REVIEW ARTICLE

Discharge Criteria and Complications After Ambulatory Surgery

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In recent years, the emphasis in providing surgical services has undergone remarkable change. Previously, patients undergoing surgical procedures remained in a hospital for many days after the operation. In 1994, 66% of all elective operations in the United States were performed on an outpatient basis (1). More complex ambulatory procedures are being performed on sicker patients (2). With the increased emphasis on early discharge after surgery and anesthesia, it is important to identify criteria that can be used to determine when patients can safely go home under the care of a friend or relative. In this article, we review current knowledge regarding the assessment of home-readiness after ambulatory surgery and discuss potential complications and appropriate treatment regimens.

Defining Recovery

Recovery is a continual process, the early stages of which overlap the end of intraoperative care. Patients cannot be considered fully recovered until they have returned to their preoperative physiological state. This entire process may last many days, but it can be conveniently divided into three distinct phases (Table 1) (3).

Early recovery (Phase I) lasts from discontinuation of anesthesia until patients have recovered their protective reflexes and motor function. Because they require close monitoring and supervision during this stage, it normally takes place in the high-dependency atmosphere of the postanesthesia care unit (PACU) with suitably trained nursing staff.

In deciding when patients have recovered enough to allow their safe transfer to an ambulatory surgical unit (ASU), or Phase II recovery, the Aldrete scoring system may be used (4). First described in 1970, and although not originally designed for ambulatory patients, it is still widely used in many PACU's in its original form. This system assigns a score of 0, 1, or 2 to activity, respiration, circulation, consciousness, and color, giving a maximal score of 10. A score of 9 indicates recovery sufficient for the patient to be transferred from the high-dependency PACU to the ASU. However, with the advent of pulse oximetry, a more reliable indicator of oxygenation than clinical observation, a modification of the Aldrete score has been suggested (Table 2) (5). In this version, the need for room air O_2 saturation is >92%. After patients were discharged, they underwent full recovery at home (Phase III recovery).

Fast-Tracking

With newer anesthetics and techniques that allow more rapid awakening, it has been suggested that early recovery may be completed in the operating room (OR). Patients are transferred directly to the ASU, bypassing the PACU (6,7). In patients undergoing outpatient laparoscopic tubal ligation maintained with desflurane or sevoflurane, Aldrete scores of 10 were achieved significantly faster than in those maintained with propofol (6). These investigators also demonstrated that 90% of the patients anesthetized with desflurane were fast-track–eligible on arrival in the PACU (6). Apfelbaum et al. (8) evaluated bypassing PACU at five surgical sites. Anesthesiologists were instructed to assess all ambulatory surgical patients for recovery while still in the OR, using standardized discharge criteria typically used at the end of a PACU stay. The PACU bypass rate for patients who received general anesthesia (GA) varied from 13.9% to 42.1%. The cost of maintaining personnel constitutes the major expense in PACU time (6,9). Therefore, because fast-tracking reduces PACU activity, the reduction in staffing requirements could result in potential cost-savings. Further research in this area is needed before implementing the fast-tracking concept safely and efficiently.

Once patients have been transferred from the OR to the ASU, they should stay there until intermediate recovery is complete (i.e., coordinated, ambulating, and judged to be home-ready). For an ASU to be

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Table 1. Stages of Recovery

Stage of recovery	Clinical definition
Early recovery	Awakening and recovery of vital reflexes
Intermediate recovery	Immediate clinical recovery Home readiness
Late recovery	Full recovery Psychological recovery

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Table 2. The Modified Aldrete Scoring System for Determining when Patients Are Ready for Discharge from the Postanesthesia Care Unit

Activity: able to move voluntarily or on command	
4 extremities	2
2 extremities	1
0 extremities	0
Respiration	
Able to deep breathe and cough freely	2
Dyspnea, shallow or limited breathing	1
Apneic	0
Circulation	
BP $\pm$ 20 mm of preanesthetic level	2
BP $\pm$ 20–50 mm of preanesthesia level	1
BP $\pm$ 50 mm of preanesthesia level	0
Consciousness	
Fully awake	2
Arousable on calling	1
Not responding	0
O_2 saturation	
Able to maintain O_2 saturation $>92\%$ on room air	2
Needs O_2 inhalation to maintain O_2 saturation $>90\%$	1
O_2 saturation $<90\%$ even with O_2 supplementation	0

A score ≥ 9 was required for discharge.
BP = blood pressure.
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effective and efficient, it is important that patients not be detained unnecessarily once intermediate recovery is complete. However, premature discharge may lead not only to the possibility of patients suffering complications, but to readmission and medicolegal concerns. Although patients may have been discharged from the hospital, they cannot be considered fully recovered until they have returned to their preoperative physiological and functional state.

