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PROSPECTIVE COMPARATIVE ANALYSIS FOR GYNAECOLOGY LAPAROSCOPIC SURGERY BETWEEN PROPOFOL AND THIOPENTAL SODIUM – HALOTHANE ANAESTHESIA WITH RESPECT TO HAEMODYNAMICS, RECOVERY PROFILE AND SIDE – EFFECT INCLUDING POST-OPERATIVE NAUSEA, VOMITING & PAIN.

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ABSTRACT

Laparoscopic surgeries are gaining fame in today's world of ambulatory anaesthesia due to reduced hospital stay and quicker recovery. The present study is prospective comparative study of haemodynamic, recovery profile and side effects including PONV and pain relief using two different anaesthetic techniques: Propofol & Thiopentone – Halothane anaesthesia.

A convenient sample size of 60 patients undergoing elective gynaecology laparoscopic surgeries under General Anaesthesia were enrolled in this study. The inclusion and exclusion criteria were strictly adhered to and the method of anaesthesia was thoroughly standardised. All patients were premedicated with intravenous Midazolam & Pentazocine, received prophylactic antiemetic in the form of intravenous ondansetron. Intravenous propofol (2 mg/kg) was given for induction and maintenance of anaesthesia was with propofol (6 mg/kg/hr) in Group P. Intravenous thiopentone (4-6 mg/kg) was used for induction and maintenance was with halothane (0.5 – 2%) in group H along with oxygen and nitrous oxide (40:60) in both the groups.

Monitoring included heart rate, systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) at different time intervals along with special assessment of recovery characteristics were studied. PONV & pain were studied using emesis score & subjective pain score upto 24 hours. All the results were statistically analysed by using Chi – square test for qualitative data and unpaired student's 't' test between two groups and paired 't' test in same group for quantitative data significance assured was at $P < 0.05$.

Haemodynamically, increase in HR, SBP, DBP & MAP in pre to post pneumoperitoneum period for found to be more in Group P than in Group H and all these parameters return to near baseline values post-desufflation.

Recovery with respect to spontaneous respiration, Extubation, eye opening to commands and orientation was found to be faster in Group P than in Group H. Anaesthesia using propofol was associated with significantly less PONV than in inhalational technique with halothane after thiopentone induction. With respect to pain there was no difference between the two groups.

Based on the results, we concluded that anaesthesia with propofol is more suitable for gynaecological laparoscopic surgeries, its major advantage being significantly shorter time of emergence and recovery with less incidence of PONV.

KEYWORDS : Gynaecologic laparoscopy, Propofol, Thiopental – Halothane, Haemodynamic response, PONV, analgesia, Pneumoperitoneum.

Introduction

Now a days Laparoscopy is widely used for diagnosis and operative procedures. It has progressed to day care surgeries with reduced hospital stay and consequent reduction in health care cost. It is minimal invasive surgery. The pneumoperitoneum and the patient positions required for laparoscopy induces pathophysiologic changes that complicate anaesthetic management. [8]

Propofol is one of the most frequently used intravenous anaesthetic [1,3]. It has high lipid solubility. The kinetics of propofol allows rapid induction of anaesthesia, adequate maintenance, rapid return of consciousness and minimum post-operative nausea & vomiting [9,3,20]

Barbiturate thiopental has been the primary IV induction agent for more than 50 years. It is highly lipid soluble produces unconsciousness in fewer than 30 seconds and has short distribution half-life. Conversely its elimination half-life is of 18 hours and because of this has long lasting sedative effect and delayed emergence from anaesthesia.

We selected 60 patients of ASA grade I & II undergoing laparoscopic surgeries for gynaecological purposes and grouped them in group P patients – induction was with Propofol followed by maintenance of anaesthesia with Propofol infusion [4]. And in group H induction was with Thiopentone Sodium and maintenance with Halothane [17]. Haemodynamic changes [23] recovery profile including post – operative nausea and vomiting as well as pain relief and side – effects using two different anaesthesia techniques were studied.

Materials & Methods

After the approval by local ethics committee 60 patients of ASA I & II aged 18 – 60 years scheduled for various gynaecological elective procedures under general anaesthesia were included in study after an informed written consent was obtained from all the patients. The present study is a prospective, comparative study to compare haemodynamics, incidence of Post- operative Nausea, vomiting as well as pain relief using two different anaesthesia techniques [21]. Patients with clinically significant cardiovascular, pulmonary, renal or hepatic diseases or history of hypersensitivity to halogenated anaesthetic agents were excluded from the study.

