"EVALUATION OF EFFECT OF LOW DOSE DEXMEDITOMIDINE ON INTRAOPERATIVE HEMODYNAMICS IN PATIENTS UNDERGOING LAPAROSCOPIC SURGERIES UNDER GENERAL ANAESTHESIA"

By

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DISSERTATION SUBMITTED TO SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH CENTER, KOLAR, KARNATAKA

In partial fulfillment of the requirements for the degree of

DOCTOR OF MEDICINE

IN

ANAESTHESIOLOGY

Under the Guidance of

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Date: **Dr PREETHI R**

Place: Kolar

ABBREVATIONS

HR	Heart rate
Bpm	Beats per minute
PR	Pulse rate
SBP	Systolic blood pressure
DBP	Diastolic blood pressure
NIBP	Non invasive blood pressure
MAP	Mean arterial pressure
ECG	Electrocardiogram
SPO_2	Peripheral capillary oxygen saturation
CVS	Cardiovascular system
PA	Per abdominal
RS	Respiratory system
CNS	Central nervous system
Iv	Intravenous
ASA	American society of anaesthesiologists
NS	Normal saline
ICU	Intensive care unit
CBC	Complete blood count
HB	Haemoglobin
BT	Bleeding time
CT	Clotting time
WBC	White blood count

HS	Horasomni- at bedtime
RFT	Renal function tests
i.e.,	That is
µg/mcg	Microgram
Kg	Kilogram
Mm Hg	Millimeter of mercury
Cm	Centimeter
Mg	Milligram
Ml	Millilitre
Mins	Minutes
Secs	Seconds
SD	Standard deviation
PACU	Post Anaesthesia Care Unit
Hr	Hour
$ETCO_2$	Endtidal carbondioxide
No. of	Number of

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ABSTRACT

EVALUATION OF EFFECT OF LOW DOSE DEXMEDITOMIDINE ON INTRAOPERATIVE HEMODYNAMICS IN PATIENTS UNDERGOING LAPAROSCOPIC SURGERIES UNDER GENERAL ANAESTHESIA

BACKGROUND AND OBJECTIVE:

INTRODUCTION:

Dexmedetomidine has proved to provide adequate intraoperative analgesia and good surgical field, postoperative sedation, and patient comfort with no adverse effects for patients. Dexmedetomidine helps in blunting hemodynamic changes in response to laryngoscopy, tracheal intubation, pneumoperitoneum and extubation in the peri-operative period due to the sympatholytic activity.

OBJECTIVES:

To assess the hemodynamic stability with the two different dose of dexmedetomidine (0.25mcg & 0.5mcg) among patients experiencing laparoscopic surgeries under general anaesthesia.

METHODOLOGY:

This is Prospective observational study done among 64 Patients admitted under General Anaesthesia for elective laparoscopic surgeries performed at R. L. Jalappa Hospital and Research centre, Tamaka, Kolar during the interval between January 2020 to May 2021. They were classified into two groups, Group A (Dexmed-0.25mcg/kg/hr) and Group B (Dexmed -0.5mcg/kg/hr). Haemodynamic changes were examined among the two groups.

RESULTS:

The differences in Baseline characteristics of the study groups were not statistically significant except the ASA grade. The difference in means of the haemodynamic parameters such as Heart rate, systolic-blood pressure, diastolic-blood pressure, mean-arterial pressure, and oxygen saturation were between the study groups were not statistically significant except the systolic-blood pressure at 90 min, where the mean SBP is significantly greater among Group A (Dexmed- 0.25mcg).

CONCLUSION:

From this study, we conclude that there is no difference in hemodynamic stability with two different doses of dexmedetomidine(0.25mcg & 0.5mcg) among patients underwent laparoscopic surgeries under general anaesthesia. We did not see any majorly adverse side effects in both the groups, with the haemodynamically stability with the two separate doses of dexmedetomidine, the drug can be used with any of the doses, depending upon the desired effect.

KEYWORDS:

Dexmedetomidine, 0.25mcg &0.5mcg , general anaesthesia, Haemodynamic stability

2. INTRODUCTION

Anaesthetic procedures involved in general anaesthesia, like direct laryngoscopy, intubation of trachea and extubationusually causes stimulation of the sympathetic system. (1)This leads to the increase in plasma nor-epinephrine, adrenaline levels and blood plasma renin activity.(2)

Because of its minimal scar, lessened postoperative pain, decreasedduration of stay at hospital and obviously less mortality, Laparoscopic surgeries become the choice wherever possible. (3)Also, the hallmark of laparoscopy is the creation of pneumoperitoneum with carbon dioxide (CO2) insufflationsunder pressure, to separate the organs present inside the abdominal cavity. (4)

The stimulation of the sympathetic system cause increase in intra-arterial pressure, systemic –pulmonary vascular resistance and changes in heart rate. Sometimes these haemodynamic alterations can produce severe permanentinjury to the myocardium or rarely life-threatening complication. (5)

To prevent this sympathetic discharge modern anaesthesia uses various drugs to provide haemodynamic stability. Most common used drugs for this purpose includes opioid analgesics, beta blockers, calcium channel blockers, benzodiazepines, and vasodilators α-2 agonists have shown to provide adequate sedation, analgesia, weakening of response to stress and reduction in anaesthetic drug requirement, hence they are used in modern anaesthesia practice.(5)

Dexmedetomidine is a highly selective agonist at the α2-adrenergic receptor falls under the imidazole subclass which is a pharmacologically active dextrorotatory S-enantiomer of medetomidine. Dexmedetomidine acts through a receptor which is different from theusual γ-aminobutyric receptor which is utilized by drugs such as benzodiazepines and propofol. (6)

Dexmedetomidine, first introduced in 1999, is a highly selective alpha 2 adreno-receptor agonist. When compared to clonidine, dexmedetomidine has eight times higher affinity to α2 adreno-receptor (α2/α1 selectivity) without causing respiratory depression. (7)This property of dexmedetomidineof being a sedative and anxiolytic makes it as the ideal choice of adjuvants in practice of general anaesthesiatraining for the reduction of the hemodynamic stimulation.(5)

The elimination half-life of dexmedetomidine is nearly 2 hours and the redistribution half-life is 6 min, and this short life makes it an ideal drug for intravenous titration. Intravenous usage of the dexmedetomidine causes reduction in serum catecholamine levels by almost 90%. (8)

Dexmedetomidine has proved to provide adequate intraoperative analgesia and good surgical field,postoperative sedation, and patient comfort with no adverse effects for patients. (9)Dexmedetomidine helps in blunting hemodynamic changes in response to laryngoscopy, tracheal intubation, pneumoperitoneum and extubation in the peri-operative period due to the sympatholytic activity.(10) It is successfully used in intravenous doses varying from 0.25 to 1 mcg/kg for attenuating intubation response. (11)

Only a few studies have evaluated dose for continuous intravenous with Dexmedetomidine. Majority of the studies done so far were with bolus doses of Dexmedetomidine for anaesthetic practice and analgesia especially in the post-operative period, proved a prolongation of analgesia and stability in hemodynamic parameters. (12) Nevertheless, an effective dose for the Dexmedetomidine remains unclear.

NEED FOR THE STUDY:

Numerous studies have demonstrated that intra-operative infusion with the dexmedetomidine reduces the requirement of perioperative analgesics. Dexmedetomidinehas also proved to reduce intra operative blood pressure and provide satisfactory surgical field conditions used in hypotension anaesthesia. This study aims to assess the efficacy of dexmedetomidine infusion in lower doses than previous studies, to reduce the systolic blood pressure lower than 30% of baseline value to achieve the targeted SBP in patients undergwent laparoscopic surgeries.

3. AIM AND OBJECTIVES

3.1 AIM:

To assess the hemodynamic stability with two separatedosesof dexmedetomidine (0.25mcg/kg/hr& 0.5mcg/kg/hr) among patients who underwent laparoscopic surgeries with general anaesthesia

3.2 OBJECTIVES:

1. To determine the changes in blood pressure and heart rate among subjects receiving GROUP A-Dexmed-0.25mcg/kg/hr during laparoscopic surgeries with general anaesthesia.
2. To determine Blood pressure and heart rate among subjects receiving GROUP B-Dexmed-0.5mcg/kg/hr during laparoscopic surgeries with general anaesthesia.
3. To compare the fluctuations in blood pressure and heart rate among the study participants in GROUP A and GROUP B.

4 PHARMACOLOGY OF DEXMEDITOMIDINE

Review of Literature of this study is discussed under the following heads:

a. Dexmedetomidine
    - Physical and Chemical Properties
    - Mechanism of action
    - Pharmacokinetics
    - Uses
    - Side effects
b. Similar Studies in the Topic

a. Dexmedetomidine:

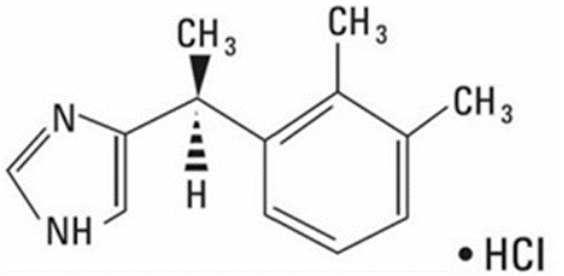
Dexmedetomidine is a highly selective agonist at the α2-adrenergic receptor falls under the imidazole subclass which is a pharmacologically active dextrorotatory S-enantiomer of medetomidine. Dexmedetomidine acts through a receptor which is different from the usual γ-aminobutyric receptor which is utilized by drugs such as benzodiazepines and propofol.(6)Dexmedetomidineis chemically dextrorotatory (S)-4-[1-(2,3-dimethylphenyl) ethyl]-3H-imidazole. (13)

Empirical formula of Dexmedetomidine - C13H16N2 • HCl

Molecular weight of Dexmedetomidine 236.74 Da

The following image represents the chemical structure of Dexmedetomidine. (13)

Figure 1. Chemical structure of Dexmedetomidine:



Physical properties:

I. A white or almost white crystalline powder with a composition of Carbon 67.6 % Chloride 14.25%, Nitrogen 11.26 % Hydrogen 6.89 % with melting point ranging between 156.5^{o} and 157.5^{o} C

II. pH of 1% diluted solution in water is 4.3

III. pKa -7.1

IV. density - 1.17g/cm^{3}

V. optical rotation [Alpha]+52.4^{o}

VI. Freely soluble in water and is available as clear isotonic solution consist of 100mcg/ml or 50mcg/0.5ml and 9gm of sodium chloride per millilitre of water.

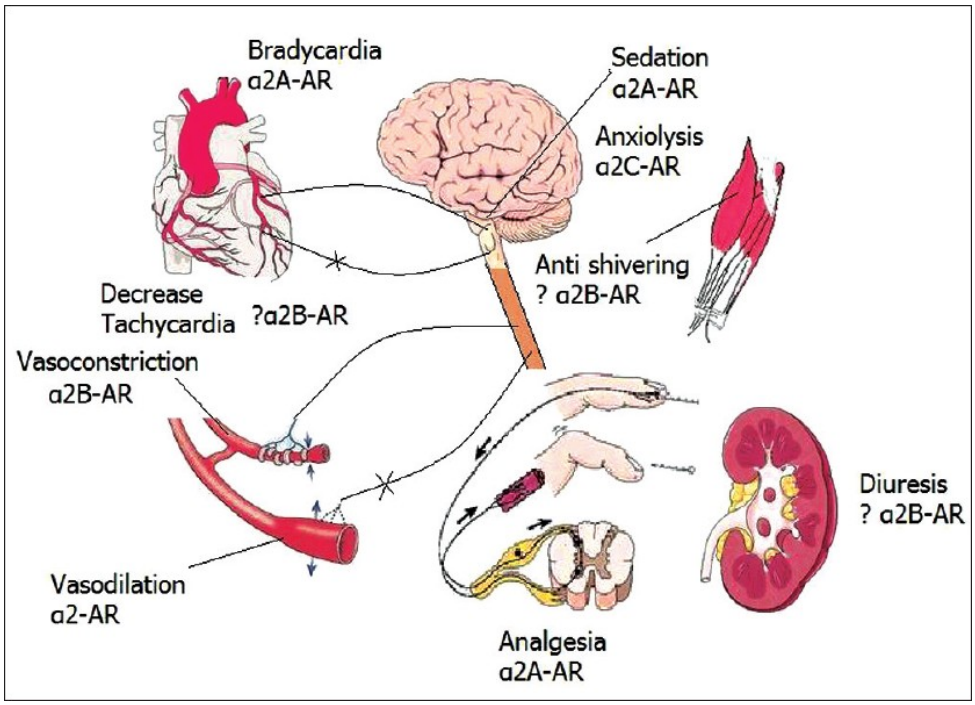
VII. compatible when administered with 0.9% sodium chloride in water, Lactated Ringer's solution, 100 mg/mL magnesium sulphate solution, 5% dextrose in water, 20% mannitol, 0.3% potassium chloride solution.(13)

Mechanism of action of Dexmedetomidine:

Dexmedetomidine is an extremely selective agonist Alpha-2 receptor, which is eight times more specific to Alpha-2 receptors than that of clonidine. With alpha-1: alpha-2 binding ratio of 1:1620.(14)Agonists binding to G protein coupled alpha-2 receptors produce the required clinical effects.