Discharge Criteria

It is the physician's responsibility to ensure that a patient is sufficiently recovered to leave the ASU under the appropriate care of a relative or other caregiver. Legal action may ensue if a patient who is discharged prematurely or inadequately supervised comes to harm as a result of residual psychomotor impairment (10). However, "a written policy establishing specific discharge criteria is a sound basis for a legally sufficient discharge decision" (11). Thus, the ASU nursing staff may discharge patients who meet specific written criteria. The key question is what criteria we should use to determine the home-readiness of a patient.

Psychomotor Tests

There have been many attempts to produce a simple reproducible test to assess a patient's recovery from anesthesia. Many of the psychomotor performance tests used in other fields and were adapted for evaluating the postanesthesia period. In 1969, a modified Gestalt test—the Trieger dot test—was proposed to measure recovery (12). In this test, patients are asked to connect a series of dots to form a pattern. The number of dots missed in the line drawn represents the score. These scores improve as patients recover from anesthesia. The Trieger dot test is only one of a battery of psychomotor tests that measure recovery from anesthesia. The Maddox wing (a device to test extraocular muscle balance) (13), driving simulators (14), reaction time tests, and peg board tests (15) have all been used. The flicker fusion threshold (16), which measures the frequency at which the patient perceives a flashing light to be continuous, has been used. So also have perceptual speed tests (17) and the digit symbol substitution test (18). Recently, a complex test assessing patients' balance by standing them on a dual forceplate has been suggested (19).

Despite the number and variety of tests in use, none has been specifically validated by follow-up studies providing adequate criteria to guide discharge in the ambulatory setting. Many are complex and time-consuming, and they may also require special equipment that is not readily available. Many of these tests also suffer from a major drawback: they assess recovery of one part of brain function only, rather than complete recovery of the patient. Patients may be able to complete paper and pencil tests, yet still be in pain or nauseated. Not surprisingly, these tests have not found their way into routine clinical practice. Most centers still rely on clinical criteria for practical discharge decisions. The more complex psychomotor tests, however, are still useful research tools, because they are sensitive to the degree of impaired psychomotor function (20). Table 3 summarizes widely accepted clinical criteria for safe discharge from the hospital (1).

A Clinical Scoring System

Anesthesiologists experienced in outpatient anesthesia can use their knowledge and experience to decide when a patient has recovered sufficiently for discharge. However, if physicians are to delegate the process, then a well designed clinical scoring system

Table 3. Guidelines for Safe Discharge After Ambulatory Surgery

Vital signs must have been stable for at least 1 h
The patient must be
Oriented to person, place, and time
Able to retain orally administered fluids
Able to void
Able to dress
Able to walk without assistance
The patient must not have
More than minimal nausea and vomiting
Excessive pain
Bleeding
The patient must be discharged by both the person who administered anaesthesia and the person who performed surgery, or by their designates. Written instructions for the postoperative period at home, including a contact place and person, must be reinforced.
The patient must have a responsible, "vested" adult escort them home and stay with them at home.

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will provide a reliable guide (21). Using the Postanesthesia Discharge Scoring System (PADS) (22) (Table 4), most patients can be discharged within 2 h after surgery (23) (Fig. 1). The PADS scoring system was developed by Chung et al. at the Toronto hospital, where it has been used extensively to determine when patients can be discharged home safely.

An earlier version of PADS and the clinical criteria in Table 3 both require that patients have either taken oral fluids or passed urine before being allowed home. Much recent scrutiny of the ambulatory discharge process has centered on these two factors. Are drinking and voiding before discharge fundamental to patient safety, or do they merely delay the release of patients who are already adequately recovered?

Is the Ability to Tolerate Oral Fluids Necessary?

