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Comparative Analysis of Pre and Post Incision Port Site Infiltration of Injection 0.5 % Bupivacaine during Laparoscopic Cholecystectomy

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ABSTRACT

Background: To study the pain profile after infiltration of injection 0.5% Bupivacaine at port site in pre and post laparoscopic cholecystectomy. To analyze the incidence of visceral, parietal and shoulder tip pain post laparoscopic cholecystectomy.

Methods: -Sample size – 60 (30 in each group), Group A &Group B. Group to be decided on odd and even numbers basis respectively. 60 adult patients of either sex between age group 18 to 60 years undergoing elective laparoscopic cholecystectomy and fulfilling the inclusion and exclusion criteria of the proposed study will be included in the study. Distribution of patients in groups will be on the basis of serial numbers. Even Serial numbers will form Group A and odd numbers will form Group B.(Randomization) Preoperatively all patients will undergo Bupivacaine sensitivity. Group (A) Patients will receive 20 ml 0.5% Bupivacaine in all port sites of laparoscopic cholecystectomy prior to incision. 6 ml at 10 mm and 4 ml at each 5 mm port size. Group (B) Patients will receive 20 ml of 0.5% Bupivacaine at port site after cholecystectomy 6 ml at 10 mm size port and 4 ml at 5mm size port. In group B the same amount will be instilled at port site but after withdrawal of laparoscopic instruments.

Result: There was no significant difference in postoperative complications in the first week following surgery. The VAS score between two groups did not differ significantly at2, 6, 12 hours respectively. However, VAS score at 24 hours was significantly higher in group B. The mean dose of analgesia given in group B was significantly higher than group A.

CONCLUSION

To conclude pre and post operative infiltration of Bupivacaine at port sites during Laparoscopic cholecystectomy, pre operative infiltration is associated with less postoperative pain and decreased analgesic use after surgery. Thus it is an effective, safe and simple technique to reduce post operative pain following cholecystectomy.

KEYWORD: 0.5% Bupivacaine, Laparoscopic cholecystectomy, Port site infiltration , Pre incision, Post incision

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I. INTRODUCTION:

Over the past two to three decades, laparoscopic cholecystectomy has established itself as a standard of care for acute and chronic cholecystitis with cholelithiasis. Quicker convalescence and shorter hospital stay in the absence of significantly higher complication rate are the advantages of laparoscopic cholecystectomy.

Nevertheless in laparoscopic approach, postoperative pain still remains the most important complaint after laparoscopy.[1]In this kind of procedure, pain can be divided into three components; visceral, parietal and shoulder tip pain. With different intensity and time courses, visceral and parietal pain seems to be more intense during first 24- 48 hours of surgery and main location of pain is the right upper quadrant, the trocar site and right shoulder.[3] Pain experienced following laparoscopy derives significantly from incision made in the anterior abdominal wall which has segmental innervations provided by nociceptive

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afferents in the transversus abdominis fascial plane between the internal oblique and transversus abdominis muscles.[4-5]

Peripheral use of local anesthetics for postoperative pain relief after laparoscopic cholecystectomy which improve early pain control and minimize the need for opioids.[2] Local anesthetics have been used subcutaneously into the incisional site , into the muscle and parietal peritoneum to provide pain relief. The injection blocks the A and C fibers and prevents transmission of pain impulses from surgical incision sites to the brain. Different studies have used long acting LA like bupivacaine [6], ropivicaine[7] or levobupivacaine[8-9] to provide pain relief. In these studies dosage and concentrations used were also variable.

In our study long acting local anesthetic bupivacaine which has a half life of 2.5 to3.5 hours and provides pain control for an average of six hours will be used, as its margin of safety is also large, at the upper limit of 2.5 mg /kg body weight of which 100mg of drug can be used safely in divided doses at different port site pre and post laparoscopically.[10]

II. BUPIVACAINE:

Bupivacaine is one such local anesthetic which has a good safety profile, is long acting and free of side effects like gastritis due to NSAIDs or nausea and vomiting and fear of drug dependence as in opioids. Bupivacaine binds to the intracellular portion of voltage-gated sodium channels and blocks sodium influx into nerve cells, which prevents depolarisation. Without depolarisation, there can be no initiation or conduction of a pain signal. Local anesthetics work by increasing the threshold for electrical excitation in the nerve, decreasing the velocity of propagation of nerve impulses and decreasing the rate of rise of action potential. This blocks the generation and conduction of nerve impulses. The effect of local anesthesia depends on myelination, cross sectional diameter and conduction velocity of the affected nerve. Clinically first to get affected is pain followed by temperature, touch, proprioception and skeletal muscle tone respectively. The effect of local anesthesia depends upon rate of absorption, which in turn, is dependent on total dose, concentration of drug, route of administration and vascularity of the area. The onset of action with bupivacaine hydrochloride is rapid and is long lasting. The duration of anesthesia is significantly longer with bupivacaine hydrochloride than with any other commonly used local anesthetic.

The return of sensation after effect of local anesthesia ends is observed to be followed by a period of analgesia. This can lead to decreased use of local anesthesia. The rate and degree of diffusion of local anesthesia is dependent on their plasma protein binding, ionization and their lipid solubility. For example, lower plasma protein binding is related to higher plasma concentration of drugs.

The half-life of Bupivacaine is 2.5 to 3.5 hours and has a wide safety margin. At the upper limit of 2.5mg of bupivacaine per kilogram body weight, 100mg of the drug can be used safely in a patient with a lean body mass of40kgs.

Bupivacaine drugs have some adverse reactions due to excessive plasma levels, which may result from overdose, rapid absorption from the injection site, diminished tolerance, or from unintentional intravascular injection of the local anesthetic solution. The most commonly encountered acute adverse experiences which demand immediate counter-measures are related to the central nervous system and the cardiovascular system.

Cardiac arrest has occurred after convulsion resulting from systemic toxicity, following unintentional intravascular injection. Bupivacaine hydrochloride containing a vasoconstrictor, such as epinephrine, should be used with extreme caution in patients receiving monoamine oxidase inhibitors (MAOI) or antidepressant of the Triptyline or Imipramine types, because severe prolonged hypertension may result. Bupivacaine hydrochloride with epinephrine 1:200,000 contains sodium metabisulphite that may cause allergic-type reactions including anaphylactic symptoms and life threatening or less severe asthmatic episodes in certain susceptible people. Sulphite sensitivity is seen more frequently in asthmatic than in non asthmatic people.

III. AIMS AND OBJECTIVES

To study the pain profile after infiltration of injection 0.5% Bupivacaine at port site in pre and post laparoscopic cholecystectomy.

To analyze the incidence of visceral, parietal and shoulder tip pain post laparoscopic cholecystectomy.

IV. MATERIALS AND METHODS

-Place of study- Department of Anesthesiology Govt. Medical College, Attached MBS Hospital, Kota, Rajasthan-324001,INDIA

- Duration of study- October 2016 to September 2018

-Study design - Prospective randomised controlled

International Journal Dental and Medical Sciences Research
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study.
-Sample size – 60 (30 in each group), Group A &Group B. Group to be decided on odd and even numbers basis respectively.

Inclusion Criteria;-

1. All adult patients above the age of 18 years of both sex, undergoing laparoscopic cholecystectomy.
2. Patient under ASA grading I andII.
3. Elective Procedure.

Exclusion Criteria:-

1. Patients refusal to be a part of study.
2. Obstructive Jaundice
3. Patients with chronic pain syndrome
4. Allergy to protocol drug.
5. Patients in whom conversion to open cholecystectomy is done for any reason