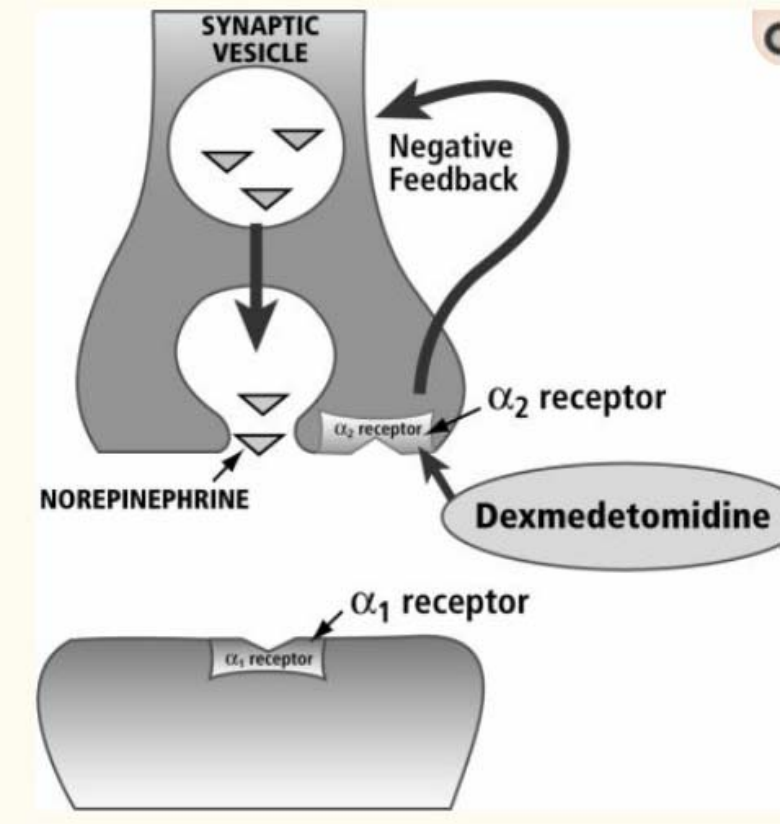
The following image represents the Physiology and action of various α2-adrenergic receptors,(15)

Figure 2. Physiology of various α2-adrenergic receptors



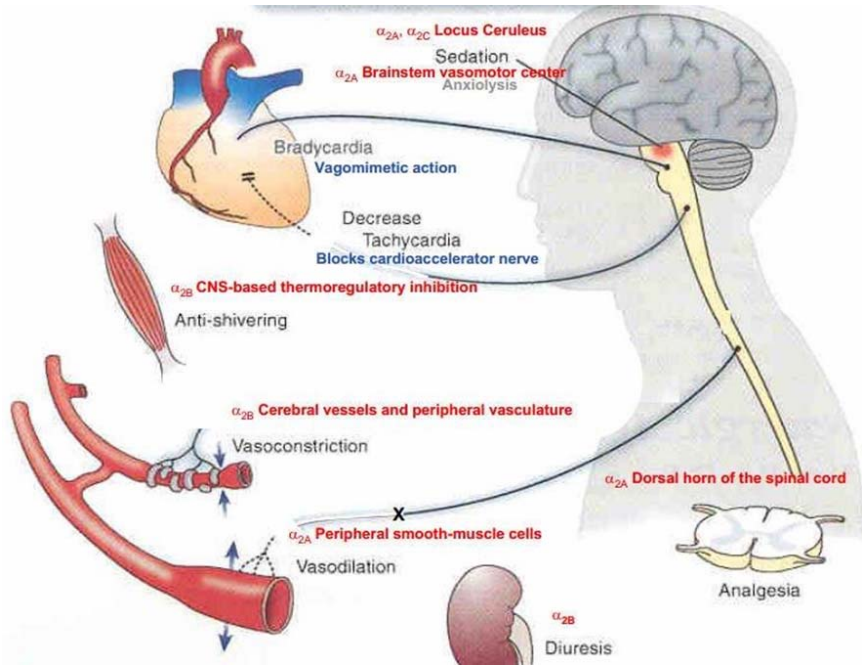
Dexmedetomidine has proved to deliver an adequate intraoperative analgesia and good surgical field,postoperative sedation, and patient and surgeon comfort with noside effects for patients. (9) Dexmedetomidine assists in blunting hemodynamic responses in the peri-operative period due to its sympatholytic activity. It is successfully applied in intravenous doses varying between 0.25 to 1 mcg/kg for attenuating intubation response.(11) The following image characterises the Physiology and action of the α2-adrenoceptor agonists receptor, (16)

Figure 3. Physiology of the α2-adrenoceptor agonists receptor:



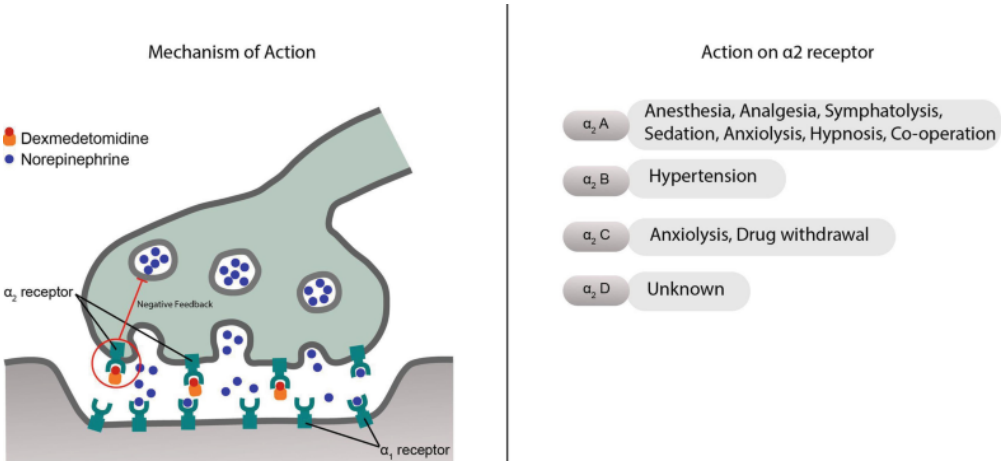
The site for action for the sedation is locus coeruleus of the brainstem, whereas the primary site of analgesia is spinal cord. In the heart, the outcome of alpha2 stimulation reduces tachycardia by blocking cardioaccelerator nerves and creates bradycardia by vagal stimulation. In the peripheral vasculature, there are vasodilatory effects produced by the dexmedreflecting sympatholytic action and vasoconstriction mediated by receptors in smooth muscle cells. The following image represents the Effects mediated by Dexmedetomidine through alpha-2 receptors, (17)

Figure 4. Effects mediated by Dexmedetomidine through alpha-2 receptors:



The following image represents the mechanism of action of dexmedetomidine on various alpha2 receptors, (18)

Figure 5. Mechanism of action of dexmedetomidine on various alpha2 receptors



Pharmacokinetics:

Absorption: Dexmedetomidine has a reduced bioavailability when delivered viaoral route due to great first pass metabolism within the liver and also, it has a good bioavailability when delivered via other routes of administration like sublingual, intranasal, intraarticular, intramuscular buccal, neuraxial, regional, and its conventional intravenous administration.

Distribution: Dexmedetomidine is rapidlydisseminatedthroughout the body with fast onset of action of 6 min with peak effect accomplished at 15min. The context sensitive half time is 4 minutes after 10 min infusion and 250 minutes after 8-hour infusion.

Metabolism and excretion: Dexmedetomidine is widely metabolised by the liver and the metabolites of the drug are excreted in urine 95% and 4% in faeces. Its elimination has a half-life of two to three hours and clearance happens at the elimination rate of 10-30 ml/kg/min.(19)

Pharmacokinetics does not experienceany modification with respect to age, gender, or renal failure as it experiences almost comprehensive biotransformation in liver. Dose is required to be corrected in hepatic failure.(20) The following table represents the differences in action between the two commonly used alpha2 agonists, clonidine and Dexmedetomidine, (21,22)

Table 1.Difference between the alpha2 agonistsclonidine and Dexmedetomidine

Clonidine	Dexmedetomidine
Developed in the 1960s	Developed in the 1980s
Clinically used first as antihypertensive in 1966	Clinically approved as sedative and analgesic used in ICU in 1999
Ratio α 2:α 1 receptor binding is 220:1	Dexmedetomidine is 7-8 times more specific for a2. Ratio α 2:α 1 receptor binding is 1620:1
Clonidine is a partial agonist at the α 2 adrenergic receptor	Dexmedetomidine is a full agonist at the α 2 adrenergic receptor
Octanol/buffer partition coefficient: 0.8	Octanol/buffer partition coefficient: 2.8 more lipophilic (3.5-fold) than clonidine
The maximum reduction in inhalational anesthetic requirement to maintain 1 MAC provided by clonidine is 50%	Dexmedetomidine has been shown to result in approximately a 90% reduction in inhalational anesthetic requirement to maintain 1 MAC
Plasma half-life is T½: 9-12 hours	Plasma half-life T½: 2-2.5 hours
Protein binding: 50%	Protein binding: 94%
Elimination half life is 8 hrs	Elimination half life is 2 hrs
Distribution half life is >10 min	Distribution half life is 5 min

Pharmacodynamics:

In CNS, it causes sedation by acting as agonist on alpha -2 receptors in locus ceruleus and it is quite different from drugs producing sedation by GABA systems. Advantages of Dexmedetomidine includes easy to awake, ability to follow commands and limited respiratory depression. (23,24)

Uses of Dexmedetomidine:

The clinical uses of Dexmedetomidineconsist of the following:

I. Premedication
    - Dexmedetomidine has ananxiolytic, analgesic, sympatholytic sedative, and anti-sialagogue properties
II. Neuro anaesthesia
III. Post-operative analgesia and sedation

IV. Sedation in ICU

V. As an adjunct to general anaesthesia and regional anaesthesia

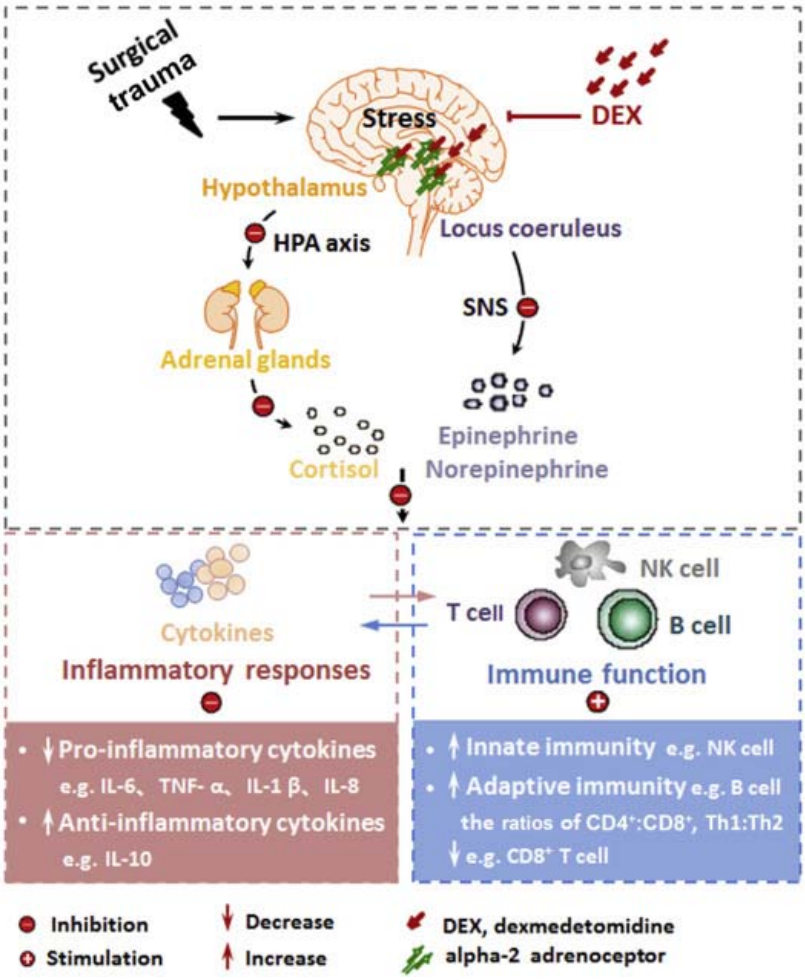
VI. Cardiovascular anaesthesia

VII. For de-addiction treatment. (16)

Side effects:

Hypotension, hypertension, and bradycardia are the commonly established adverse effects caused by agonist action on alpha 2A receptors. The drug causes the decreased release of noradrenaline from sympathetic nervous system. Other infrequent adverse effects include nausea, vomiting, dry mouth, extrasystoles, myocardial ischaemia, pulmonary oedema, hyperkalaemia, atelectasis, atrial fibrillation, acidosis, arrhythmia, AV block, hypervolemia, muscle weakness, syncope etc. The following image represents the action of dexmedetomidine on inflammation, perioperative stress, and immune function, (25)

Figure 6.Effect of the drug-dexmedetomidine on perioperative stress, inflammation, and immune function



5 .REVIEW OF LITRATURE

Gourishankar Reddy Manne et al, studied the effects of infusion of different low dose of dexmedetomidine (0.2 mcg/kg/hr and 0.4 mcg/kg/hr) on haemodynamic stress response, sedation and need for the post-operative analgesia among the participants under general anaesthesia undergoing laparoscopic cholecystectomy. They concluded that the low dose of infusion ofdexmedetomidine in the dose of 0.4 mcg/kg/hr effectively decreases haemodynamic stress response with decrease in post-operative analgesic requirements and no significant side effects.(5)

Summaira Janet al, studied the effects of infusion of different low dose of dexmedetomidine (0.2 mcg/kg/hr) compared with the infusion of normal saline on haemodynamic stress response, sedation and need for the post-operative analgesia among the cases under general anaesthesia undergoing laparoscopic cholecystectomy.They observed that in their 60 patients that the Dexmedetomidine infusion in the dosage of 0.2μg/kg/hr effectively diminishes the haemodynamic changes to stress response with a significant reduction on the heart rate, Systolic blood pressure, Mean arterial pressure and Diastolic blood pressure.(26)

YojanTrikhatri et al, examined the effects of Dexmedetomidine on Intraoperative Haemodynamicresponse and Postoperative Analgesia among the 84 patients receiving general anaesthesia for Laparoscopic Cholecystectomy. They observed that among the group received dexmedetomidine (0.4 mcg/kg/hr), haemodynamic responses were considerablydiminished and the during postoperative period, the 24 hours analgesic requirement were substantially reduced. (27)