Although it is obviously unacceptable to discharge a patient who is actively vomiting, is it necessary to insist that those patients who feel unable to tolerate oral fluids demonstrate that they can do so before discharge? One study addressed this question (24). Nine hundred eighty-nine children were randomly assigned to two treatment groups. One group of "mandatory drinkers" had to fulfill the traditional discharge criteria by demonstrating the ability to drink clear fluids without vomiting. The other group were "elective drinkers" and were allowed, but not required, to drink. The mandatory drinkers had a higher incidence of nausea in the ASU and stayed there longer. No patient in either group required readmission for persistent vomiting. Since completion of this study, the Children's Hospital of Philadelphia has discharged >6000 ambulatory surgery patients without requiring them to drink before discharge. Three children required admission for vomiting, and only one was readmitted for intractable vomiting and dehydration (24). Another study involving 726 adult patients showed that there was no difference in the incidence of postoperative nausea and vomiting (PONV) between the drinking and nondrinking groups (25). Eliminating drinking can slightly shorten the stay in the ASU without evidence of adverse effects. Therefore, medical staff and nurses should be taught that drinking may not be necessary before discharge for adult ambulatory surgical patients, and the discharge criterion could be modified accordingly.

Is Voiding Necessary Before Discharge?

Insisting that patients pass urine can lead to delays in discharge. There is evidence that outpatients not at high risk of urinary retention can be safely discharged before they have voided without urinary retention problems at home (26).

Risk factors for postoperative urinary retention include a history of postoperative urinary retention, spinal/epidural anesthesia, pelvic or urological surgery, and perioperative catheterization (26). One study observed 1719 consecutive ambulatory patients, 30 of whom were identified as being ready for discharge, unable to void, and in a high-risk group for urinary retention. These patients were discharged from the ASU and were followed-up by a home healthcare nurse. Of these 30 patients, only 3 required catheterization at home, and all those who needed catheterization had undergone a rectal or inguinal procedure under spinal anesthesia (26). This suggests that even patients at high risk of urinary retention can be discharged before they have voided, given appropriate follow-up, which can include catheterization by homecare nurses. The cost of providing homecare nurses may, however, outweigh any savings from discharging these patients early.

Another study investigated the effects of adding 10 μg of fentanyl to 5 mg of bupivacaine intrathecally for ambulatory knee arthroscopies and found that neither time to urination nor time to discharge were prolonged by the addition of fentanyl (27). Given the relatively small sample size, additional studies are needed before a final recommendation can be made on whether ambulatory patients receiving intrathecal opiates can be discharged before voiding. These studies were all performed on adults, and it may not be possible to extrapolate these data to children.

Removing the requirement to drink and void and separating the pain and nausea/vomiting scores have produced the current version of PADS (28) (Table 4). The PADS is based on five criteria: vital signs, ambulation, nausea/vomiting, pain, and surgical bleeding.

Table 4. Postanesthesia Discharge Scoring System (PADS) for Determining Home-Readiness

Vital signs	
Vital signs must be stable and consistent with age and preoperative baseline	
BP and pulse within 20% of preoperative baseline	2
BP and pulse 20%–40% of preoperative baseline	1
BP and pulse >40% of preoperative baseline	0
Activity level	
Patient must be able to ambulate at preoperative level	
Steady gait, no dizziness, or meets preoperative level	2
Requires assistance	1
Unable to ambulate	0
Nausea and vomiting	
The patient should have minimal nausea and vomiting before discharge	
Minimal: successfully treated with PO medication	2
Moderate: successfully treated with IM medication	1
Severe: continues after repeated treatment	0
Pain	
The patient should have minimal or no pain before discharge	
The level of pain that the patient has should be acceptable to the patient	
Pain should be controllable by oral analgesics	
The location, type, and intensity of pain should be consistent with anticipated postoperative discomfort	
Acceptability	
Yes	2
No	1
Surgical bleeding	
Postoperative bleeding should be consistent with expected blood loss for the procedure	
Minimal: does not require dressing change	2
Moderate: up to two dressing changes required	1
Severe: more than three dressing changes required	0

Maximal score = 10; patients scoring ≥9 are fit for discharge.
Reprinted from Marshall S, Chung F. Assessment of "home readiness": discharge criteria and postdischarge complications. Curr Opin Anaesthesiol 1997;10:445–50.

