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Original Research Article

A Comparative Study of Hemodynamic Stability in Patients Receiving Propofol with Fentanyl and Propofol with Dexmedetomidine during Tracheal Intubation in Laparoscopic Cholecystectomy.

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Abstract

Background and introduction: Laparoscopic surgery have many advantages such as reduced postoperative pain, speedy recovery. Most of laparoscopic cholecystectomy is performed under general anaesthesia. Direct laryngoscopy and intubation often results in a profound sympathetic response which leads to tachycardia, hypertension. The techniques such as increasing the depth of anaesthesia, various drugs such as opioids (fentanyl), local anesthetics (lignocaine), beta adrenergic blockers, vasodilators (nitroglycerin), calcium channel blockers (diltiazem) and alpha 2 adrenergic agonists (clonidine, dexmedetomidine) have been used to minimize these adverse responses.

Methodology: Patients were divided randomly in 2 groups (40 patients in each group) using block randomization. Patients in Group F were administered with IV Fentanyl 2 mcg/kg in 100 ml normal saline loading dose over 10 minutes. Patients in Group D were administered with IV Dexmedetomidine 1 mcg/kg in 100 ml normal saline over 10 minutes. Hemodynamics was monitored throughout the entire procedure of laryngoscopy, intubation, 2 and 5 minutes post intubation. Maintenance of anaesthesia was done as standard protocol. Patients were monitored for pain intensity using Visual Analogue Scale (VAS), at interval of 30 minutes till 2 hours.

Observation and Results: Demographic profile were similar in both groups. Heart rate and MAP at baseline and before premedication was similar in both groups ($p>0.05$). After study drug and induction, Heart rate decreased in both groups and was significantly lower in Group F as compared to Group D Just after intubation, at 2 minutes and 5 minutes post intubation, heart rate remained higher in Group F than in Group D. After study drug and induction MAP was lower in Group D as compared to Group F. Just after intubation, at 2 minutes post intubation and at 5 minutes post intubation MAP was higher in Group F than in Group D.

Conclusion: Hence, from the present study it can be concluded that though both the study drugs are effective in blunting the hemodynamic stress response, dexmedetomidine is better among the two study drugs. Both the drugs provide good analgesia but dexmedetomidine provided better analgesia in the postoperative period.

Keywords: Laparoscopic surgery, Propofol, Fentanyl, Dexmedetomidine

Introduction

Laparoscopic surgery aims to minimize trauma of the interventional process but still achieve a satisfactory therapeutic result. It have many advantages such as reduced postoperative pain, speedy recovery and early return to normal activities, reduced hospital stay, and reduced postoperative pulmonary complications. [**1]**

Most of laparoscopic cholecystectomy is performed under general anaesthesia. Appropriate patient selection with proper monitoring to detect and reduce complications must be used to ensure optimal anesthesia care during laparoscopic cholecystectomy. [**2]** General anesthesia without endotracheal intubation can be used safely and

effectively with a ProSeal laryngeal mask airway in non-obese patients. [**3,4]**The uses of rapid and short acting volatile anesthetics such as sevoflurane and desflurane as well as rapid and short acting intravenous drugs such as propofol, etomidate, remifentanil, fentanyl, atracurium, vecuronium and rocuronium are commonly used and have allowed anesthesiologists to more consistently achieve a recovery profile. Propofol is effective and safe even in children and elderly patients. **[5-9]** The ideal anaesthetic technique for laparoscopic surgery should maintain stable cardiovascular and respiratory functions, provide rapid post-operative recovery, lead to minimal post-operative nausea and vomiting (PONV) and provide good post-operative pain relief for early mobility. The safest technique of anaesthesia remains GA with endotracheal intubation in those with no contraindications, with maintenance of intra-operative end-tidal carbon dioxide (EtCO2) around 35 mmHg with adjustments in tidal volume or respiratory rate. [10], General anaesthesia were accompanied by laryngoscopy and tracheal intubation. Direct laryngoscopy and intubation often results in a profound sympathetic and sympathoadrenal response which leads to tachycardia, hypertension and in predisposed individuals may lead to arrhythmias. The increase in blood pressure ranges from 40-50% and an increase in heart rate may up to 20% may be observed. This response even only temporary, may be in healthy patient it is not dangerous but in patients who have had previous risk factors such as hypertension, coronary artery diseases, cerebrovascular disease and intracranial aneurysm it may be dangerous.

Various ways or techniques have been used to prevent or reduce the hemodynamic responses at the time of laryngoscopy and intubation. The techniques or ways such increasing the depth of anaesthesia, various drugs such as opioids (fentanyl and alfentanyl), local anesthetics (lignocaine), beta adrenergic blockers, vasodilators (nitroglycerin), calcium channel blockers (diltiazem) and alpha 2 adrenergic agonists (clonidine,dexmedetomidine) have been used to minimize these adverse responses.