Qin Ye, Fangjun Wang et al, did randomized controlled trialto study the effects of infusion of seperate doses of dexmedetomidine D1, D2, D3 (0.4 mcg/kg/hr, 0.6 mcg/kg/hr, 0.8 mcg/kg/hr) matched with the infusion of normal saline on haemodynamic stress response, sedation and need for the analgesia during the post-operative period in subjects under general anaesthesia undergoing laparoscopic cholecystectomy. The did the study among 120 patients divided into four groups. They observed that the heart rate, systolicand diastolic blood pressures had smaller fluctuations, low incidence of cough, low visual analogue scale scores, less tramadol dosage, longer spontaneous respiratory recovery and extubation among the groups received higher dose of dexmedetomidine. (28)

VinayakPanchgar et al, explored the effects of Dexmedetomidine on Intraoperative Haemodynamic response and Postoperative Analgesia among the 84 patients receiving general anaesthesia for Laparoscopic surgeries. They observed that among the group received dexmedetomidine (0.5 mcg/kg/hr), haemodynamic responses were significantly attenuated during laryngoscopy, intubation, during pneumoperitoneum formation, and during extubation. During postoperative period, the 24 hours analgesic requirement were significantly reduced. (28)

Geetanjali T. Chilkoti et al, did a randomised, double-blinded, placebo-controlled trialand analysed the effects of Dexmedetomidine on Intraoperative Haemodynamic response and Postoperative Analgesia with low dose intravenous dexmedetomidine infusion in patients who underwent laparoscopic cholecystectomy. They observed that among the group received dexmedetomidine (0.5 mcg/kg/hr), haemodynamic responses were significantly attenuated during laryngoscopy, intubation, during pneumoperitoneum formation, and during extubation. During

postoperative period, the 24 hours analgesic requirement in terms of VAS score were decreased but not statistically significant. (29)

M.R.El-Tahan et al, did a dose–response study to study the efficacy of dexmedetomidine in curbing the cardiovascular response and hormonal response to general anaesthesia for caesarean delivery in 68 parturient. The study participants were randomly assigned three seperate doses of dexmedetomidine (0.4 mcg/kg/hr, 0.6 mcg/kg/hr, 0.8 mcg/kg/hr). They noticed that the heart rate, mean arterial blood pressure had smaller fluctuations, low Sevoflurane alveolar concentrations,lesser serum cortisol levels, higher sedation scores and greater uterine tone among the groups received higher dose of dexmedetomidine.They did not observe any difference between the Apgar scores, NACS and acid–base status of the neonates. (30)

Meiyan Sun et al, did randomized controlled trial to study the effects of low dose of dexmedetomidinein prevention of emergence of agitation following general anaesthesia in elderly patients. They observed a low emergence of agitation following general anaesthesia in elderly patients.They further observed that they remained stable in terms of haemodynamic responses, without any delay in anaesthesia recovery time and extubation time. (31)

6 MATERIAL AND METHODS

METHODOLOGY

STUDY SUBJECTS:

Patients admitted for elective laparoscopic surgeries with General Anaesthesia at R. L.Jalappa Hospital & Research centre, Tamaka, Kolar, Karnataka during the time period from January 2020 to May 2021.

STUDY DESIGN:

Prospective observational study.

SAMPLING PROCEDURE:

Computerized random sampling.

INCLUSION CRITERIA:

Patients belonging to

- ASA Grade I and II
- Both genders
- Age group between 18years to 60years
- Weighing more than 45 kgs
- Scheduled for elective laparoscopic surgeries.

EXCLUSION CRITERIA:

Patients suffering from

- chronic hypertension,
- severe ventricular dysfunction
- Hypovolemia
- Bradycardia

SAMPLE SIZE:

According to **SarikaAshutoshSamel et al** study,(32) considering the mean and stan.deviation of Diastolic BP at 60 min at Group A as 86.8 ± 7.95, mean and stan. deviation of Diastolic BP at 60 min at Group B as 92.33 ± 7.75 at 95% confidence interval with 80% power, the sample size is calculated as

$$N = (Z1-\alpha/2 + Z1-\beta)2 * 2 * \sigma2/ (\mu1 - \mu2)2$$

Z1-α/2 - two tailed probability for 95% confidence interval = 1.96

Z1-β - two tailed probability for 80% power = 0.84

μ1 - mean of Diastolic BP at 60 min at Group A = 86.8

μ2 - mean of Diastolic BP at 60 min at Group B = 92.33

σ - average standard deviation of Diastolic BP at 60 min at Group A & Diastolic BP at 60 min at Group B = 7.85

N = (1.96 + 0.84) ^2 * 2 * 7.85^2 / (86.8 - 92.33) ^2

N = 31.63

Thus, the calculated sample size for each group is 32 and the total sample size is 64.

STUDY PROCEDURE:

64 study subjects underwent elective laparoscopic surgeries with the General Anaesthesia were randomly selected. All the patients were evaluated one day prior to surgery. During pre-operative evaluation, Informed consents were taken from the patients. Data was collected using a proforma.The following investigations were routinely done preoperatively,

- Complete hemogram.
- Bleeding time and clotting time.
- Random blood sugar.

• Blood urea and serum creatinine.

• Serum electrolytes.

• Urine analysis for sugar, albumin, and microscopy.

• ECG and chest x-ray.

Airway assessment was done using Mallampati score. Fasting of 6 hours was ensured and were premedicated with Tab. Alprazolam 0.5 mg and Tab. Ranitidine 150 mg and the drugs were repeated 2 hours before the surgery. Based on the Computerised randomisation, the patients will be allocated to either of the two groups.

Group A (Dexmed- 0.25mcg):received dexmedetomidine 0.25mcg/kg/hr as continuous iv infusion at aninfusion rate of 0.05ml/kg/hr from a prepared dexmedetomidine diluted in saline to a concentration of 5mcg/ml.

Group B (Dexmed -0.5mcg): received dexmedetomidine 0.5mcg/kg/hr as continuous iv infusion at aninfusion rate of 0.05ml/kg/hr from a prepared dexmedetomidine diluted in saline to a concentration of 10mcg/ml.

After securing a venous access using a 18G cannula, patients were preloaded with Ringer's Lactate at aninfusion rate of 5ml/kg/hr. On arrival to the operation room, baseline HR, NIBP, ECG, SPO2 were recorded, and monitoring was started. All patients were pre-medicated with Inj. Glycopyrrolate 0.005mg/kg, Inj. Fentanyl citrate 2 mcg/kg and Inj. Ondansetron 4 mg, 10 minutes before induction of anaesthesia.

After preoxygenation for 3 minutes, anaesthesia was induced with the Inj.Propofol 2 mg/kg till loss of verbal command and tracheal intubation with appropriate size Oral Endo Tracheal Tube was facilitated with Inj. Succinyl Choline 2 mg/kg.

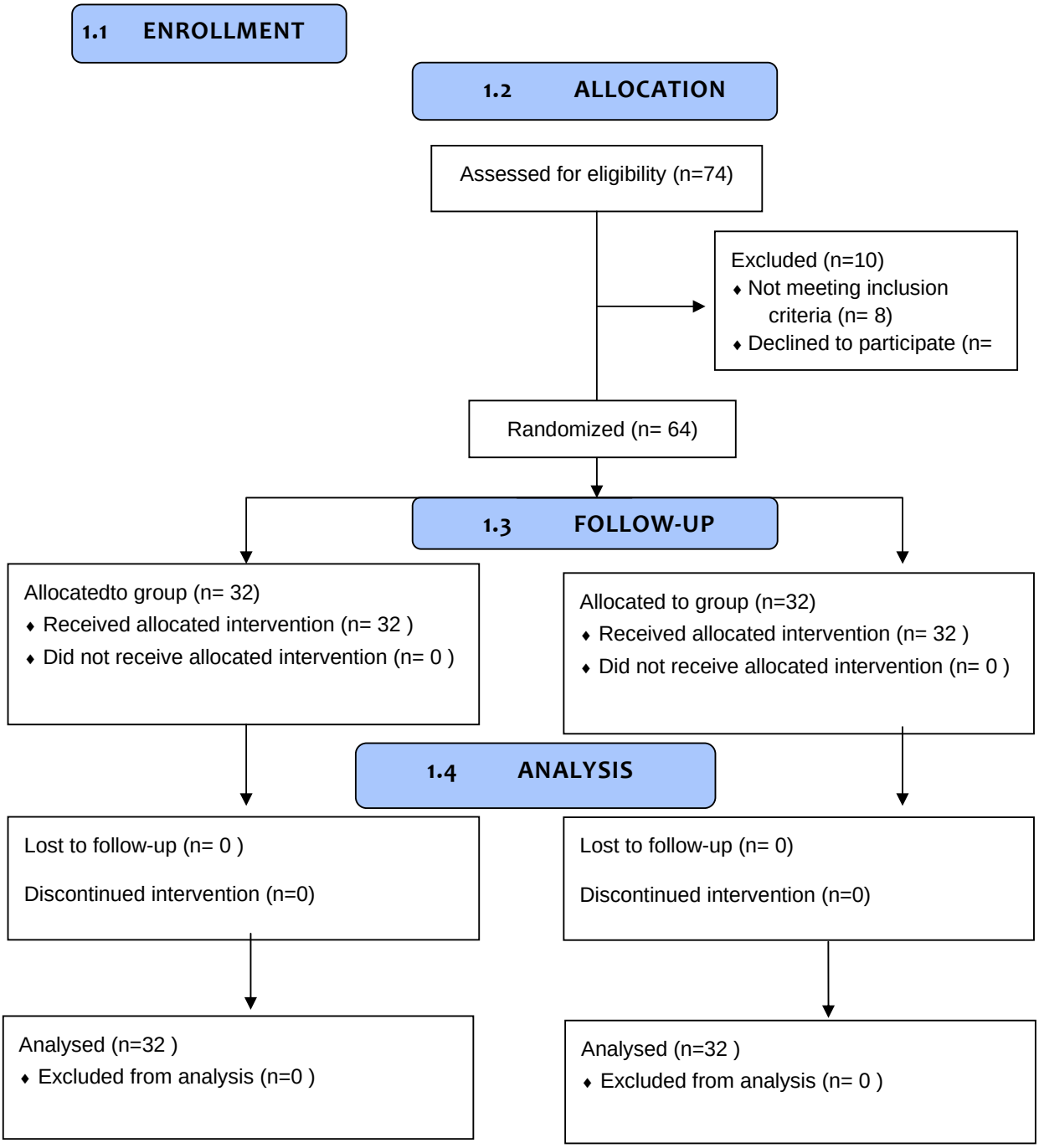
Anaesthesia was maintained with 60% Nitrous Oxide in O2, Isoflurane and Inj.Vecuronium 0.1mg/kg as muscle relaxant. Patients were mechanically ventilated to maintain ETCO 2 between 30 – 35 mmHg.

Intra operatively, HR, NIBP, ECG, ETCO 2 and SPO 2 were monitored and recorded at 15 min interval till the finishing of surgery. Hypotension was treated by decreasing the dial concentration of isoflurane or rate of infusion of IV fluids and bradycardia was treated with IV Atropine.

After conclusion of surgery, the residual neuro-muscular blockade was withdrawn with Inj.Neostigmine 0.05mg/kg and Inj.Glycopyrrolate 0.008 mg/kg. Extubation was done after adequate motor recovery and spontaneous breathing efforts.

The awakening time following reversal of neuromuscular blockade was recorded. Patients were later transferred to PACU to be observed for respiratory depression, sedation score, VAS score, haemodynamic changes, nausea, vomiting or any additionaldrug induced adverse effects or complications.

Figure 7. Modified CONSORT flow diagram



PARAMETERS TO BE OBSERVED:

- Heart Rate, ETCO2, SpO2
- Systolic Blood Pressure
- Diastolic Blood Pressure
- Mean Arterial Pressure

ETHICAL CONSIDERATION:

Institutional Ethical Committee approval was acquired from the institution before the commencement of the study. Informed written consent from each participant was obtained.

Source of Funding:None

Conflict of Interest:None

STUDY PERIOD:

January 2020 to May 2021.

STATISTICAL METHODS:

Descriptive Statistics:

1. Numerical variables like Ageetc., are represented in mean, median, mode and standard deviation.
2. Categorical variables like gender, etc., are represented in frequencies and percentages. Pie-charts and bar diagrams are used as appropriate.

Inferential Statistics:

3. When a mean difference of a Numerical variable is comparedamong thegroup A and B,independent t test is used.
4. When a Categorical Variable is compared with a categorical variable, the variablesare represented in both by tables and bar diagrams. For test of significance, chi-square test is used. Fisher's exact test is used when more than 20% of the cell values have expected cellvalue less than 5.
5. P-values less than 0.05 wereregarded as statistically significant.
6. Data was entered in MS excel sheet and analysed using SPSS software version 26.