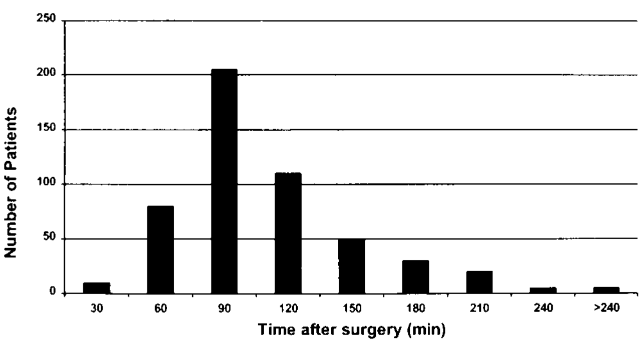

Figure 1. Most patients had recovered from anesthesia and were discharged home within 1–2 h after surgery. Only 4% of patients were discharged home 3 h after surgery. Reprinted from Chung F. Recovery pattern and home readiness after ambulatory surgery. Anesth Analg 1995;80:896–902.

Each of these items is assessed independently and assigned a numerical score of 0–2, with a maximal score of 10. Patients are judged fit for discharge when their score is >9. For surgical procedures in which voiding is not a discharge criterion, patients are advised to contact the responsible and available physician if they are unable to void within 6–8 h after discharge. Most patients can be discharged within 1–2 h after surgery (23). Delays in discharge are related to persistent symptoms such as pain, nausea/vomiting, hypotension, dizziness, unsteady gait, syncope, and asthma. Delays can also occur when an escort is not immediately available (23). Although 50,000 patients have been discharged safely from the Toronto Hospital using PADS, it has yet to be validated by other researchers.

Discharge After Regional Anesthesia

Patients undergoing regional anesthesia should expect the same standard of postoperative care as those who have undergone GA (29). However, regional anesthesia does bring unique advantages and problems to the ambulatory setting (30). For example, some authors have demonstrated significantly faster discharges after regional techniques (29). One study comparing three-in-one femoral block with GA for knee arthroscopy found that the block patients could be discharged approximately 40 min earlier than the GA patients (31). Interscalene block can provide good analgesia after shoulder arthroscopy and can also decrease the incidence of nausea and vomiting and of unexpected hospital admissions, compared with GA (32). Even when combined with GA, a suprascapular block can improve recovery profiles and facilitate early discharge after arthroscopic shoulder surgery

(33). The benefits of avoiding GA may be apparent up to 3 days postoperatively, when testing can reveal cognitive defects in GA patients that are not present in patients who received local anesthetic infiltration (34). There have been no trials comparing regional blocks with the new, less soluble volatile anesthetics, which have more rapid recovery profiles. Patients who have had a peripheral nerve block need not be detained until full return of sensation if discharge criteria have been achieved. It is acceptable to send a patient home with an anesthetized limb properly protected, with careful written and verbal instructions, and with a 24-h contact telephone number (35).

Spinal anesthesia is a simple and reliable technique that has been widely used for ambulatory anesthesia (36). Because of its short action, lidocaine has been commonly used for ambulatory procedures. However, there has been concern over possible neurotoxic effects of the 5% hyperbaric solution of lidocaine, with numerous reports of transient radicular irritation (TRI) after its use in spinal anesthesia (37,38). Recently, even the 2% solution has been associated with an increased incidence of TRI (39). Investigators have therefore been experimenting with more dilute isobaric solutions of lidocaine. One study has indicated that 40 mg of lidocaine (as a 1% solution) provided reliable anesthesia for outpatient knee arthroscopies, with a mean discharge time of 178 min (40). Smaller doses provided inadequate anesthesia, whereas larger doses led to longer recovery times.

With the continuing controversy over the use of lidocaine for spinal anesthesia, other avenues are being explored to achieve reliable spinal anesthesia with rapid recovery and minimal adverse effects. Ben-David et al. (41) demonstrated that small doses of dilute bupivacaine (7.5 mg/0.25%) provide reliable anesthesia for knee arthroscopies, with a mean time to discharge of 202 min. Vaghadia et al. (42) showed that a combination of 25 mg of lidocaine and 25 μg of fentanyl produces sufficient anesthesia for brief laparoscopic procedures, with patients meeting discharge criteria at 122 min.