This study was planned to find out which drug combination among fentanyl and dexmedetomidine is better along with propofol for decreasing hemodynamic stress responses during laryngoscopy and intubation.

Methodology

In this double-blinded prospective randomized controlled interventional study, conducted at the Department of Anesthesia, Govt. RDBP Jaipuria Hospital, RUHS CMS, Jaipur, after obtaining institutional ethical committee approval, a comprehensive investigation took place. The research involved a participant pool consisting of adult patients aged 18 to 55, both male and female, falling within ASA I and II categories, and scheduled to undergo laparoscopic cholecystectomy. The data collection spanned from April 2019 to January 2020.

The determination of the sample size factored in an alpha error of 0.05 and a study power of 90%. This calculation established a minimum of 36 subjects per group, and considering a 10% attrition rate, the sample size was rounded up to 40 patients for each group. To ensure impartiality, block randomization was employed, utilizing computer-generated random numbers from www.random.org for the randomization process.

Eligible participants for the study included adults aged 18 to 55, slated for laparoscopic cholecystectomy under general anesthesia, with an ASA I or II classification, and a Mallampatti grade of 1 or 2. Patients with allergies to the study drugs, procedures exceeding 2 hours in duration, and co-morbidities such as hypertension, diabetes mellitus, or cardiorespiratory illnesses were excluded. Written informed consent was diligently obtained from all subjects following a detailed explanation of the study.

On the day of surgery, all patients observed an 8-hour fasting period. The study drugs were prepared by an anesthesiologist who was not involved in the study, ensuring blinding. Patients and the anesthesiologist responsible for their care were both unaware of the drug administered (double blinding).

In the operating theater, continuous vital parameter monitoring was performed, including pulse, blood pressure, and oxygen saturation, using ECG, pulse oximetry, and NIBP ETCO2. General anesthesia was administered according to established protocols. Pre-induction sedation included IV midazolam at 0.03 mg/kg and glycopyrrolate at 0.2 mg.

Patients were randomly divided into two groups, each comprising 40 patients, through block randomization. Group F received IV Fentanyl (2 mcg/kg) in 100 ml normal saline over 10 minutes, while Group D received IV Dexmedetomidine (1 mcg/kg) in 100 ml normal saline over 10 minutes.

The surgical procedure involved induction with IV propofol (2 mg/kg), tracheal intubation facilitated by IV succinylcholine (2 mg/kg), and continuous hemodynamic monitoring. A loading dose of IV atracurium (0.4 mg/kg) was administered. Anesthesia maintenance was achieved through IV atracurium (0.1 mg/kg), 50% N2O, 50% oxygen, and inhaled sevoflurane. Hemodynamic parameters, heart rate, blood pressure, SpO2, and EtCO2 were continuously measured during the intraoperative period. Post-incision, IV Paracetamol (1 gm) was administered to both groups for pain management.

At the conclusion of the surgery, patients were reversed with IV neostigmine (0.05 mg/kg) and IV glycopyrrolate (0.01 mg/kg). Extubation occurred after achieving complete anesthesia reversal and

stabilizing the patient's vital signs. Pain intensity and hemodynamics were closely monitored in both groups using the Visual Analogue Scale (VAS) at 30-minute intervals for up to 2 hours. If patients reported pain, they received a 75 mg injection of Diclofenac. The total analgesic consumption during the hospital stay was also recorded.

Statistical Analysis : For statistical analysis, continuous variables were summarized as mean and standard deviation, assessed using a student t-test. Ordinal variables like VAS score were expressed as median and interquartile range and analyzed using the Mann Whitney U test. Nominal/categorical variables were represented as frequencies and proportions (%) and analyzed using the Chi-square test or Fischer exact test where applicable. A p-value of <0.05 was considered statistically significant, and the analysis was conducted using Epi Info version 7.2.1.0 statistical software.