V. METHODOLOGY

60 adult patients of either sex between age group 18 to 60 years undergoing elective laparoscopic cholecystectomy and fulfilling the inclusion and exclusion criteria of the proposed study will be included in the study. Distribution of patients in groups will beon the basis of serial numbers. Even Serial numbers will form Group A and odd numbers will form Group B. (Randomization)
Preoperatively all patients will undergo Bupivacaine sensitivity.
Group (A) - Patients will receive 20 ml 0.5% Bupivacaine in all port sites of laparoscopic cholecystectomy prior to incision. 6 ml at 10 mm and 4 ml at each 5 mm port size.
Group (B) -: Patients will receive 20 ml of 0.5% Bupivacaine at port site after
cholecystectomy 6 ml at 10 mm size port and 4 ml at 5mm size port .
In group B the same amount will be instilled at port site but after withdrawal of laparoscopic instruments.
- All patients will be kept nil orally for 8 hours prior to surgery and will be given 0.25mg Alprazolam orally and Ranitidine 150mg at bedtime before surgery.
- General Anaesthesia will be given. Induction will be done with Thiopentone sodium 5mg/kg and Succinylcholine 2mg/kg followed by maintenance with Vecuronium bromide with Isoflurane and Nitrous oxide (60-70%), reversal will be done with Neostigmine 0.1mg/kg and Glycopyrrolate 0.01mg/kg.
-Standard laparoscopic four port cholecystectomy will be done, 2 ports of 10 mm and 2 ports of 5 mm size will be used.
-30 degree scope will be used in this procedure.
-CO2 will be used for creating pneumoperitoneum and the pressure will be maintained at 14 mm of Hg during the procedure.
-Operation will be done in reverse trendelenburg, right side up position.
-After gallbladder extraction position will be changed to supine position.
-In supine position thorough irrigation and suction will be done with normal saline.
-In the post-operative period patients will be assessed for pain by using visual analogue scale at 2 hr, 6hr., l2hr. and 24 hr. In the postoperative period if VAS score would be >2 then only it would be considered significant pain and if patient will have 4 or > 4 VAS score, inj. Diclofenac 75 mg im stat will be given.Time of rescue analgesic will be noted. Maximum of only 2 doses of 75mg Diclofenac will be given in 24 hours. If a patient will need more analgesic then inj. Tramadol 50 mg through iv infusion will be given. If patients complain of post-operative nausea & vomiting, Inj. Emeset 4 mg iv stat and SOS will be given.
VAS - visual analogue scale consists of a 10 cm scale representing varying intensity of pain from O (no pain) to 10 (worst pain).
Certain variables will be assessed which include:
Age Sex Weight BMI
Postoperative duration of analgesia{in hours)
No. of analgesic doses required post operatively in 24 hours Side effects: nausea, vomiting
Headaches and lightheadedness.
Complications after surgery which includes induration of incision site, itching, infection.

International Journal Dental and Medical Sciences Research
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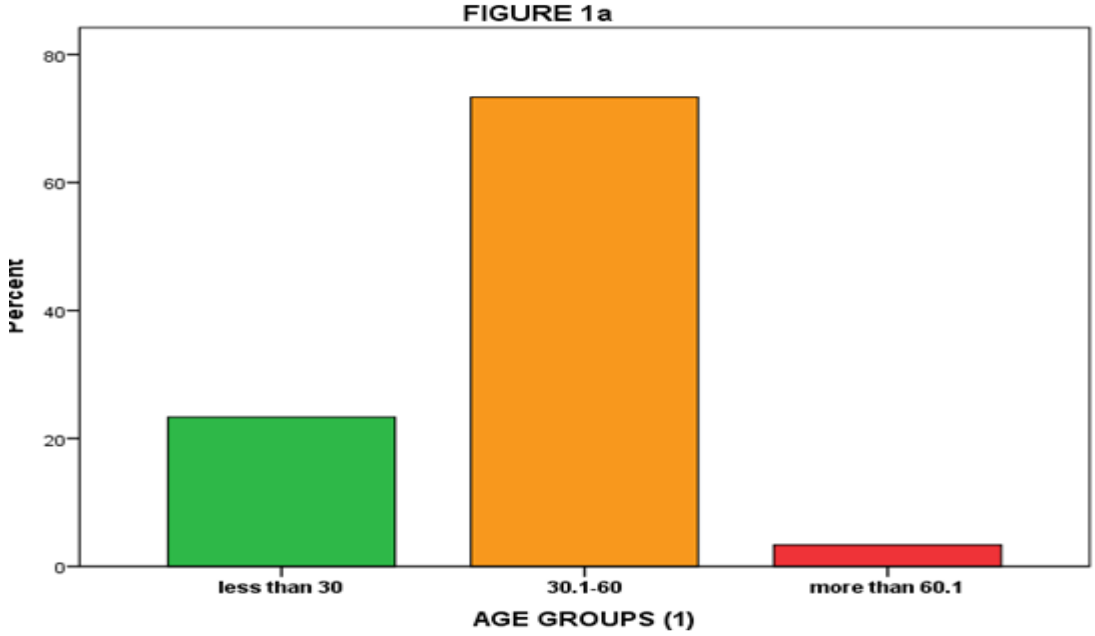
VI. OBSERVATIONS AND RESULT

TABLE 1a. AGE DISTRIBUTION (GROUP1)

AGE GROUPS	FREQUENCY	PERCENTAGE
Less than 30	5	16.7
30.1-60	24	80
More than 60.1	1	3.3
TOTAL	**30**	**100**

FIGURE 1a



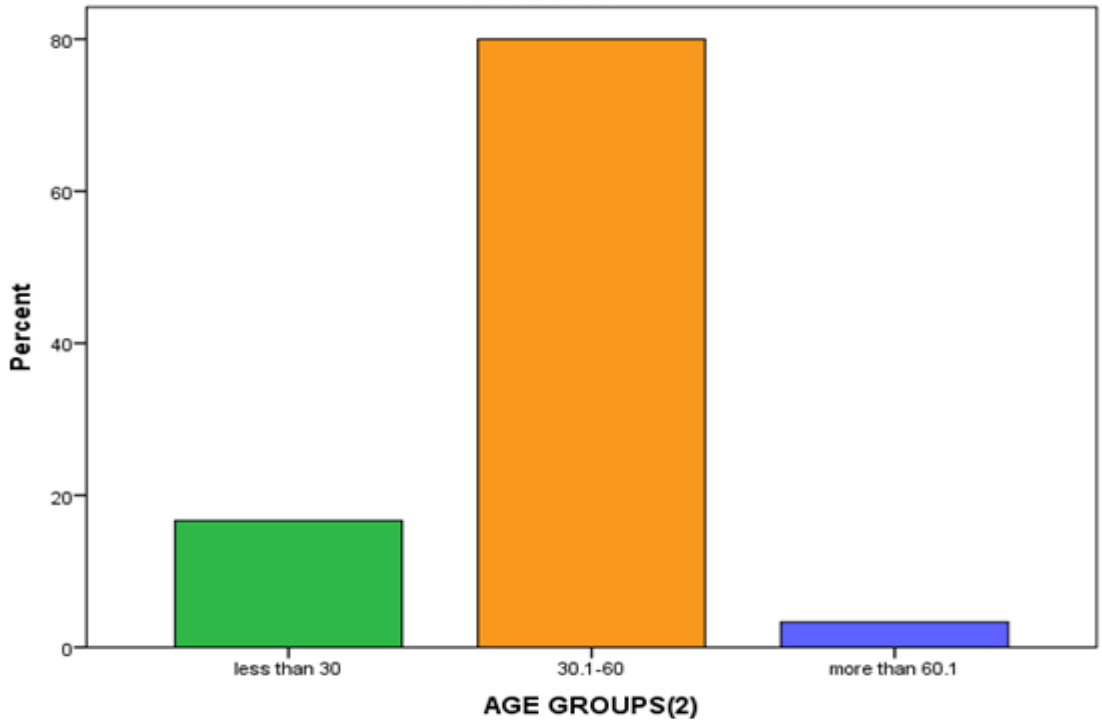
73.3% of patients in group 1 are in age group of 30.1-60 years

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 1b. AGE DISTRIBUTION (GROUP 2)

AGE GROUPS	FREQUENCY	PERCENTAGE
Less than 30	5	16.7
30.1-60	24	80
More than 60.1	1	3.3
TOTAL	**30**	**100**

FIGURE 1b

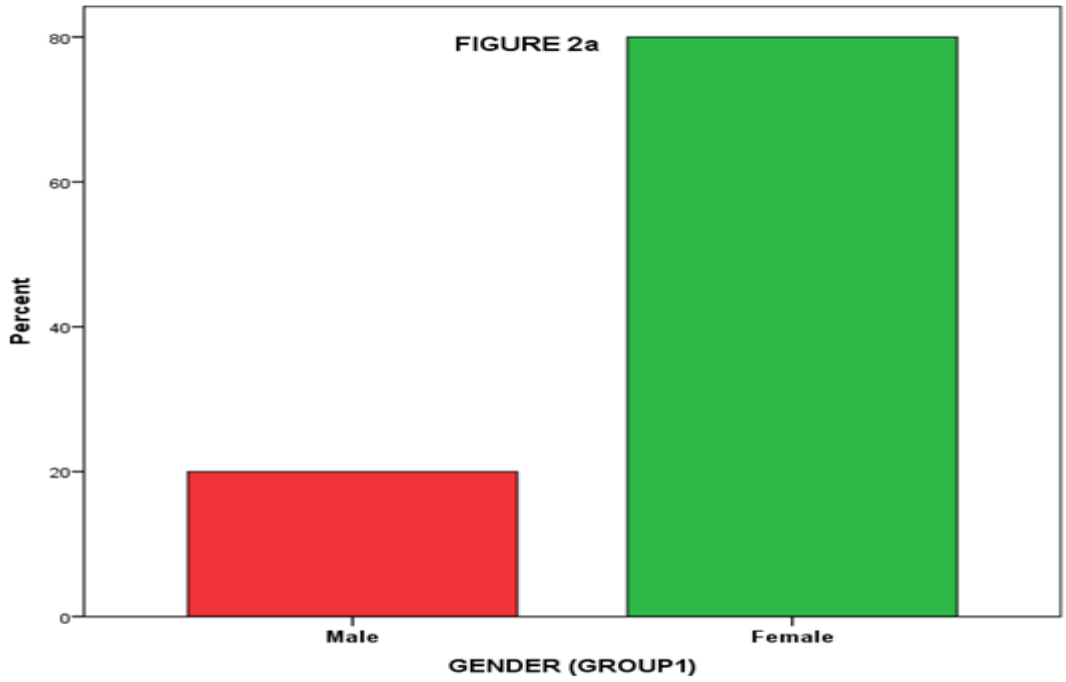


80% of patients in group B are in age group of 30.1-60 years

Table 2a. GENDER DISTRIBUTION (GROUP1)

