

PART I

General Preoperative, Intraoperative, and Postoperative Challenges

Section 1

Preoperative Care

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CHAPTER 1

Patient with Poor ASA Score

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Case history: An obese 79-year-old woman with chronic obstructive pulmonary disease, angina, hypertension and insulin-dependent diabetes requires abdominal hysterectomy for endometrial cancer.

Background

The idea of a physical status classification system was originally suggested by the American Society of Anesthetists in 1940, and three physicians – Saklad, Rovenstine and Taylor – produced a six-point scale. In 1963 this was published with two modifications by Dripps *et al.* as the current five-point scale, which was subsequently amended to become the American Society of Anesthesiologists physical status system for assessing the fitness of patients before surgery. This eponymous system consists of five grades (Table 1.1). The system was later modified to include a sixth grade for brain-dead patients whose organs are being removed for donation. In cases of emergency surgery, the grade is modified by the addition of an 'E' (e.g., 5E).

Table 1.1 American Society of Anesthesiologists (ASA) physical status system.

ASA grade	Physical status
1	A normal healthy patient
2	A patient with mild systemic disease
3	A patient with severe systemic disease
4	A patient with severe systemic disease that is a constant threat to life
5	A moribund patient who is not expected to survive without the operation

The score has been criticized for being subjective and prone to inter-observer variability. Additionally, it takes no account of the nature of the surgical procedure being carried out. Nevertheless, it is simple and quick to administer, rapidly communicated, and has been shown to be broadly correlated with adverse outcomes from surgery (Table 1.2).

Table 1.2 Percentage perioperative mortality categorized by ASA status.

ASA physical status class	Vacanti <i>et al.</i> [1]	Marx <i>et al.</i> [2]
1	0.08%	0.06%
2	0.27%	0.47%
3	1.8%	4.4%
4	7.8%	23.5%
5	9.4%	50.8%

In view of the increased morbidity and mortality rate, patients with high ASA scores undergoing major surgery need appropriate preoperative investigations and preparation and, in order to optimize their outcome, require the involvement of senior surgical and anesthetic staff at all stages of their management.

Management

The management of patients with a poor ASA score is based on three important principles.

- 1 A multidisciplinary assessment of the risks and benefits of the proposed procedure, and a frank discussion of these issues with the patient, and her relatives if appropriate.

In the case described, surgery may be necessary to save the woman's life; nevertheless, the severity of the underlying diseases must be taken into account, to ensure that surgery will result in not only prolonged life, but also a return to a quality of life deemed acceptable to the patient. However, it can be very difficult to quantify the risks and benefits associated with the proposed surgical procedure, and the decision to proceed is often based on a consensus opinion of the specialists involved. It is sometimes appropriate, especially in cases of disagreement among the healthcare professionals, to obtain opinions from clinicians not directly involved in the case. Discussions with the patient should include provision of published risk data if available, although this may be difficult to apply to an individual patient's clinical situation. The General Medical Council (UK) has stressed the importance of providing adequate information to enable patients to make a decision about their care. The patient may ask for the clinician's opinion about whether to proceed, and while it is appropriate to provide this, it should be made clear that this decision ultimately lies with the patient. It is almost always mandatory to seek the consent of patients before involving their relatives in discussions about their care. All discussions should be documented, in addition to obtaining signed written consent.

Sometimes the risks of surgery and anesthesia may dictate that a decision not to operate is the most appropriate course of action, with symptomatic, supportive or palliative care provided instead, with the patient's consent.

- 2 Preoperative optimization of physiology and pre-existing morbidity, including the involvement of other medical specialists as appropriate.

