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Review Article

Dynamic Duo: The Synergistic Relationship between Surgeons and Anesthesiologists in Emergency Medicine

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Abstract

Surgeons and anesthesiologists play a critical role in emergency medicine, where timely intervention can mean the difference between life and death. The success of emergency medical interventions often relies heavily on the coordinated efforts of these two professions, who work in close collaboration to provide safe and effective care. Surgeons perform the necessary surgical procedures, while anesthesiologists administer anesthesia and monitor the patient's vital signs throughout the procedure.

In this paper, we explore the vital role of surgeons and anesthesiologists in emergency medicine. We review the various situations where their expertise is needed, such as trauma cases, organ failure, and life-threatening infections. We also examine the challenges and opportunities for collaboration that exist in emergency medicine, including the need for effective communication, teamwork, and coordination. Moreover, we highlight the importance of advanced training and experience for both professions, as they face unique challenges and stressors in emergency situations. We discuss the need for ongoing education and professional development to ensure that they are equipped with the knowledge and skills

Introduction

In emergency medicine, time is of the essence. Patients in critical condition require prompt and coordinated interventions to prevent further harm or loss of life. Surgeons and anesthesiologists play a vital role in this process, working together to provide the best possible care for their patients. One of the most critical aspects of emergency medicine is the ability to recognize and manage life-threatening conditions. In many cases, surgical intervention is necessary to stabilize the patient, and anesthesia is required to ensure their comfort and safety during the procedure. Anesthesiologists play a crucial role in administering and monitoring anesthesia and managing the patient's vital signs. Their expertise in pharmacology, respiratory physiology, and critical care management is essential for ensuring safe and effective care [1]. At the same time, surgeons play a critical role in emergency medicine, often providing life-saving interventions in high-pressure situations. They must be skilled in various surgical procedures and able to work quickly and efficiently while maintaining a high level of precision and attention to detail. Their training and experience enable them to manage complex medical conditions and perform delicate surgeries when needed. However, providing safe and effective care in emergency medicine requires more than just individual expertise. Effective teamwork and communication are essential for ensuring that each team member is aware of their role and responsibilities and that they can work together seamlessly. Collaboration can help to prevent errors and complications, improve patient outcomes, and enhance the overall quality of care [2]. Effective collaboration requires a shared understanding of the goals and objectives of the emergency medical team. Surgeons and anesthesiologists must work together to ensure that the patient receives the appropriate level of care and attention at each stage of their treatment. They must also be able to communicate effectively with other members of the team, including nurses, technicians, and support staff [3].

Surgeon and anesthesiologist in bleeding patient:

Bleeding is one of the most common and life-threatening emergencies in emergency medicine. Prompt and coordinated interventions are essential to prevent further harm or loss of life. Surgeons and anesthesiologists play a vital role in this process, working together to provide the best possible care for their patients [4]. The first step in treating a bleeding patient in emergency medicine is to control the bleeding. This can be achieved through various methods, including direct pressure,



elevation, tourniquets, and hemostatic agents. The use of these methods depends on the location and severity of the bleeding and the patient's overall condition. Once the bleeding is under control, the patient must undergo further evaluation to determine the extent of their injuries and the appropriate course of treatment. This evaluation may include imaging tests, such as X-rays or CT scans, as well as blood tests to assess the patient's overall condition.

In many cases, surgical intervention is necessary to stabilize the patient. Surgeons play a crucial role in managing bleeding in emergency medicine. They must be skilled in various surgical procedures, including vascular surgery, trauma surgery, and general surgery, and able to work quickly and efficiently while maintaining a high level of precision and attention to detail. Anesthesiologists play a critical role in providing anesthesia and ensuring the patient's comfort and safety during surgery. Their expertise in pharmacology, respiratory physiology, and critical care management is essential for ensuring safe and effective care. Anesthesiologists also play an important role in managing the patient's pain and providing sedation as needed [5]. Effective collaboration between surgeons and anesthesiologists is essential for ensuring that the patient receives the best possible care. Surgeons must communicate the extent of the patient's injuries and their surgical plan to the anesthesiologist, who can then tailor the anesthesia and pain management plan to the patient's needs. Anesthesiologists must also be able to monitor the patient's vital signs and adjust the anesthesia as needed to ensure the patient's safety. In addition to surgical interventions, bleeding patients in emergency medicine may require other interventions, such as blood transfusions or medications to promote clotting. Anesthesiologists play a critical role in managing these interventions, ensuring that the patient receives the appropriate medications and monitoring the patient's response to these interventions. Effective collaboration between surgeons and anesthesiologists also extends to post-operative care. The anesthesiologist must continue to monitor the patient's vital signs and pain management, while the surgeon manages the patient's wound care and recovery [6].