Pre – anaesthesia check-up was done on day before and on morning of surgery. Clinical examination was done and routine investigations like Chest X-ray, blood sugar and ECG were done and reports noted. The method of anaesthesia was thoroughly standardised.

On the day of surgery, all the patients were weighed in kgs and height measured in centimetres. Patients received intravenous glycopyrrolate 4mcg/ kg before surgery. Monitors were attached and vital parameters like pulse, BP, SPO_2, ECG were noted. In OT, monitors like cardioscope, non – invasive blood pressure, pulseoxymeter and capnometer were attached. An infusion of RL 10 ml/kg was started. Patients premedicated with intravenous 0.03 mg/kg Midazolam and intravenous 0.05mg/kg Pentazocine hydrochloride 10 minutes prior to induction. All patients received 50 mg Ranitidine & Ondansetron 4 mgs (32, 27, 48).

After preoxygenation for 3 minutes General anaesthesia was induced in Group P with intravenous Propofol 2 mg/kg & Group H with intravenous Thiopentone sodium 4 – 6 mg/kg. Loss of eyelash reflex was considered as end point of induction. Intravenous Succinylcholine 2 mg/kg was given to facilitate endotracheal intubation. Intravenous Atracurium 0.6 mg/kg was used for

neuromuscular blockade in both the groups. In Group P, anaesthesia was maintained with continuous infusion of Propofol (1%) at the rate of 6 mg/kg/hr along with N_2O (50%) and Oxygen (50%). Controlled ventilation was done by using Bain's circuit. After induction pneumoperitoneum was established using CO_2 as insufflating gas. Before the start of surgery patient was given Trendelenburg's position. ECG, NIBP, Heart rate, SpO_2 and E_TCO_2 were monitored throughout. These parameters were recorded before sedation, 10 minutes post sedation, before pneumoperitoneum, 10 minutes post – pneumoperitoneum and 5 minutes post – desufflation in both the groups to compare haemodynamic response. Intramuscular Diclofenac sodium was given half hour prior to the end of surgery for analgesia. Administration of maintenance anaesthesia was stopped at the time of last skin suture & time recorded as end of anaesthesia. Patient breathed 100% O_2 with fresh gas flow of 6L/minute thereafter till awakening.

After completion of surgery reversal of neuromuscular blockade was achieved with intravenous 8 mcg/kg glycopyrrolate and 50 mcg/kg of Neostigmine. The time at which patient started breathing spontaneously and time to extubate were noted. The time at which patient opened their eyes, respond to simple commands and orientation to time were recorded to compare the difference in the recovery time in both the groups.

Post – operative Nausea and vomiting were studied at 30, 60, 90, 120 minutes and 24 hours after anaesthesia using emesis score.

0 -Nausea & vomiting
1 -Nausea
2 -Retching
3 -Vomiting
4 -Vomiting ≥ 2 episodes

Patients having emesis score ≥ 3 were given rescue medicine inform of intravenous metoclopramide 10 mgs.

Similarly, pain score was recorded at 30, 60, 90, 120 minutes and 24 hours using subjective pain score.

1. Patient appears comfortable & calm & not complaining
2. Patient is wide awake & complaining of pain
3. Patient awake & is always of pain sometimes
4. Patient experiencing complaining of pain

Patient having pain score ≥ 3 were given rescue medicine in form of intravenous tramadol 50 mg. the significance of difference between the two groups were determined by using Chi – Square test for qualitative data and unpaired student's 't' test in the same group for quantitative data.

Significance was assured at $P < 0.05$.

Observation and Results

60 patients belonging to ASA Garde I – II were divided I 2 groups. The patients in our study were belonged to age group 19 – 45 years. There was no significant difference in the mean age or weight and distribution among patients in two groups.

Table 1: Comparison of demographic data

	Mean ± SD	
	Group P	**Group H**
Age (years)	28.6 ± 6.68	28.7 ± 5.52
Height (cms)	164. 37 ± 5.59	164.07 ± 7.16
Weight (kgs)	43.6 ± 9.02	47.27 ± 1.64
Duration of surgery	55.5 ± 25.06	49.67 ± 17.47
Duration of Anaesthesia time	71.33 ± 25.32	74.03 ± 19.85

Thus, demographic data was comparable between the two groups which was not significant.