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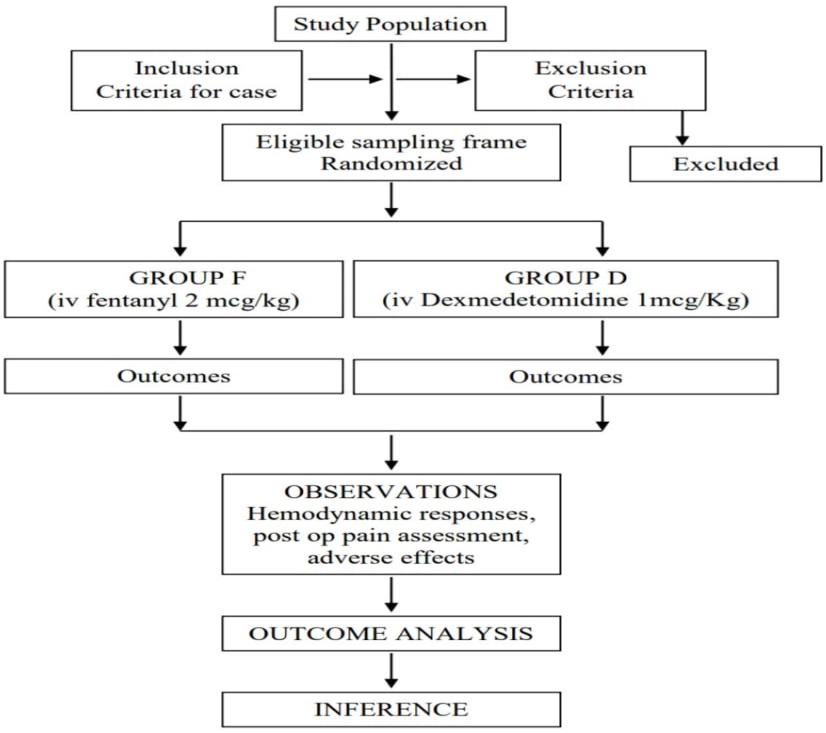


Observations and Results

Table 1: Demographic comparison of both groups

Demographic	Group D	Group F	P value
Age (years)	35 ± 9.2	33.8 ± 9.8	**0.749(NS)**
Weight	64.4 ± 11.5	68.2 ± 11.3	**0.145 (NS)**
Duration of surgery	62.5 ± 16.8	62.2 ± 18.5	**0.945 (NS)**

Table 1 shows no significant difference was seen in age distribution among study groups (p=0.749).

Most of the study subjects in Group D were females (82.5%) and only 7 (17.5%) were males. Similarly, most of the subjects in Group F were females (80%) and only 20% were males. Both the groups were similar in relation to their gender composition (p=1.000).

Table 1 depicts that the mean weight of subjects in Group D was 64.4 Kg while that of Group F was 68.2 Kg and this difference was however not found to be statistically significant (p=0.145). i.e. both the groups were similar in relation to their mean weight.

Most of the study subjects in Group D had ASA grade I (60%) and only 16 (40%) had ASA grade II. Similarly most of the subjects in Group F had ASA grade I (70%) and only 30% had ASA grade II. This difference was however not found to statistically significant (p>0.05). Both the groups were similar in relation to their ASA grade distribution.

Most of the study subjects in Group D had Mallampati grade I (67.5%) and only 13 (32.5%) subjects had Mallampati grade 2. Similarly most of the subjects in Group F had Mallampati grade I (80%) and only 8 (20%) had Mallampati grade 2. This difference was however not found to statistically significant (p>0.05). Both the groups

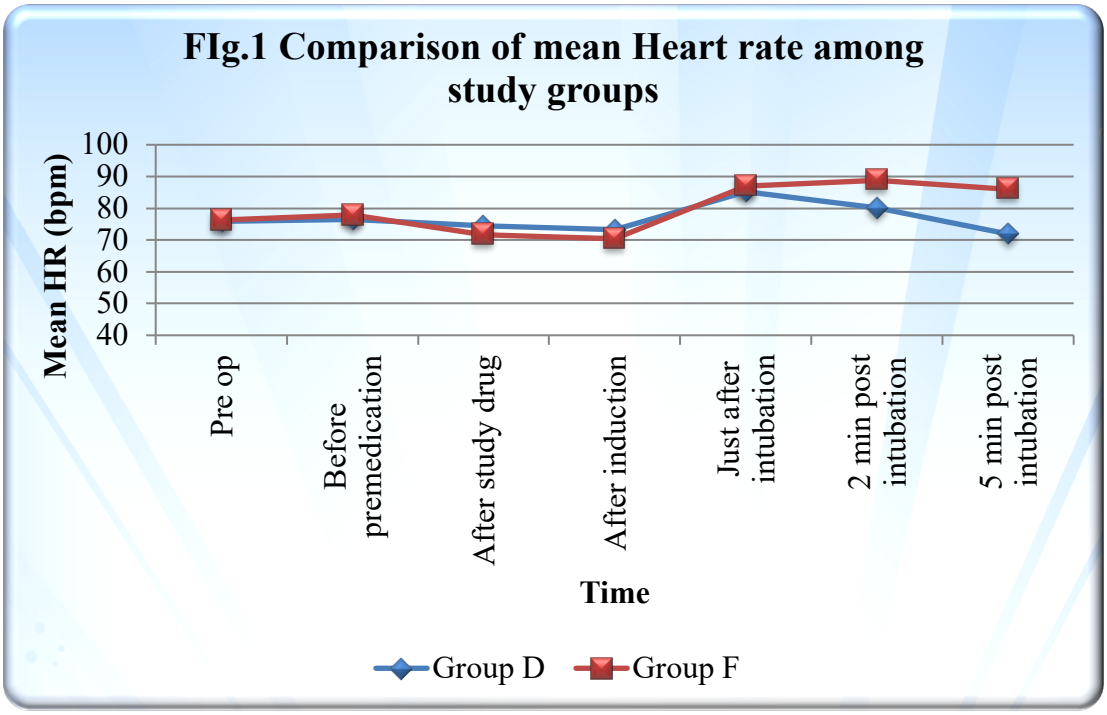
were similar in relation to their Mallampati grade distribution. Table 1 depicts that both the groups were similar in relation to their mean duration of surgery(p=0.945) .