In the case described, the woman should be reviewed by the cardiologists, diabetologists, respiratory or general physicians, and geriatricians as necessary. The aim of preoperative preparation is to optimize management of the patient's pre-existing comorbidities, and it may be appropriate to perform this either in the outpatient department or after hospital admission. This process may involve changing the patient's medication, or optimizing the dose and frequency of the drugs already in use. In the case described, review will include the patient's inhaled bronchodilators (Chapter 8), insulin (Chapter 9), and antihypertensive drug therapy (Chapter 7). It might be necessary to carry out further investigations or even interventional procedures, for example coronary angiography and stenting if her angina is inadequately controlled (Chapter 3). Arrangements should also be made for the postoperative management of these conditions. Although other specialists will likely make a valuable contribution to the patient's management, the final decision to proceed with anesthesia and surgery lies with the consultant surgeon and anesthetist caring for the patient. After listing for surgery, the patient should be reviewed by an anesthetist at the earliest possible opportunity, to allow planning of the perioperative management of her comorbidities. Physiological variables such as intravascular volume and plasma electrolyte levels should be optimized as far as possible. Some patients will benefit from preoperative admission to a critical care area where oxygen delivery to body tissues can be optimized with goal-directed therapy utilizing intravenous fluids and inotropes, and with invasive cardiovascular monitoring. Arrangements should also be made for higher-level care postoperatively, if required, and good communication with the nursing staff who will care for the patient will allow any special equipment or arrangements to be organized; for example, in this case, the patient is obese and may require specialist equipment for manual handling. It is important that discharge planning also commences at this stage, as non-standard care or equipment may also be needed in the community, and early assessment of these will avoid a prolonged and inappropriate stay in hospital.

3 The involvement of consultant-level surgical and anesthetic personnel and senior nursing staff in the planning and implementation of intraoperative and postoperative care. It may be important to also involve other healthcare and allied professionals, such as physiotherapists, dietitians, and social workers. It may be appropriate for very senior surgical and anesthetic trainees to manage high-risk cases; however, close supervision and involvement of consultant staff is mandatory for high-risk patients at all stages of their hospital stay. This is particularly true intraoperatively, as minimizing time under anesthesia may reduce complications and enhance recovery. The World Health Organization (WHO) surgical checklist provides an opportunity for all the staff involved with the procedure to highlight issues or potential problems, and to ensure everyone understands the procedure being undertaken, and the particular risks associated with the patient's pre-existing conditions.

Although avoidance of general anesthesia by using spinal or epidural anesthesia may be advantageous from the point of view of this patient's lung disease, it may be associated with increased cardiovascular risk, requiring careful risk-benefit consideration by an experienced anesthetist. Depending on the planned incision, regional techniques may not provide adequate anesthesia.

Arrangements for recovery and high-level postoperative care (in a high-dependency or intensive therapy unit) should be in place in advance of surgery, and these should be confirmed on the day. It is sometimes necessary to review and clarify the patient's

resuscitation status before surgery. High-risk patients may have 'Do not attempt resuscitation' (DNAR) orders in place, and as a number of the activities involved in general anesthesia may be interpreted as being resuscitative in nature (e.g., lung ventilation), DNAR orders may have to be withdrawn or suspended intraoperatively, dependent on local policy. Alternatively, it may be appropriate to agree limits on the interventions which may be used, for example stipulating that cardiac compressions in the event of cardiac arrest would be inappropriate. These issues should be fully discussed with the patient and/or relatives as appropriate.

Prevention of complications

All discussions and plans should be carefully documented in the medical records, and good lines of communication should be established to ensure that all staff involved in the patient's care are aware of these.

Most medication should be continued up to the time of surgery, although this may require discussion with the anesthetist and appropriate medical specialists (Chapter 2). It may be necessary to repeat investigations such as blood tests after admission to hospital, to provide up-to-date baseline data in advance of surgery. The patient should be closely monitored postoperatively to allow early identification and treatment of complications arising from anesthesia or surgery. Regular review by senior medical staff is mandatory during the early postoperative period.

Scheduling the patient for surgery early in the day allows early postoperative complications to be detected and dealt with during daylight hours. It may be inadvisable to operate on these patients just before a weekend, as weekend medical cover is often reduced.

KEY POINTS

Challenge: Surgery for the patient with a poor ASA score.

Background

- The ASA physical status scale correlates with perioperative morbidity and mortality.
- Patients' physical condition should be optimized before surgery.
- Senior surgical and anesthetic staff must be involved in all stages of patient management.

Prevention

- Careful planning of all stages of perioperative care.
- Multidisciplinary involvement.
- Scheduling of operation early in the day.

Management

Preoperative

- Multidisciplinary assessment of risks and benefits of surgery, and discussion of these with the patient and her relatives.
- Optimization of pre-existing medical conditions by medical specialists.
- Optimization of physiological variables: goal-directed therapy.
- Multidisciplinary advance planning of perioperative management.

Intraoperative

- Direct involvement of consultant surgical and anesthetic staff.
- Minimization of operative time.

Postoperative

- Close monitoring to identify complications early.
- Consideration for transfer to HDU or ITU for postoperative care.
- Regular senior surgical and anesthetic or critical care review of patient during postoperative period.

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Further reading

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