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Total Intravenous Anesthesia Versus Inhalational Anesthesia in Ambulatory Surgery: Effects on Recovery, Postoperative Outcomes, and Patient Satisfaction

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Abstract

Ambulatory surgery has expanded rapidly, creating a need for anesthetic techniques that promote rapid recovery, minimal complications, and high patient satisfaction. Total intravenous anesthesia (TIVA) and inhalational anesthesia are widely used in day-care surgical practice, each with distinct pharmacological and clinical characteristics. This article compares TIVA and inhalational anesthesia with respect to perioperative hemodynamic stability, depth of anesthesia, recovery profiles, postoperative pain, postoperative nausea and vomiting (PONV), discharge readiness, and patient satisfaction. Evidence indicates that propofol-based TIVA is associated with reduced PONV, improved quality of recovery, stable hemodynamics, and earlier discharge, particularly in high-risk and ambulatory populations. Inhalational anesthesia remains effective but may contribute to higher emetogenic effects. The role of structured patient education and standardized recovery assessment tools in optimizing outcomes is also highlighted. Overall, TIVA emerges as a valuable and patient-centered anesthetic technique for ambulatory surgical procedures.

Keywords: Total intravenous anesthesia, inhalational anesthesia, ambulatory surgery, postoperative nausea and vomiting, recovery of function, patient satisfaction, propofol

INTRODUCTION

Anesthesia is an essential part of contemporary care in surgery as it guarantees patient comfort, immobility, and physiological stability to undergo invasive surgery. Within the years, the major development of anesthetic methods has changed the way surgery was conducted to achieve positive results and help decrease perioperative morbidity and mortality. Some of the most widely used methods in clinical anesthesia include Total Intravenous Anesthesia (TIVA) and inhalational anesthesia that have different pharmacological profiles, clinical practice as well as the outcomes that may arise [1, 2].

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Ambulatory (day care) surgery has revolutionized perioperative care by enabling selected surgical cases to be undertaken safely without the need to be admitted in the hospital, enabling patients to go back to their home the same day as they save on healthcare expenses and also increase the satisfaction. These procedures require not just a surgical technique but more importantly an anesthetic strategy that would allow rapid induction, stable intraoperative practice, few postoperative complications, and quick recovery to promote early release. Two main approaches are commonly applied in this environment: total intravenous anesthesia (TIVA) which is usually built on the sustained use of a continuous infusion of drugs, like propofol and short acting opioids, and inhalational anesthesia

which relies on volatile drugs, like sevoflurane or desflurane, used in maintenance following intravenous induction [1, 3].

Acute postoperative pain is one of the unaddressed clinical issues. Eighty per cent of surgery patients have been reported to experience pain following surgery and less than half of the patients are given proper pain relief. The patient perspective on reducing the acute postoperative pain does not seem to have improved over years. Poor acute postoperative pain control is linked to undesirable outcomes – such as reduced patient satisfaction, delayed recovery, the onset of chronic post-surgical pain, and higher morbidity; hence, methods of enhancing acute postoperative pain management are required. Propofol is a widely used intravenous anesthetic medication, used as total intravenous anesthesia (TIVA) and can induce and maintain general anesthesia. Propofol has been linked with analgesia in both animal models and in healthy volunteer studies in humans. Thus, the type of general anesthetic used can influence acute postoperative pain management [3, 6]. The largest understanding of balanced anesthesia is the intravenous anesthesia which eliminates the requirement of inhalational agents such as halothane. The introduction of propofol into clinical practice has earned it a significant role in the anesthesiologist's armamentarium and the interest in the total intravenous anaesthesia has been rekindled by propofol. A perfect intravenous anaesthetic regime in day case surgery should have rapid recovery, early discharge with minimal side effects and must be cost effective. Propofol is the preferred drug in cases where the speed and smooth recovery is needed. Propofol anaesthesia has the following characteristics: the absence of the hangover effect and a low rate of nausea and vomiting. Besides, TIVA is used to avoid the pollution of operation theatres by inhalational anaesthetic agents, such as Halothane with Nitrous Oxide, and to compare the anaesthetic TIVA with the inhalational anaesthesia; to compare the anaesthetic TIVA with inhalant anaesthetics in terms of intra and post-operative hemodynamic profile, post operative recovery and unwanted side effects such as post-operative nausea vomiting (PONV) [2, 3, 4].