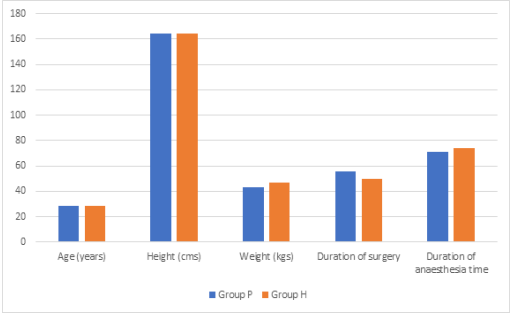
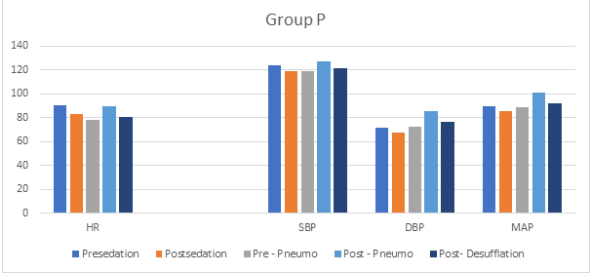


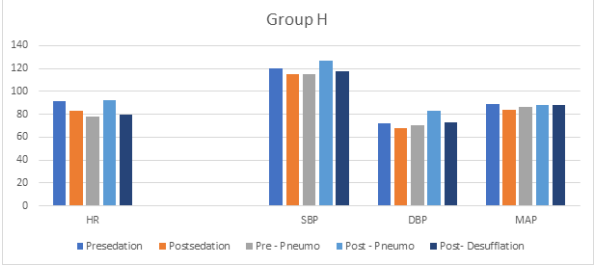
Table 2: Changes in Hear Rate, Systolic Blood Pressure, Diastolic Blood Pressure & Mean Arterial Pressure at different intervals between of both groups at various time intervals.

Group P

	Group P				
	Presedation	**Postsedation**	**Pre - Pneumo**	**Post - Pneumo**	**Post- Desufflation**
HR	90.80 ± 13.92	83.27 ± 10.09	78.00 ± 9.94	89.67 ± 9.28	80.60 ± 10.45
SBP	123.83 ± 8.65	119.17 ± 8.31	119.30 ± 8.57	127.30 ± 9.94	121.63 ± 6.70
DBP	71.30 ± 8.81	67.37 ± 5.89	72.80 ± 6.77	85.70 ± 7.13	76.20 ± 5.42
MAP	89.97 ± 7.37	85.33 ± 5.60	88.87 ± 6.30	101.03 ± 7.06	91.87 ± 4.78
Group H					
HR	91.27 ± 9.05	82.77 ± 9.24	78.20 ± 10.05	92.57 ± 9.85	80.00 ± 11.24
SBP	119.80 ± 7.21	114.97 ± 7.46	115.47 ± 11.58	126.77 ± 11.54	117.43 ± 10.09
DBP	71.87 ± 7.86	67.73 ± 7.60	70.27 ± 9.02	83.40 ± 8.60	72.70 ± 8.16
MAP	88.57 ± 6.07	83.87 ± 6.83	86.43 ± 9.20	88.33 ± 6.47	88.33 ± 6.47



Heart Rate & Diastolic Blood Pressure at different intervals were not significant between the two groups with $P > 0.05$.



Systolic Blood Pressure between the groups was not significant at different intervals except for post sedation value which was

significant with P < 0.05.

In Presedation, Postsedation and Pre – Pneumoperitoneum period MAP values were not significant with P > 0.05 between the two groups.

However, in Post – Pneumoperitoneum period MAP in Group P was 101.03 ± 7.06 whereas in Group H MAP was 88.33 ± 6.47 which was highly significant with P < 0.001.

In Post – Desufflation period, the MAP value in Group P was 91.87 ± 4.78 and in Group H was 88.33 ± 6.47 which was significant.

Table 3: Comparison of HR, SBP, DBP and MAP b3etween Pre – pneumoperitoneum and Post – Pneumoperitoneum in Group P.