One factor limiting the popularity of outpatient spinal anesthesia among anesthesiologists is postdural puncture headache (PDPH) (43–46). It seems that 25-gauge pencil-point needles produce an incidence of PDPH <1%, and the headaches that occurred were mild and self-limited (43). Fine needles (29 gauge) must be used to achieve similarly low headache rates with Quincke point needles. However, the use of fine needles greatly increases the technical difficulty of dural puncture and leads to a higher failure rate (47). Before allowing patients to ambulate after spinal anesthesia, it is important to ensure that the motor, sensory, and sympathetic blocks have regressed. Suitable criteria to judge when this has occurred include normal perianal (S4-5) sensation, plantar flexion of the foot, and proprioception in the big toe (48).

The major advantages of spinal anesthesia are the same as those of other forms of regional anesthesia. Wound pain after spinal anesthesia can be less intense and shorter lived than that after GA (49).

Malignant Hyperthermia

In the past, overnight hospitalization of patients with suspected or confirmed malignant hyperthermia (MH) was common practice. A large, retrospective review of 285 children with suspected or proven MH susceptibility was conducted at Toronto's Hospital for Sick Children (50). There were no MH reactions in these patients, all of whom had been given trigger-free anesthetics. The authors concluded that same-day discharge is safe for patients with suspected or biopsy-proven MH after uncomplicated ambulatory surgery.

Complications of Ambulatory Anesthesia

The overall safety record of modern ambulatory anesthesia is impressive (51–53), with major morbidity and mortality being extremely rare (54). A major study of 38,958 patients after ambulatory surgery found that the risk of dying in the 30 days after surgery was 1:11,273. The incidence of myocardial infarction, stroke, and pulmonary emboli was extremely low, lower than would be expected among a similar age group who had not undergone ambulatory surgery (54). However, minor sequlae are relatively common and may lead to delays in discharge, unanticipated admission, and returns to the hospital.

The unanticipated postoperative admission rate from the ASU is an important outcome measurement; in most centers, it averages 1% (55). In practice, the most common causes for admission are surgical factors, particularly bleeding (55–59). In the first 30 days after ambulatory surgery, 3%–12% of patients will contact a family doctor or the emergency services about complications (57,60,61), the most common of which is surgical bleeding (55,62). Inadequate pain relief is also an important factor at this stage (56,59). One survey found that 2.7% of patients had to contact their family doctor or the hospital because of inadequate analgesia, and 1% expressed dissatisfaction with the ambulatory surgical experience because of inadequate analgesia after discharge (60).

Pain

Postoperative pain is the most commonly reported complication of ambulatory anesthesia (60,61) (Fig. 2), with up to 50% of patients experiencing wound pain

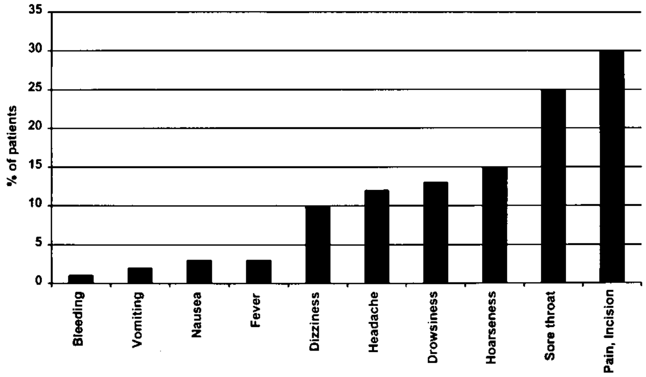

Figure 2. Within 24 h postoperatively, pain at incision site and sore throat were the main postoperative symptoms, and 10%–15% of patients suffered from dizziness, headache, drowsiness, and sore throat. Reprinted from Chung F. Recovery pattern and home readiness after ambulatory surgery. Anesth Analg 1995;80:896–902.

24 h after laparoscopic, orthopedic, and general surgery (61). Treatment of pain in the ambulatory surgical patient is challenging. Inadequate pain treatment can delay discharge and is inhumane. However, the overzealous use of opiates can lead to postoperative nausea and vomiting (63).