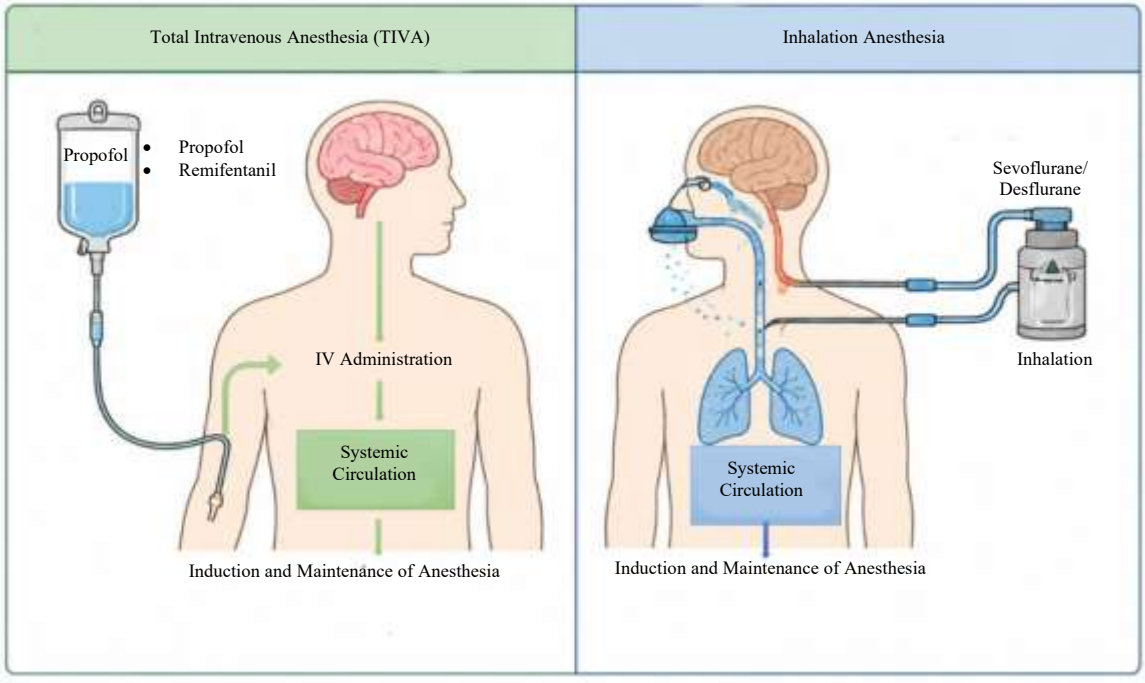

Figure 1. Xxxxxxx xxxxxxxxxxxxx.

Moreover, it has also been linked to the reduction of the length of stay, early discharge, less initial postoperative pain, decreased risk of postoperative nosocomial infections and venous thromboembolism (VTE) and less cancellation. Moreover, it has been linked to release of overnight hospital bed to major surgical cases, decreased surgery waitlists and fewer costs of surgery. Lastly, it

has been related to happier patients who get a treatment, which fits their requirements, and they can recuperate at home. Patient satisfaction may be termed as the extent to which the patients wanted expectations, goals and preferences of the healthcare provider and service to be fulfilled. Several types of anesthetic methods apply in same-day surgery. Different approaches are preferred in the hospitals and individual clinics depending on the nature of the surgery. General anesthesia in same-day surgery is commonly maintained through maintenance by either inhalation or intravenous. Several studies have indicated that there are slight variations in quality recovery, of the two anesthetic procedures in terms of time taken in discharging the patient as well as satisfaction of the patient. Nevertheless, Target Controlled Infusion (TCI) or Total intravenous anesthesia (TIVA) are reported to correlate with fewer cases of postoperative nausea (PONV) and have been demonstrated to be the most frequently used option by the anesthetist in the same-day surgery [1, 5].