	Mean ± SD	
	Pre – Pneumoperitoneum	Post – Pneumoperitoneum
HR	78 ± 9.94	89.67 ± 9.28
SBP	119.50 ± 8.44	127.13 ± 9.42
DBP	72.80 ± 6.77	85.7 ± 7.13
MAP	88.87 ± 6.30	101.03 ± 7.06

Comparison of HR, SBP, DBP and MAP in Group P before and after pneumoperitoneum were highly significant indicating the haemodynamic changes.

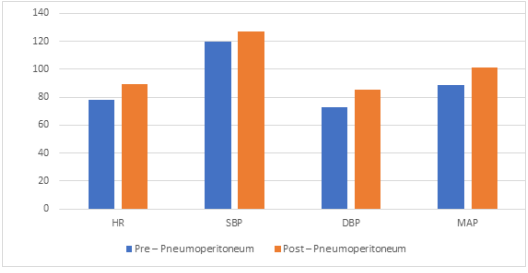


Table 4: Comparison of HR, SBP, DBP and MAP between Pre - Pneumoperitoneum and Post – Pneumoperitoneum in Group H.

	Mean ± SD	
	Pre – Pneumoperitoneum	**Post – Pneumoperitoneum**
HR	78.20 ± 10.05	92.57 ± 9.85
SBP	115.47 ± 11.58	126.77 ± 11.54
DBP	70.27 ± 9.02	83.40 ± 8.60
MAP	86.43 ± 9.20	99.53 ± 7.51

These values were highly significant indicating that pneumoperitoneum produce increase in HR, SBP, DBP & MAP during laparoscopy (8, 15, 16, 23).

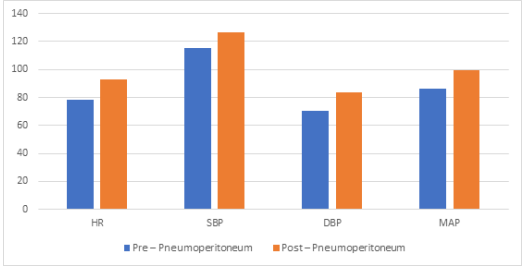


Table 5: Comparison of recovery profile between patients of both the groups.

Mean ± SD			
	Group P	**Group H**	**P value**
Spontaneous Respiration	2.43 ±0.94	5.50 ± 1.33	< 0.001
Extubation	3.30 ± 1.02	6.70 ± 1.34	< 0.001
Eye Opening	4.13 ± 1.11	7.80 ± 1.27	< 0.001
Orientation	4.43 ± 1.04	8.80 ± 1.21	< 0.001

The recovery profile between the two groups is highly significant.

The study revels faster recovery in respect to spontaneous respiration, Extubation, eye opening and orientation in Group P then in Group H.

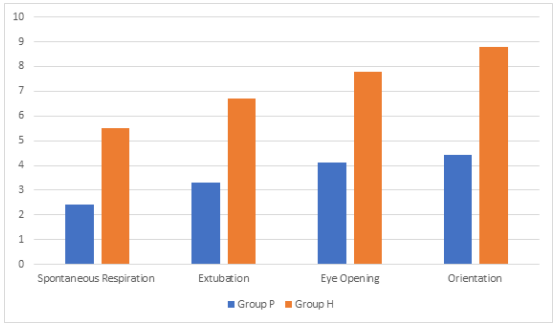
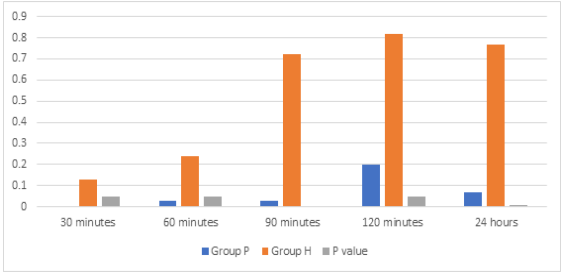


Table 6: Comparison of emesis score of patients between two groups.

Mean ± SD			
	Group P	**Group H**	**P value**
30 minutes	0	0.13 ± 0.57	> 0.05
60 minutes	0.03 ± 0.18	0.24 ± 0.44	< 0.05
90 minutes	0.03 ± 0.18	0.72 ± 0.84	< 0.001
120 minutes	0.2 ± 0.76	0.82 ± 0.98	< 0.05
24 hours	0.07 ± 0.26	0.77 ± 1.21	< 0.01



In this study, in Group P at 30 minutes no patient had nausea and vomiting at 60 & 90 minutes only one patient had nausea (3.33%) respectively whereas at 120 minutes 2 patients had nausea (6.66%) and one patient experienced vomiting (3.33%). In PACU, none of the patients vomited but two patients had nausea (6.66%).