7 RESULTS

Results of the study is discussed under the following headings:

i. Study groups

ii. Age distribution among the study population

iii. Gender distribution among the study population

iv. Weight among the study participants

v. ASA classification among the study participants

vi. Procedure among the study participants

vii. Diagnosis among the study participants

viii. Heart rate changes among the study participants

ix. Systolic Blood pressure changes among the study participants

x. Diastolic blood pressure changes among the study participants

xi. Mean Arterial pressure amongst the study participants

xii. Oxygen Saturation among the study participants

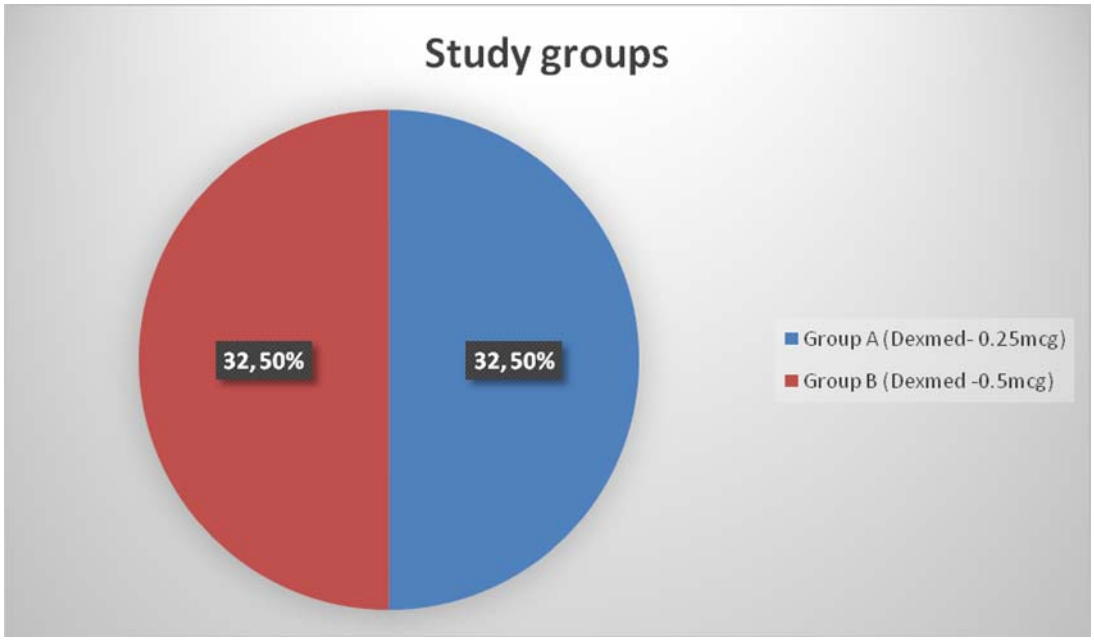
i. Study groups:

The Study population consists of 64 Patients admitted for elective laparoscopic surgeries performedwith General Anaesthesia. They were allocated into two separate groups, Group A (Dexmed- 0.25mcg) and Group B (Dexmed -0.5mcg). The study groups are represented in the following table and visualised using the pie chart,

Table 2. Study groups

Group	Frequency	Percent
Group A (Dexmed- 0.25mcg/kg/hr)	32	50
Group B (Dexmed -0.5mcg/kg/hr)	32	50

Figure 8. Pie Chart. Study groups



ii. Age distribution among the study population:

The mean age and the Standard deviation of the study participants was 41.46 ± 8.94 and 41.50 ± 8.49 among the Group A and Group B respectively. These differences were not found to be statistically significant using t test and is represented in the following table

Table 3. Mean age among the two groups:

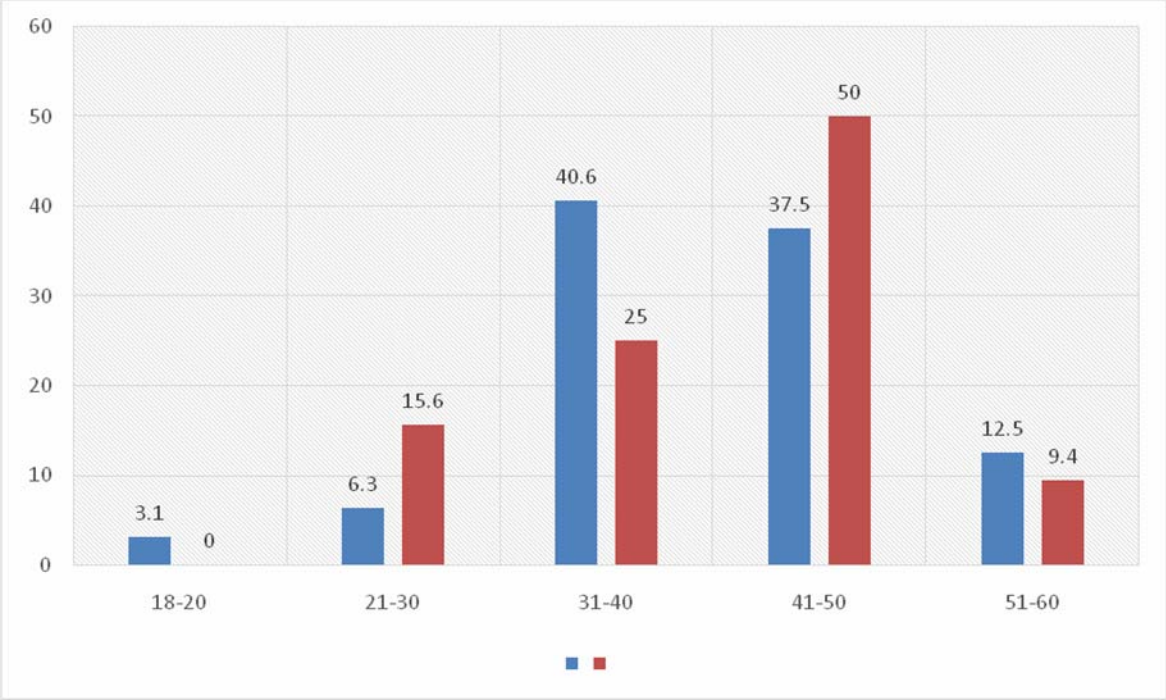
	Group	N	Mean	Std. Deviation	p-value (t test)
Age	A	32	41.4688	8.94782	0.989
	B	32	41.5000	8.49288	(Not Significant)

The age distribution of the study participants between the groups are represented in the following table and visualised using Bar chart,

Table 4. Age distribution of the study participants

S no	Age (years)	Group A		Group B		P value*
		Frequency	Percentage	Frequency	Percentage	
1	18-20	1	3.1	0	0	0.381 (Not Significant) – Chi – Square test used
2	21-30	2	6.3	5	15.6	
3	31-40	13	40.6	8	25	
4	41-50	12	37.5	16	50	
5	51-60	4	12.5	3	9.4	

Figure 9. Bar Chart. Age distribution of the study participants



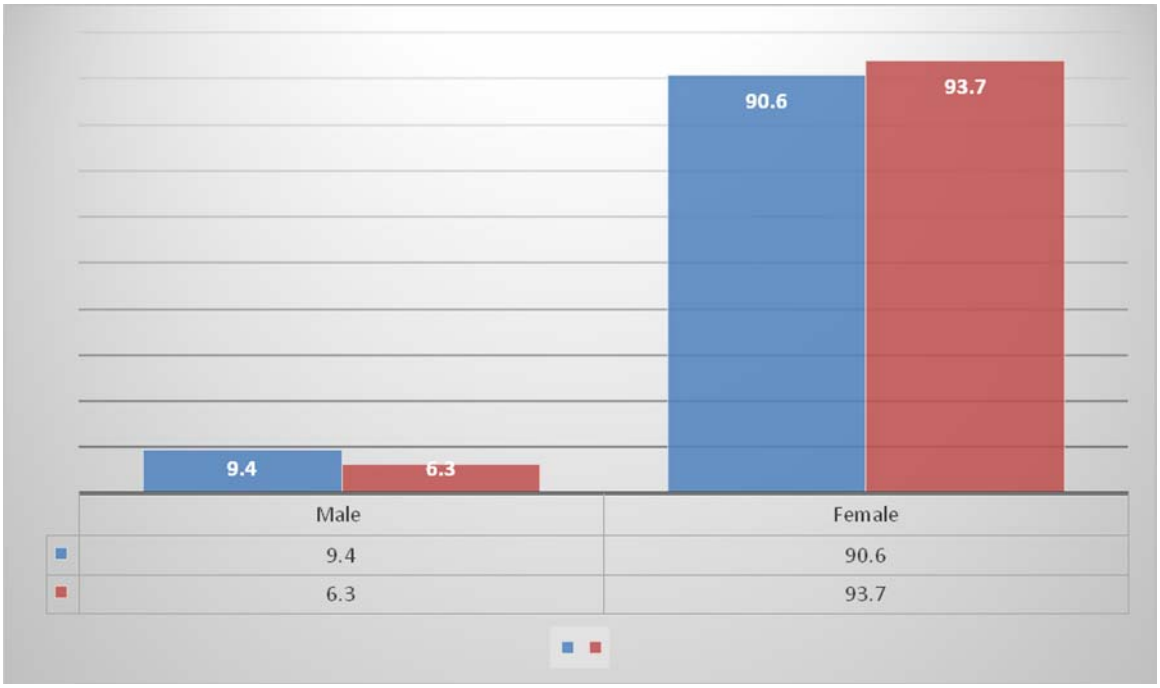
iii. Gender distribution among the study population:

Majority of the study participants were females in both the study groups. 29 (90.6%), 30 (93.7%) among group A and Group B respectively. These differences were not found to be statistically significant. The gender distribution of the study participants between the groups are represented in the following table and visualised using Bar chart,

Table 5. Gender distribution among the study participants

S no	Gender	Group A		Group B		P value*
		Frequency	Percent	Frequency	Percent	
1	Male	3	9.4	2	6.3	0.641 (Not Significant) – Chi – Square test used
2	Female	29	90.6	30	93.7	

Figure 10. Gender distribution of the study participants



iv. Weight among the study participants:

The mean weight and the Standard deviation of the study participants was 63.75 ± 8.88 and 62.18 ± 5.96 among the Group A and Group B respectively. These differences were not found to be statistically significant using t test and is represented in the following table,

Table 6. Mean weight among the two groups:

	Group	N	Mean	Std. Deviation	p-value (t test)
Weight	A	32	63.7500	8.87912	0.412
	B	32	62.1875	5.95920	(Not Significant)

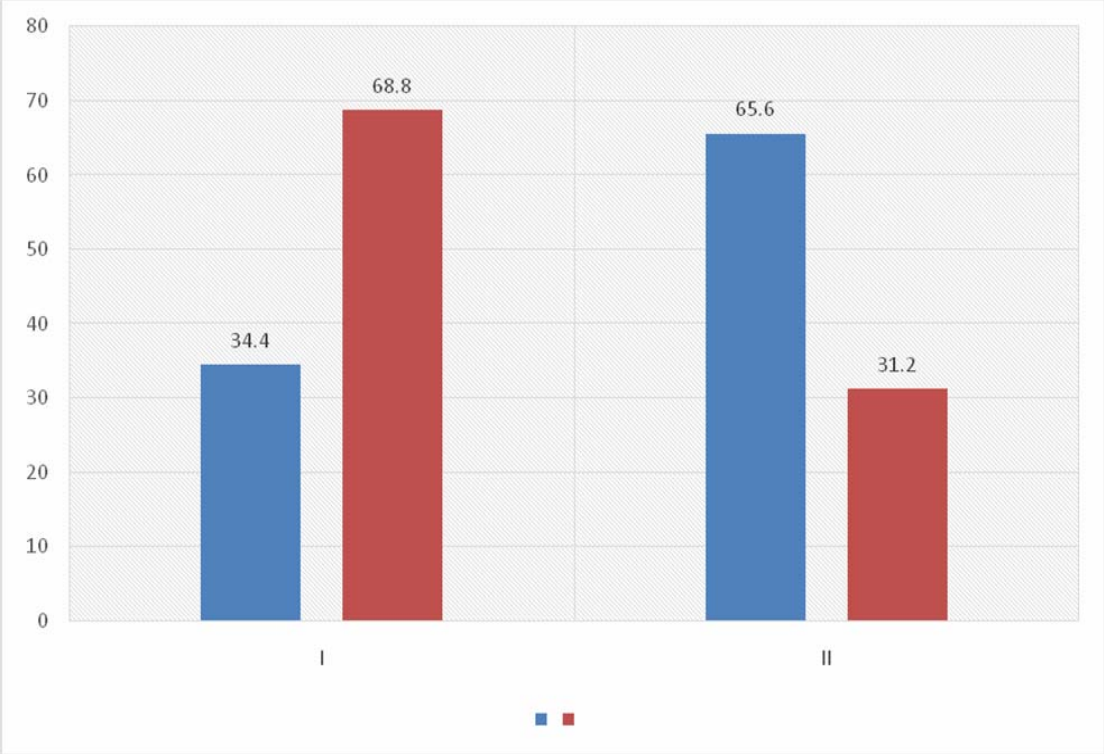
v. ASA classification among the study participants:

Majority of the study participants (65.6%) in Group A had ASA II and majority in (68.8%) group B had ASA I.The ASA classification grade among the study groups is statistically significant using Chi – Square test and is represented in the following table,

Table 7. ASA classification among the study participants

S no	ASA	Group A		Group B		P value*
		Frequency	Percent	Frequency	Percent	
1	I	11	34.4	22	68.8	0.006 (Significant) – Chi – Square test used
2	II	21	65.6	10	31.2	

Figure 11. ASA classification among the study participants



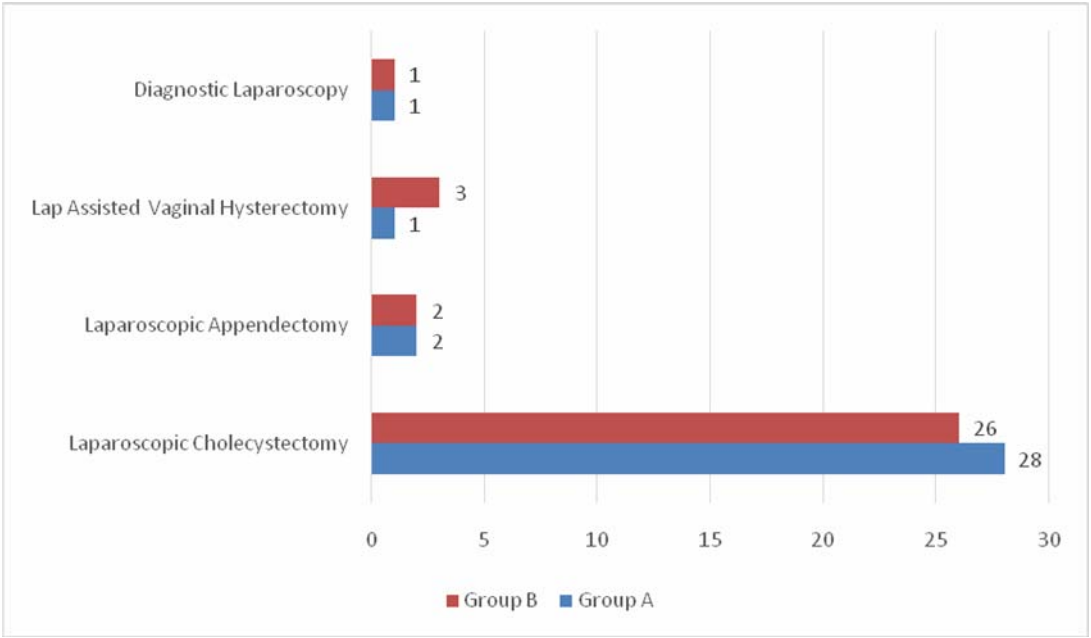
vi. Procedure among the study participants:

Among the 32 study participants each in Group A and B, 28 and 26 had laparoscopic cholecystectomy. The difference in procedures among the groups is not statistically significant using chi-square test and is represented in the following table and visualised using bar chart,

Table 8. Distribution of Procedure among the study participants

S no	Procedure	Group A		Group B		P value*
		Frequency	Percentage	Frequency	Percentage	
1	Laparoscopic Cholecystectomy	28	87.5	26	81.2	0.783(Not Significant) – Chi – Square test used
2	Laparoscopic Appendectomy	2	6.3	2	6.3	
3	Lap Assisted Vaginal Hysterectomy	1	3.1	3	9.4	
4	Diagnostic Laparoscopy	1	3.1	1	3.1	

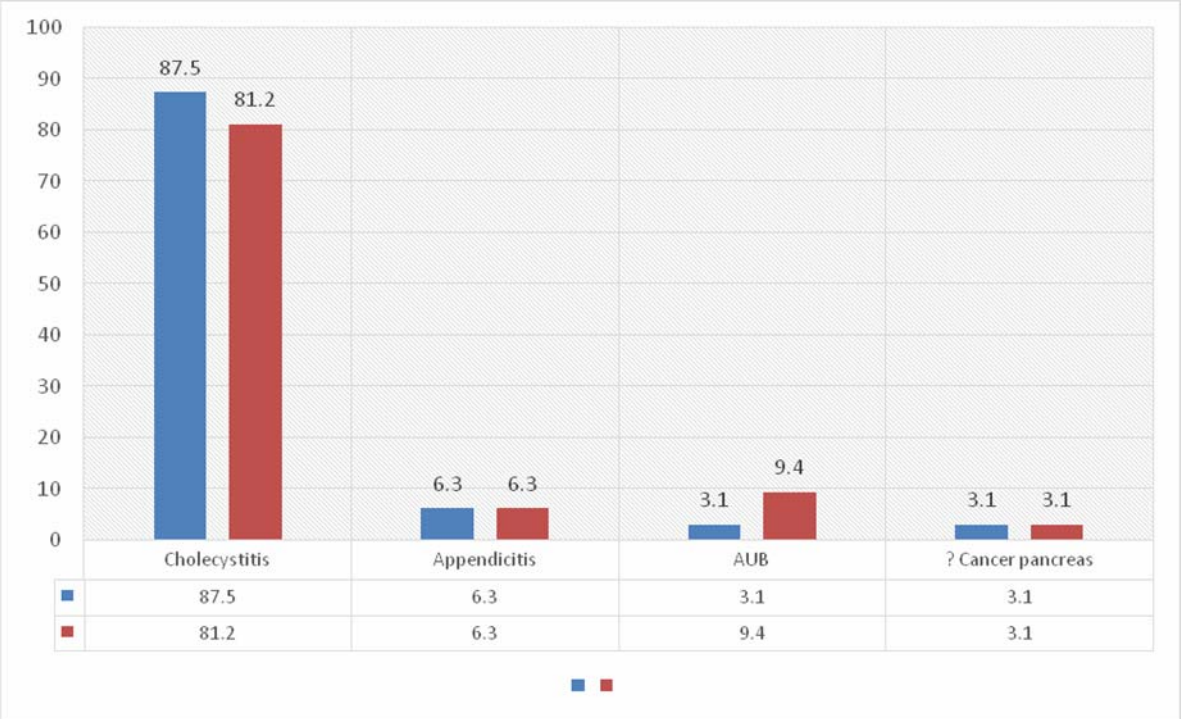
Figure 12. Bar Chart. Distribution of Procedure among the study participants



vii. Diagnosis among the study participants:

Among the study participants majority (87.5% in group A and 81.2% in group B) were getting treated for cholecystitis in both the groups, followed by appendicitis and Artificialuterine bleeding. The diagnosis among the study groups is represented in the following bar chart,

Figure 13. Bar Chart. Diagnosis among the study participants



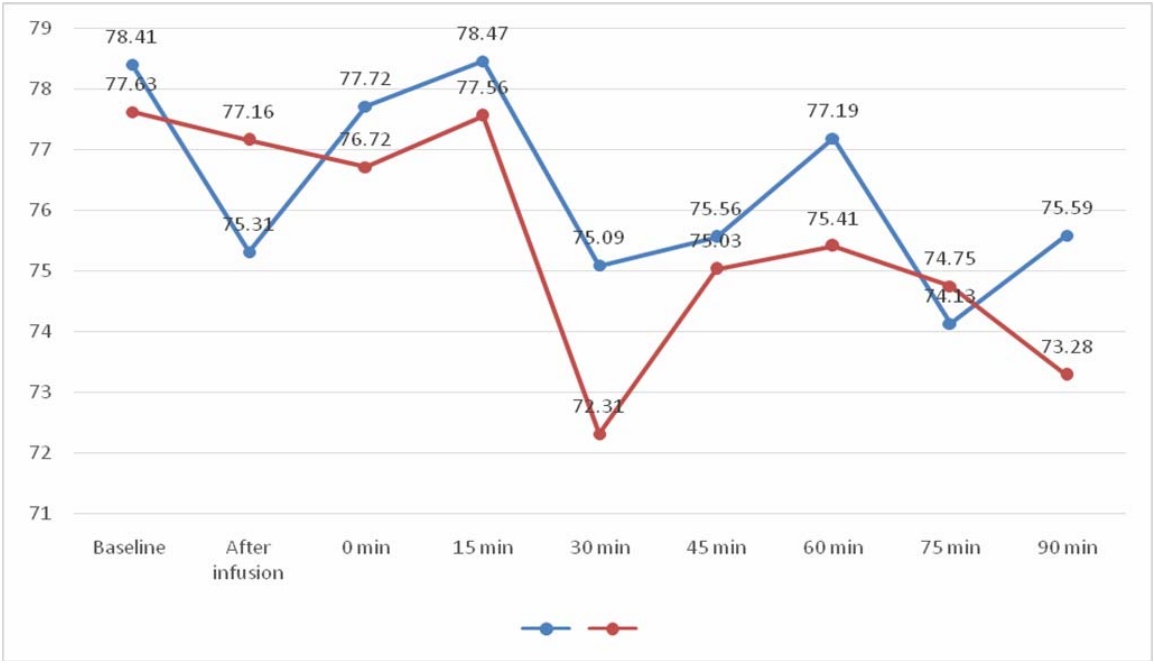
viii. Heart rate changes among the study participants:

The mean difference of heart rate between the groups was -1.84, 1.00, 0.906, 2.78, 0.53, 1.78, -0.62 and 2.31 respectively at after infusion, 0,15,30,45,60, 75 and 90 minutes. There differences between the groups in maintaining the heart ratewas not found to be statistically significant. The mean and standard deviations of Heart rate among group A and group B is represented in the following table and visualised using means plot,

Table 9. Heart rate changes among the study participants

S no	Heart rate	Group-A		Group-B		P value
		Mean	SD	Mean	SD	
1	Baseline	78.41	8.076	77.63	6.676	.636
2	After infusion	75.31	8.778	77.16	9.689	.371
3	0 min	77.72	9.102	76.72	9.991	.798
4	15 min	78.47	8.393	77.56	8.699	.652
5	30 min	75.09	9.275	72.31	9.107	.216
6	45 min	75.56	9.108	75.03	9.943	.867
7	60 min	77.19	9.003	75.41	11.039	.554
8	75 min	74.13	8.163	74.75	9.339	.804
9	90 min	75.59	9.970	73.28	9.173	.405

Figure 14. Heart rate changes among the study participants:



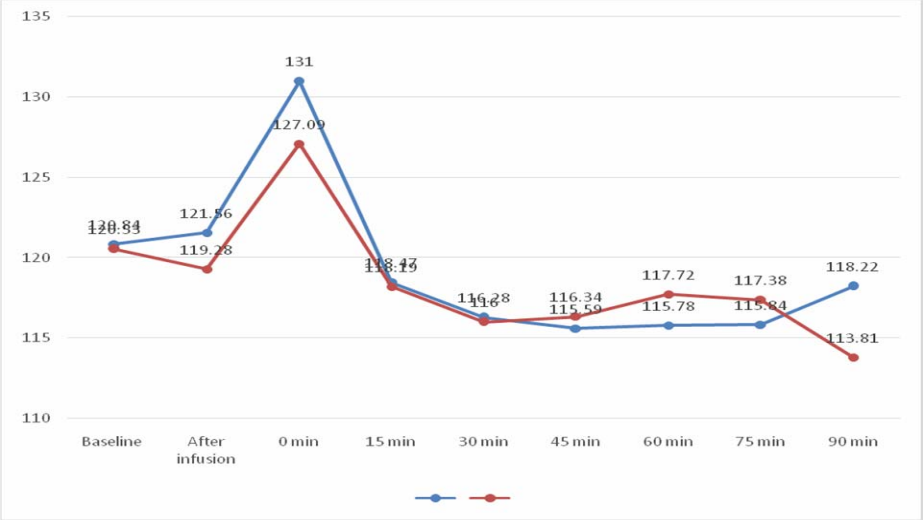
ix. Systolic Blood pressure changes among the study participants:

The mean difference of systolic blood pressure between the groups was 2.28, 3.90, 0.28, 0.28, -0.75, -1.93, -1.53 and 4.40 respectively at after infusion, 0,15,30,45,60, 75 and 90 minutes. They did not observe any statistical significancein difference in maintaining the systolic blood pressure except at 90 minutes between the groups. The mean and std. deviations of Systolic Blood pressure among group A and group B is represented in the following table and visualised using means plot,

Table 10. Systolic Blood pressure changes among the study participants

S no	Systolic Blood pressure	Group A		Group B		P value
		Mean	SD	Mean	SD	
1	Baseline	120.84	10.662	120.53	8.923	.685
2	After infusion	121.56	8.915	119.28	8.263	.296
3	0 min	131.00	8.636	127.09	8.208	.080
4	15 min	118.47	7.594	118.19	8.185	.866
5	30 min	116.28	9.254	116.00	8.485	.995
6	45 min	115.59	8.776	116.34	9.393	.752
7	60 min	115.78	7.942	117.72	7.871	.310
8	75 min	115.84	7.883	117.38	7.820	.447
9	90 min	118.22	7.443	113.81	8.146	.029

Figure 15. Systolic blood pressure changes among the study participants



x. Diastolic blood pressure changes among the study participants:

The mean difference of diastolic blood pressure between the groups was -0.12, -0.25, -1.84, -1.00, -0.75, -1.31, 2.78 and -1.46 respectively at after infusion, 0,15,30,45,60, 75 and 90 minutes. There was no statisticalsignificance in difference between the groups in maintaining the diastolic blood pressure. The mean and standard deviations of Diastolic blood pressure among group A and group B is represented in the following table and visualised using means plot,

Table 11. Diastolic blood pressure changes among the study participants:

S no	Diastolic Blood pressure	Group A		Group B		P value
		Mean	SD	Mean	SD	
1	Baseline	73.97	7.694	77.13	7.699	.157
2	After infusion	78.47	8.367	78.59	7.641	.882
3	0 min	78.94	8.458	79.19	7.446	.962
4	15 min	76.09	8.050	77.94	8.328	.476
5	30 min	77.06	8.359	78.06	7.919	.628
6	45 min	77.88	7.534	78.63	7.971	.682
7	60 min	75.41	7.816	76.72	7.826	.471
8	75 min	79.31	8.177	76.53	7.224	.129
9	90 min	78.47	7.397	79.94	7.721	.343

Figure 16. Diastolic blood pressure changes among the study participants

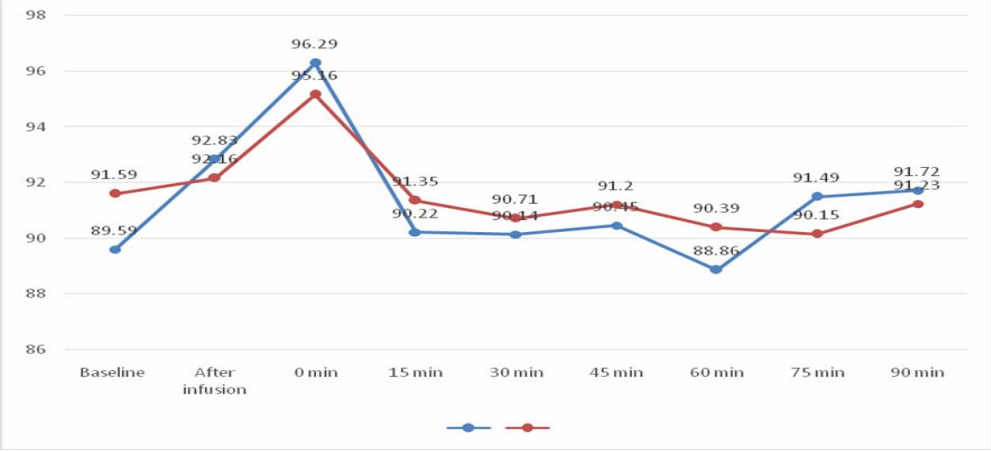
xi. Mean Arterial pressure among the study participants:

The mean differences of mean arterial pressures between the groups was 0.67, 1.13, -1.13, -0.57, -0.75, -.152, 1.34 and 0.49 respectively at after infusion, 0,15,30,45,60, 75 and 90 minutes. There was no statistical significance in difference between the groups in maintaining the mean arterial pressure. The mean and standard deviations of Mean Arterial pressure among group A and group B is represented in the following table and visualised using means plot,