Table 2: Comparison of mean Heart rate (beat/min) among study groups

Time	Group D	Group F	P value
Pre op	75.8 ± 6.1	76.2 ± 6.2	0.786
Before premedication	76.4 ± 7	77.9 ± 7.2	0.354
After study drug	74.4 ± 3	71.7 ± 3.8	0.001 (S)
After induction	73.2 ± 3	70.4 ± 3.6	<0.001 (S)
Just after intubation	85.2 ± 3.4	87 ± 4.5	0.046 (S)
2 min post intubation	80.1 ± 4	88.8 ± 5.6	<0.001 (S)
5 min post intubation	71.9 ± 6.3	86 ± 7.2	<0.001 (S)

This table 2 depicts the Heart rate at baseline and before premedication was similar in both groups (p>0.05). After study drug, Heart rate decreased in both groups and was significantly lower in Group F (71.7 /min) as compared to Group D (74.4 /min).

After induction also the Heart rate was significantly lower (p<0.001) in Group F (70.4 / min) as compared to Group D (73.2 /min). Just after intubation, heart rate spiked in both the groups but the heart rate was significantly more (p=0.046) in Group F (87 / min) as compared to Group D (85.2) / min. The heart rate remained higher in Group F than in Group D at 2 minutes and 5 minutes post intubation (p<0.001).



The table shows that after 2 minutes of intubation heart rate stabilized in Group D at 6.4% higher than baseline, however in Group F it increased by 17.3% and this difference was found to be statistically significant (P<0.001). At 5 minutes follow up, the heart rate decreased 4.5% below pre op value in group D where as it was 13.5% higher than baseline in Group F and this difference was also statistically significant (P<0.001).

Mean Systolic blood pressure (SBP) at baseline and before premedication was similar in both groups (p>0.05). Just after intubation, SBP spiked in Group F (135.4 mmHg) but increased only slightly in Group D (120.8 mmHg) and this difference was statistically significant (p<0.001). The SBP decreased slightly in Group F but was still higher in Group F (121.6 mmHg) than in Group D (121.2 mmHg) at 2 minutes post intubation and the difference was found to be statistically significant (P<0.001). Even at 5 minutes post intubation the SBP was significantly higher (p=0.019) in Group F (128.3 mmHg) as compared to Group D (123.3 mmHg).

Mean Diastolic blood pressure (DBP) at at baseline and before premedication was similar in both groups (p>0.05). Just after intubation, DBP spiked in Group

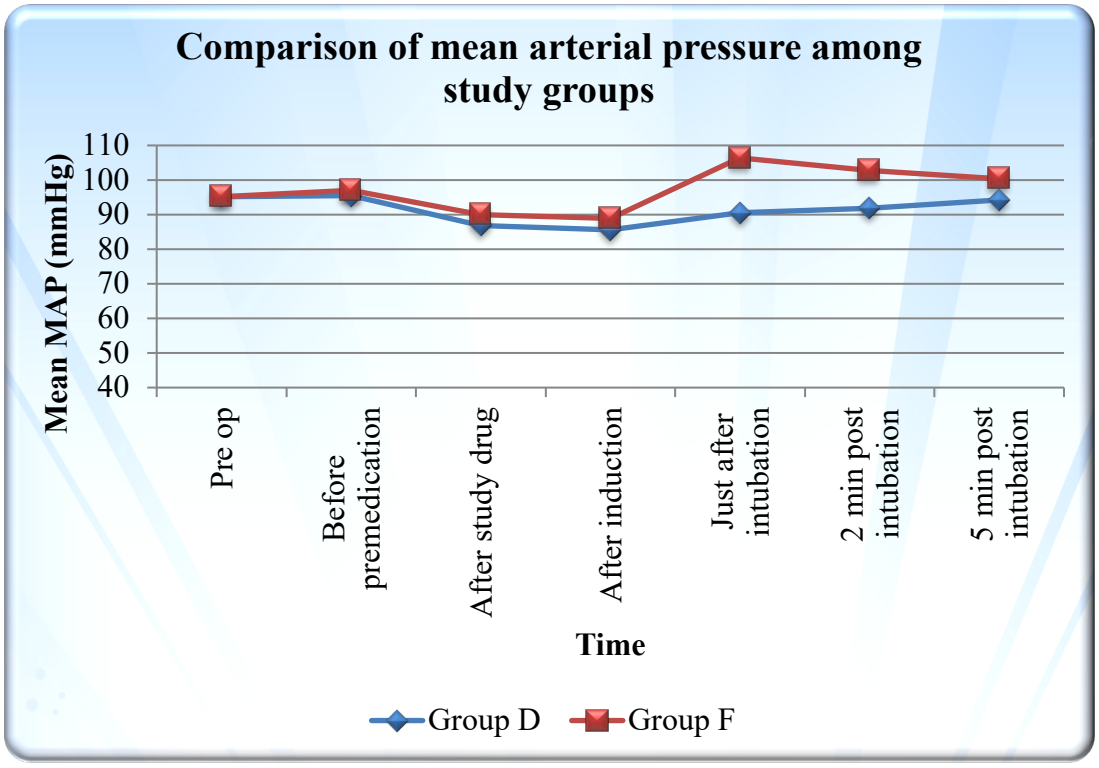
F (91.7 mmHg) but increased only slightly in Group D (75.4 mmHg) and this difference was statistically significant (p<0.001). The DBP decreased slightly in Group F but was still higher in Group F (88.4 mmHg) than in Group D (77.3 mmHg) at 2 minutes post intubation and the difference was statistically significant (P<0.001). Even at 5 minutes post intubation the DBP was significantly higher (p=0.019) in Group F (86.4 mmHg) as compared to Group D (79.6 mmHg).