Surgeon and anesthesiologist during cardiopulmonary resuscitation:

Cardiopulmonary Resuscitation (CPR) is a critical intervention used to revive patients in cardiac arrest or other life-threatening emergencies. The role of the surgeon and anesthesiologist in CPR is crucial in emergency medicine, where prompt and coordinated actions can make the difference between life and death. The surgeon's role in CPR involves addressing the underlying cause of the cardiac arrest. In many cases, this may involve surgical intervention to treat an acute medical condition, such as a ruptured aneurysm or a perforated organ. The surgeon must work quickly and efficiently to diagnose and treat the condition, often in high-stress and time-sensitive situations. The surgeon may also be involved in the placement of a temporary or permanent pacemaker in some cases, to support the patient's heart function [7]. The anesthesiologist's role in CPR is to manage the patient's airway and breathing during resuscitation efforts. They are responsible for providing oxygenation and ventilation support, as well as administering medications to support the patient's heart function. The anesthesiologist must also monitor the patient's vital signs and adjust their interventions accordingly, to ensure the patient's safety and comfort during the procedure. Effective collaboration between the surgeon and anesthesiologist is crucial in CPR. The surgeon must communicate the underlying medical condition and the planned surgical intervention to the anesthesiologist, who can then tailor the anesthetic and medication plan to the patient's needs. The anesthesiologist must also communicate the patient's vital signs and response to the interventions back to the surgeon, to guide the surgical plan and ensure the patient's safety.

In addition to surgical and anesthetic interventions, CPR may also involve the use of other medical devices, such as defibrillators or mechanical ventilators. The surgeon and anesthesiologist must be proficient in the use of these devices, and work together to ensure that they are used safely and effectively. Effective teamwork and communication between the surgeon and anesthesiologist are essential in CPR. They must be able to work quickly and efficiently, while maintaining a high level of precision and attention to detail. They must also be able to adapt to changing situations and adjust their interventions accordingly, to ensure that the patient receives the best possible care [8].

Surgeon and anesthesiologists managing burn patients in emergency department:

In the emergency department, burn injuries are a common presentation. These types of injuries can range from minor burns to severe burns, which require urgent medical attention. Burn injuries are not only painful for the patient, but they can also lead to severe complications, such as infection and shock, if not managed promptly and

appropriately. This is where the expertise of a surgeon and anaesthesiologist comes into play. Surgeons, have extensive training in diagnosing and treating injuries and diseases that require surgical intervention. In the context of burn injuries, a surgeon plays a critical role in the management of the patient. They are responsible for assessing the severity of the burn, determining the appropriate course of treatment, and performing surgical procedures as needed. The surgeon examines burn case which involves examining the burn site, determining the depth of the burn, and assessing the overall health of the patient. Based on the severity of the burn, the surgeon will determine whether surgical intervention is necessary. In cases where the burn is severe, surgical debridement may be required. This involves removing the dead tissue and debris from the burn site to prevent infection and promote healing. In addition to performing surgical procedures, a surgeon also plays a critical role in managing the patient's pain. Burn injuries can be excruciatingly painful, and managing this pain is essential to ensure the patient's comfort and wellbeing. Surgeons are trained to administer pain medication and work closely with anesthesiologists to manage the patient's pain effectively [9].

In the context of burn injuries, an anesthesiologist plays a critical role in managing the patient's pain during surgical procedures and monitoring their vital signs throughout the procedure. When a patient requires surgical intervention for a burn injury, the anesthesiologist will administer anesthesia to ensure that the patient is comfortable and does not feel any pain during the procedure. There are several types of anesthesia that may be used, including local anesthesia, regional anesthesia, and general anesthesia. The type of anesthesia used will depend on the severity of the burn and the extent of the surgical procedure required. During the surgical procedure, the anesthesiologist will closely monitor the patient's vital signs, such as blood pressure, heart rate, and oxygen saturation. This is important to ensure that the patient's body is responding well to the anesthesia and that there are no adverse reactions or complications. If any issues arise, the anesthesiologist will take appropriate action to ensure the patient's safety and wellbeing.

In addition to administering anesthesia during surgical procedures, anesthesiologists also play a critical role in managing the patient's pain after the procedure. Burn injuries can be extremely painful, and effective pain management is essential to promote healing and prevent complications. Anesthesiologists are trained to administer pain medication and work closely with surgeons to develop an appropriate pain management plan for each patient

Airway management is a critical aspect of emergency medicine, especially in burn patients. The airway of burn patients can be compromised due to several factors, including inhalation injury, facial and neck burns, and edema. Anesthesiologists play a crucial role in airway management in such cases, as they are skilled in intubation and other airway management techniques. In this article, we will discuss the airway management of burn patients by anesthesiologists in emergency medicine departments [10]. Assessment of the Airway: The first step in airway management is the assessment of the patient's airway. In burn patients, the assessment should include the extent of facial and neck burns, presence of carbonaceous sputum, hoarseness, stridor, and other signs of inhalation injury. This will help in determining the best approach for airway management.

