

Advances in ambulatory anaesthesia

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Over the past four decades, ambulatory surgery has grown from less than 10% to over 70% of all elective surgical procedures. Increasing healthcare costs have contributed to the development of Day Surgery. Advancements in anesthesia have contributed to the success. Advancements in endoscopic and other minimally invasive surgical procedures are contributing to the better care of patients in these settings. Patient selection criteria, knowledge in anesthetic pharmacology, pre-operative selection criteria, post-operative discharge criteria and different modalities of anesthesia for Day Surgery patients are essential for the success of the Ambulatory Surgery Centres (ASC).

The primary reason for the continued expansion in ambulatory surgery is related to the pressure from third-party payers and governmental agencies to reduce health care costs, there may be other, less obvious, benefits for patients and their families. More aggressive rehabilitation leads to faster recovery of organ function, fewer surgical and anesthetic complications, reduced mental and physical disability, and, most importantly, earlier resumption of normal activities and return to work. For patients “at risk” of hospital-acquired infections (e.g., immunosuppressed patients), ambulatory surgery may also reduce postoperative infectious complications.

Recent advances in anesthetic and surgical practices have facilitated the rapid growth in ambulatory surgery throughout the world. With the availability of rapid, short-acting anesthetic, analgesic, sympatholytics, and muscle relaxant drugs, as well as improved monitoring devices, it has been possible to minimize the adverse effects of anesthesia on the recovery process. Improvements in the perioperative care of outpatients has allowed surgeons to perform an increasing array of more invasive surgical procedures on an ambulatory (day-case) basis.

Major ambulatory surgery procedures (e.g., extensive knee and shoulder reconstructions, laparoscopic-assisted vaginal hysterectomies, gastric funduplications, splenectomies, and adrenalectomies) are being performed at many centers around the world. Even patients undergoing carotid endarterectomy, pulmonary lobectomy, prostatectomy, and minor craniectomy procedures, are being discharged on a same-day (or 23-hour admit) basis.

There are certain procedures that should not be done in ASC. i.e. procedures requiring blood transfusion and intense postoperative monitoring. Uncontrollable pain and undue sedation are reasons for prolonged stay in ASC. American Society of Anesthesiology (ASA) grades I and II patients are taken up in ASC. ASA grade III patients can be entertained depending on the nature and brevity of procedure.

As perioperative physicians, anesthesiologists can play an important role in facilitating ambulatory (and short-stay) surgery by becoming actively involved in the pre-, intra-, and postoperative care of this expanding patient population. To achieve the desired outcome, careful consideration must be given to each phase of the surgical process.

Pre operative clearance must be done as soon as patient is scheduled for surgery. These patients should be called on to make sure that proper investigations are done. A recent consultation with the proper specialist should be on board, addressing the concerned problem and its implication to the impending procedures. It is important to ensure that all patients are in “optimal” medical condition before their elective operation.

NPO Guidelines that are set for inpatient anesthesia are applicable to all Day Surgery patients too. Recent changes in fasting policies have allowed patients to continue taking chronic medications and avoid the uncomfortable symptoms of dehydration, hypoglycemia, and caffeine withdrawal.

In the immediate pre-operative period a careful history should be reviewed to chart the allergies, systemic diseases requiring special consideration, medication and any adverse reaction to anesthesia. Uncontrolled hypertension, uncontrolled diabetes, abnormal cardiac rhythm, non-compliance with NPO instructions are causes of great alarm and should be reasons for postponement of surgery until they are properly addressed. A careful airway assessment must be made to make sure that they do not present any intubation or airway problem. All patients should be asked for any adverse airway problem during past anesthetics. They must be instructed that provision be made for them to be picked up after the procedure and there must be someone to take care of them during the first 24 hours. Out of town patients must make proper arrangements to stay in town as per need basis.

The use of small doses of sedative-anxiolytic drugs for premedication improves the perioperative experience for the patient without adversely affecting the recovery process. Anti-sialagogue and anti-emetic premedication helps a lot in ASC patients.

Anesthetic techniques that optimize the intraoperative surgical conditions while providing for a rapid, early recovery have assumed increased importance. The introduction of more rapid and shorter-acting volatile anesthetics (e.g., desflurane and sevoflurane), opioid analgesics (e.g., remifentanyl), and muscle relaxants (e.g., rapacuronium) has allowed practitioners to more consistently achieve a recovery profile that facilitates “fast-tracking” after the administration of general anesthesia. The use of electroencephalographic bispectral index (BIS) monitoring can improve titration of maintenance anesthetics and thereby facilitate the early recovery process. Although recovery after central neuroaxis blockade is improved by decreasing the local anesthetic dosage and adding a potent opioid analgesic (e.g., fentanyl, sufentanyl), discharge times are still prolonged compared with general anesthesia or local anesthesia with sedation. Increasingly, practitioners are turning to monitored anesthesia care (MAC) as an alternative to both general and regional anesthesia. The availability of drugs, such as

propofol, alfentanil, and remifentanyl, has clearly improved intraoperative conditions for patients undergoing more extensive surgical procedures with local anesthesia.