D-day surgery rates are increasing at an alarming rate across the globe with 65 percent of the total number of surgeries performed on an outpatient basis in the U.S. The day-care surgeries offer an advantage to the patient, the hospital and the insurance companies as the results are not only a great safety record but also in a better level of care that is also cost-effective unlike the complex surgeries that can be done on patients with multiple co-morbidities. The drugs have enabled anaesthesia and pain management, and this has changed the status of patients who were viewed as high risk when it comes to outpatient surgery [6, 14].

ROLE OF TIVA IN DAY CARE SURGERY

The morphine Intake and the pain rating of TIVA patients were significantly lower than inhalational anesthesia patients during the initial 24 hours post-surgery due to the high dose infusion of remifentanil used in total intravenous analgesic methods. Nevertheless, pain scores, and morphine consumption between TIVA and sevoflurane patients have not differed with low dose remifentanil infusion as compared to the times when they were used to induce anaesthesia [3, 6]. Propofol is usually employed to induce an anaesthetic in day care surgery and is extensively employed as a part of TIVA. Propofol possesses a pharmacokinetic profile, which makes it preferable in maintaining anaesthesia as an intermittent dose. TIVA using propofol has been demonstrated to be better than inhalational anaesthesia in operations of brief duration regarding quick recovery and regaining fitness to the street. As numerous studies have shown, there are benefits of TIVA in conjunction with propofol on day care procedures. Propofol with oxygen mixture maintenance with adequate maintenance of anesthesia is sufficient to maintain normal levels of SpO_2. Moreover, TIVA minimizes the chances of formation of diffusion hypoxia which may arise among patients placed on O_2/Halothane/ N_2O mixture. A comparison of post-operative recovery by scoring Aldrete discovered that there was premature recovery in patients receiving TIVA relative to inhalation anaesthesia, but not significantly so [4, 15].

PERIOPERATIVE OUTCOMES

Hemodynamic Stability

Emphasis on hemodynamic stability is an important measure of the success of anesthesia in surgery. It has been demonstrated that TIVA, especially in combination with propofol, provides a more predictable blood pressure and heart rate control. As an example, have shown that TIVA patients who undergo neurosurgical procedures experienced much fewer changes in intraoperative blood pressure than patients on inhalational anesthesia [5].

Depth of Anesthesia

Another crucial metric is depth of anesthesia, which is used to guarantee the patient immobility and reduce the risk of operating mindfulness. TIVA provides accurate control of the depth of anesthesia with the adjustment of the infusion rate but in certain situations, the absence of measurable concentrations may be a problem [19].

Recovery Times

Increased anesthesia recovery is a way to improve the efficiency of the operating room and throughput of the patients. The TIVA is linked to a faster emergence time because of the pharmacokinetics of propofol

with a lower half-life context-sensitive half-life than volatile agents. The meta-analysis observed that the patients who have received TIVA usually started to have their consciousness restored 15–20% sooner than the ones who had undergone inhalational anesthesia [1, 6].

EFFECTS ON POSTOPERATIVE PAIN AND NAUSEA/VOMITING (PONV)

Postoperative Pain

Dexmedetomidine can minimize the postoperative pain and PONV occurrence [7].

Successful management of postoperative pains is one of the pillars of successful surgical outcomes. Research indicates that TIVA has been linked with decreased postoperative pain rating and decreased opioid use. Indicatively, reported that the patients that underwent abdominal surgery with TIVA needed 25% less morphine than those that were subjected to inhalational anesthesia. This is an advantage because propofol has the sparing effect of analgesia.

Post Operative Nausea and Vomiting (PONV)

PONV is an adverse event that is prevalent after general anesthesia, since it impacts patient comfort and recovery. TIVA has been demonstrated to play a huge role in the alleviation of PONV occurrence because of the lack of emetogenic volatile agents. conducted a systematic review which identified a 50 percent lower PONV rates in TIVA patients as compared to those on inhalational anesthesia [3, 4, 8].

The other factor, which affects the patient outcome is the presence of post-operative agitation and delirium [9].

