

Perioperative death: Its implications and management

ABSTRACT

Death to most people is a major life event. Nothing in this world prepares us to face and manage the perioperative death although the majority of anesthesiologists will be involved in an intraoperative death during the course of their careers. Whether death on the table was expected or occurred when least expected or may be even later, the anesthesiologist is most likely to be affected emotionally, physically in his personal life, and as well as will have an influence on his professional career. Anesthesiologists as perioperative physicians are likely to experience death on the operating table at some time in their careers. In case of perioperative death, meticulous record keeping including time of occurrence of event and methods and medications used during resuscitation, nature of the problem, and all sequence of events should be adopted to breaking bad news with relatives and blame game should be avoided. The anesthesiologist and the relatives of the patient should also be given emotional support to come out of this untoward event. In this article, we have highlighted the various factors and causes leading on to perioperative death and if in case such an event occurs, what are the protocols to be followed, including medicolegal aspects, giving emotional support to the concerned anesthesiologist, dealing with the relatives of the patient sympathetically, etc. We have also enumerated the various precautions to be taken to prevent perioperative mortality in this article.

Key words: Anesthesiologist; medicolegal aspects; perioperative death; postmortem

Introduction

As anesthesiologists, our main focus is the safe delivery of anesthesia and proper management of perioperative as well as postoperative crisis in case it arises. As compassionate professionals, anesthesiologists always expect the safe outcomes of the patient and are rarely prepared for the demise of a patient. A major theme in anesthesia has been prevention of untoward outcomes, the most serious of which is death of a patient on the table. Although anesthetic deaths are uncommon, but death is a part of medical care. The situation becomes, even more, critical when there is an unexpected death on the table. Anesthetic death is defined as

death occurring within 24 h of administration of anesthesia due to causes related to anesthesia.^[1,2]

Anesthesia is a high-risk specialty as there is a very thin margin of safety. As such anesthesiologist has very little interactions with patients and patient's relatives. The public is not at all aware about the role of an anesthesiologist, type of anesthesia, and the risks involved, so invariably in case of perioperative deaths, the anesthesiologist has to bear the brunt of such mishap. Hence, the patient's relatives react in a very hostile manner toward the anesthesiologist and many a times they seek redressal in police station/courts of law.^[3]

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Of course, the fact that anesthetists are extremely likely to witness a death on the table does not mean that every death will trigger psychological distress in the anesthetist, or affect his/her professional ability to continue delivering safe anesthesia.^[4] In perioperative deaths, whether the death may be due to surgical causes, there is a tendency of the surgical team to put the blame on anesthesiologist.

Human error is a factor in anesthetic practice and its consequences, more so than in other medical specialties, tend to be immediate, adverse, and conspicuous. Due to proper preanesthetic check-up and evaluation and extensive perioperative monitoring of the patient, perioperative deaths solely due to anesthesia or anesthetic error are mercifully a rare occurrence (with an estimated prevalence of 0.5-0.8:100,000 anesthetics).^[5,6] However, the intraoperative death of anesthetized patients is a more common occurrence, with an estimated prevalence of 1-30:100,000^[7] majority of which occur during emergency surgery (80%).^[8] Various factors of death on table are described below.

Age

The extreme of ages that is elderly as well as infants pose a great challenges for anesthesia and surgery. Elderly patients: Have the highest postoperative mortality and morbidity rates due to reduced functional capacity of organs, co-existing diseases, e.g., preexisting hypertension, ischemic heart disease, diabetes mellitus, renal failure, etc.^[9] Similarly, in pediatric population, there is higher perioperative mortality rate in children, more frequently in neonates and infants as compared with the older children.^[9,10]

Associated co-morbid conditions

A major causative factor is preexisting medical/surgical conditions other than for what surgery is being conducted. The American Society of Anaesthesiologists (ASA) grading is a useful tool in assessing the risk involved. Patients with ASA grading III onward are at high risk of perioperative complications and death, e.g., patients of ASA grade III have 1.8% mortality rate as compared to 9.4% in grade V patients.

Surgical factors

Major risk factors are related to surgical sites, e.g., aortic, thoracic, or upper abdominal surgeries are the highest risk procedures even in healthy patients. Similarly, emergency, cardiac, and neuro surgeries are more at risk than other surgeries.

Causes of Perioperative Deaths

Anesthetic causes

Due to our increasing population and lesser number of anesthesiologists most of the doctors are overburdened. Over dosage, wrong labeling of drugs, inadvertent administration of drugs through wrong routes, lack of experience, and accidents during intubation may account for the human error. The stressed anesthesiologist is more liable to making more fatal errors and may be subjected to greater psychological stress if intraoperative death occurs. Hypersensitivity to inhalational, induction agent, or muscle relaxants may cause cardiac arrhythmias/arrest. Various human errors such as laryngoscopy failure, inadvertently giving hypoxic mixture due to crossing over of pipelines, malfunction of apparatus, kinked pipes, vagal stimulation during intubation leading to obstruction to glottis, and laryngospasm/bronchospasm may occur during and/or after the anesthesia/surgical procedure due to multiple factors. Sometimes, patient either does not convey properly or hides preexisting medical conditions or these conditions are missed by the anesthesiologist/surgeon. Sometimes, the anesthesiologist has to work in a setup which is not fully equipped, or he/she is not fully accustomed to the environment.