GENDER	FREQUENCY	PERCENTAGE
MALE	6	20
FEMALE	24	80
TOTAL	30	100

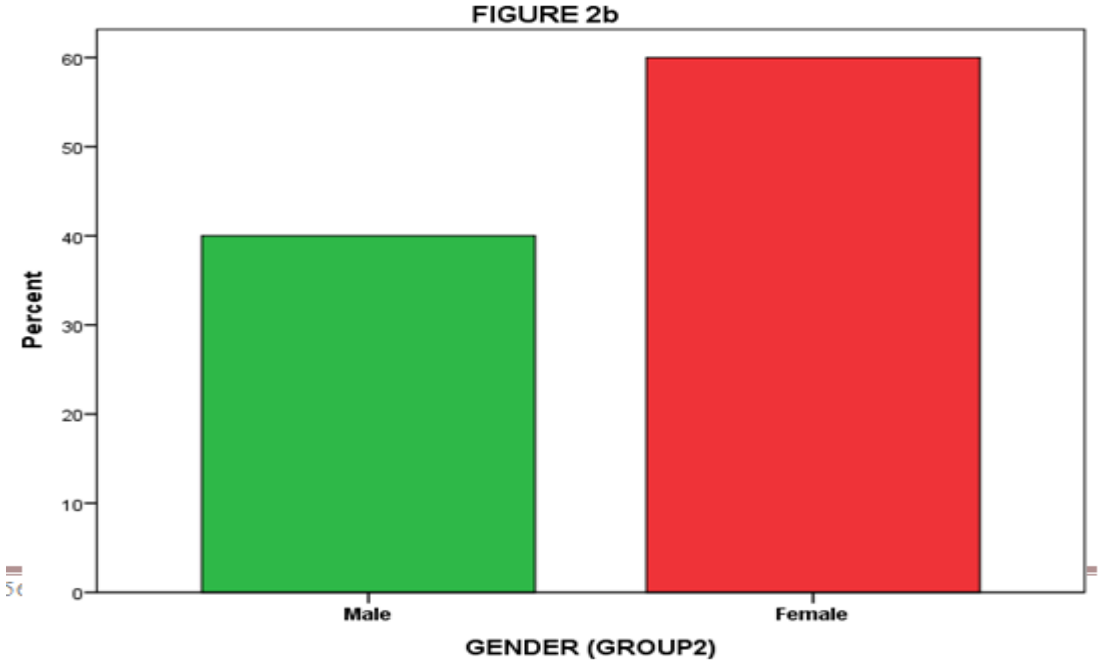
International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018



80% patients in group 1 are females and only 20 % are males

TABLE 2b. GENDER DISTRIBUTION (GROUP 2)

GENDER	FREQUENCY	PERCENTAGE
MALE	12	40
FEMALE	18	60
TOTAL	30	100



International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

60% patients in group 1 are females in contrast to 40% male patient

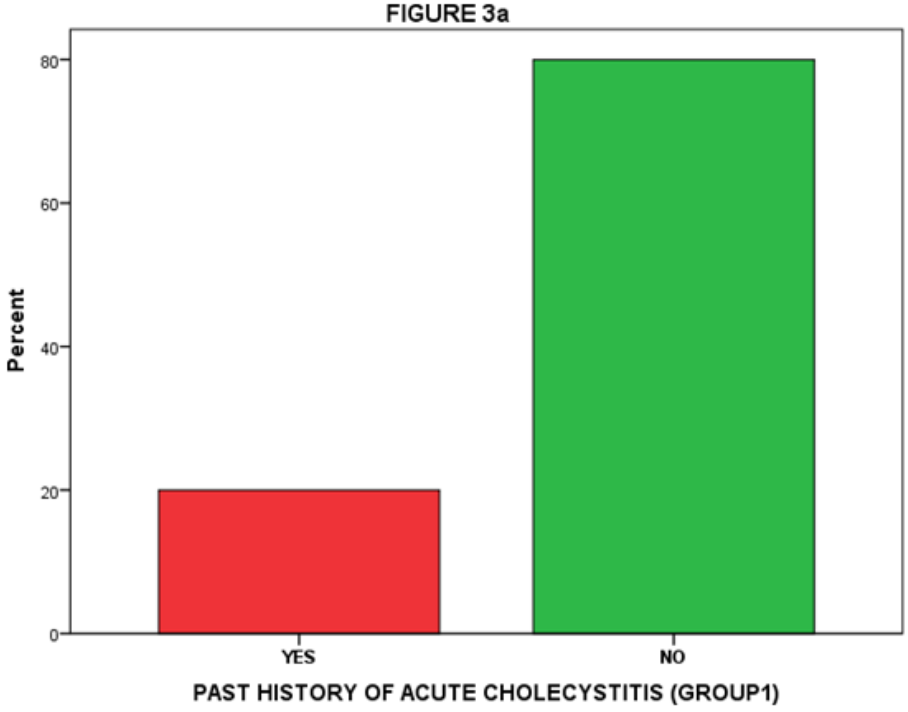
TABLE 2c. GENDER COMPARISON (GROUP1-GROUP2)

Test	Value	Df	Asymp. Significance
Pearson Chi-Square	0.139	1	0.709

TABLE 3a. PAST HISTORY OF ACUTE CHOLECYSTITIS (GROUP1)

ACUTE CHOLECYSTITIS	FREQUENCY	PERCENTAGE
YES	6	20
NO	24	80
TOTAL	30	100

FIGURE 3a



20% patients in group 1 had previous history of acute cholecystitis

TABLE 3b. PAST HISTORY OF ACUTE CHOLECYSTITIS (GROUP 2)

ACUTE CHOLECYSTITIS	FREQUENCY	PERCENTAGE
YES	8	26.7
NO	22	73.3
TOTAL	30	100

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

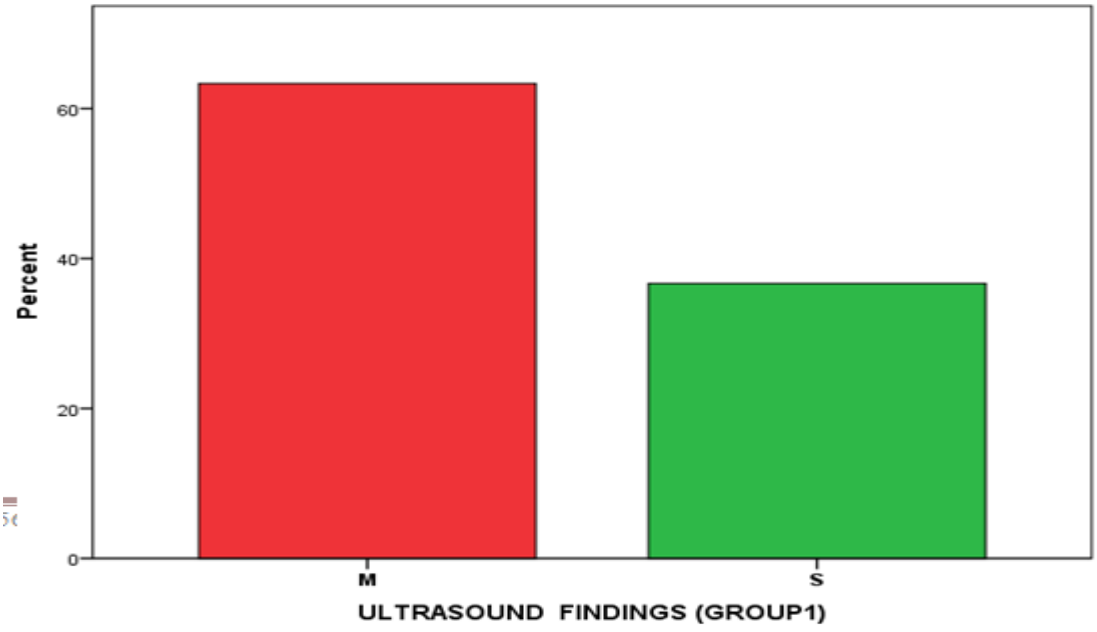
FIGURE 3b

26.7% patients in group 2 had previous history of acute cholecystitis

TABLE 4a. ULTRASONOGRAPHY FINDINGS (GROUP1)