Preparation: Before the actual airway management procedure, the anesthesiologist should ensure that all necessary equipment is available and in working condition. This includes endotracheal tubes of different sizes, laryngoscopes, suction devices, and ventilators. The anesthesiologist should also ensure that appropriate sedation and analgesia are administered to the patient before the procedure.

Intubation: Intubation is the most common method of airway management in burn patients. However, the anesthesiologist should be cautious during intubation, as it can cause further trauma to the already injured airway. The use of video laryngoscopes can help in reducing trauma during intubation. The anesthesiologist should also be prepared for difficult intubation and should have alternative methods ready in case of failure.

Alternative Methods: In some cases, intubation may not be possible or may not be the best option for airway management. In such cases, the anesthesiologist can use alternative methods such as Supraglottic Airway Devices (SADs), which are less traumatic than intubation. SADs are especially useful in cases of facial and neck burns, where intubation may cause further trauma.

Emergency Cricothyroidotomy: Emergency cricothyroidotomy is a life-saving procedure that can be performed in cases of failed intubation and inability to secure the airway using SADs. The procedure involves making an incision in the cricothyroid



membrane to create an airway. Anesthesiologists should be trained in performing this procedure, as it requires specialized skills [11].

Post-Intubation Care: After intubation, the anesthesiologist should ensure that the endotracheal tube is properly secured and that the patient is adequately sedated and ventilated. The anesthesiologist should also monitor the patient for any signs of complications such as pneumothorax, aspiration, or hypoxia.

Surgical emergencies in emergency department and anesthesiologist role:

Surgical emergencies require immediate surgical intervention to prevent further harm or loss of life. These emergencies can occur due to a variety of reasons, including trauma, disease, or complications from previous surgeries. Emergency departments are typically the first point of contact for patients experiencing surgical emergencies, and the role of the anesthesiologist is crucial in ensuring the safe and effective management of these patients. The emergency department is a fast-paced, high-stress environment that requires quick decision-making and rapid intervention. Patients presenting with surgical emergencies may be in critical condition, and the anesthesiologist's role is to evaluate the patient's condition, assess the need for surgical intervention, and ensure the patient's safety during and after the procedure. The anesthesiologist's first task is to assess the patient's airway, breathing, and circulation (ABCs) to determine the severity of the patient's condition and the appropriate course of action. Depending on the patient's condition, the anesthesiologist may need to provide emergency airway management, such as intubation or tracheostomy, to ensure adequate oxygenation and ventilation [12].

Once the patient's ABCs are stable, the anesthesiologist will work with the surgical team to determine the most appropriate surgical approach and anesthesia technique. The anesthesiologist must consider the patient's medical history, current medications, and any allergies or adverse reactions to anesthesia. In many cases, patients with surgical emergencies require immediate surgery to prevent further harm or loss of life. The anesthesiologist's role during surgery is to ensure the patient's safety and comfort by monitoring vital signs, administering anesthesia, and managing any complications that may arise during the procedure. One of the most significant risks associated with surgical emergencies is bleeding. The anesthesiologist must closely monitor the patient's blood pressure, heart rate, and oxygen saturation levels to detect signs of bleeding and other complications. If significant bleeding occurs, the anesthesiologist must work quickly to address the problem and provide the necessary interventions to stop the bleeding [13]. Another risk associated with surgical emergencies is the potential for adverse reactions to anesthesia. Anesthesiologists must be prepared to manage these reactions quickly and effectively, ensuring the patient's safety throughout the procedure [14]. In addition to managing the patient's immediate medical needs, anesthesiologists play a critical role in post-operative care. After surgery, patients with surgical emergencies require close monitoring to ensure that their condition remains stable and that there are no complications. The anesthesiologist may need to administer pain medication, manage fluid levels, and monitor the patient's vital signs to ensure a smooth recovery [15].

Conclusion

In emergency medicine, the synergy between surgeons and anesthesiologists is crucial. Surgeons rely on anesthesiologists to ensure patient safety during surgery, while anesthesiologists rely on surgeons to perform necessary procedures. Effective communication and collaboration between the two specialties are essential in providing prompt and efficient care. Anesthesiologists manage the patient's airway, breathing,

and circulation during the procedure, while surgeons develop an appropriate surgical plan. They must be prepared to manage complications and provide post-operative care. Together, they can save lives, improve patient outcomes, and make a significant impact on emergency medicine.

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