Preventing postoperative pain and other untoward side effects (e.g., postoperative nausea and vomiting) is critical to successful implementation of a fast-tracking program in the ambulatory setting. The use of a multi-modal approach to prevent postoperative pain will decrease the dependence on opioid analgesics. Nonsteroidal anti-inflammatory drugs (NSAIDs- e.g., ketorolac, diclofenac, COX-2 inhibitors) and other non-opioid analgesics (e.g., local anesthetics, acetaminophen, paracetamol) have become increasingly important in controlling pain after ambulatory surgery. Similarly, the use of prophylactic anti-emetic drugs can be extremely useful in facilitating the recovery process and improving patient satisfaction. Minimizing side effects after ambulatory surgery has assumed even greater importance because of the rapid growth in office-based surgery.

Providing patients and their families with information on how to avoid problems after discharge will facilitate the rehabilitation process. The importance of discussing the implications of undergoing surgical procedures on an ambulatory basis with the patient and his/her family before the operation will also increase acceptance and patient satisfaction with early discharge. As perioperative physicians, anesthesiologists will be required to assume an increasingly important role in minimizing the postoperative pathophysiologic changes and facilitating the rehabilitation process. To optimize patient outcome, a care team approach (involving the patient, the family, the nursing staff, as well as the surgeon and anesthesiologist) is essential. As more extensive surgical procedures are performed on an ambulatory basis, innovative approaches to providing recovery care will be required.

Prior to discharge anesthesiologist or one of the nurses in the PACU must give home-going instructions. These home-going instructions must include the following: 1. These patients must have some responsible adult to take them home, 2. They must not be left alone for overnight or for the first 24 hours, 3. They must not operate any machinery or drive a vehicle for the first 24 hours, 4. They must be instructed not to take any sedatives or any alcoholic beverages for the first 24 hours as it can cause depression of respiration and interaction with remnant anesthesia medications and prescribed pain medications, 5. Clear instructions must be given to them as well as to the family members what to do in case of emergency and phone number of the person to contact.

In conclusion, novel surgical and anesthetic techniques have allowed an increasing number of outpatients around the world to benefit from ambulatory surgery. As the emphasis shifts toward so-called value-based care, it is increasingly apparent that ambulatory surgery provides the best patient care possible at the most reasonable cost.

Ambulatory anesthesia has become recognized as an anesthetic subspecialty, with formal postgraduate training programs. With increasing clinical experience, it is possible to determine which patients will derive the greatest clinical benefit from ambulatory surgery. Further expansion of the specialty of ambulatory anesthesia and surgery is likely to occur in the near future. The rate of expansion of ambulatory anesthesia will probably

vary from country to country, depending on local needs, the level and availability of ancillary home health-care services, and economic considerations.

Many recently developed drugs have pharmacological profiles that make them ideally suited for use in the ambulatory setting. Although these new drugs are valuable additions to the anesthesiologist's armamentarium, their cost is obviously higher than the drugs they were designed to replace. Given the changing pattern of health-care reimbursement, it is incumbent upon all practitioners to carefully examine the impact of new drugs and techniques on the quality of ambulatory anesthesia. It is obvious that these more rapid and shorter-acting anesthetic, analgesic, and muscle relaxant drugs have facilitated the early recovery process, thereby allowing our surgical colleagues to perform more extensive surgical procedures on an ambulatory basis.

Future studies of new drugs and techniques for ambulatory anesthesia need to focus not only on subjective improvements for the patient during the perioperative period, but also on the overall cost-effectiveness of the care provided. These studies must compare the increased cost of new treatments with the potential financial savings resulting from earlier hospital discharge, reduced consumption of supplemental drugs, and earlier return to work. Recent pharmacological and technological advances in anesthesia and surgery allow outpatients with complex medical problems to undergo a wide variety of diagnostic and surgical procedures on an ambulatory basis. Increasingly, anesthesia practitioners as well as pharmacy and therapeutic committees are demanding evidence that new drugs and medical devices are superior to existing products—that they work better, have fewer adverse effects, and enhance efficiency, thereby reducing healthcare costs.

The challenge that all practitioners face is to provide high-quality ambulatory anesthesia care at a reduced cost. The new biomedical technology, introduced to facilitate the perioperative management of patients (e.g., computerized anesthesia information management systems) enhances our ability to provide high-quality, cost-effective health care.