TIVA produced a large increase in QOR, 8.5% (175 to 190) and 21.7% (156.5 to 190) as compared to study. TIVA has been found to enhance the QOR by 8%. TIVA has banked on the pharmacodynamic interaction between the propofol and short acting opioids to succeed. Nonetheless, dexmedetomidine has been successfully applied as a part of the of TIVA in laparoscopic cholecystectomy. TIVA missed request on the first analgesic, reduced pain scores, and tramadol rescue analgesia. applied the method of anesthesia with tranquilizing results and reduced the need to use rescue tramadol analgesic [6, 7, 18]. TIVA has been simplified, rendered safe, and accurate using target-controlled infusion pumps and depth of anaesthesia monitors. Newer drugs in use include ciprofol and remimazolam that hope to bring improvement to the practice of TIVA [2, 1]. As safe and effective drugs continue to be studied, the practice of TIVA is being done alongside administration of drugs and adjuncts to counter the shortcomings of each and to achieve full and balanced anaesthesia with extra advantages before and after surgery. TIVA modulation in the special population groups is still in the process. The progress in the digital technology using mobile applications has expanded the purview of TIVA in daily application [14]. The safe and effective practice of TIVA can be made through formulation and revision of guidelines. TIVA is also practicable by using routine infusion pumps among other circumstances when such advanced models of equipment are not present. TIVA can be done with either insertion of an endotracheal tube or supraglottic airway device, nasal or oral airway, or oxygen alone, without the insertion of any airway device. TIVA was first embraced in neurosurgery, day care surgery, as an addition to a regional or local anaesthesia, and as a sedation/analgesia during diagnostic/therapeutic operations. Recently, it has been found useful in oncosurgery, paediatric and geriatric surgery, cardiac surgery, and non-operating room anaesthesia (NORA) [5, 1]. Though the anti-emetic effect of propofol is well known and reported in other literature, the introduction of the same as a primary or first line measure to reduce PONV has yet to be transferred into clinical practice. Despite grade A1 evidence to lower the risk of baseline PONV during recent consensus guidelines, the adoption of TIVA as a default anaesthetic method is still lagging. For example, less than one out of every five general anaesthetics in the UK utilises propofol as maintenance [1]. TIVA also had an improved pain control during post-surgery surgery ($p = 0.001$) and 24 h later ($p = 0.1$). In recent past, a bit of evidence has been found relating exposure during intraoperative propofol with an intrinsic analgesic effect as evidenced by the lowered post-operative analgesic needs and lack of hyperalgesia [3,6]. TIVA combined with opioids has been shown to positively influence QOR following ambulatory surgery. Nevertheless, opioids may be linked to a higher rate of postoperative complications, and these complications may impact patient QOR. In ambulatory laparoscopy of gynecology using sevoflurane, discovered a significant decrease in QOR of 11.8% (156.5 to 170) in patients

who were receiving less opioid under sevoflurane. In the current study, there was a notable restoration in QOR by 8.5 percent (175 to 190) and 21.7 percent (156.5 to 190) with the assistance of OF TIVA compared to the research by. TIVA has been said to raise QOR by 8% [6,18]. TIVA has also depended on the pharmacodynamic interaction between the short acting opioids and the propofol to achieve success. Nevertheless, dexmedetomidine has been successful as a part of OF TIVA in laparoscopic cholecystectomy [7]. Higher usage of inhalational agents and opioids have been linked to increased occurrence of PONV [3, 8, 10].

The comparison between Total Intravenous Anesthesia (TIVA) and inhalational anesthesia shows their various benefits and drawbacks in various clinical dimensions. TIVA has proven to be better in particular aspects such as less postoperative nausea and vomiting (PONV), shorter recovery time, and better patient satisfaction. These benefits are especially effective in outpatient and high-risk groups [1, 3, 14]. TIVA also is less harmful to the environment, and thus makes it more sustainable option, in the framework of the contemporary healthcare delivery [10].