Table 12.Mean Arterial pressure amongst the study participants

S no	Mean Arterial pressure	Group A		Group B		P value
		Mean	SD	Mean	SD	
1	Baseline	89.59	7.814	91.59	7.355	.310
2	After infusion	92.83	6.471	92.16	6.226	.825
3	0 min	96.29	6.348	95.16	5.659	.401
4	15 min	90.22	6.418	91.35	6.444	.409
5	30 min	90.14	6.289	90.71	5.780	.672
6	45 min	90.45	5.098	91.20	5.229	.610
7	60 min	88.86	5.676	90.39	5.508	.351
8	75 min	91.49	5.939	90.15	5.459	.307
9	90 min	91.72	5.505	91.23	5.635	.893

Figure 17. Mean Arterial pressure changes among the study participants



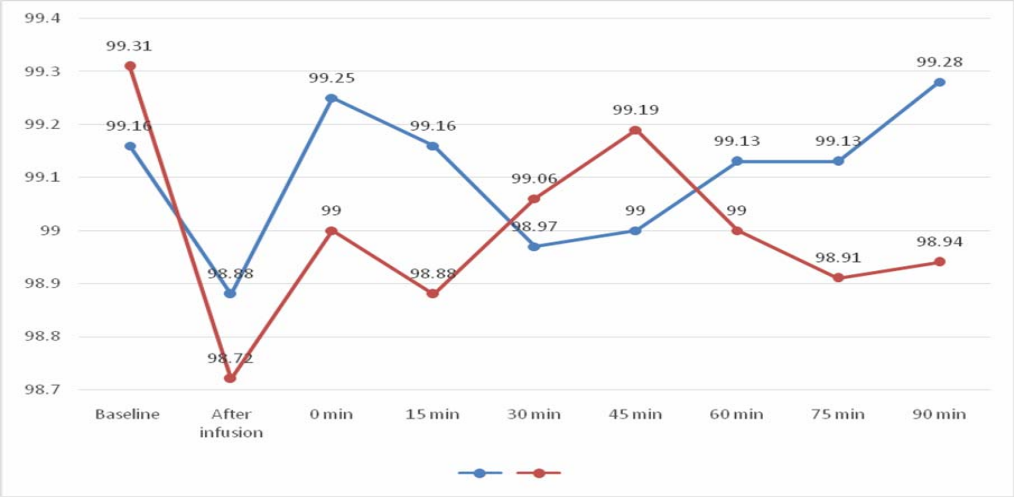
xii. Oxygen Saturation between the study participants:

The mean difference of oxygen saturation between the groups was 0.15, 0.25, 0.28, -0.94, -0.18, 0.12, 0.21 and 0.34 respectively at after infusion, 0, 15, 30, 45, 60, 75 and 90 minutes. There was no statistical significance in difference between the groups in maintaining the oxygen saturation. The mean and standard deviations of Oxygen Saturation among group A and group B is represented in the following table and visualised using means plot,

Table 13.Oxygen Saturation among the study participants

S no	Oxygen Saturation	Group A		Group B		P value
		Mean	SD	Mean	SD	
1	Baseline	99.16	.808	99.31	.780	.426
2	After infusion	98.88	.833	98.72	.924	.384
3	0 min	99.25	.842	99.00	.880	.250
4	15 min	99.16	.920	98.88	.871	.209
5	30 min	98.97	.861	99.06	.914	.667
6	45 min	99.00	.950	99.19	.859	.433
7	60 min	99.13	.833	99.00	.803	.530
8	75 min	99.13	.751	98.91	.818	.268
9	90 min	99.28	.683	98.94	.759	.066

Figure 18. Oxygen saturation among the study participants



8 DISCUSSION

Laparoscopic surgeries necessitate intraperitoneal insufflations with carbon di oxide which is linked with significant hemodynamic changes including reduced stroke volume, increased blood pressures and rise in pulmonary and systemic vascular resistance.(33,34)These Problems happening during the laparoscopic surgeries are primarily due to the combined effects of pneumoperitoneum with CO2 insufflation and the positioning of patient, which results in several hemodynamic and ventilatory changes.(35–37)

Because of decreased venous return and increased systemic vascular resistance, systemic hypertension can occur. This in turn increases the essential for deepening the plane of anaesthesia and requires the usage of vasodilators to offset the rising blood pressures. IAPs greater than 10 mm Hg due to the peritoneal insufflation with carbon di oxide makes significant alterations in hemodynamics, characterised by reduction in venous return, increase in arterial pressures, increase in systemic vascular resistance and pulmonary vascular resistance. Heart rate remains unchanged or increases only slightly. These hemodynamic perturbations occur mostly at the commencement of peritoneal insufflation.(38,39)

The use of alpha 2 agonists during the perioperative period have been related with decreased anaesthetic requirements and diminished the heart rate and blood pressure to the stress responses. Furthermore, α2 receptors lying within the spinal cord modulate the pain pathways, thus providing some grade of analgesia.(40,41)

Anaesthesia during these laparoscopic surgeries has emphasized on usage of many pharmaceutical agents which can counteract these hemodynamic changes. Various studies have been conducted with different pharmacological interventions which result in reduced incidence of tachycardia, hypertension during the surgeries

via laparoscopy and provide a stable hemodynamic state with minimal undesirable effects. α2-adrenergic agonists may aid the role of ideal pharmacological adjuvant for laparoscopic surgeries, as they provide anxiolysis, sedation, analgesia, hypnosis and sympatholysis.(42,43)

Dexmedetomidine is a highly selective alpha-2-adrenoceptor agonist with anxiolytic, sedative, and analgesic properties. It is more selective for α2 receptors with 1600 times greater affinity than α receptor. Its sympatholytic effect decreases mean arterial pressure(MAP) and heart rate by reducing norepinephrine release. In addition,Dexmedetomidine has the ability to reduce both the anaesthetic and opioid analgesic requirements during the perioperative period. Moreover, Dexmedetomidine is short acting and has an antidote for its sedative effect called Atipamezole. (16,44–46)

The above-mentioned properties render Dexmedetomidine suitable for sedation and analgesia in the perioperative period; as a premedication, as an anaesthetic adjunct, and as postoperative analgesic and sedative. It was observed that dexmedetomidine used in premedication attenuates the sympathetic activation. (47)

The primary objective of this research is to investigatethe hemodynamic stability with two separate doses of dexmedetomidine (0.25mcg/ml & 0.5mcg/ml) among patients who underwent laparoscopic surgeries with general anaesthesia.This is Prospective observational study done among 64 Patients who underwent elective laparoscopic surgeries performedwith General Anaesthesia.They were classified into two separate groups, Group A (Dexmed- 0.25mcg/ml) and Group B (Dexmed - 0.5mcg/ml). Haemodynamic alterations were studied between the two groups.

In this study, Theage, gender, weight, procedures and diagnosis differences between the groups were not of statistical significance. Majority of the study

participants (65.6%) in Group A had ASA II and majority in (68.8%) group B had ASA I. The ASA classification grade among the study groups is statistically significant using Chi – Square test. This will not cause any bias or confounding effect while assessing the hemodynamic changes of two seperate doses of dexmedetomidine, but these study results cause a definitive bias while assessing the ease of the intubation and extubation with respect to the different doses of dexmedetomidine.

Haemodynamic changes:

The difference in means of the haemodynamic parameters such as Heart rate, systolic, diastolic, andmean arterial pressure, and oxygen saturation were between the study groups were not statistically significant except the systolic blood pressure at 90 min, where the mean SBP is significantly greater in Group A(Dexmed-0.25mcg/kg/hr).

Heart rate: In this study, The mean difference of heart rate between the groups was -1.84-2.31 respectively measured every 15 mintues during the study. There difference between the groups in maintaining the heart ratewas not of statistical significance.None of the patients developed bradycardia.

However, in a study done by **Gunalan S et al**, it showed that the mean heart rate was decreased significantly in the group dexmedetomidine(0.5mcg) when related to the fentanyl group immediately after induction and there was significant reduction in the heart rate for up to 10 minutes post intubation among the participants who received dexmedetomidine. (48)Accordingly, a study done by **Jain V et al** showed that in group D,dexmeditomidine(0.5mcg) the mean heart reduced after intubation. The reduction was by 0.7 beats/min at 1 min to 4.7 beats per min at 15 minutes.(49)

Presynaptic activation of alpha 2 adrenoceptor lying in the locus ceruleus of brain impedes nor epinephrine release. Furthermore, the locus ceruleus is the origin site for descending medullo-spinal noradrenergic pathway, which is known to be an imperative modulator of nociceptive neurotransmitters. Postsynaptic activation of alpha 2 receptors in the central nervous system will result in reduction in sympathetic activity which in turn leads to fall in heart rate.(50,51)

Systolic blood pressure: The mean difference of systolic blood pressure between the groups measured at 15min interval did not have any statistical significance difference between the studygroups in maintaining the systolic blood pressure except at 90 minutes.

A study done by **Gogus N et al**, stated that the mean systolic blood pressure was significantly reduced at 1-6 minutes in dexmedetomidine group and in fentanyl group it was significantly reduced at 2-6 minutes.(52) A study done by **Jain V et al**demonstrated that in group D, the Systolic blood pressure increased by 2.16mmHg at 1 minutes and 0.06mmHg at 2 min. After that they started to decline by 5.4mmHg at 5 minutes to 8.97 mmHg at 15 minutes. Though there was increase in systolic pressure in group D, it was reduced than that of their counterparts. (49)The present study did not observe this transient increase in the systolic blood pressure.

Diastolic blood pressure: In this study, the mean difference of diastolic blood pressure measured at 15min interval during the study showed no statistical significance in difference between the groups in maintaining the diastolic blood pressure.

On the contrary, A study done by **Patel ND et al**it showed a significant decrease in diastolic blood pressure.(53)**Ebert TJ et al** studied the hemodynamic responses to increasing concentrations of Dexmedetomidine and concluded that

increasing concentrations of Dexmedetomidine in humans resulted in progressive increases in sedation and analgesia and progressive decreases in heart rate, cardiac output and memory.(54)

Mean arterial pressure: The mean difference of mean arterial pressure between the groups also had no statistical significance in difference between the groups in maintaining the mean arterial pressurewhen measured at 15min interval during the study

In a randomized study by **Menda F et al**dexmedetomidine was used for reduction of hemodynamic response with low dose fentanyl and etomidate in patients undergoing myocardial revascularization receiving beta blocker treatment. Among the dexmedetomidine group systolic, diastolic and mean arterial pressures were lower at all times compared to baseline values.(55)

Sulaiman S et al directed a study regarding the efficacy of intra-venous dexmedetomidine for attenuation of haemodynamic responses. Dexmedetomidine at a dosage of 0.5 mcg/kg as 10 minutes infusion administered before induction of general anaesthesia reduces the sympathetic response.(56)

Oxygen saturation:. There was no statistical significance in difference between the groups in maintaining the oxygen saturation. Moreover much differences, could not be observed in oxygen saturation between the groups as with even minor drop in oxygen saturation will be addressed by the anaesthetist immediately.

We did not observe any majorly adverse side effects in both the groups, with the haemodynamically stability with the two separate dosages of dexmedetomidine, the drug can be used with any of the doses, depending upon the desired effect.

LIMITATIONS

This study was donein a tertiary care setting where the skill levels of the anaesthetists are quitehigh,better monitoring facilities and probably that would be a reason for the absence of any adverse events in both the study groups. Hence the study results cannot be readily generalised to the resource limited settings.

The study was conducted with a relatively smaller sample size to measure the differences in the hemodynamic parameters. Also, the desired sample size was achieved despite the Covid pandemic threat mandating a halt in elective surgeries during the majority of the study duration.

The role of Confounding factors in cannot be ruled out, even though the factors such as baseline attributes were comparable in both the groups and randomisation was followed to allocate the groups.

STRENGTHs

The data was collected primarily by the principal investigator, hence the inter observer reliability bias will be minimal.

The age, gender, weight, procedures, and diagnosis differences were not of statistical significance between the groups, hence the role of confounding bias by these factors on the study results is less.

The study participants were assigned into two groups by computerised randomisation technique. This will eliminate allocation bias and ensures the comparability between the groups.

RECOMMENDATIONS

We did not witness any majorly adverse side effects in both the groups, with the haemodynamically stability with the two separate doses of dexmedetomidine, the drug can be used with any of the doses, depending upon the desired effect.

Dexmedetomidine can be safely used with haemodynamic stability at doses of both 0.25mcg/kg/hrl& 0.5mcg/kg/hr.

Further studies and research with improved sample size will increase the power of the study in identifying the differences in all the haemodynamic parameters. More studies from resources limited centers may add new challenges to the existing literature.

SUMMARY OF RESULTS

Baseline Characteristics:

The Study population consists of 64 Patients admitted for elective laparoscopic surgeries performedwith General Anaesthesia. They were classified into two separate groups, Group A (Dexmed- 0.25mcg/kg/hr) and Group B (Dexmed - 0.5mcg/kg/hr).The Baseline characteristics between the groups were having no statistical significance except the ASA grade.

The demographic data including age,gender,weight matched and was comparable in both the groups

ASA grade: Majority of the study participants (65.6%) in Group A had ASA II and majority in (68.8%) group B had ASA I.

The ASA classification grade among the study groups is statistically significant using Chi – Square test.

Procedures: Among the 32 study participants each in Group A and B, 28 and 26 had laparoscopic cholecystectomy.

Diagnosis: Among the study participants majority (87.5% in group A and 81.2% in group B) were getting treated for cholecystitis in both the groups, followed by appendicitis and Abnormal uterine bleeding.

Haemodynamic changes:

The difference in means of the haemodynamic parameters such as Heart rate, systolic, diastolic, andmean arterial pressures, and oxygen saturation were between the study groups were not statistically significant except the systolic blood pressure at 90 min, where the mean SBP is significantly increased in Group A(Dexmed-0.25mcg/kg/hr).