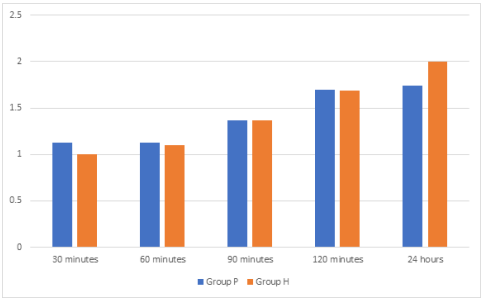
In Group H at 30 minutes one patient had nausea (3.33%) and one patient vomited (3.33%). At 60 minutes seven patient had nausea (23.33%). At 90 minutes ten patients had only nausea (33.33%), four patients had retching (13.35%) and one patient had one episode of vomiting (3.33%). At 120 minutes, seven patients had nausea (23.33%), five patients had retching (16.66%) and two had vomiting (6.66%). Similarly, in PACU 24 hours post – operative four patients had retching (13.33%) and four had vomiting (13.33%).

Thus, one patient in Group P and eight patients in Group H received rescue medication in form of intravenous metoclopramide (10 mcg). (14, 17, 19)

Thus, the incidence of post–operative nausea and vomiting was much less in Group P as compared to Group H. And difference was highly significant.

Table 7: Comparison of pain in both the Groups

Mean ± SD		
	Group P	**Group H**
30 minutes	1.13 ± 0.18	1 ± 0
60 minutes	1.13 ± 0.35	1.10 ± 0.31
90 minutes	1.37 ± 0.49	1.37 ± 0.56
120 minutes	1.7 ± 0.76	1.69 ± 0.66
24 hours	1.74 ± 0.76	2.00 ± 0.65



Pain (10, 12) was studied for 24 hours using subjective pain scale which was found to insignificant between both the groups.

Discussion

Anaesthesia for the laparoscopy has been established with broad usage of agents and techniques. The aim of our study was to compare two anaesthesia techniques in laparoscopic surgery. This study is prospective study of haemodynamic changes including HR, SBP, DBP, MAP at different intervals as well as recovery characteristics including Post – Operative Nausea & Vomiting and pain relief between propofol and thiopentone – halothane group which was carried out in 60 patients, 30 in each group, aged 19 – 45 years belonging to physical status ASA I & II. All these patients underwent elective gynaecological laparoscopic surgeries under general anaesthesia. In our present study, we have used bolus intravenous propofol 2 mg/kg for induction of anaesthesia. In pilot cases conducted in our study, patients had severe hypotension & bradycardia with maintenance dose of 8 – 10 mg/kg/hr of propofol in spite of preloading. Hence, we decided to reduce maintenance dose of propofol to 6 mg/kg/hr in contrast to study conducted P. M. R. M. DeGrood et al who used 12 mg/kg/hr of propofol for first 15 minutes, then 9 mg/kg/hr for another 25 minutes and thereafter 6 mg/kg/hr by continuous infusion. A. Klockgether Radke et al after bolus IV dose of propofol started infusion of propofol at a rate of 10 mg/kg/hr for 30 minutes followed by 6 mg/kg/hr thereafter which is also consistent with our study,

In this study, we have attempted to standardised the method and the technique of anaesthesia-

1) Both the groups received intravenous Midazolam (0.03 mg/kg) and intravenous Pentazocine (0.3 mg/kg) as premedication.
2) Both the groups received prophylactic intravenous Ondansetron (0.08 mg/kg) as earlier studies [3, 27, 32] showed increased incidence of PONV after laparoscopic surgeries.

After preoxygenation of the patient with 100% oxygen induction of anaesthesia was as follows:

Group – P: Patients received intravenous Propofol (2 mg/kg)

Group – H: Patients received intravenous Thiopentone (4-6 mg/kg)

After induction of anaesthesia, patients were intubated and they received intravenous atracurium 0.6 mg/kg for neuromuscular blockade.