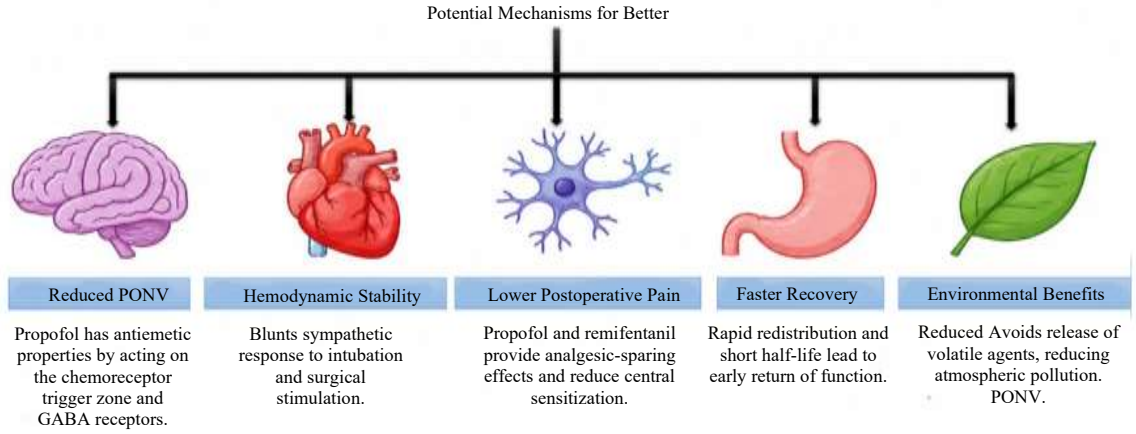

Figure 2. Xxxxxxx xxxxxxxxxxxxx.

PRESCRIPTION TO ANESTHESIOLOGISTS

- *Apply TIVA with High-Risk Populations:* TIVA ought to be given first priority to patients with high PONV susceptibility including patients with history of motion sickness or are undergoing extended surgeries. These advantages in obese and geriatric patients, such as accelerated recovery and less cognitive disruption, also strengthen the usefulness in these groups [8, 1].
- *Embrace Modern Surveillance Systems:* The use of BIS monitors during TIVA and the necessary presence of the correct end-tidal gas monitoring when using inhalational anesthesia make the process of safety and minimization of complications like awareness or over-sedation [9, 19].
- *Take Environmental Impact into Decision-Making:* Select the anesthetic methods, where feasible, which have lesser environmental footprints. Restricting the use of high GWP agents – like desflurane and including TIVA in the routine – are some of the steps to sustainable healthcare delivery [10].
- *Encourage Further Research:* Although the body of evidence underpinning the use of TIVA and inhalational anesthesia is strong, additional randomized controlled studies are required to investigate the long-term cognitive outcomes of the two methods, safety in certain groups, and their cost-effectiveness in varied health care scenarios [14, 6].

Impact on Discharge Time and Patient Satisfaction

The safety and efficiency of ambulatory surgery depend on the rapid recovery with full recovery. Post-anesthesia recovery is determined by key indicators of time to eye opening, recovery return to orientation, achievement of a modified Aldrete Score [?] 9, and discharge readiness. Also, fewer cases of postoperative nausea and vomiting (PONV) and an easy cognitive and psychomotor recovery are

vital to reducing unplanned admissions and enhancing experience aspects of patients. Nevertheless, even with the wide clinical applications, there are mixed results in the literature as to which one is better in this regard: TIVA or inhalational anesthesia. Faster emergence and early eye opening with volatile agents has been reported due to their insensibility to blood–gas solubility and short washout, although other studies have shown that TIVA yields a superior quality of cognitive recovery, substantially reduced rates of PONV, and sooner discharge readiness [1, 3, 14].

Routine orders, forms and checklists can be used to improve recovery and discharge care by eliminating unnecessary work. Both PACU Phase 1 (medical discharge) and Phase 2 (physical discharge) should have standardized, performance-based recovery criteria that are used to measure and report their preparedness. There are also formal scoring systems – the Modified Aldrete Post Anaesthesia Recovery Score during phase 1 and Modified Post-Anaesthesia Discharge Scoring System during phase 2. Post discharge follow up of the patient is the last phase of the ambulatory anaesthesia care process, where medical outcome of patient satisfaction is determined. Although the major adverse outcomes are not frequent, minor side effects are frequent post-operative ambulatory surgery and anaesthesia (86%). These side effects are not complications, but they do occur frequently enough to be anticipated. The most prevalent post-discharge effect is drowsiness. The aches as well as sore throat are frequent conditions among intubated patients. Headache and dizziness are also present; however, post-discharge nausea and vomiting are less prevalent. The patient can also take 2–3 days before they can go back to normal activities. These known side effects should be included in the preoperative patient education [13, 15].