Surgical causes

About, 100% successful performance of surgery is impractical. There always lies risk of death in every surgery as there are always standard or high risks involved. Sometime, case is very bad, but we have no choice. Excessive bleeding, accidental perforation of organs, or injury to main vessels, emergency surgeries such as penetrating or blunt thoracic or abdominal trauma carry more risk.^[1,11-14]

Immediate Actions in Case of Perioperative Cardiac Arrest

1. Cardiac arrest in an operation theater is reversible in 90% cases. Time is a very important factor. Hence, as soon as cardiac arrest occurs immediate resuscitation should be started.
2. Check the equipment and drugs while debriefing the theater team and be prepared to face the media.
3. An accurate record of the sequence of events in view of medicolegal aspects should be made either hand written or electronically printed. This should include every detail of routine followed for this particular patient including perioperative check-up when it was done and by whom, investigations done, drugs prescribed, type of surgery planned, type of anesthesia planned, all personnels involved, exact timing of drugs, fluids used, procedures

or interventions performed, and outcomes should be noted as well as photocopied.^[15,16]

4. Dealing with the anesthesiologist - the most important thing is that the department should fully support the involved anesthesiologist as he is most likely to be stressed and traumatized.^[15,16] The anesthetist may have the feeling of shock, guilt, anger fear, and stress. Doctors may experience physical effects in the form of restlessness, anxiety, tiredness, palpitation, and excessive sweating. A senior consultant should stand by his side for a quick review of all sequence of events and for help to talk to the family. Avoid indulging in any kind of addiction, alcohol, smoking, or self-medication.
5. Breaking bad news - while communicating with relative transparency is important but “good communication” doesn’t necessarily mean “tell all.” Show genuine concern about the unfortunate incident. Answer all the queries of relatives. Bad news should be delivered in a straightforward and honest way, avoiding medical jargon. Surgeon and anesthesiologist should meet together and before meeting and answer all questions firmly.^[15,16]
6. Dealing with the patient^[17] — Any death occurring on the operation table would constitute a procedure related death and would require further investigation and probably postmortem. Fast documentation should be done to facilitate the transfer of the body to the mortuary and as a mark of respect, it is appropriate for a registered practitioner to escort the deceased to the theater suite exit. The relatives should be given the opportunity to pay their last respects and a quiet area should be made available to allow them to be with the deceased.

Subsequent Actions or Delayed Actions

Debriefing the theater team

Ideally, all the members of theater team should be debriefed within few hours of catastrophe or in fact as soon as possible as intraoperative death can be traumatic and stressful to the entire theater team. Anesthesia departments in developing countries should have protocol or guidelines on how to deal with catastrophes affecting both consultant and trainee anesthetists.^[17,18]

Insurance company

Immediately inform the insurance company. The purpose is not to protect the negligent doctors as they can be made to prepare in the appropriate court. However, we can't accept vandalism of any kind against doctors, hospital staff, other admitted patients, and establishment.

Investigation and examination of anesthetic death

As per section 39 Code of Criminal Procedure (CrPC), all deaths occurring in due course of surgery and anesthesia should be treated as unnatural deaths and should be reported to the police.^[3]

Liabilities of anesthesiologists

First confirm the liabilities of anesthesiologist that whether the patient was suitably prepared and examined properly? Was informed consent was taken and suitable type of anesthesia given? Was the anesthesia administered and the operation performed with reasonably skills and care and were suitable and adequate arrangement made before operation to deal with any emergency? Moreover, in the case of emergency, suitable steps were taken to resuscitate the patient?^[3,12,13,19]

Equipment and drugs

In case there is suspicion of equipment failure/malformation or drug related, then that piece of equipment or drug should be isolated for further investigations. All drugs, syringes, ampoules, airway devices, etc., should be kept in a secured box for investigation.

Communicating with media

Following such an event, there may be scenarios where media might get involved and approach the hospital staff for statements. A nominated hospital representative should be the only person handling the media and all enquiries should be directed to him. He/she should be well-aware of the facts that have to be said depending upon the situations.

Inform the police

It is better that you call the police rather than relative calling the police. Under section 39 CrPC, the attending medical officer is legally bound to inform the police about the arrival of medicolegal cases (MLC). In case of Mob violence, mention the names of miscreants if known in FIR. Hand over a copy of CCTV footage so that police can identify them. In case violence occurs: Take photographs of the damage done to property especially before police or local leaders arrive. Send all the injured staff and doctors for medical check-up and first aid preferably to nearby Government Hospital, make an MLC in that hospital and preserve all injury reports.

Precautions for Safe Anesthesia and Means to Prevent Perioperative Deaths

It is the duty of an anesthetist to attend the patient, assess him, and optimize the patient with necessary investigations and treatment. He must record everything on the case sheet. Complicated cases should be discussed with seniors and colleagues. A written informed consent should be taken and a reasonable degree of skill and care should be done

in the selection of anesthetic agent and the procedure. Anesthetist must adhere to standard practice and follow the protocols of the institution. Must update his/her professional knowledge by attending Continuing Medical Educations. An anesthetist must cope with job stress to improve the quality of care provided to patients and must enjoy the work rather than be burdened by it.^[20] Indian Society of Anesthesiologists should also lay down standards related to number of working hours, number of night-call duties per week, proper assistance, medicolegal protection, etc., which would improve efficiency and job satisfaction among anesthesiologists.^[21] All emergency drugs and equipment should be kept ready and never give prescription of life-saving drugs to relatives at that time.

Conclusion

The perioperative death of a patient is one of the most stressful events experienced by the anesthesiologists. The concerned anesthesiologist is afraid of losing his/her reputation which has been built after doing lot of hard work, dedication, and after administering successful anesthesia to so many cases. To prevent perioperative mortality, minimum monitoring should include pulse, noninvasive blood pressure, respiratory, SPO₂, ETCO₂, and electrocardiogram monitoring. Document all efforts, avoid prescription of emergency drugs, inform police beforehand, take collective responsibility, learn to communicate, declare death as a team, and never think of running away unless and until you have a direct threat to your life. Cooperate with all the investigators and get support from senior colleagues or mentors.

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Conflicts of interest

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