Table 3: Comparison of mean arterial pressure (mmHg) among study groups

Time	Group D	Group F	P value
Pre op	95.2 ± 6.7	95.2 ± 5.7	0.954
Before premedication	95.5 ± 6	97.1 ± 4.9	0.202
After study drug	86.9 ± 5	90 ± 6.5	0.018 (S)
After induction	85.6 ± 4.8	88.9 ± 5.2	0.003 (S)
Just after intubation	90.5 ± 6.2	106.4 ± 7.7	<0.001 (S)
2 min post intubation	91.9 ± 6.3	102.8 ± 5.8	<0.001 (S)
5 min post intubation	94.2 ± 6.4	100.4 ± 6.2	<0.001 (S)

This table 3 depicts the mean arterial pressure (MAP) at different times among study groups. The MAP at baseline and before premedication was similar in both groups (p>0.05). After study drug, MAP decreased in both groups and was lower in Group D (86.9 mmHg) as compared to Group F (90 mmHg), the difference was found to be statistically significant (p=0.018). After induction also the MAP was lower in Group D (85.6 mmHg) as compared to Group F (88.9 mmHg), the difference was found to be statistically significant (p=0.003).

Just after intubation, MAP spiked in Group F (106.4 mmHg) but increased only slightly in Group D (90.5 mmHg) and this difference was statistically significant (p<0.001). The MAP decreased slightly in Group F but was still higher in Group F (102.8 mmHg) than in Group D (91.9 mmHg) at 2 minutes post intubation and this difference was also found to be statistically significant. Even at 5 minutes post intubation the MAP was significantly higher (p<0.001) in Group F (100.4 mmHg) as compared to Group D (94.2 mmHg).



Present table shows that after study drug there was a reduction of 8.5% in MAP in Group D as compared to 5.4% reduction in Group F and this difference was found to be statistically significant (p=0.008). There was decline in MAP after induction in both groups and the decline was significantly more in Group D (p=0.001). Just after intubation the MAP increase in both groups but was 4.8% lower than baseline in Group D, while in Group F it was 11.7% higher than baseline and this difference was found to be statistically significant. After 2 minutes of intubation heart rate stabilized in Group D at 3.4% lower than baseline, however in Group F it was 8% higher than baseline and this difference was found

to be statistically significant (P<0.001). At 5 minutes follow up, the heart rate was 1% below pre op value where as it was 5.4% higher in Group F and this difference was also statistically significant (P<0.001).

Table 4: Comparison of VAS score (median & range) among study groups

Time	Group D		Group F		P value*
	Median (range)	Mean ± SD	Median (range)	Mean ± SD	
30 min	1.5 (1-2)	1.5 ± 0.5	3 (1-3)	2.4 ± 0.7	<0.001
60 min	3 (2-3)	2.6 ± 0.5	4 (2-4)	3.4 ± 0.7	<0.001
90 min	4 (2-5)	3.6 ± 0.6	4 (3-5)	4.2 ± 0.7	0.001
120 min	4 (3-5)	4.2 ± 0.5	5 (4-5)	4.6 ± 0.5	0.001

*p value calculated using Mann Whitney U test

Present table 4 depicts the pain score (VAS score) of study groups at post op follow up. The median VAS score at 30 minutes post op in Group D was 1.5 with a range of 1 – 2, while in Group F median VAS score was 3 with a range of 1 – 3 and this difference was found to be statistically significant. Similarly the median VAS score was significantly more (p<0.001) at 60 minutes in group F (median 3 range 2-4) as compared to Group D (median 3 range 2-3).