USG FINDING	FREQUENCY	PERCENTAGE
MULTIPLE	19	63.3
SINGLE	11	36.7
TOTAL	30	100

FIGURE 4a



International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

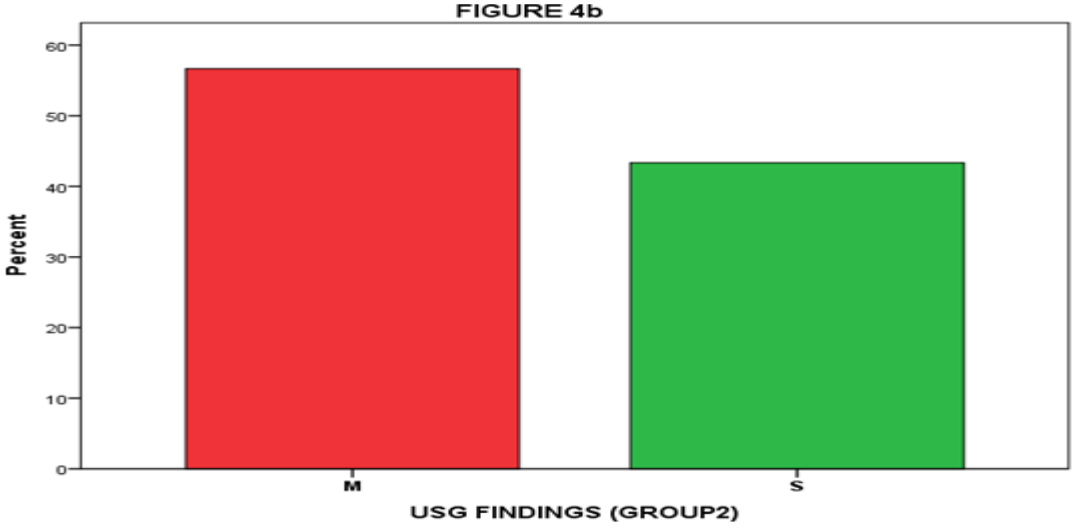
63.3% patients in group 1 had ultrasonography finding of multiple gall bladder calculi

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 4b. ULTRASONOGRAPHY FINDINGS (GROUP2)

USG FINDING	FREQUENCY	PERCENTAGE
MULTIPLE	17	56.7
SINGLE	13	43.3
TOTAL	30	100

FIGURE 4b

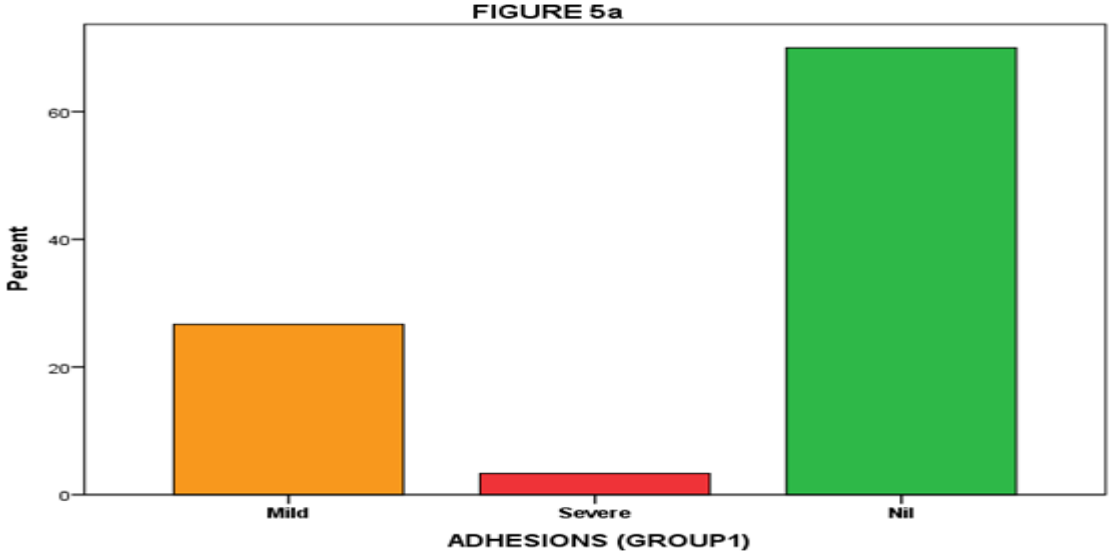


56.7% patients in group 2 had ultrasonography finding of multiple calculi

Table 5a. TYPE OF ADHESIONS (GROUP1)

ADHESION TYPE	FREQUENCY	PERCENTAGE
MILD	8	26.7
SEVERE	1	3.3
NIL	21	70
TOTAL	30	100

FIGURE 5a



26.7% patients in group 1 were found to have mild adhesions intraoperatively 3% patients had severe adhesions

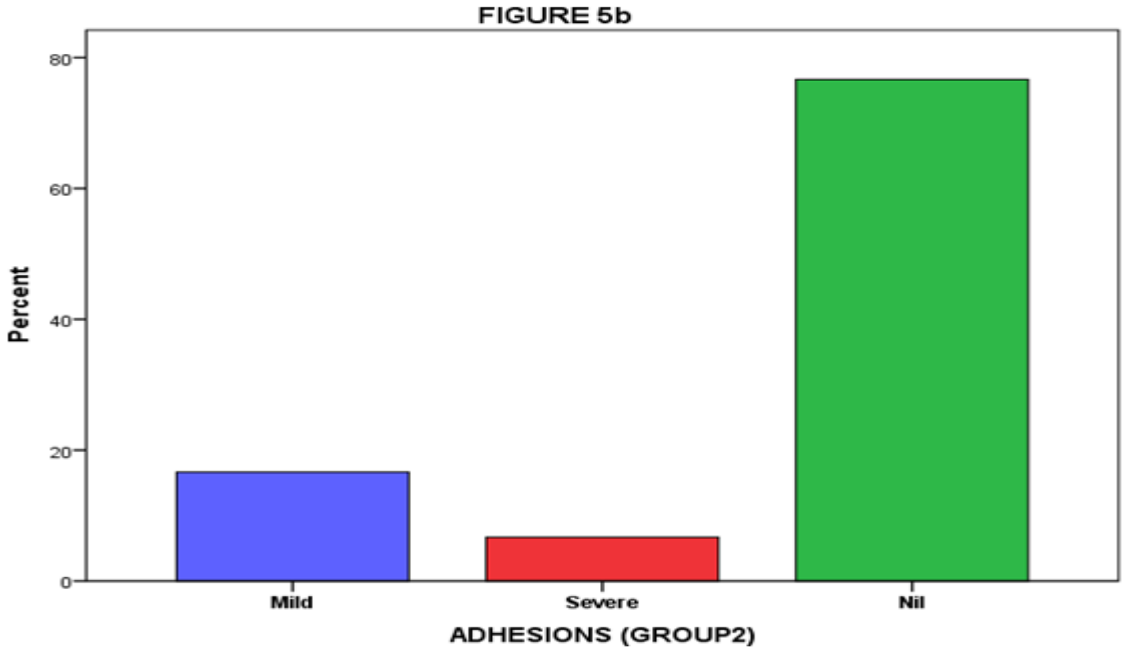
Rest 70% had no adhesions

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 5b. TYPE OF ADHESIONS (GROUP2)

