e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2024; 16(4); 1096-1098

Original Research Article

Study of Total Intravenous Anaesthesia in Laparoscopic Surgery in Telangana Population

Kothapally Girish Reddy[1], Swapna. T[2]

[1]Associate Professor, Department of Anaesthesiology, MediCiti Institute of Medical Sciences, Ghanpur (village), Medchal (Mandal), Medchal – Malkajgiri (district) Hyderabad-501401, Telangana.
[2]Associate Professor, Department of Anaesthesiology, CMR Institute of Medical Sciences, Kandlakoya village, Medchal Road, Hyderabad-501401, Telangana

Received: 25-01-2024 / Revised: 23-02-2024 / Accepted: 26-03-2024
Corresponding Author: Dr. Swapna. T
Conflict of interest: Nil

Abstract:

Background: Total intravenous anaesthesia (TIVA) is commonly used in gynaecological laparoscopic surgeries, but TIVA is yet to be assessed in laparoscopic surgeries because it is safer than inhalation aesthetic agents to maintain hemodynamic status.

Method: 50 adult patients aged between 20 to 65 undergoing laparoscopic surgery were studied. A solution of propofol containing different concentrations of sufentanil (1 µgm per ml and 2µ gm/ml) was infused. The patient's HR, SBP, DBP, MAP, and peripheral O_2 saturation from the anesthesia monitor were taken as baseline measurements. All the hemodynamic parameters were recorded intra-operatively at different intervals of duration.

Results: The changes in mean values of hemodynamic values were insignificant, and only significant parameters were noted. 156.10 (± 78.9) mean value of time to rescue analgesia (in minutes) Post-surgical complications are 4 (8%) nausea and vomiting.

Conclusion: It has been proven that the propofol and sufentanil combination is ideal for laparoscopic surgeries because of the lowest post-surgical complications and hemodynamic stability.

Keywords: Total intravenous, anaesthesia, hemodynamics, propofol, sufentanil, laparoscopy, Telangana.

Introduction

Total intravenous anaesthesia (TIVA) is an evolved concept of general anaesthesia that obviates the need for volatile anaesthesia. Propofol, a sedative hypnotic agent with excellent recovery characteristics at the end of infusion and additional antiemetic properties [1], has become the drug of choice for TIVA. Sufentanil has been combined with propofol in TIVA for various types of surgeries due to its advantages, like synergistic action with propofol, rapid induction, less cardiovascular and respiratory depression, and a smooth recovery profile [2].

In addition, early post-operative analgesia with operative use of safentanil has been proven to be better than fentanyl [3]. These properties can make sufentanil an excellent adjuvant to propofol in TIVA for laparoscopic surgeries where intraoperative hemodynamic fluctuations take place. Sufentanil-propofol TIVA provides speedy recovery of consciousness at emergence compared to inhalational anaesthesia and good post-operative analgesia [4]. However, sufentanil efficacy as an adjuvant to propofol in TIVA is yet to be justified in laparoscopic surgeries. Hence, an attempt is made to combine propofol with sufentanil in different proportions to evaluate the efficacy of both aesthetic agents.

Material and Method

50 (fifty) patients aged between 20 to 65 admitted to the MedicCiti Institute of Medical Sciences Hospital Ghanpur (village), Medchal (mandal), and Medchhal-Malkajgiri (district) Hyderabad-501401, Telangana were studied.

Inclusive Criteria: patients in grades I and II who gave written consent and were ready to undergo laparotomies were selected for the study.

Exclusion Criteria: Patients with known drug allergies, type II diabetes, cardiovascular disease, and immune compromised patients were excluded from the study.

Method: A detailed history of occupation and social status was noted. Pre-anaesthetic checkups were done, and solutions of propofol containing different concentrations of sufentanil were prepared

as per the protocol: 1 µg/ ml and 2 µg/ ml. Pre-induction measurements of heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), and peripheral oxygen saturation from the anaesthesia monitor were taken as the baseline measurements. All the hemodynamic parameters were recorded intra-operatively; separate recording of the time duration required for rescue analgesia was done, as was the prevalence of postoperative complications.

Duration of study: November 2022 to January 2024

Statistical analysis:

The hemodynamic parameters indicating the prevalence of complications were also noted.

The mean values of hemodynamic variables were statistically insignificant, and only significant parameters were noted. This was done in SPSS software. The ratio between males and females was 1:2.

Observation and Results

Table 1: The mean time for rescue analgesia in 50 (fifty) patients was 156.10 (± 78.72).