The VAS score at 90 minutes was also higher in Group F ranging from 3 – 5 as compared to Group D (range 2-5) and this difference was also statistically significant (p=0.001). Even at 120 minutes post op median VAS was higher in Group F(median 5 range 4-5) as compared to Group D (medina 4 range 3-5) and the difference as statistically significant at p =0.001.

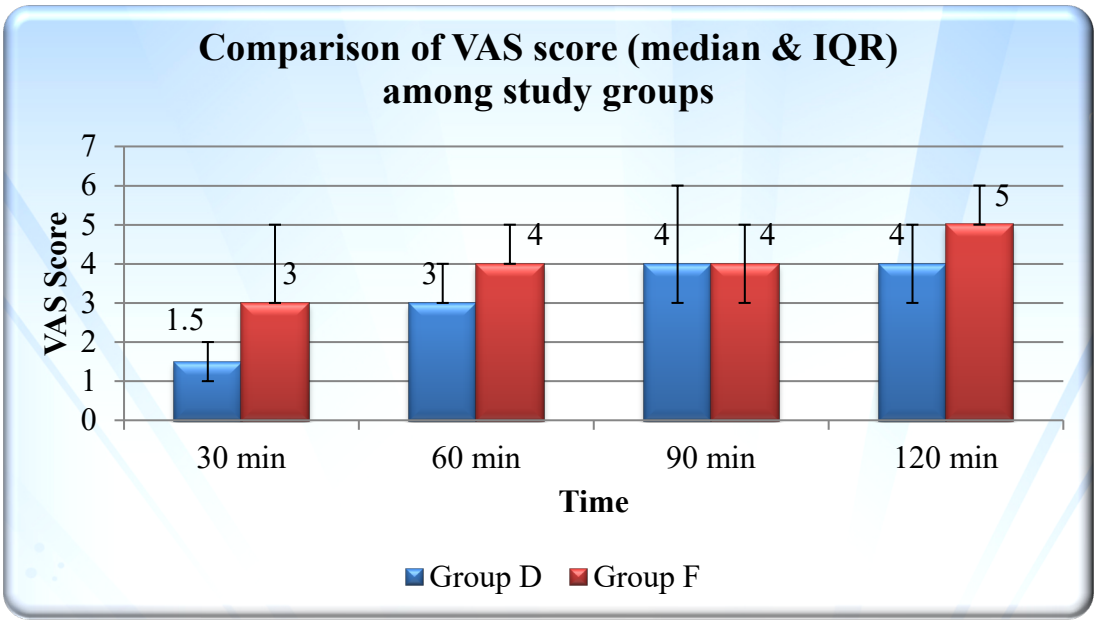


Table 14: Distribution of study subjects according need for analgesic

Time	Group D		Group F		P value
	N	%	N	%	
30 min	0	0	0	0	-
60 min	0	0	0	0	-
90 min	2	5	14	35	0.001 (S)
120 min	8	20	10	25	0.789

Above table demonstrates the requirement of analgesic among study subjects. No patient in either group needed analgesic at 30 minutes or 60 minutes. At 90 minutes post op 14 (35%) subjects in Group F, while only 2 (5%) subjects in Group D needed analgesic, and this difference was found to be statistically significant (p=0.001). At 120 minutes post op 8 (20%) subjects in Group D and 10 (25%) in Group F needed analgesic, but this difference was not statistically significant (p=0.789).

Tachycardia was noted in 7 (17.5%) of subjects in Group F while no patients in Group D showed tachycardia and this difference was found to be statistically significant (p=0.012).

Similarly hypertension was seen in 7 (17.5%) of subjects in Group F and no patient in Group D and

this difference was also statistically significant ($p<0.001$).

Discussion

Magnification, dexterity, good cosmetic results, less postoperative pain, and decreased hospital stay along with less morbidity and mortality, these are the advantages of laparoscopic techniques. Laparoscopic cholecystectomy (LC) has become the gold standard for diseases related to gall bladder. It is associated with less postoperative pain, shorter hospitalization and faster functional recovery.

The hemodynamic changes such as increase in heart rate (HR), mean arterial pressure (MAP), and increased systemic and pulmonary vascular resistance along with reduced cardiac output due to initial Trendelenburg position, creation of pneumoperitoneum (PNP), systemic absorption of CO2, and reverse Trendelenburg position predispose the myocardium in vulnerable patients to ischemic changes. Therefore, the basic need has been continuously felt in anesthesia practice for availability of drug that electively suppresses all hazardous responses to obnoxious stimuli with maximum safety margin.