ADHESION TYPE	FREQUENCY	PERCENTAGE
MILD	5	16.7
SEVERE	2	6.7
NIL	23	76.6
TOTAL	30	100

FIGURE 5b



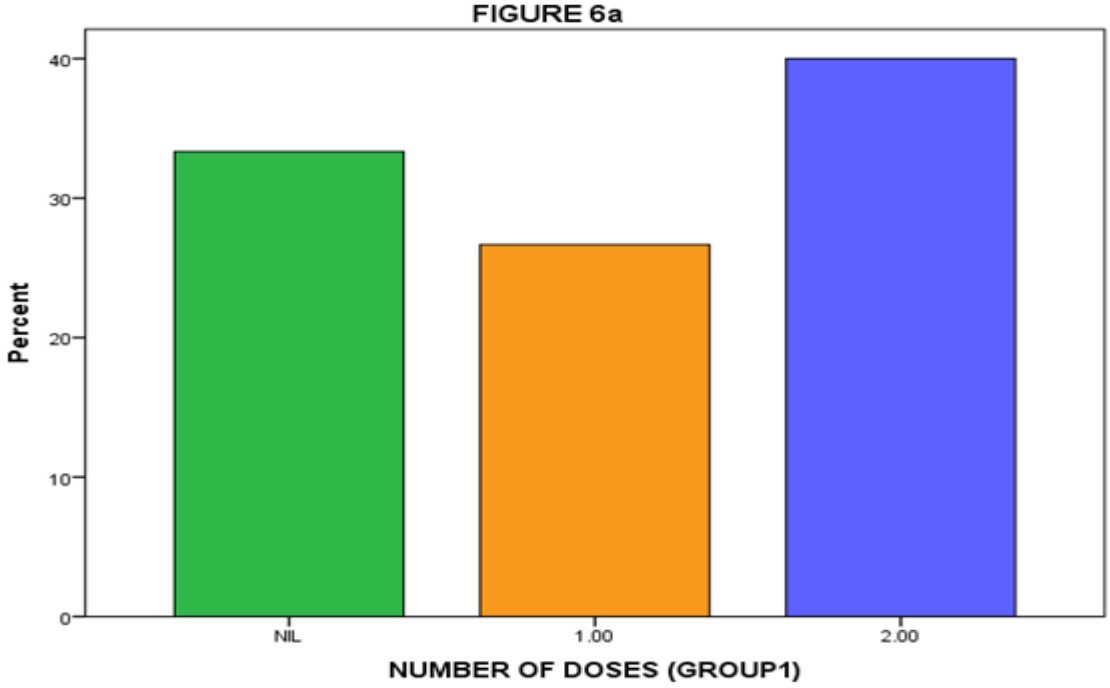
16.7% patients in group 2 were found to have mild adhesions intraoperatively 6.7% had severe adhesions 76.6% had no adhesions

TABLE 6a. NUMBER OF DOSE OF ANALGESIC (GROUP1)

NUMBER OF DOSES	FREQUENCY	PERCENTAGE
NONE	10	33.3
1	8	26.7
2	12	40
TOTAL	30	100

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 6a



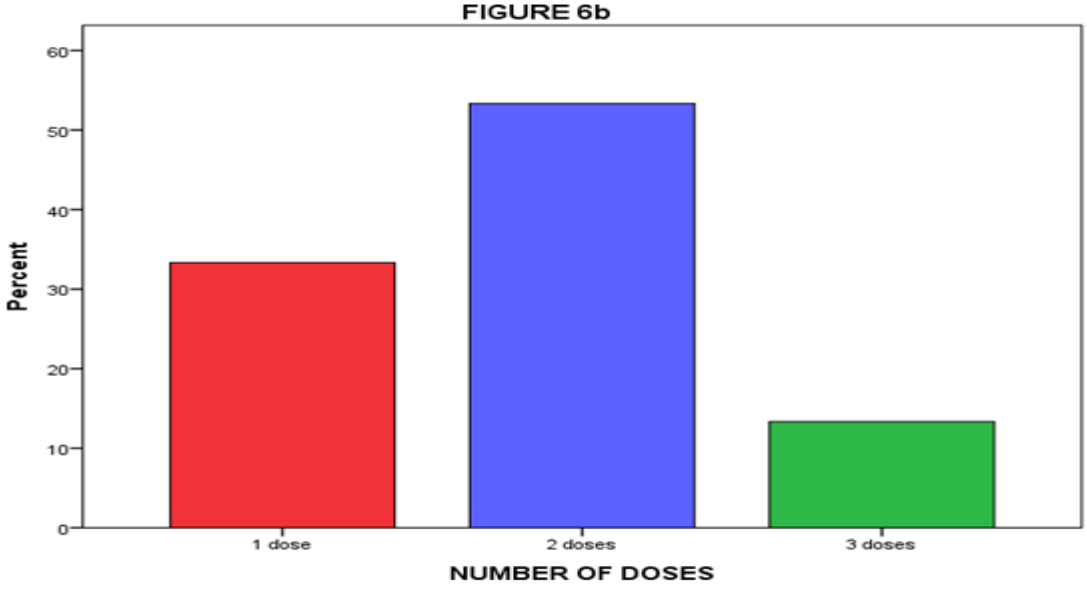
33.3% patients in group 1 did not require analgesia in first 24 hours 26.7% patients required 1 dose of analgesia 40% patients required 2 doses of analgesia No patient required 3 doses of analgesia

TABLE 6b. NUMBER OF DOSE OF ANALGESIC (GROUP2)

NUMBER OF DOSES	FREQUENCY	PERCENTAGE
1	10	33.3
2	16	53.3
3	04	13.4
TOTAL	30	100

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 6b



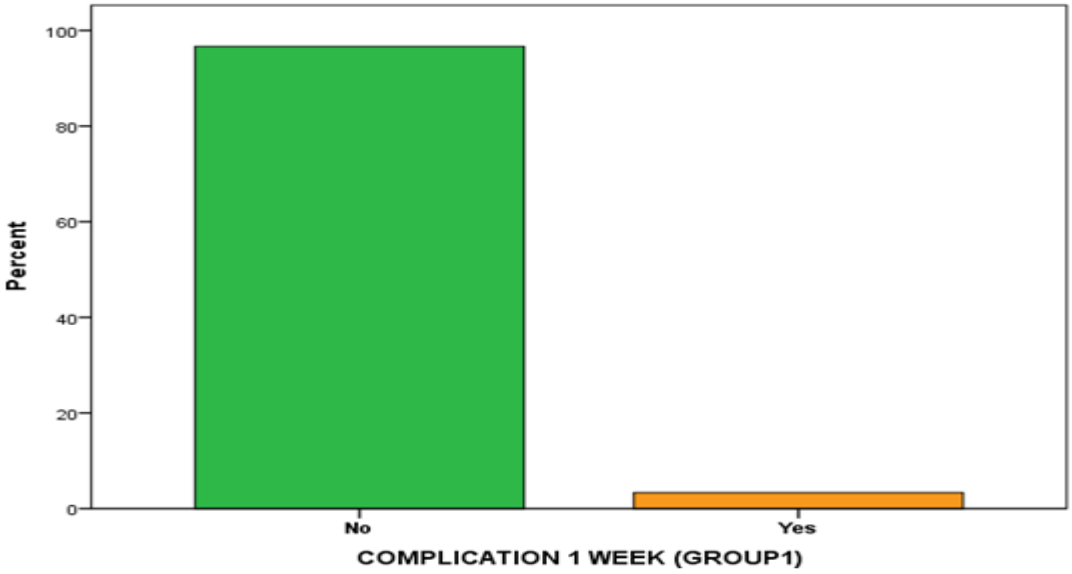
33.3% patients required 1 dose of analgesia in first 24hours 53.3% patients required 2 doses of analgesia 13.4% patients required 3 doses of analgesia

No patient remained without analgesia in first 24 hours

TABLE 7 COMPLICATIONS 1ST WEEK

GROUP	YES	NO
1	1	29
2	1	29

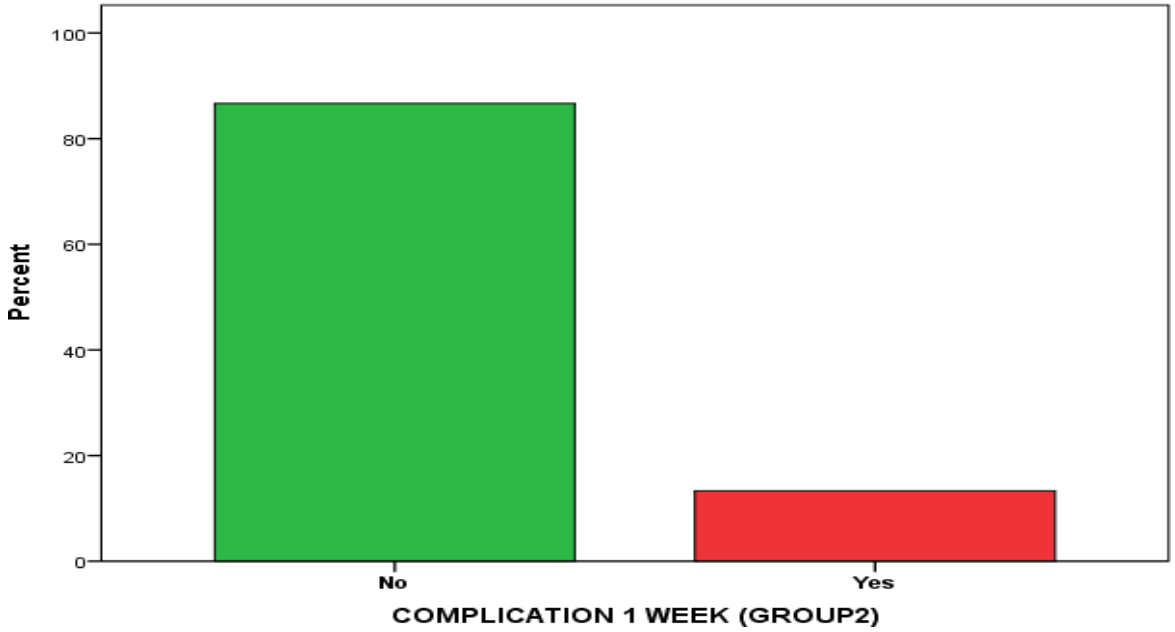
FIGURE 7a



3.34% patients in group 1 had complications in the first week post operatively. (Complication includes induration at port site, itching or infection)