For comparing the haemodynamic response in both the groups heart rate, systolic blood pressure, diastolic blood pressure and mean arterial pressure were recorded at different time intervals that is before sedation, 10 minutes after sedation, before pneumoperitoneum, 10 minutes after pneumoperitoneum and 5 minutes after desufflation.

In the present study, in Propofol group, the heart rate, systolic blood pressure, diastolic blood pressure and mean arterial pressure increased from mean values of 79 ± 9.94, 119.50 ± 8.44, 72.80 ± 6.77, 88.87 ± 6.30 in prepneumoperitoneum to 89.67 ± 9.28, 127.13 ± 9.42, 85.70 ± 7.13, 101.03 ± 7.06 in post-pneumoperitoneum period and decreased to 80.60 ± 10.45, 121.63 ± 6.70, 76.20 ± 5.42, 91.87 ± 4.78 in post-desufflation period respectively.

Similarly, in halothane group, heart rate, systolic blood pressure, diastolic blood pressure and mean arterial pressure increased from mean values of 78.20 ± 10.05, 115.47 ± 11.58, 70.27 ± 9.02, 86.43 ± 9.20 in prepneumoperitoneum to 92.57 ± 9.85, 126.77 ± 11.54, 83.40 ± 8.60, 99.53 ± 7.51 in post-pneumoperitoneum period and decreased to 80 ± 11.24, 117.43 ± 10.09, 72.70 ± 8.16 and 88.67 ± 6.17 in post-desufflation period respectively.

Thus, our study demonstrated that the increase in heart rate, systolic blood pressure, diastolic blood pressure and mean arterial pressure in prepneumoperitoneum to post-pneumoperitoneum period interval was found to be more in propofol group than in halothane group and all these parameters returned to near baseline values after desufflation of the pneumoperitoneum in both the groups. The increased haemodynamic parameters in the propofol group may be due to the lighter plane of anaesthesia due to lesser dose of propofol used (88 µg/kg/minute) for maintenance of anaesthesia than recommended by other studies.[7,17]

P. M. R. M. DeGrood, et al [7] conducted a study in 1987 regarding 'Anaesthesia for Laparoscopy – A comparison of five techniques including propofol etomidate, thiopentone and isoflurane'. In this study, for first two groups, propofol and etomidate were used for TIVA. Propofol, etomidate and thiopentone were used as induction agents prior to inhalational anaesthesia with isoflurane and nitrous oxide in the remaining three groups. Fentanyl was used for analgesia for all five groups. TIVA using propofol in the maintenance dose of 6 mg/kg/hour required intermittent extra bolus doses to provide stable anaesthesia. No difference was observed between the groups with regards to changes in arterial blood pressure and heart rate. Recovery was most rapid following total intravenous anaesthesia with propofol. Post-operative side effects like PONV were much lower after propofol.

Hiravonen [14], studied haemodynamic changes due to Trendelenburg positioning and pneumoperitoneum during laparoscopic hysterectomy. The conclusion of the study was anaesthesia and Trendelenburg position increased the CVP, PCWP and pulmonary arterial pressures and decreased cardiac output. Pneumoperitoneum increased these pressures further mostly in the beginning of the laparoscopy and cardiac output decreased at the end of laparoscopy, however, heart rate remained stable.

In our study, non-invasive monitoring in the form of heart rate, systolic blood pressure, diastolic blood pressure and mean arterial pressure was done. There was a increase in heart rate from prepneumoperitoneum to post-pneumoperitoneum period and this may be a compensatory mechanism following decrease in CO as a result of increased IAP which produces decreased IVC blood flow and increases cardiac afterload. The increase in afterload cannot be considered to be a reflex sympathetic response to decrease CO. The SVR also increases leading to increase in arterial pressures more over diastolic pressures and all these changes are due to increasing cardiac afterload and decreasing preload.

Thus, our results are in agreement with the above-mentioned results.

Despite the alternations in physiology noted in our study, it should be emphasized that clinically we encountered no major anaesthetic difficulty or complications in the form of cardiac arrhythmias, pneumothorax or subcutaneous emphysema.

In this study, the recovery profile which included spontaneous respiration, time to Extubation, eye opening and orientation was 2.43 ± 0.94, 3.30 ± 1.02, 4.13 ± 1.11, 4.43 ± 1.04 in Propofol group and 5.50 ± 1.33, 6.70 ± 1.34, 7.80 ± 1.27 and 8.80 ± 1.21 in Halothane group respectively.