The benefits of outpatient procedures are numerous and comprise of such variables as little psychological disturbances particularly among children, low chances of nosocomial infections, and low risks of venous thromboembolism (VTE). Patients will choose to heal at home and provide positive feedback concerning less waiting time and cancellations compared to the inpatient surgeries. The nursing and medical supervision and general hospital services are also reduced; therefore, outpatient surgery is also less expensive. There is also the reduction in time that a patient must wait to be treated as more patients can be treated and the recovery after anaesthesia will be swift as outcomes are faster turn-arounds, positive patient experiences, and cost reduction. Good pain control is also desired by a patient. This enhances the patient experience and the recovery because the eating, movement, and other daily activities can occur faster in case a patient is not in pain [6, 14].

Preoperative Discharge Instructions

Preoperative education refers to the act of teaching patients to assist them understand their procedure. It gives details regarding the procedure, experience and outcomes. Preoperative education is one of the aspects that enable the patient to be mentally and physically ready to undergo the procedure. This preparation and education is useful to the patient not only psychologically but also physically in preparing them to undertake surgical operations [11]. Preoperative discharge education has been reported to enhance the patient retention of the information and their satisfaction with the same instructions on the OAS–CAHPS survey [11]. The literature indicated that education offered by the surgeon often fails to satisfy the educational requirements of the patients and that the patients might not have the ability to remember and recollect the important information's presented to them by their surgeon preoperative. Further training enhances the perioperative experience [11]. Recovery does not occur on the same day as the procedure and discharge. Therefore, patients need to be educated on how to manage their recovery at home and recognize potential complications. This also demands that the patient and caregiver acquire a lot of information within a relatively short time, since these were same day surgeries [11].

Effect on Education and Length of Stay

One and a half hours of incentive spirometry instructional visit during the preoperative visit resulted in lowered expenses per day in the hospital starting on post-operative day one and through to discharge.

Besides reduced cost per day, the patients also enjoyed reduced LOS regarding the patients admitted to the hospital. Wongkietkachorn, also reported that preoperative teaching resulted in less length of stay [11]. The results of that study were that needs-based education had the potential of reducing the time taken during education by modifying the education based on the need of the patient. The patients in the study were required to complete a five-question survey on the extent to which they desired information (none, concise, or detailed) about their disease information, procedural detail, complications, patient behavior, and pain. Subjects were not allowed to decide against giving them the minimum information necessary on complications of their operation. What came out was that not every patient desired the level of information that was being taught as the standard education. The delivery of the demanded amount of education enhanced patient satisfaction, decreased education time, and also helped to reduce anxiety [11].

Education Effect on Complications and Outcome

Educated patients also have a higher chance of reporting side effects of the medication. This was because of early intervention resulting in minimized complications like nausea and vomiting or unmanageable pain. Patients with preoperative education on pain management strategies can achieve better results, with their pain scores being lower [12]. Authored that self-reporting outcomes of the patients who received presurgical teaching were better [11]. The same was agreed, who observed that the outcome scores of the patients that underwent preoperative education was better [11].

Effect of Education on Pain

Another greatest fear of an operating patient is postoperative pain. It was estimated that there will be moderate to severe pain in 30 to 50 percent of patients who have undergone surgery and this offered some credibility to the fears of the patient. [11]. Poor pain management resulted in reduced mobility, anxiety, and LOS, which prolonged complications and thus caused an increase in complications in the postoperative phase such as venous thromboembolism. Emotions and moods were also painful.

Educated patients were more inclined to employ non-pharmacologic pain management techniques to help in the management of postoperative pain. This assertion was supported. In their investigation of the implications of preoperative education on the usage of opioid pain medications by their patients they established that patients who underwent preoperative education showed reduced opioid use postoperative. This has been achieved without the control of pain and patients could still achieve recovery and rehabilitation objectives [12].

Education Effect on Anxiety

The psychological issues within the surgical arena included anxiety, which was one of the concerns that the individuals who provided education had to struggle with. It is a period of anxiety that started when informed of the necessity to undergo surgery and reached its peak when day of surgery arrived at the surgery centre. This fear and the signs of depression and negative ideas were connected with the expectations of physiological changes due to the procedure. Anxiety physiologic manifestations consist of high levels.