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 7b



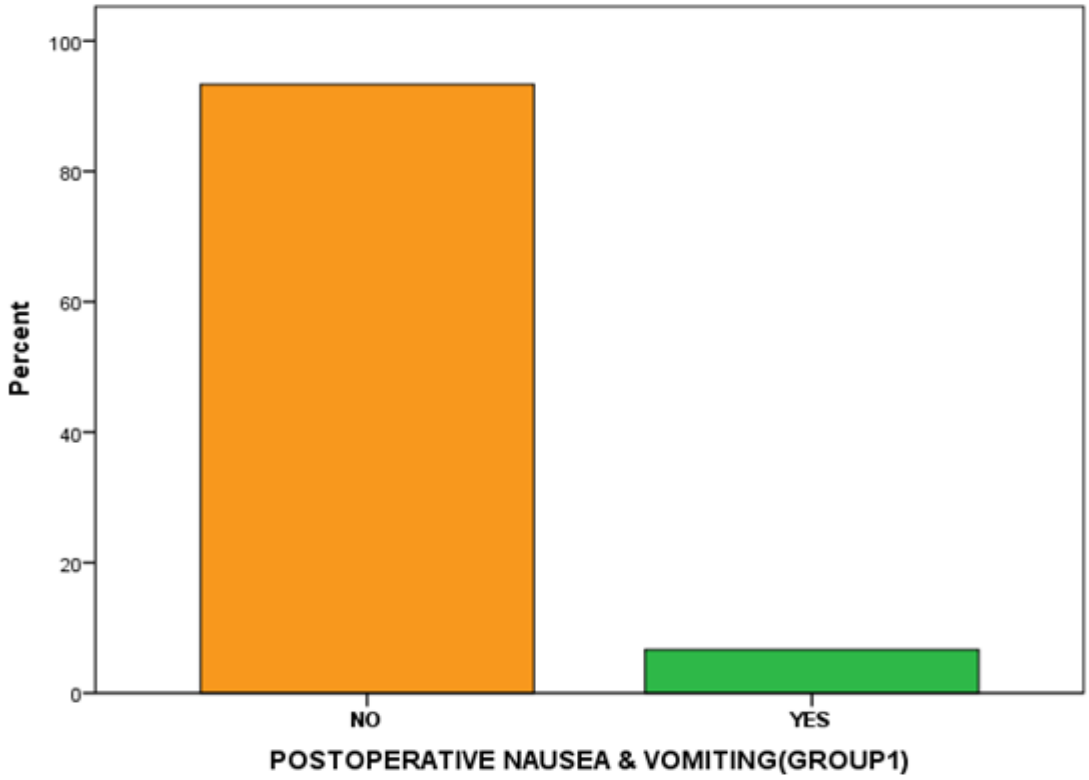
3.34% patients in group 2 had complications in the first week post operatively. (Complication includes induration at port site, itching or infection)

TABLE 8 POSTOPERATIVE NAUSEA AND VOMITING

GROUP	YES	NO
1	2	28
2	4	26

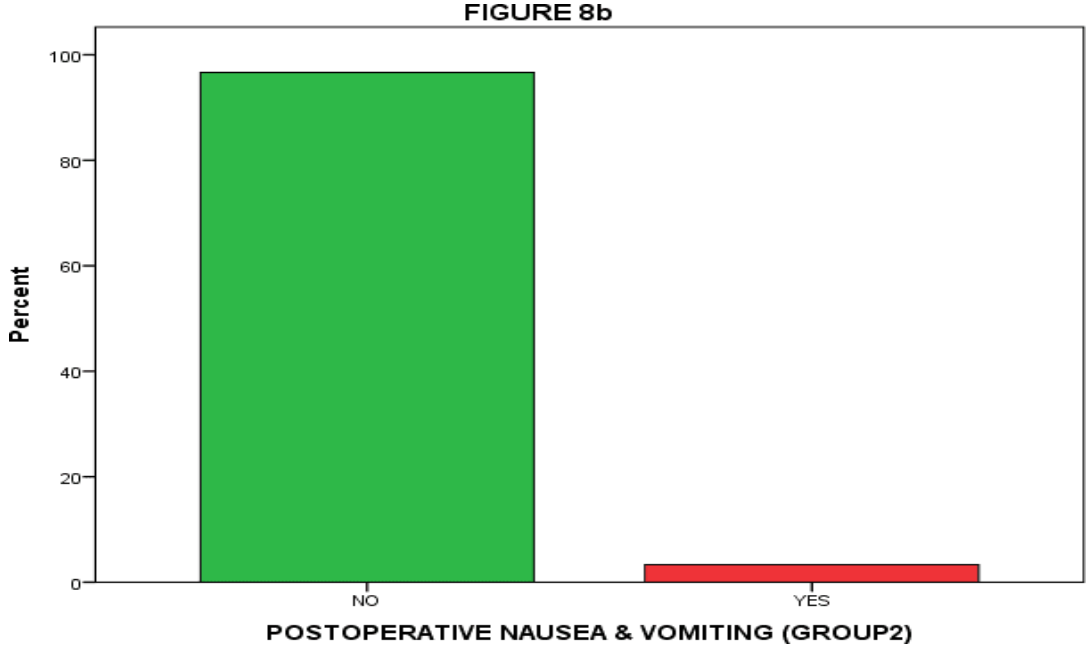
International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 8a



6.67% patients in group 1 had postoperative nausea and vomiting

FIGURE 8b



13.34% patients in group 2 had postoperative nausea and vomiting

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 9a (VAS SCORE (GROUP1)
Descriptive Statistics

VAS SCORE	Minimum	Maximum	Mean	Std. Deviation
VAS PAIN SCORE 2h	2.00	3.00	2.1000	.30513
VAS PAIN SCORE 6h	2.00	3.00	2.2667	.44978
VAS PAIN SCORE 12h	2.00	4.00	3.1000	.75886
VAS PAIN SCORE 24	.00	4.00	3.0667	.82768

TABLE 9b
VAS SCORE (GROUP2)
Descriptive Statistics

VAS SCORE	Minimum	Maximum	Mean	Std. Deviation
VAS PAIN SCORE 2h	2.00	3.00	2.0333	.18257
VAS PAIN SCORE 6h	2.00	3.00	2.2667	.44978
VAS PAIN SCORE 12h	2.00	5.00	3.2333	.81720
VAS PAIN SCORE 24	2.00	6.00	3.5333	.89955

TABLE 9c
VAS SCORE COMPARISON
Paired Samples Test

	Paired Differences				Sig. (2-tailed)
	Mean	Std. Deviation	95% Confidence Interval of the Difference		
			Lower	Upper	
Pair 1 VAS PAIN SCORE 2hG1 - VAS PAIN SCORE 2hG2	-.06667	.25371	-.02807	.16140	.161
Pair 2 VAS PAIN SCORE 6hG1 - VAS PAIN SCORE 6hG2	.00000	.64327	-.24020	.24020	1.000
Pair 3 VAS PAIN SCORE 12hG1 - VAS PAIN SCORE 12hG2	-.13333	1.16658	-.56894	.30228	.536
Pair 4 VAS PAIN SCORE 24G1 - VAS PAIN SCORE 24G2	-.46667	1.22428	-.92382	-.00951	**.046**