Heart rate: The mean difference of heart rate between the groups had no statistical significance in difference between the study groups in maintaining the heart rate.

Systolic blood pressure: The mean difference of systolic blood pressure between the groups at 15 min interval,showed no statistical significance in difference between the study groups in maintaining the systolic blood pressure except at 90 minutes.

Diastolic blood pressure: The mean difference of diastolic blood pressure between the groups also did not have statistical significance in difference between the study groups in maintaining the diastolic blood pressure.

Mean arterial pressure: The mean difference of mean arterial pressure between the groups observed at 15 min had no statistical significance in difference between the study groups in maintaining the mean arterial pressure.

Oxygen saturation: The mean difference of oxygen saturation between the groups was 0.15-0.34 respectively after infusion. There was no statistical significance in difference between the study groups in maintaining the oxygen saturation.

CONCLUSION

The Baseline attributes between the groups were not having statistical significance except the ASA grade. The difference in means of the haemodynamic parameters such as Heart rate, systolic, diastolic, and mean arterial pressures, and oxygen saturation were between the study groups were not statistically significant except the systolic blood pressure at 90 min, where the mean SBP is significantly higher in Group A(Dexmed- 0.25mcg/kg/hr).

Hence this study, we conclude that there is no difference in hemodynamic stability with two separate doses of dexmedetomidine (0.25mcg/kg/hr& 0.5mcg/kg/hr) among patients undergoing surgeries with laparoscopywith general anaesthesia. We did not witness any majorly adverse side effects in both the groups.

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ANNEXURE – I PROFORMA

EVALUATION OF EFFECT OF LOW DOSE DEXMEDITOMIDINE ON INTRAOPERATIVE HEMODYNAMICS IN PATIENTS UNDERGOING LAPAROSCOPIC SURGERIES UNDER GENERAL ANAESTHESIA

Investigators: **DR.PREETHI R / DR.SURESHKUMAR N**

Name:

Age:	Sex:	Weight:
Hospital no:	ASA grade:	

Diagnosis:

Operation:

Pre anaesthetic evaluation:

PR: BP:

	CBC:	Hb -
CVS:		wbc -
RS:		Platelets -
CNS:	BT -	CT -
Pa:	Rft:	

S.Electrolytes :

X ray chest: Rbs:

Mallampati grading:

Anticipated difficult airway: yes / no

(Dexmed- 0.25mcg): Will receive dexmedetomidine 0.25mcg/kg/hr as continuous iv infusion at a rate of 0.05ml/kg/hr from a prepared dexmedetomidine diluted in saline to a concentration of 5mcg/ml.

Group B (Dexmed -0.5mcg) : Will receive dexmedetomidine 0.5mcg/kg/hr as continuous iv infusion at a rate of 0.05ml/kg/hr from a prepared dexmedetomidine diluted in saline to a concentration of 10mcg/ml.

Time	HR	SBP	DBP	MAP
0 min				
15 min				
30 min				
45 min				
60 min				
75 min				
90 min				
105 min				
120 min				

ANNEXURE II- PATIENT INFORMATION SHEET

STUDY TITLE: EVALUATION OF EFFECT OF LOW DOSE DEXMEDITOMIDINE ON INTRAOPERATIVE HEMODYNAMICS IN PATIENTS UNDERGOING LAPAROSCOPIC SURGERIES UNDER GENERAL ANAESTHESIA

Investigators: Dr.PREETHI.R / Dr.SURESH KUMAR N

Study location: R L Jalappa Hospital and Research Centre attached to Sri Devaraj URS Medical College, Tamaka, Kolar.

Details - All Patients posted for Laparoscopic surgeries under general anesthesia will be included in this study. Patients with co-morbid conditions will be excluded from the study.

This study aims to reduce the incidence of hypotension in patients undergoing laparoscopic surgeries under general anesthesia. Patients will have to undergo all the routine investigations. Patient and the attenders will be completely explained about the procedure being done (i.e.) one group of patients will be receiving dexmedetomidine 0.25mcg/kg/hr as continuous iv infusion at a rate of 0.05ml/kg/hr from a prepared dexmedetomidine diluted in saline to a concentration of 5mcg/ml, and another group of subjects will be receiving receive dexmedetomidine 0.5mcg/kg/hr as continuous iv infusion at a rate of 0.05ml/kg/hr from a prepared dexmedetomidine diluted in saline to a concentration of 10mcg/ml. Dexmedetomidine will be avoided in patients with cardiovascular disease, chronic hypertension, advanced heart block, severe ventricular dysfunction, hypovolemia, bradycardia.

Please read the information and discuss with your family members. You can ask any question regarding the study. If you agree to participate in the study we will collect information.Relevant history will be taken.This information collected will be used only for dissertation and publication.

All information collected from you will be kept confidential and will not be disclosed to any outsider. Your identity will not be revealed.There is no compulsion to agree to this study.The care you will get will not change if you don't wish to participate.You are required to sign/ provide thumb impression only if you voluntarily agree to participate in this study.

For further information contact

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1st year Postgraduate

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Mobile no: 9487779089

ANNEXURE III - INFORMED CONSENT SHEET

I,Mr/Mrs_____son/daughter/wife of Mr/Mrs_____,aged_____years have been explained in the language understood by me about the study entitled:

EVALUATION OF EFFECT OF LOW DOSE DEXMEDITOMIDINEON INTRAOPERATIVE HEMODYNAMICS IN PATIENTS UNDERGOING LAPAROSCOPIC SURGERIES UNDER GENERAL ANAESTHESIA

I have been explained about the procedure and investigations that will be done during this study.

I have no objections for sharing the medical information and details in the case records with the investigators of this study. I am aware that the data generated in the study may be used for publication/dissertation purpose and personal identity will not be revealed.

I confirm that I have not been offered any financial incentives for participating in this study or I shall not derive any financial benefits from the study.

I understand that my son/daughter/wife's participation in this study is entirely voluntary and wilfully give consent regarding participation in the study for specified duration.

PARTICIPANT'S NAME:

SIGNATURE OF INVESTIGATOR:

SIGNATURE / THUMB IMPRESSION OF PATIENT:

PATIENT ATTENANDANT/WITNESS'S NAME:

SIGNATURE:

KEY TO MASTER CHART

M	Male
F	Female
KGS	Kilograms
ASA PS	American Society of Anaesthesiologists Physical Status
HR	Heart Rate
SBP	Systolic Blood Pressure
DBP	Diastolic Blood Pressure
MAP	Mean Arterial Pressure
mmHg	Millimetre Of Mercury
SPO2	Peripheral Capillary Oxygen Saturation
MINS	Minutes
SECS	Seconds

MASTER CHART GROUP A : Group A (Dexmed- 0.25mcg).

S no	Group	IP no	Age	Gender	ASA	Weight	Diagnosis	Procedure	BaseHR	AftinfHR	0HR	15HR	30HR	45HR	60HR	75HR	90HR	BaseSBP	AftinfSBP	0SBP	15SBP	30SBP	45SBP	60SBP	75SBP	90SBP	BaseDBP	AftinfDBP	0DBP	15DBP	30DBP	45DBP	60DBP	75DBP	90DBP	BaseMAP	AftinfMAP	0MAP	15MAP	30MAP	45MAP	60MAP	75MAP	90MAP	BaseO2	AftinfO2	0O2	15O2	30O2	45O2	60O2	75O2	90O2
1	A	809397	38	F	II	53	Acute Cholecystitis	Lap Cholecystectomy	60	86	90	75	78	87	87	71	79	125	125	131	116	110	121	121	111	124	78	75	76	87	86	74	73	90	64	94	92	94	97	94	90	89	97	84	98	100	98	100	99	98	99	98	100
2	A	822844	33	F	II	51	Acute Cholecystitis	Lap Cholecystectomy	70	82	78	64	88	74	71	74	77	120	115	146	110	117	125	125	116	113	80	80	77	67	68	67	75	64	76	93	92	100	81	84	86	92	81	88	99	99	100	100	100	98	100	98	99
3	A	781853	40	F	I	64	Acute Cholecystitis	Lap Cholecystectomy	86	73	84	84	82	69	82	62	67	130	140	144	118	115	109	115	111	106	74	75	90	74	79	74	70	77	72	93	97	108	89	91	86	85	88	83	99	98	100	98	98	98	98	99	99
4	A	785465	46	F	II	58	Acute Cholecystitis	Lap Cholecystectomy	80	82	60	75	82	83	89	86	62	110	124	120	122	113	121	114	122	112	74	78	87	74	76	84	73	79	76	86	93	98	90	88	96	87	93	88	99	99	98	100	100	100	99	100	99
5	A	784453	50	F	I	65	Acute Cholecystitis	Lap Cholecystectomy	78	63	90	86	62	89	80	85	81	110	112	120	105	124	116	104	119	125	70	70	64	67	91	72	86	80	82	83	84	83	80	102	87	92	93	96	100	99	100	100	99	100	100	100	100
6	A	826341	30	F	II	60	Acute Cholecystitis	Lap Cholecystectomy	90	64	76	88	64	68	87	60	88	100	116	130	113	124	120	107	113	125	76	90	91	66	91	74	75	71	85	84	99	104	82	102	89	86	85	98	100	100	99	99	100	100	100	100	98
7	A	803989	36	F	II	74	Acute Cholecystitis	Lap Cholecystectomy	66	89	68	76	72	77	69	77	60	134	144	146	105	126	102	125	110	123	78	88	81	69	67	66	68	65	66	97	107	103	81	87	78	87	80	85	99	99	100	98	100	98	98	99	100
8	A	793047	48	F	II	52	Acute Cholecystitis	Lap Cholecystectomy	84	77	82	82	72	63	87	66	82	116	124	138	126	128	111	116	102	121	64	90	85	64	68	89	64	78	77	81	101	103	85	88	96	81	86	92	98	99	100	99	98	99	98	100	100
9	A	793093	42	F	I	71	Acute Cholecystitis	Lap Cholecystectomy	84	78	71	79	71	84	61	67	60	116	124	140	124	104	106	123	106	106	66	90	87	75	67	77	78	89	85	83	101	105	91	79	87	93	95	92	99	98	100	100	98	100	100	99	99
10	A	804485	47	F	II	59	Acute Cholecystitis	Lap Cholecystectomy	75	62	83	70	79	69	64	76	70	135	130	140	113	103	119	104	108	129	89	76	64	65	89	80	66	81	81	104	94	89	81	94	93	79	90	97	98	99	99	100	98	98	99	100	99
11	A	828117	40	M	II	57	Acute Cholecystitis	Lap Cholecystectomy	80	85	73	90	62	74	79	66	81	130	124	136	122	104	129	110	120	120	64	75	76	75	82	64	72	79	77	86	91	96	91	89	86	85	93	91	100	98	100	98	99	99	99	99	98
12	A	792627	37	F	II	66	Acute Cholecystitis	Lap Cholecystectomy	82	63	71	63	79	79	72	71	81	132	130	144	116	103	109	117	127	126	76	75	75	85	73	82	85	84	68	95	93	98	95	83	91	96	98	87	100	100	98	99	100	100	99	98	99
13	A	773117	33	F	II	76	Acute Cholecystitis	Lap Cholecystectomy	74	74	79	85	65	80	76	87	61	124	116	132	106	115	104	122	121	116	80	82	80	75	75	80	76	64	75	95	93	97	85	88	88	91	83	89	100	98	99	100	99	100	100	99	100
14	A	764204	50	F	II	63	Acute Cholecystitis	Lap Cholecystectomy	94	66	86	86	72	69	84	90	88	114	118	136	113	121	120	107	111	111	74	90	66	73	64	71	68	90	82	87	99	89	86	83	87	81	97	92	98	99	98	100	98	100	98	100	99
15	A	771295	56	F	II	71	Acute Cholecystitis	Lap Cholecystectomy	66	84	82	76	70	61	69	78	81	118	120	130	128	115	111	120	104	114	74	68	91	86	90	90	84	86	64	89	85	104	100	98	97	96	92	81	100	100	100	98	100	98	100	99	99
16	A	809527	51	F	II	74	Acute Cholecystitis	Lap Cholecystectomy	88	70	87	67	84	87	63	76	87	134	128	130	129	128	128	123	105	126	89	66	82	78	87	83	87	66	84	104	87	98	95	101	98	99	79	98	100	100	100	98	98	99	100	100	100
17	A	811553	49	F	II	74	Acute Cholecystitis	Lap Cholecystectomy	85	60	60	83	89	76	90	75	68	131	128	131	117	126	129	125	115	120	87	66	72	82	76	77	85	68	86	102	87	92	94	93	94	98	84	97	98	100	100	98	98	98	99	100	99
18	A	745850	38	F	I	60	Acute Cholecystitis	Lap Cholecystectomy	75	75	82	63	87	90	72	69	79	110	109	126	113	119	124	104	107	120	78	79	64	83	67	73	76	88	87	89	89	85	93	84	90	85	94	98	99	99	99	98	98	100	98	99	99
19	A	726463	33	F	I	55	Acute Cholecystitis	Lap Cholecystectomy	82	75	89	90	86	79	90	79	61	100	104	115	120	105	123	117	126	127	60	75	73	64	78	69	64	77	83	73	85	87	83	87	87	82	93	98	99	99	100	98	98	100	98	98	98
20	A	726533	40	F	I	61	Acute Cholecystitis	Lap Cholecystectomy	88	75	78	70	68	84	76	86	90	110	120	130	118	129	108	105	120	102	70	90	90	64	82	85	89	69	81	83	100	103	82	98	93	94	86	88	99	100	98	98	98	100	99	99	100
21	A	703103	46	F	II	68	Acute Cholecystitis	Lap Cholecystectomy	68	79	63	74	76	74	77	72	85	132	126	139	108	130	104	116	130	126	84	82	76	89	84	73	75	84	68	100	97	97	95	99	83	89	99	87	100	98	100	100	100	98	100	100	99
22	A	644465	16	M	I	43	Acute Appendicitis	Lap Appendectomy	78	60	81	79	65	84	85	67	62	116	106	124	116	123	104	111	113	114	68	70	77	86	76	77	66	86	73	84	82	93	96	92	86	81	95	87	100	98	99	100	99	98	98	98	99
23	A	848489	55	F	II	80	AUB	Lap assisted vaginal hys	90	78	87	90	67	77	61	84	85	100	109	115	112	128	125	130	118	118	60	75	80	65	74	80	66	86	83	73	86	92	81	92	95	87	97	95	99	98	99	100	99	98	99	98	98
24	A	849069	48	M	I	58	Acute Appendicitis	Lap Appendectomy	80	84	83	88	61	83	78	63	87	110	119	121	127	119	112	112	128	107	70	79	88	82	74	77	79	77	86	83	92	99	97	89	89	90	94	93	100	98	98	99	100	100	100	99	100
25	A	835578	53	F	I	75	AUB	Lap assisted vaginal hys	78	80	75	71	82	72	74	65	75	126	121	131	126	110	118	112	115	123	78	64	89	83	66	74	88	85	90	94	83	103	97	81	89	96	95	101	100	98	100	99	100	99	100	98	100
26	A	675570	46	F	II	65	Acute Cholecystitis	Lap Cholecystectomy	76	88	65	77	76	90	65	77	65	130	126	137	128	105	104	106	123	129	74	64	79	77	86	87	70	76	86	93	85	98	94	92	93	82	92	100	100	98	99	98	99	98	100	100	99
27	A	632080	38	F	II	55	Acute Cholecystitis	Lap Cholecystectomy	78	78	60	84	82	72	72	74	84	126	118	130	119	107	121	110	120	117	74	87	68	77	89	81	75	88	79	91	97	89	91	95	94	87	99	92	98	98	100	100	98	98	98	99	100
28	A	657864	36	F	II	68	Acute Cholecystitis	Lap Cholecystectomy	84	79	83	85	90	76	87	80	69	124	110	132	128	116	105	108	121	118	72	80	71	86	69	87	81	90	73	89	90	91	100	85	93	90	100	88	100	98	98	100	99	100	100	99	100
29	A	760816	23	F	II	64	Acute Cholecystitis	Lap Cholecystectomy	68	90	80	80	67	64	84	73	69	122	128	126	124	108	109	128	102	123	64	83	72	74	75	88	76	80	74	83	98	90	91	86	95	93	87	90	99	100	100	100	99	98	99	99	100
30	A	676023	40	F	II	78	Acute Cholecystitis	Lap Cholecystectomy	78	72	89	65	75	60	89	72	71	134	126	130	127	129	121	118	115	115	82	73	87	83	72	64	72	80	91	99	91	101	98	91	83	87	92	99	99	99	99	99	98	100	100	98	99	99
31	A	664815	46	F	I	56	Acute Cholecystitis	Lap Cholecystectomy	76	73	72	85	89	60	77	82	90	130	126	120	130	114	111	122	122	106	74	91	84	74	76	86	87	87	75	93	103	96	93	89	94	99	99	85	98	98	100	100	98	98	100	100	99
32	A	683664	43	F	I	66	Acute Cholecystitis	Lap Cholecystectomy	68	66	80	81	61	64	73	62	74	118	124	122	112	103	130	128	126	121	66	85	84	86	69	87	64	74	82	83	98	97	95	80	101	85	91	95	98	100	98	100	100	100	99	99	100