Levels of cortisol, adrenaline and noradrenaline. Such high stress hormones raised the level of pain and the need of analgesic medication after surgery [11]. Additional physiologic symptoms of this stress included sleep problems, worsening underlying medical illnesses, delayed recovery that eventually impacted the quality-of-life post-surgery [11].

Education is also often the key intervention and is an important component of mitigating the anxiety [11]. In their needs-based education study, concluded that providing preoperative education using the self-identified needs of the patient in congruence minimized their anxiety. About 50 percent of the patients under study desired succinct information pertaining to their disease information, complications, patient behavior and pain. Almost three-quarters desired succinct information pertaining to the procedure compared to the attainment of detailed information. Their research considered the theory of adult learning and various coping styles of adult patients. also agreed when they said that the medical language used by the physician and serious discourse can be intense and result in anxiety [11].

Since the quality of life of the patients is in recent years established as the main outcome of the clinical studies, the adequate recovery is reconsidered as the enhancement of the quality of recovery, involving both the increase of the level of comfort and the ability to regain the normal functioning. Nevertheless, patient quality of recovery might be not readily measured using traditional recovery metrics, i.e., awakening time, length of stay, or adverse events. Rather than these conventional methods, the Quality of Recovery-40 (QoR-40) questionnaire has been very popular to measure the difference in quality of the recovery based on the type of anesthesia or desflurane anesthesia based on administering adjuvant agents. propofol TIVA resulted in much higher scores on the physical comfort and physical independence dimensions of the quality of recovery on the postoperative day than did desflurane anesthesia. The physical comfort is made up of inquiries related to the mitigation of short-term consequences (e.g., Therefore, this field can offer data about the side effects and issues within the ambulatory surgery patients (TIVA reduces postoperative nausea and vomiting (PONV) when used instead of inhalation anesthesia). It has been established in studies that preoperative dexamethasone enhances quality of recovery [12].

A randomized trial demonstrated less early PONV (0–6 h) with propofol-based TIVA compared with balanced anesthesia [9]. The non-significant effect favoring less airway irritation with TIVA does not make scientific sense, as emergence coughing/irritation may more often occur with volatile maintenance, but mixed reports in the literature have been found between sevoflurane and TIVA on the matter of sore throat and PONV [10].

Application of Aldrete/Steward Matrics

The application of Modified Aldrete and Steward score is as per the standard PACU practice. Aldrete score is largely supported by physiologic readiness, but the reviews warn that the score needs to be combined with clinical variables (e.g., pain, arrhythmias, hypothermia, severe nausea) which do not necessarily change the score – strengthening the presence of qualitative outcomes and satisfaction [13].

TIVA-P demonstrates a potential of decreasing the PACU-I time and overall discharge time with a decreased use of antiemetics without affecting pain or satisfaction [14].

Recovery Assessment

The process of recovery was measured in two stages:

- *Phase I Recovery:* The time interval between cessation of anaesthetic condition and Aldrete score $\geqslant 9$.
- *Phase II Recovery (Home Readiness):* The interval between the cessation of anaesthetic to a PADSS score ≥ 9 [15].

Patient Satisfaction

Patient satisfaction is a set of factors, among which in addition to the quality of recovery, physical comfort and emotional condition should be included. TIVA has a stable higher score in the patient satisfaction surveys, especially in the Quality of Recovery-40 (QoR-40) scale. Established that TIVA patients said their quality of recovery and their anxiety levels would be less after the surgery than the inhalational anesthesia group. This increased satisfaction is achieved by improved comfort and reduced side effects [1].

One last factor is the patient satisfaction. When it comes to providing ambulatory care in hospitals, freestanding surgery centres (ASCs) and offices, most stakeholders are concerned with the quality of healthcare. Friendliness of staff was found to be the number one determinant of satisfaction with Ambulatory Surgery care. The ASA has specific indicators of quality in relation to ambulatory practice in the ASA Outcome-Indicators-For-Office-Based-And-Ambulatory-Surgery and the Society for Ambulatory Anaesthesia/SAMBA Clinical Outcomes Registry (SCOR). The national Centres of Medicare and Medicaid Services (CMS) in the USA have also developed several quality initiatives that are incorporated into the payment system. Physician quality program and inpatient hospital quality program, outpatient hospital quality program (outpatient surgery), and ASC quality program are available [6].