Immediate recovery from anaesthesia after TIVA using Propofol was rapid. As seen earlier the time between opening eyes on command and answering questions was remarkably short. The slowest recovery was shown after thiopentone – isoflurane anaesthesia.

Recovery characteristics and post-operative oxygenation using TIVA with propofol or inhalational anaesthesia with isoflurane for major abdominal surgeries was studied by A. S. Philips, et al [34]. In the study, anaesthesia was induced in isoflurane group with thiopentone 3-5 mg/kg and was maintained with 67% N_2O in oxygen and isoflurane in concentration necessary for adequate anaesthesia. In Propofol group, anaesthesia was induced with propofol 1.5 – 2.5 mg/kg and was maintained with an infusion of propofol commenced at 10 mg/kg/hour, reduced to 6 mg/kg/hour at 10 minutes intervals. Thereafter, rate was adjusted as clinically appropriate. Both the groups received a bolus dose of alfentanil 30 µgm/kg/min. The time to Extubation, opening eyes to command and giving correct date of birth after discontinuation of all anaesthesia were recorded. The time for spontaneous respiration, Extubation, eye opening to commands and orientation were much shorter in propofol group (5.3, 9.3 14. 25.5 respectively) as compared to isoflurane group (7.3, 12.1, 18.5, 35.3 respectively).

The recovery time in our present study is comparatively much lesser than the above-mentioned studies. This may be due to the lesser doses of Propofol used for maintenance of anaesthesia as well as use of nitrous oxide which may have reduced the anaesthetic requirement. In addition, we have used NSAIDs for pain relief rather than opioids which was used in the form of pentazocine for premedication in lesser dose.

PONV continues to be a common post-operative problem especially, in the day-care surgery [14, 17, 20]. The incidence of PONV in patients undergoing laparoscopic surgery has been reported to be very high which may delay the discharge from the hospital.

In the present study, incidence of PONV in Group – P received rescue medicine in the form of intravenous metoclopramide whereas 7 patients from Group – H received rescue medication.

Klockgether – Radke, et al [17], in 1996, studied 60 patients scheduled for laparoscopic cholecystectomy or inguinal herniotomy. Group – H: induction with thiopentone 4 – 6 mg/kg fentanyl 2 µg/kg, pancuronium 0.03 mg/kg and succinylcholine 1 mg/kg, maintenance with halothane (0.8 – 1.5%) and N_2O in O_2 (FiO_2= 0.33). Group – P: induction with propofol 2-3 mg/kg fentanyl 2 µg/kg, pancuronium 0.03 mg/kg and succinylcholine 1 mg/kg, maintenance with propofol 6 – 10 mg/kg/hour and O_2 in N_2 (FiO_2= 0.33). Seven of the patients experienced nausea in each group with Group – H having higher emetic scores. Six patients in Group – H vomited compared to none in Group – P. The overall incidence of emetic sequalae was 43% in Group – H and 23% in Group – P.

In our study, lesser incidence of PONV noted in Group – P compared to the above study may be attributed to prophylactic administration of intravenous ondansetron and avoidance of opioids.

Pre-emptive analgesia is a must to achieve home readiness and discharge to patients in day care surgery. In our study, there was not much difference in pain relief in both the groups. Eight patients in Group – P and 10 patients in Group – H received rescue medication in the form of intramuscular diclofenac sodium.

Conclusion

Laparoscopy in general induced moderate adverse haemodynamic changes in healthy patients which included tachycardia, elevated mean arterial pressures along with increased incidences of post-operative nausea and vomiting.

In conclusion, in sixty patients undergoing laparoscopic gynaecological surgeries, anaesthesia using propofol was associated with more haemodynamic changes. These may be attributed to lesser dose of propofol used and hence we recommend that higher doses of propofol should be used for maintenance anaesthesia. The recovery form anaesthesia after propofol was rapid compared to halothane. Propofol was associated with significantly less post-operative vomiting than inhalational technique with halothane.

Thus, propofol anaesthesia is more suitable for gynaecological laparoscopic surgeries, its major advantage being significantly shorter time of emergence and recovery from anaesthesia and less incidence of post-operative nausea and vomiting.

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