*(4), 223–229. https://doi.org/10.7181/acfs.2017.18.4.223

Joffe, A. M., Aziz, M. F., Posner, K. L., Duggan, L. V., Mincer, S. L., & Domino, K. B. (2019). Management of difficult tracheal intubation. *Anesthesiology*, *131*(4), 818–829. https://doi.org/10.1097/aln.0000000000002815

Modir, H., Moshiri, E., Malekianzadeh, B., Noori, G., & Mohammadbeigi, A. (2017). Endotracheal intubation in patients with difficult airway: using laryngeal mask

airway with bougie versus video laryngoscopy. *Medical Gas Research*, *7*(3), 150–155. https://doi.org/10.4103/2045-9912.215744

Offiah, G., Ekpotu, L. P., Murphy, S., Kane, D., Gordon, A., O'Sullivan, M., Sharifuddin, S. F., Hill, A., & Condron, C. M. (2019). Evaluation of medical student retention of clinical skills following simulation training. *BMC Medical Education*, *19*(1), 263. https://doi.org/10.1186/s12909-019-1663-2

Onwudiegwu U. (2018). OSCE: Design, development, and deployment. *Journal of the West African College of Surgeons*, *8*(1), 1–22.

Pacheco-Lopez, P.C., Berkow, L. C., Hillel, A.T., & Akst, L. M. (2014). Complications of airway management. *Respiratory Care 59*(6), 1006-1021. https://doi.org/10.4187/respcare.02884

Richtsfeld, M., & Belani, K. G. (2017). Anesthesiology and the difficult airway – where do we currently stand? *Annals of Cardiac Anaesthesia*, *20*(1), 4–7. https://doi.org/10.4103/0971-9784.197814

Shyam, R., Chaudhary, A. K., Sachan, P., Singh, P. K., Singh, G. P., Bhatia, V. K., Chandra, G., & Singh, D. (2017). Evaluation of fastrach laryngeal mask airway as an alternative to fiberoptic bronchoscope to manage difficult airway: A comparative study. *Journal of Clinical and Diagnostic Research*, *11*(1), UC09–UC12. https://doi.org/10.7860/JCDR/2017/22001.9284

Steadman, J., Catalani, B., Sharp, C., & Cooper, L. (2017). Life-threatening perioperative anesthetic complications: major issues surrounding perioperative morbidity and mortality. *Trauma surgery & acute care open*, *2*(1), e000113. https://doi.org/10.1136/tsaco-2017-000113