Alpha two agonists seems to be potentially beneficial as they possess various properties such as hypnotic, sedative, anxiolytic, sympatholytic, and analgesic properties without producing significant respiratory depression. Opioids are also used to blunt the hemodynamic response to intubation and surgical stress responses, but they are associated with serious complication such as respiratory depression besides nausea and vomiting. This present study therefore aimed to compare dexmedetomidine and fentanyl in reducing hemodynamic stress response to laryngoscopy and tracheal intubation in patients undergoing laparoscopic cholecystectomy under general anaesthesia.

No significant difference was seen in age distribution among study groups ($p=0.749$). In present study mean weight of subjects in Group D was 64.4 Kg while that of Group F was 68.2 Kg and this difference was however not found to be statistically significant. In the present study majority of the study subjects in Group D and Group F had Mallampati grade I. Difference in mean duration of surgery of subjects was not found to be statistically significant.

Findings of present study showed that the heart rate at baseline and before premedication was similar in both groups ($p>0.05$). After study drug, Heart rate decreased in both groups and was significantly lower in Group F (71.7 /min) as compared to Group D (74.4 /min). After induction also the Heart rate was significantly lower ($p<0.001$) in Group F (70.4 / min) as compared to Group D (73.2 /min). Just after intubation, heart rate spiked in both the groups but the heart rate was significantly more ($p=0.046$) in Group F (87 / min) as compared to Group D (85.2) / min. The heart rate remained higher in Group F than in Group D at 2 minutes and 5 minutes post intubation ($p<0.001$).

Turgut et al (2008) found no statistical difference in heart rate between the groups. In conformance to our study, Dhurjoti Prosad Bhattacharjee et al (2010) found that heart rate in Group D were significantly less after intubation and throughout the period of pneumoperitonium. Anchalee Techanivate et al (2012) found that heart rate in fentanyl group P was higher than Group D at 10th min and from 25th min throughout the period of colonoscopy ($P<0.05$). Sayeed et al(2013) observed that dexmedetomidine provides better intubating conditions and haemodynamic stability during AFOI. Ashraf S. Hasanin & Ahmad M. Sira et al (2014) found that HR values were significantly lower in dexmedetomidine group. Amar Parkash Kataria et al (2016) also found that control of HR in dexmedetomidine group was better than fentanyl group during laryngoscopy, intubation and PNP, they observed that after start of infusion of dexmedetomidine, HR decreased to 72.53 ± 4.89, 15 bpm in Group I. After induction, there was more decrease (67.43 ± 4.23) but it increased to 77.83 ± 6.57 after intubation. In fentanyl group II, after start of infusion of fentanyl, HR decreased to 77.46 ± 1.65 beats/min. There was further decrease after induction to 75.07 ± 8.03 and increase after intubation (85 ± 6.3). Syafri Kamsul Arif et al(2017) also observed that Hemodynamic response was more stable in dexmedetomidine group than fentanyl group at 1st minute after intubation but at 3rd and 5th min after intubation both groups can maintain stable hemodynamic response with a lower mean heart rate achieved by dexmedetomidine. T. Nisar et al (2018) observed mean heart rate lower in the dexmedetomidine group as compared to fentanyl group and difference was statistically significant ($P < 0.05$).

Similarly Feng Yuan et al (2016) found that SBP was significantly lower in the DF group than in the PF group ($P<0.05$). Amar Parkash Kataria et al (2016) also observed that SBP (in mmHg) is comparable in both the groups with 130.50 ± 5.13 in Group I and 132.23 ± 7.09 in Group II. SBP decreased to 116.13 ± 4.11, 15 min after the infusion of dexmedetomidine which further decreased after induction (112.13 ± 4.34) followed by increase after intubation (122.13 ± 9.34). In Group II, SBP decreased after 15 after infusion of fentanyl to 128.00 ± 6.60. Further decrease occurred after induction to 121.96 ± 94, followed by increase after intubation to 137.00 ± 5.68. SyafriKamsulArif et al(2017) found that Hemodynamic response was more stable in dexmedetomidine group than

fentanyl group at 1st minute after intubation but at 3rd and 5th min after intubation both groups can maintain stable hemodynamic response.

The DBP at baseline and before premedication was similar in both groups (p>0.05). After study drug, DBP decreased in both groups and was slightly lower in Group D (70.7 mmHg) as compared to Group F (74.4 mmHg), the difference was however not statistically significant (p=0.058). After induction also the DBP was lower in Group D (69.3 mmHg) as compared to Group F (72.8 mmHg), and the difference was found to be statistically significant (p=0.023). Similar findings were found by Feng Yuan et al (2016). Amar Parkash Kataria et al (2016) observed that baseline DBP (in mmHg) is 79.57 ± 5.26 in Group I which decreased to 71.56 ± 5.18 after starting the infusion of dexmedetomidine. There was further decrease after induction (69.46 ± 5.67) and increase after intubation to 75.53 ± 4.16 though values remained below the baseline. In Group II baseline DBP 82.51 ± 5.20 decreased after infusion of fentanyl to 79.56 ± 5.88. There was further decrease after induction to 69.46 ± 5.97 but increased to 75.53 ± 4.16 after intubation.