One large, prospective study observed >10,000 patients to identify predictive factors for severe postoperative pain (64). Orthopedic and urological procedures were related to severe pain, as was the length of anesthesia, with patients who underwent longer procedures experiencing more pain. It was also confirmed that patients with severe pain stayed significantly longer in the PACU and ASU. Severe pain itself can be an important cause of nausea, and treating pain can relieve nausea (65). These findings suggest that close attention should be paid to analgesia in ambulatory surgical patients in the early postoperative period. Painful ambulatory procedures, such as shoulder arthroscopy, may require powerful opiate analgesics. Morphine 0.1 mg/kg given intraoperatively for painful orthopedic surgery does not delay discharge, nor does it increase the incidence of nausea and vomiting, compared with similar doses administered in the PACU. Alternatively, fentanyl can be used in the PACU and seems to produce a lower incidence of PONV. However, the quality of analgesia in the ASU is not as good, and oral analgesic supplements must be given early (66). The addition of local anesthetics (49) or nonsteroidal antiinflammatory drugs (NSAIDs) (67) can improve postoperative analgesia, thus facilitating an earlier discharge.

Postoperative analgesia combining intraoperative opiates, local anesthesia, and NSAIDs has been referred to as either balanced (68) or multimodal analgesia (69). The combined approach can lead to significantly shorter discharge times, lower pain scores, and a lower incidence of nausea and vomiting, compared with traditional opiate-based anesthetic techniques (68,69). In light of these recent studies, a strong case can be made for balanced analgesia as the technique of choice for painful ambulatory surgery.

Nausea and Vomiting

PONV is another distressing complication of ambulatory anesthesia that may lead to delayed discharge and unanticipated admissions (57). However, its incidence seems to be declining, probably as a result of newer antiemetic drugs and improved anesthetic techniques (65). Nausea is not only distressing to the patient, it can delay discharge (70). It has been estimated that nausea can increase the patient charges for an ambulatory treatment by approximately $415 (US 1994) (71). The true incidence of PONV may not be apparent in the PACU, as it may not begin until patients are discharged and become more mobile at home. Up to 35% of patients experience PONV at home after discharge, many of whom did not experience emetic symptoms in the PACU (72). What can be done to influence the rate of PONV?

Propofol, with its rapid recovery profile, is the most commonly used IV induction anesthetic for ambulatory procedures (73,74), and its use is associated with less nausea and vomiting than other induction drugs (73,74). It has been suggested that propofol has a distinct antiemetic action. However, three separate randomized, placebo-controlled trials have failed to demonstrate the antiemetic effects of small-dose propofol (75–77).

The role of nitrous oxide in contributing to PONV is unclear. Individual studies have failed to show a reduction in the incidence of nausea and vomiting when nitrous oxide is withheld from the anesthetic (78,79). However, four meta-analyses of randomized, controlled trials on the subject have all shown a reduction in the incidence of PONV when nitrous oxide was omitted (80–83). One of these studies found a significantly higher incidence of awareness when nitrous oxide was withheld (81), a finding that may limit the desirability of eliminating it from ambulatory anesthetic techniques.

The muscle relaxants seem to have little effect on recovery in their own right, but the use of neostigmine may be associated with an increased incidence of PONV when used as a reversal drug, possibly because of its gastrointestinal effects (65). The rapid recovery characteristic of mivacurium makes reversal drugs unnecessary and allows neostigmine to be eliminated from the anesthetic technique, decreasing the incidence of PONV (84). The opioid analgesics have a powerful emetic action (63), and one effective method of reducing the incidence of PONV is to minimize their use (85).

Because the reported incidence of PONV is actually relatively low and many of the available antiemetic drugs have side effects, routine antiemetic medication cannot be recommended (65). However, subgroups of patients at high risk of PONV can be identified, and prophylactic antiemetics are indicated for these patients. High-risk outpatients include those with a history of PONV or motion sickness, women undergoing gynecological procedures, and children undergoing strabismus surgery. The 5-HT_3 antagonist ondansetron has generated much interest, and it is undoubtedly an effective antiemetic (86,87), especially if given at the end of surgery (88). However, two trials have demonstrated that it is no more effective than small-dose droperidol (89,90). Ondansetron 8 mg has been shown to be more efficacious than metoclopramide 10 mg in reducing opioid-induced PONV (91).