Education Effect on Patient Satisfaction

In case a patient felt that there was not enough information, the level of satisfaction with a surgeon and the experience of the surgery reduced [11]. The questions in the OAS–CAHPS survey (Appendix A) that are based on the discharge depend on the recall of the information to give a positive answer to the questions inquired. It is agreeable that nurses cannot expect physicians to offer the discharge education as it has been established that education administered by the surgeon is sometimes too little to enable the patient to retain or recollect the pertinent information required [11]. Concurred that patients were commonly being discharged with less or incorrect knowledge, and they could hardly recall much of what was told in the physician office. In this study, the discharge education was given to the patients before the surgery and reiterated at the time of discharge. Telephone survey was then conducted on patients after their procedure. The authors discovered that giving the postoperative discharge instructions both in writing and verbally preoperative enhanced patient satisfaction with their discharge instruction by an average of seven percent. The patients quoted that they were more ready to go home. This is a finding that seems to be replicated by Rice who found that the national percentile rank in terms of preoperative teaching about postoperative care rose to 99th percentile compared to 88th percentile [11]. Concurred, but said that written educational materials and verbal discussion and education were more effective than postoperative education in helping patients to say they were prepared to receive home-care [11]. Such patients also said they had a better knowledge and satisfaction with discharge instructions. The patients also responded better to the OAS–CAHPS survey question in the discharge area and the author observed that there was an increase in satisfaction scores during intervention. Reported that a preoperative course where the patients were provided with discharge instructions found that the patients had higher satisfaction and confidence in their home care as well as reduced anxiety levels. Explained that the evidence showed that dual format education involving both verbal and written instructions has been proven to enhance patient learning and satisfaction. The study of patients undergoing total knee and total hip arthroplasty reported that preoperative education aided patients to set their expectations regarding their treatment and resulted in more satisfaction [11]. The same result of preoperative education to create expectations which resulted in better satisfaction was also observed in the study of the spine surgery patients. This paper achieved statistically significant results of increased satisfaction with the patient in the intervention group who underwent preoperative education. Discovered that 84 percent of patients who were given preoperative education on incentive spirometry considered the education as helping. In the study, the patient satisfaction had a statistically significant increase when the patients received preoperative education [11].

The fact of slightly improved patient satisfaction with TIVA in study probably indicates the reduced PONV burden – one of the most potent predictors of patient perceived quality of recovery and readiness to leave the hospital the same day. The metatanalytic evidence indicates that with standardized antiemetic prophylaxis and control of surgical factors processes, an overall discharge preparedness and unexpected hospitalizations are generally similar across methods, in line with similar Aldrete/Steward scores and discharge time [13].

CONCLUSION

Total intravenous anesthesia (TIVA) and inhalational anesthesia are both effective techniques for ambulatory surgery; however, current evidence suggests that propofol-based TIVA offers several clinically important advantages. TIVA is associated with reduced postoperative nausea and vomiting (PONV), improved postoperative pain control, greater hemodynamic stability, enhanced quality of recovery, and higher patient satisfaction, making it particularly beneficial for high-risk patients and day-care surgical procedures. Although modern inhalational anesthetics provide rapid induction and emergence and remain reliable for routine practice, they are associated with a higher incidence of emetogenic effects and may not consistently achieve the same quality of recovery as TIVA. In addition to the choice of anesthetic technique, standardized recovery assessment, effective multimodal analgesia, and comprehensive preoperative patient education play essential roles in optimizing perioperative outcomes and facilitating safe early discharge. Future well-designed randomized controlled trials are

needed to evaluate long-term outcomes, cost-effectiveness, and the role of newer intravenous agents and monitoring technologies across diverse patient populations. Overall, TIVA represents a patient-centered and evidence-based anesthetic approach that can improve recovery quality and enhance the overall success of ambulatory surgery.

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