In present study the MAP at baseline and before premedication was similar in both groups (p>0.05). After study drug, MAP decreased in both groups and was lower in Group D (86.9 mmHg) as compared to Group F (90 mmHg), the difference was found to be statistically significant (p=0.018). After induction also the MAP was lower in Group D (85.6 mmHg) as compared to Group F (88.9 mmHg), the difference was found to be statistically significant (p=0.003).

Just after intubation, MAP spiked in Group F (106.4 mmHg) but increased only slightly in Group D (90.5 mmHg) and this difference was statistically significant (p<0.001). The MAP decreased slightly in Group F but was still higher in Group F (102.8 mmHg) than in Group D (91.9 mmHg) at 2 minutes post intubation and this difference was also found to be statistically significant. Even at 5 minutes post intubation the MAP was significantly higher (p<0.001) in Group F (100.4 mmHg) as compared to Group D (94.2 mmHg). After study drug there was a reduction of 8.5% in MAP in Group D as compared to 5.4% reduction in Group F and this difference was found to be statistically significant (p=0.008). There was decline in MAP after induction in both groups and the decline was significantly more in Group D (p=0.001). Turgut et al (2008) found that MAP values in Group D were significantly higher than in Group F only after intubation,Pre and post extubation, MAP values in Group F were significantly higher than those in Group D. Dr. Lella Nageswara Rao (2015) observed that Mean MAP to start with was 79.92, and fell to 65.2 with loading dose of Dex, which was significant statistically. Amar Parkash Kataria et al (2016) observed that baseline MAP was 94.62 ± 4.45 and 96.31 ± 5.71, respectively, in both the groups. After infusion of dexmedetomidine, MAP decreased to 91.07 ± 5.27 and after induction it further decreased to 83.97 ± 4.95 but increased to 91.07 ± 5.27 after intubation. In Group II, MAP decreased from the baseline (96.31 ± 5.71) to 90.28 ± 6.01, 15 min after infusion of fentanyl. There occurred reduction to 83.97 ± 4.95 after induction which increased to 91.07 ± 5.27 after intubation.

The median VAS score at 30 minutes post op in Group D was lower than Group F and this difference was found to be statistically significant. Similarly the median VAS score was significantly more at 60 minutes,90 minutes and 120 minutes in group F as compared to Group D.

No patient in either group needed analgesic at 30 minutes or 60 minutes. At 90 minutes post op 14 (35%) subjects in Group F, while only 2 (5%) subjects in Group D needed analgesic, and this difference was found to be statistically significant (p=0.001). At 120 minutes post op 8 (20%) subjects in Group D and 10 (25%) in Group F needed analgesic, but this difference was not statistically significant. Yildiz et al(2006) found that dexmedetomidine resulted in reduced opioid and anaesthetic requirements.

Turgut et al (2008) also observed that the fentanyl group patients required supplemental analgesia earlier than the dexmedetomidine group.

The mean propofol dose required in Group F (68 mg) was higher as compared to Group D (46.1 mg) and this difference was found to be statistically significant. Similarly Turgut et al (2008) found that Propofol dosages for induction (1.40+/-0.48 mgkg(-1)) and maintenance of anesthesia (2.03+/-0.41 mg kg(-1)) were lower with dexmedetomidine. Aveenash Khare et al (2017) also observed that significantly low doses of propofol were required in dexmedetomidine group during induction and intraoperatively.

Tachycardia was noted in 7 (17.5%) of subjects in Group F while no patients in Group D showed tachycardia and this difference was found to be statistically significant (p=0.012). Similarly 7 (17.5%) of subjects in Group F found to have hypertension and none in Group D and this difference was also statistically significant (p<0.001). Yildiz et al (2006) found that dexmedetomidine decreased blood pressure and heart rate. Aksu et al (2009) also observed that dexmedetomidine 0.5 µg/kg IV, administered before extubation, was more effective in attenuating airway reflex responses to tracheal extubation and maintaining hemodynamic stability. Sayeed et al (2013) also found that dexmedetomidine provides better intubating conditions.

Conclusion

Hence, from the present study it can be concluded that though both the study drugs are effective in blunting the hemodynamic stress response, dexmedetomidine is better among the two study drugs. Both the drugs provide good analgesia but dexmedetomidine provided better analgesia in the postoperative period.

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