Newer 5-HT_3 antagonists are currently being investigated (e.g., granisetron, tropisetron, dolasetron). One study has demonstrated that granisetron is more effective than droperidol in treating PONV (92). Another has shown that dolasetron, which has proved effective in treating chemotherapy-induced nausea, is more effective than placebo in preventing PONV in ambulatory patients who have undergone laparoscopic gynecological surgery (93).

One factor that has been implicated in the etiology of PONV is gastric distention after mask ventilation, especially by inexperienced personnel (94), and it has also been suggested that gastric decompression may reduce the incidence of PONV. However, one group investigated this approach and found that gastric decompression with a nasogastric tube had no impact on the incidence of PONV in the PACU; it may have even increased PONV after discharge (95).

Less Common Postoperative Complications

Other complications, such as sore throat, headache, dizziness, and drowsiness, have been reported after ambulatory surgery (Figure 2). These have not been investigated as extensively as pain and nausea, but they may, in part, be caused, or at least aggravated by, perioperative dehydration. The relatively simple measure of giving patients 20 mL/kg (versus 2 mL/kg) of saline IV can reduce the incidence of thirst, dizziness, and drowsiness for up to 24 h postoperatively (96). Sore throat, headache, dizziness, and drowsiness may also delay patients from resuming normal activities. The occurrence and impact of postoperative symptoms was studied in 12,899 ambulatory patients (97). Patients who listed more postoperative symptoms had lower functional level when assessed on a self-rating scale. Incisional pain was associated with the largest decrease in postoperative functional level, but headache, drowsiness, dizziness, and sore throat were also significant. It is apparent that these symptoms have received relatively little attention, although they can have a significant impact on patients' ability to resume their normal daily activities.

Patient Education and Patient Perception

The success and safety of an ambulatory surgery program depends on patients' understanding and compliance. Patients often forget verbal instructions or ignore them (98); for many years, written instruction have been provided. Given the availability of sophisticated information systems, it was perhaps inevitable that these technologies would find their way into patient education. Instructional video presentations have been shown to patients preoperatively. Although those who saw the video claimed that they found it helpful, their knowledge about the perioperative period was not demonstrably better than those who had not seen it (99). Although these developments may hold some promise for the future, for the present, written instructions must still be recommended.

Thiopental enhances the effects of alcohol (100), and patients have been advised against drinking for 24 h after anesthetic. With the introduction of newer, shorter-acting drugs, patients may be able to drink safely sooner after ambulatory surgery. Similarly, it is usual to instruct patients not to drive after anesthesia because residual psychomotor impairment inhibits driving skills. Recently published guidelines suggest that patients should not drive for 24 h after an anesthetic of $\leq$1 h and should not drive for 48 h after an anesthetic of $\geq$2 h (1). However, these guidelines are based on outdated studies using thiopentone and halothane; with the introduction of newer, shorter-acting drugs, this issue must be reexamined to provide our patients with rational, up-to-date advice.

The ultimate arbiter of the quality of service in the ambulatory surgery setting is the patient. In general, outpatients have been satisfied with their experience of ambulatory anesthesia and surgery (101). In a recent study, 2730 patients completed a satisfaction survey, and only 2.5% were dissatisfied with the overall experience. Although only 1.1% expressed dissatisfaction with anesthesia, this was a powerful predictor of global dissatisfaction with ambulatory surgery (101). The most common reasons for dissatisfaction involved inadequate communication between the patient and the medical/nursing staff. Dissatisfaction with anesthesia was also related to the number of postoperative symptoms suffered.

Conclusion

Ambulatory anesthesia is becoming a major part of the anesthesiologist's workload. We must ensure that the increasing number of ambulatory patients are discharged into the home environment appropriately.

Removing drinking and voiding from discharge criteria may help to speed discharge. Fast-tracking ambulatory patients and bypassing the PACU may prove more efficient, but with patients being treated and discharged so speedily, we have a responsibility to be aware of problems, such as pain, nausea, sore throats, and headaches, that occur at home after discharge. These can delay a patient's return to full function and leave a poor impression of ambulatory surgery.

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