***The difference was statistically significant**.

International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 9a

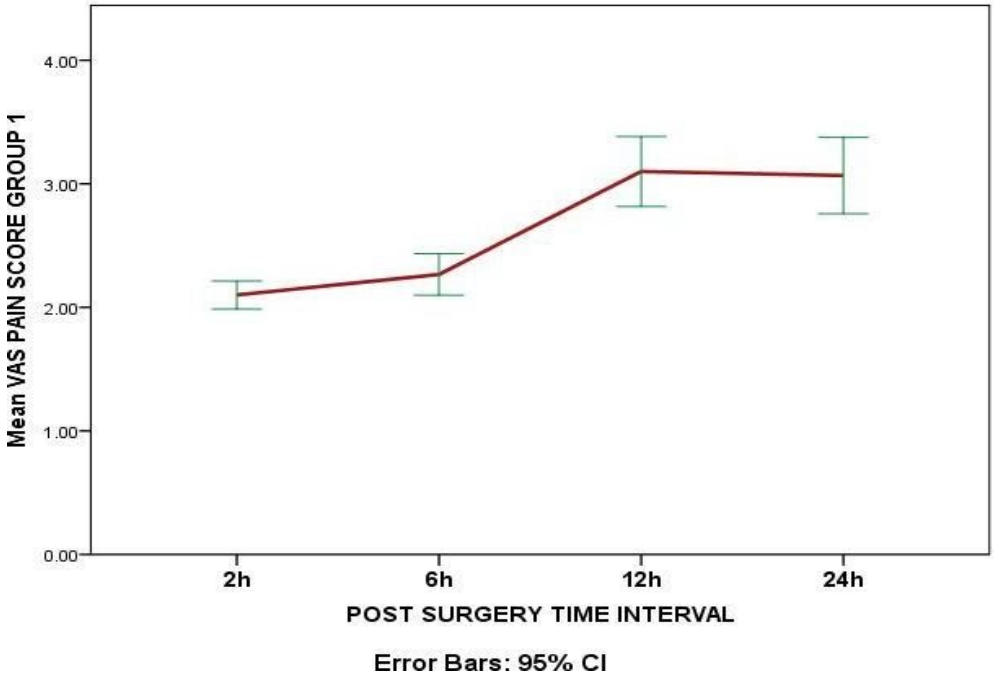
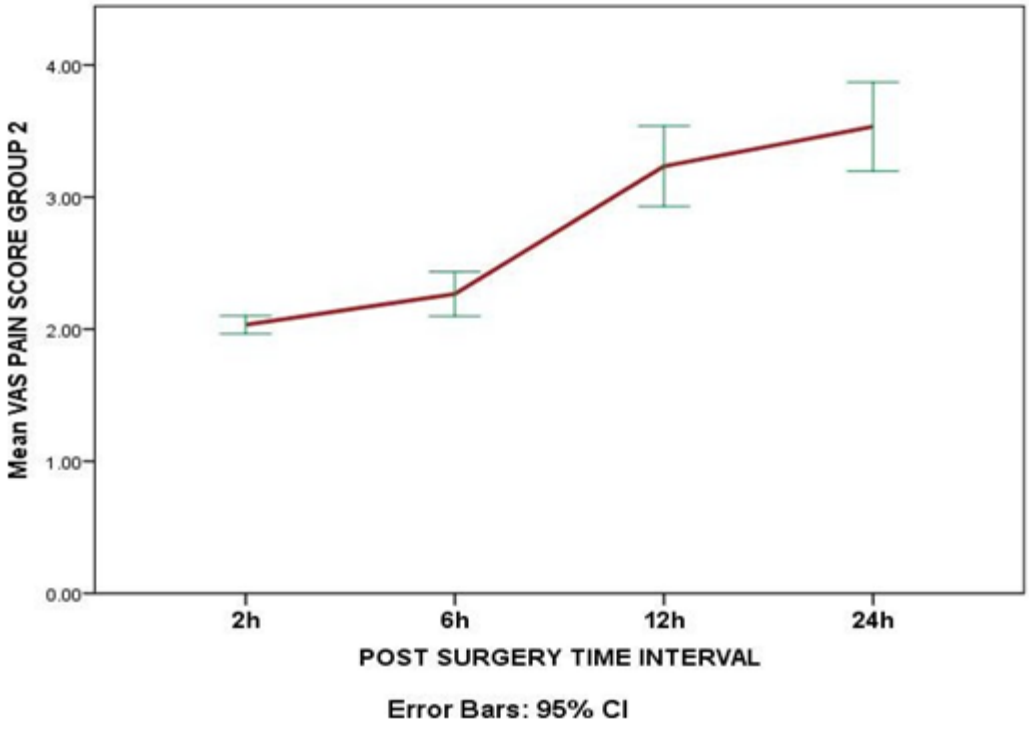
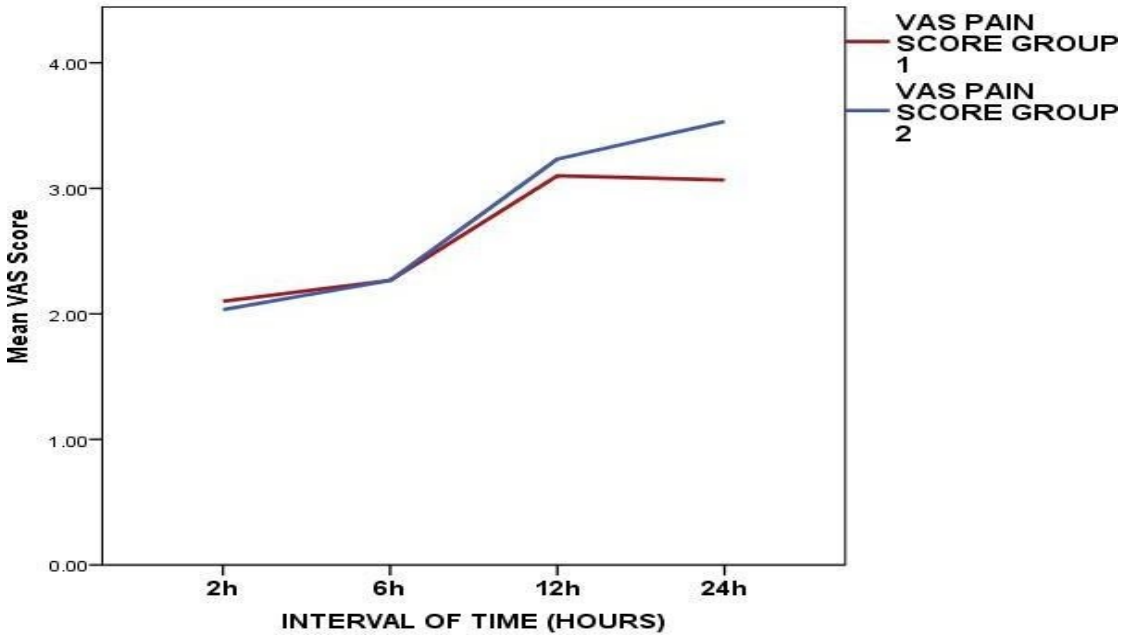


FIGURE 9b



International Journal Dental and Medical Sciences Research
Volume 2, Issue 6, pp: 259-276 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 9c



VII. STATISTICS

Statistical analysis was performed using IBM, SPSS Statistics version 25 (IBM Corp., New York, NY). Descriptive data was expressed as mean ± standard deviation unless otherwise stated. A P value less than 0.05 was considered statistically significant. The association between categorical variables was compared with Chi-square tests or Fisher exact tests. The difference in mean test values between Group 1(pre-incision, 0.5% bupivacaine at port sites) and group 2 (0.5% bupivacaine after removal of laparoscopic instruments at port site) were compared with paired t tests.

RESULTS :The mean age of patients in Group 1 was 42.87±12 (range, 23-62 years) and in group 2 was 41.47±12.3 (range, 19-79 years). The difference in age between the two groups was not statistically significant (paired t-test, P=0.677). Table 1a and Figure 1a shows the age distribution of patients in Group 1. The age distribution of patients in Group 2 is depicted in Table 1b and Figure 1b, respectively.

The gender distribution of patients in Group 1 is shown in Table 2a and Figure 2a. Table 2b and Figure 2b shows the gender distribution in Group 2. The difference in males and females between the two groups was not statistically (Chi-square tests, P=0.545) significant (Table 2c).

The mean duration of surgery in group 1 was 62.5±14.2 minutes and in Group 2 was 51.96±4.64 minutes, respectively. There was a significant difference in duration of surgery between the two groups (paired t-test, P=0.001).

Patients with a past history of acute cholecystitis in Group 1 are shown in Table 3a and Figure 3a. Table 3b and Figure 3b shows patients with past history of cholecystitis in Group 2. The two groups did not differ significantly for acute cholecystitis (Chi- square tests, P=0.155).

Table 4a and Figure 4a shows ultrasonography findings in Group 1. The ultrasonography findings in Group 2 are depicted in Table 4b and Figure 4b. There was a significant difference in ultrasonography between the two groups (Chi-square tests, P=0.057).

Table 5a and Figure 5a shows the type of adhesions present in Group1 and Table 5b and Figure 5b shows the type of adhesions in Group 2, respectively. The adhesion type did not differ significantly between the two groups (Chi-square tests,P=0.836).

Table 6a and Figure 6a shows the number of doses of analgesic given after surgery in Group 1.Table 6b and Figure 6b shows the number of doses of analgesic given in Group 2.