Table 2: Post-surgical complications were Nausea and vomiting in 4 (8%) of the patients

Table 1: Study of mean time to rescue analgesia

Parameter time to rescue	Total No. of Patients	Mean value
Analgesia (minutes)	50	156.10 (± 78.92)

Table 2: Study post-surgical complication

Parameters	No. of patients	Percentage (%)
Nausea and vomiting	4	8

Discussion

Present study of TIVA in laparoscopic surgery in the Telangana population. The mean time to rescue analgesia (in minutes) was 156.10 (± 78.9) minutes (Table 1), and post-surgical complications were nausea and vomiting in 4 (8%) patients (Table 2). These findings are in more or less agreement with previous studies [5,6,7].Day care surgery is a planned surgery where patients requiring early recovery and discharge are admitted for a short stay for surgery on a non-resident basis (8). Laparoscopic surgery is the most common surgical procedure performed worldwide and is widely used today for laparoscopic appendectomy, lap cholecystomy, laphernioplasty, other urology surgeries, and gynecological surgeries like diagnostic laparoscopy for infertility, hysteroscopy for embryo transfer, etc. TIVA is an evolved concept of general anesthesia that obviates the need for volatile anesthetics. Though laparoscopic surgical technique has a minimally invasive method, a stress response exists and runs throughout the peri-operative period of laparoscopic surgery, which alters hemodynamic parameters and may cause morbidity and mortality.

Hence, appropriate aesthetic drugs like propofol in combination with sufentanil in different concentrations are needed to reduce stress during the perioperative period. Sufentanil is an analogue of fentanyl suitable for post-operative pain control because it has no active metabolites, shows a higher therapeutic index, and has a lower frequency of respiratory suppression [9]. For outpatient surgeries, intravenous sufentanil produces equivalent anaesthesia to isoflurane or fentanyl. Recovery tends to be more rapid after sufentanil, and the requirement for post-operative analgesia is lower [10]. Propofol is the preferred intravenous agent in daycare surgeries as it has smooth induction, rapid recovery, and some antiemetic properties [11]. In the present study, only a few patients required additional sufentanil boluses to maintain an adequate depth of anaesthesia. Surfentanil mixed with propofol provides better hemodynamic stability in laparoscopic cholecystectomies with good postoperative analgesics.

Summary and Conclusion

Present TIVA in laparoscopic surgeries. Propofol is a sedative and hypnotic agent with excellent recovery properties, and sulfentanil, an opioid analgesic, enhances its properties. It is an ideal combination for laparoscopic surgery, but this study demands that such clinical trials of TIVA be conducted where larger numbers of patients and the latest technologies are available to confirm the significance of the results of the present TIVA study.

Limitation of Study –

Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest techniques, we have limited findings and results. This research paper was approved by the Ethical Committee of MediCiti Institute of Medical Sciences Hospital Ghanpur (village), Medchal (Mandal), Medchhal-Malkajgir (district) Hyderabad-501401, Telangana

References

1. Monk JP, Beresford R, Sufentanil A review of its pharmacological properties and therapeutic use Drugs, 1988, 36; 286-313.
2. Vuyk J, Mertens MJ: Propofol anesthesia and rational opiod selection. Anaesthesiology 1997, 87; 1548–1562.

3. Ahonen J, Olkkola K: Comparison of alfentarylfentany and sulfentanil for total intravenous anesthesia with propofol in patients undergoing coronary artery bypass surgery. R. J. Anaesth. 2000, 85; 533–34.
4. Subromanyam M, Sreeelakshmi B – Comparison of total intravenous anesthesia using propofol in laparoscopic surgery, Ind. J. Anaesth. 2009, 53; 467–79.
5. Nagata, Y Matsuki, and Y Ogino: Safety and efficacy of an automated anesthesia delivery system for total intravenous anesthesia with propofol, remifentanil, and rocuronium, Journal of Anaesthesia 2022, Vol. 36 (1), 96–10.
6. Prakash, LH Parate, MC Nagaraj The study of intranasal dexmedetomide during total intravenous anesthesia and endoscopic retrograde cholangiopancreatography. The Indian Anaesthetic Forum 2021, vol. 2 (2); 129–133
7. Y Chen, B Wang, L Yao: Maximum dosage of continued infusion of mivacurium for thyroid surgery under total intravenous anesthesia J. of Southern Medical University 2021, vol. 4 (1), 64–68.
8. Hoshikawa Y, Tsutsumi N: The effect of steep Trendelburg positioning on intraocular pressure and visual function during robotically assisted radical prostatectomy. The British Journal of Ophthalmology 2014, 98 (3); 305-8.
9. Bhattarai and PK Hamel: Comparison of fentanyl propofol and ketanine propofol combinations in induction and maintenance with intravenous anesthesia for surgical procedures Journal of Nepal Health Research Council 2021, vol. 18(4); 769–771.
10. RM Abazid, A Khatami, Hiatal hernia after robotic assisted coronary artery bypass graft surgery, Journal of Thoracic Disease 2021, col. 13 (2); 575–581.
11. Bosteels J, Van Hereneal B, The Position of Diagnostic Laparoscopy in Current Fertility Practice Hum Reprod. Update 2007, 13; 477–85.