MASTER CHART GROUP B : (Dexmed -0.5mcg/kg/hr)

S no	Group	IP no	Age	Gender	ASA	Weight	Diagnosis	Procedure	BaseHR	AftinfHR	0HR	15HR	30HR	45HR	60HR	75HR	90HR	BaseSBP	AftinfSBP	0SBP	15SBP	30SBP	45SBP	60SBP	75SBP	90SBP	BaseDBP	AftinfDBP	0DBP	15DBP	30DBP	45DBP	60DBP	75DBP	90DBP	BaseMAP	AftinfMAP	0MAP	15MAP	30MAP	45MAP	60MAP	75MAP	90MAP	BaseO2	AftinfO2	0O2	15O2	30O2	45O2	60O2	75O2	90O2
1	B	692913	29	F	I	69	Acute Cholecystitis	Lap Cholecystectomy	68	79	65	81	62	63	82	82	72	122	130	138	115	105	108	126	104	105	90	91	89	82	74	81	65	65	87	101	104	105	93	84	90	85	78	93	99	100	98	98	98	98	98	100	99
2	B	743170	40	F	I	54	Acute Cholecystitis	Lap Cholecystectomy	84	77	75	65	68	65	87	73	67	124	120	138	126	126	112	121	111	129	84	74	86	89	67	91	75	70	85	97	89	103	101	87	98	90	84	100	100	98	99	99	99	100	98	98	99
3	B	748691	46	F	I	58	Acute Cholecystitis	Lap Cholecystectomy	76	88	60	73	73	75	89	72	78	136	124	130	127	121	108	103	104	114	82	83	81	79	78	85	85	77	83	100	97	97	95	92	93	91	86	93	100	100	100	98	99	99	99	100	100
4	B	756525	30	F	I	64	Acute Cholecystitis	Lap Cholecystectomy	66	86	61	72	71	60	84	68	76	124	116	132	112	127	114	111	107	109	74	79	75	91	87	65	87	83	86	91	91	94	98	100	81	95	91	94	98	98	98	100	99	100	99	100	98
5	B	756204	33	F	I	60	Acute Cholecystitis	Lap Cholecystectomy	80	62	88	89	85	82	62	71	88	130	120	110	121	107	104	105	111	113	80	68	74	76	91	86	76	75	88	97	85	86	91	96	92	86	87	96	99	98	100	99	100	100	100	99	100
6	B	755826	43	F	I	60	Acute Cholecystitis	Lap Cholecystectomy	80	86	83	85	80	73	63	76	84	120	130	120	111	111	108	103	122	126	80	85	66	81	75	86	88	70	68	93	100	84	91	87	93	93	87	87	99	100	98	99	100	100	100	98	99
7	B	753596	41	F	II	65	Acute Cholecystitis	Lap Cholecystectomy	86	63	86	73	62	85	89	64	82	124	120	130	119	104	129	120	126	102	84	84	90	64	90	75	76	66	70	97	96	103	82	95	93	91	86	81	100	98	98	100	100	100	99	99	99
8	B	694186	43	F	II	60	Acute Cholecystitis	Lap Cholecystectomy	69	70	88	61	71	74	61	62	89	130	120	120	103	108	128	124	123	113	80	91	83	71	66	66	90	84	79	97	101	95	82	80	87	101	97	90	100	100	99	98	98	100	99	98	98
9	B	752203	23	M	II	60	Acute Appendicitis	Lap Appendectomy	66	76	90	88	65	60	83	81	65	130	120	130	129	102	128	105	120	115	70	79	73	64	76	76	66	69	73	90	93	92	86	85	93	79	86	87	99	100	99	98	98	100	100	99	99
10	B	694186	30	M	I	56	Acute Appendicitis	Lap Appendectomy	90	62	82	69	79	85	66	69	70	110	102	128	112	116	117	129	121	118	72	67	76	73	90	86	68	67	88	85	79	93	86	99	96	88	85	98	99	98	99	98	100	100	99	100	98
11	B	752557	60	F	II	55	CA Pancreas	Diagnostic laproscopy	70	86	86	71	77	79	89	67	77	130	110	120	118	123	105	121	114	106	80	91	88	85	82	90	86	74	78	97	97	99	96	96	95	98	87	87	100	100	100	100	100	98	100	99	98
12	B	677801	46	F	I	70	Acute Cholecystitis	Lap Cholecystectomy	74	83	83	74	71	75	89	76	63	124	110	132	105	108	130	127	116	121	74	76	85	89	73	67	76	89	88	91	87	101	94	85	88	93	98	99	99	98	99	99	99	100	100	100	98
13	B	822272	48	F	I	60	Acute Cholecystitis	Lap Cholecystectomy	70	69	65	79	81	89	79	84	86	136	135	120	115	116	130	120	106	115	92	86	72	67	83	76	67	81	83	107	102	88	83	94	94	85	89	94	98	100	98	98	100	98	98	99	98
14	B	868434	40	F	II	62	Acute Cholecystitis	Lap Cholecystectomy	80	68	78	80	61	66	81	67	68	110	115	115	127	120	103	126	118	117	72	69	88	83	66	78	75	71	89	85	84	97	98	84	86	92	87	98	100	98	98	98	100	98	100	98	99
15	B	867350	42	F	I	55	Acute Cholecystitis	Lap Cholecystectomy	74	61	65	62	61	90	90	62	70	135	136	122	127	115	118	111	114	123	92	74	84	80	75	82	74	85	79	106	95	97	96	88	94	86	95	94	100	100	98	98	98	99	99	98	100
16	B	850671	43	F	I	70	Acute Cholecystitis	Lap Cholecystectomy	80	85	67	75	82	84	66	77	79	115	116	122	115	117	121	112	122	128	72	83	71	73	85	66	83	64	89	86	94	88	87	96	84	93	83	102	100	98	99	98	98	98	99	98	100
17	B	868888	44	F	I	55	Acute Cholecystitis	Lap Cholecystectomy	80	88	75	85	73	85	88	69	77	127	125	112	130	111	103	115	126	117	88	80	84	76	81	75	88	86	70	101	95	93	94	91	84	97	99	86	99	98	98	100	100	98	100	100	99
18	B	329848	46	F	I	72	Acute Cholecystitis	Lap Cholecystectomy	88	84	62	89	68	84	62	90	61	115	112	124	116	121	123	121	103	109	78	74	76	70	66	75	66	74	65	90	87	92	85	84	91	84	84	80	98	98	100	100	98	100	100	100	100
19	B	863503	50	F	I	55	AUB	Lap assisted vaginal hys	84	79	71	79	75	87	83	87	65	130	122	140	116	123	113	117	116	103	72	67	73	82	89	73	72	87	88	91	85	95	93	100	86	87	97	93	100	99	100	100	100	99	100	98	99
20	B	822844	55	F	II	65	AUB	Lap assisted vaginal hys	76	90	82	89	60	74	66	76	71	110	104	132	117	122	127	105	120	127	64	78	69	89	91	69	75	86	72	79	87	90	98	101	88	85	97	90	99	99	100	100	99	98	100	98	100
21	B	826341	60	F	I	59	AUB	Lap assisted vaginal hys	74	74	76	68	61	71	85	90	83	110	124	138	116	116	124	111	130	118	64	66	77	64	78	86	80	73	74	79	85	97	81	91	99	90	92	89	100	99	100	98	98	100	99	98	100
22	B	825032	28	F	I	70	Acute Cholecystitis	Lap Cholecystectomy	68	83	72	68	73	85	69	68	62	112	110	125	112	108	109	117	114	103	75	83	83	88	80	78	85	69	87	87	92	97	96	89	88	96	84	92	98	98	99	99	98	99	98	98	98
23	B	824580	40	F	I	60	Acute Cholecystitis	Lap Cholecystectomy	80	70	85	83	61	67	61	86	61	104	114	142	113	104	117	114	122	102	68	75	70	72	72	82	65	85	89	80	88	94	86	83	94	81	97	93	99	98	99	98	100	99	99	99	99
24	B	877627	42	F	I	54	Acute Cholecystitis	Lap Cholecystectomy	78	90	89	81	88	73	61	90	63	118	120	130	109	118	109	124	129	118	74	81	86	79	84	79	86	80	72	89	94	101	89	95	89	99	96	87	98	98	98	100	99	100	98	99	98
25	B	689988	41	F	II	68	Acute Cholecystitis	Lap Cholecystectomy	92	62	63	84	64	62	81	62	63	125	125	131	126	130	106	117	130	117	78	70	91	89	73	86	67	75	88	94	88	104	101	92	93	84	93	98	100	100	98	98	98	99	98	99	99
26	B	683475	38	F	II	60	Acute Cholecystitis	Lap Cholecystectomy	80	86	64	90	64	60	80	76	63	110	122	128	110	130	125	125	110	104	70	86	87	65	77	75	80	81	70	83	98	101	80	95	92	95	91	81	100	98	100	99	100	100	98	100	99
27	B	871444	48	F	II	77	Acute Cholecystitis	Lap Cholecystectomy	76	77	89	67	82	71	62	82	73	122	130	138	128	115	127	126	113	102	90	87	74	82	78	90	79	82	86	101	101	95	97	90	102	95	92	91	100	98	98	99	98	100	98	98	99
28	B	882045	40	F	I	65	Acute Cholecystitis	Lap Cholecystectomy	80	71	74	85	86	84	73	75	71	110	110	120	130	115	114	125	115	110	75	76	65	74	74	68	75	74	83	87	87	83	93	88	83	92	88	92	100	98	100	100	98	99	98	99	99
29	B	878239	38	F	I	58	Acute Cholecystitis	Lap Cholecystectomy	80	88	90	77	62	77	87	80	87	116	125	120	129	129	112	127	129	122	70	66	87	80	65	91	76	75	78	85	86	98	96	86	98	93	93	93	98	98	100	98	100	99	99	100	99
30	B	656691	33	F	I	62	Acute Cholecystitis	Lap Cholecystectomy	80	81	79	84	87	90	63	88	89	110	110	120	103	107	120	113	118	118	80	78	74	75	85	86	70	70	73	90	89	89	84	92	97	84	86	88	100	100	100	99	98	100	98	99	100
31	B	878095	43	F	I	64	Acute Cholecystitis	Lap Cholecystectomy	80	83	88	88	78	63	69	62	65	118	120	130	118	108	102	123	119	109	74	87	79	73	70	71	69	79	69	89	98	96	88	83	81	87	92	82	100	98	100	98	100	98	99	99	98
32	B	854198	45	F	II	68	Acute Cholecystitis	Lap Cholecystectomy	75	62	74	68	83	63	63	60	77	120	120	130	127	129	129	123	123	109	70	81	78	89	77	76	85	83	81	87	94	95	102	94	94	98	96	90	99	98	98	100	100	98	99	98	98