The mean dose of analgesic given in Group 2

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(1.8±0.66) was significantly higher
(paired t-test, P=0.001) as compared to Group 1 (1±0.86).
Table 7a and Figure 7a shows the complication in Group 1 at 1 week and Table 7b and Figure 7b shows complications in Group 2 at 1 week. The complications did not differ significantly between the two groups (Chi-square tests,P=0.867).
Table 8a and Figure 8a shows postoperative nausea and vomiting in Group1 and Table 8b and Figure 8b in Group 2. There was a significant difference in post- operative nausea and vomiting between the two groups (Chi-square test, P=0.001). The incidence of postoperative nausea and vomiting was more in Group 2 compared to Group 1.The mean Visual Analogue Scale (VAS) Score in Group 1 at 2, 6, 12 and 24 hours after the surgery is shown in Table 9a.
The mean Visual Analogue Scale (VAS) Score in Group 2 at 2, 6, 12 and 24 hours after the surgery is shown in Table 9b.

Line diagram showing change in VAS pain score over a period of 24 hours after procedure in Group 1 and Group 2 is depicted in Figures 9a and 9b, respectively.

The VAS pain score at 2h, 6h, and at 12 hours did not differ significantly between the groups (paired t-test, P=0.161, 1, and 0,536, respectively). However, VAS score was significantly higher (Paired t-test, P=0.047) in Group 2 at 24 hours (TABLE 9c). Pain was higher in Group 2 compared to Group 1 at 24 hours. Line diagram differentiating VAS score between the two groupsis depicted in Figure 9c.

VIII. DISCUSSION:

Laparoscopic cholecystectomy, a minimal access approach surgery, offers many advantages that include reduced post operative pain, reduced hospital stay and faster recovery. Although it causes less postoperative pain than open cholecystectomy, still it is not a completely painless procedure. NSAID can cause both analgesic effects and unwanted side effects. However, it does have the additional benefit that it does not cause nausea and vomiting associated with opioids . Therefore any modality that has the capability of pain control with no severe side effects will be more practical and safer than conventional methods.
Local anesthetic agents if used with a proper method can have many benefits

- Reduce the need for narcotics and NSAIDís and hence the side effects too
- They donít have a sedative effect and hence patient can be ambulated earlier
- The intensity of pain relief is good
- Patient can be discharged early and reduce the hospital stay and hence cost effective

In current study, two groups of patients undergoing laparoscopic cholecystectomy are studied, with pre and post operative infiltration of bupivacaine at port site respectively.

In our study, mean VAS of patients receiving pre operative (Group A) infiltration of bupivacaine at port sites is 2.1, 2.2667, 3.1 and 3.0667 at 2, 6, 12 and 24 hours respectively and those receiving post operative (Group B) infiltration of bupivacaine at port sites has mean VAS of 2.0333, 2.2667, 3.2333 and 3.5333 at 2, 6, 12 and 24 hours respectively.

In this study, 33.3% of group A patients did not require a dose of analgesia in the first 24 hours and none of the patients required 3 doses of analgesia. However, in group B patients none of the patients have had the first 24 hours without use of analgesia and % patients required 3 doses of analgesia.

A study conducted by Liu Yu, Yeh CN et al[11] on port site infiltration of Ropivacaine following Laparoscopic cholecystectomy compared to control group. It stated shorter

hospital stay (average 1.1 days in study group compared to 2.8 days in control group) and less pain at 1 and 24 hours compared to control group. Mean VAS at 1 hour in the study group was 5.6 in contrast to 6.8 in the control group while it was 2.1 and 2.7 at 24 hours respectively.

Similar conclusions were made in a study conducted by Ceyhunet al[12], in which 45 patients divided into 3 groups, first a control group and then two groups who received port site infiltration with ropivacaine and lornoxicam respectively following laparoscopic cholecystectomy. The cumulative VAS at 24 hours in all patients was 10, 0 and 0 respectively in three groups. The mean VAS of all patients in each group was 42.8, 22.8 and 22.8respectively.

A study conducted by Castore et al stated that somatic pain is more important than visceral pain in early postoperative periods. The current study focuses on incision site pain which is somatic and benefits of local anesthesia infiltration at port

International Journal Dental and Medical Sciences Research
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sites following laparoscopic cholecystectomy.

Moiniche et al, in his study concluded that there was no superiority of pre incision analgesia compared with the one given after incision. Dahl et al, reported no significant in pain scores or analgesia requirements if analgesic intervention was given preoperatively versuspostoperatively.[13]

In contrast to this, in this study, the requirement of analgesia is significantly higher in patients having postoperative infiltration (Group B) of local anesthesia at port sites. VAS score in both groups did not significantly differ at 2, 6 and 12 hours respectively. However, VAS score was significantly higher in Group B at 24hours.

Cantore et al, in a study done on 50 patients, compared pre and postoperative port site infiltration of Bupivacaine following laparoscopic cholecystectomy.[14] This study had 64% female patients compared to 70% females in our study. The mean age of patients in this study was 59.12. During the postoperative period, mean VAS of patients for the first 24 hours in pre and post groups was 5.1 and 10.7 respectively. Postoperative analgesic used in the patients was ketorolac, with total use in both groups in the first 24 hours 124mg and 339mgrespectively.

In another study, done on 72 patients comparing port site bupivacaine infiltration and control group, total analgesia (tramadol) used was 92mg and 158mg respectively.

In another study, conducted by Hiten M Patel[15], three groups of patient were taken. First group of patients had Bupivacaine soaked oxidized cellulose placed in gallbladder bed, second group had port site infiltration of Bupivacaine and third group was taken as control group following laparoscopic cholecystectomy. The patients in second group had significant reduction in post operative pain compared to other two groups at 3 and 6 hours. Also the dose of analgesia required was significantly low in first two groups compared to the control group. In current study, the dose of analgesic required in pre incision group is lower compared to the group receiving post incision infiltration of local anesthesia.

A study conducted by Maharjan S K[16], with a sample size of 40, comparing first group of patients receiving intraperitoneal instillation of Bupivacaine in addition to port site infiltration of Bupivacaine to the second group with no such treatment following laparoscopic cholecystectomy. They categorized patients in 4 groups on the basis of VAS, no pain (VAS 0), mild (VAS 1-3), moderate (4-8) and severe (9and 10). Patients in the first group with no pain at 24 hours between control and study group were 1 and 2, mild group 13 and 18, moderate 6 and 0 and severe 2 and 0 respectively. 6 patients (30%) in the study group did not require analgesia in the first 24 hours compared to no such patient (0%) in the control group. The analgesic use in the first 24 hours once, twice and thrice in the study group was 14(70%), 4(20%) and 2(10%) compared to 20 (100%), 16(80%) and 4(20%) in the control group respectively.

This study is not without limitations. One of the major limitations to this study is failure to differentiate and characterize the type of pain experienced by the patient while obtaining a VAS score. Sample size in our study is less, which is also a limitation. Another limitation is the difference in the characteristics of patients in both groups like gender, previous history of acute cholecystitis. Finally, the analgesic used in patients post operatively would be different among patients which could possibly affect the results.

There is no conflict of interest.

IX. SUMMARY

- This study was conducted on 60 patients undergoing laparoscopic cholecystectomy in MBS hospital,Kota, Rajasthan.
- Patients were divided into two equal groups on basis of serial number-
- Group A and GroupB.
- Patients in group A received 20ml of 0.5% bupivacaine at port site prior to incision for laparoscopic cholecystectomy, 6ml each at 10mm ports and 4ml at 5mm ports. In patients of group B, same amount of bupivacaine was instilled but after withdrawal of laparoscopic instruments
- In postoperative period, patients of both groups were assessed for pain by using Visual

analogue scale or VAS score at 2, 6, 12 and 24 hours respectively

- The difference in age in two groups was not statistically important.\
- In group A, 24 patients were female, in contrast to 18 females in group B. The gender difference between both the groups was not statistically important
- 10 patients in group A did not require analgesia in the first 24 hours postoperatively and 12 patients received it twice. In group B, at least one dose of analgesia was given to each patient, with 4 patients receiving a total of three analgesic doses in first 24 hours postoperatively
- The mean dose of analgesia given in group B was significantly higher than groupA
- There was no significant difference in postoperative complications in first week following surgery
- The VAS score between two groups did not differ significantly at2, 6, 12 hours respectively. However, VAS score at 24 hours was significantly higher in group B

X. CONCLUSION

To conclude pre and post operative infiltration of Bupivacaine at port sites during Laparoscopic cholecystectomy, pre operative infiltration is associated with less postoperative pain and decreased analgesic use after surgery. Thus it is an effective, safe and simple technique to reduce post operative pain following cholecystectomy.

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