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Research Article

Comparative Study of General Anesthesia versus Regional Anesthesia Post Operative Effects in Patients Undergoing Laparoscopic Cholecystectomy

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ABSTRACT

Surgery for laproscopic cholecystectomy done under general and regional anesthesia. The goal of this research is to contrast two anesthesia techniques concerning their intraoperative and post operative complication such as hypotension, ponv, heart rate, etc. A total of 70 patients with an ASA (american society of anesthesiologist) Grade I or II had laproscopic cholecystectomy procedures with standard pressure pneumoperitoneum =12 to 15mmhg were randomized into two groups With 35 patients in each Group. In terms of group division, Group A received the procedure while under general anesthesia and Group B while under spinal anaesthesia. The following measurements were performed: heart rate, systolic and diastolic blood pressure, pain management, and ponv analysis. Statistical analysis were done with SPSS software such as t-test and chi square test. Compared with both Group, Group B having spinal anesthesia was hemodynamically safer. All hemodynamic parameters pulse rate, systolic blood pressure, and diastolic blood pressure were higher in Group A throughout the surgery and significant difference were found in all parameter of Group B ($P<0.05$).Both Group patient continue to have spo2.In Group A, 31.4% of patients had postoperative nausea and vomiting as compared Group B was 5.7%.There was significant difference found in Group B ($p<0.05$).Vas score was found less in Group B as compared to Group A until 2hr and p value was significant in Group B ($P<0.05$).).we also found that there was no statiscally difference was found between Group A and B with respect to VAS pain score post operative 4 and 6, 12 hours ($p>0.05$).Spinal anasthesia is safer and effective alternative to General anasthesia providing more hemodynamic stable, less complication, good pain free post operative period.

Keywords: Local And General Anesthesia: Complication of Anesthesia: Ap Cholecystectomy: Spinal Ansthesia: Regional Anesthesia.

INTRODUCTION

Unconsciousness, are ill defined concepts. Anesthetists are however generally in agreement about what these words mean from a therapeutic standpoint. The aim is to make the patient reversible and unresponsive to the shock of the operation or other forms of distress. This is accomplished with medications that render the patients unconscious in such a way that they are unable to perceive or remember any noxious or additional stimulation throughout the process. Hypnosis, analgesia, autonomic reflex stability, and muscle relaxation are the four elements that make up general anesthesia. More anaesthetic drugs operate by blocking the signals that travel down your nerves to your brain.. Anesthetist always require for general anesthesia and other form of anesthesia, such as spinal and nerve block. The presynaptic voltage-gated sodium channel in their glutamatergic synapses, which prevents the release of presynaptic nuerotransmitters, may be suppressed by general anaesthesia when the influence of the anaesthesia medications wear out, the patient begins noticing normal sensations once more[1-2].After phillipe mouret in france initially described laparoscopic cholecystectomy in 1987, it quickly gained widespread acceptance. The benefits of less postoperative discomfort, a shorter hospital stay, and an earlier return to work have been described in published publications, and laparoscopic surgical procedures have been quickly adopted by surgeons around the world. Rare instances of laparoscopic cholecystectomy performed solely under regional anesthesia in

the past involved patients who were deemed unfit for general anesthesia, typically those with severe chronic obstructive pulmonary disease. For the first time, hamad and ibrahim el-khattary performed a laparoscopic cholecystectomy on a small number of healthy patients while under spinal anaesthesia. An anesthesiologist, a medical professional, administers general anaesthesia with a mask or an iv that is inserted into a vein. While the anaesthetic sets effect, you won't be conscious, and numerous bodily processes will slow down or need support to work properly. Your throat can be inserted with a tube to aid with breathing. The anesthesiologist will keep an eye on your vital signs throughout the operation or surgery to make sure they remain stable and within normal limits while you are unconscious and pain-free. (S.D.Bayable *et al.*, 2023).After the procedure is over, your anesthesiologist will stop the anaesthesia and stay by your side as you regain awareness while continuously checking your oxygen, breathing, and circulation. Some individuals awaken feeling good, while others have symptoms like nausea, vomiting, or chills. The breathing tube may have made your throat sore. You can control these symptoms with the aid of your anesthesiologist. Anaesthesia makes it possible for a patient to endure treatments that would otherwise cause excruciating pain, amplify severe physiologic exacerbations, and leave them with unpleasant recollections[3-4].Through an cannula that is inserted into a vein site your arm or hand, you will receive anaesthesia prior to your surgery. Using a mask, you might also inhale gas. In a few minutes, you should start to nod off. The doctor may insert a tube through your mouth into your windpipe once you are unconscious. You will receive enough oxygen throughout surgery thanks to this tube. Your doctor will first administer medication to ease your throat muscles. The tube will be inserted without you feeling anything. The anaesthesia team will monitor these and other bodily processes throughout surgery: Breathing, temperature, the heart rate, level of blood oxygen, fluid amounts. These measurements will be used by your medical team to change your medication dosages and, if necessary, to administer extra fluids or blood. Additionally, they will make sure you are comfortable and sleepy throughout the entire process.Your anaesthesia medications will be stopped by the surgeon after surgery. In a recovery chamber, you'll begin to gently awaken. The medical staff will check to see if you're in pain and if the surgery or anaesthesia has caused you any complications. Additionally, there was a noticeably lower incidence of complications after surgery such as nausea, vomiting, feeling dizzy. breathing problems, pulmonary embolism and a pneumonia when compared to general anaesthesia. The total cost of spinal anaesthesia was also much lower overall than that of general anaesthesia when including hospital stays, inducing and recovery, the need for postoperatively anti-emetics and analgesics, and the occurrence of extra problems[5-6.] Modern medicine is impossible without general anesthesia. Unconsciousness, amnesia, analgesia, and akinesia are among the particular behavioral and physiological characteristics of this drug-induced, reversible condition, which also includes the autonomic, circulatory, respiratory, and thermoregulatory systems are stable[7]. "Both general sedation and the condition that precedes or fewer of the four elements may need to be taken into account, but hypnosis is essential, depending on the needs of the specific treatment[8-12] .Targeting the various components using mixtures of various medications that have different principal functions is typical practice to reduce drug adverse effects[13-14]

METHODOLOGY AND MATERIAL

This Randomized clinical, trial study conducted comparing two anesthesia methods. The data was collected from the hospital ALLAMA IQBAL TEACHING HOSPITAL Dera Ghazi Khan. Data were recorded using standardized pro forma ,January 2025 to June 2025 ,included demographic data , such as age , gender, and relevent anesthetic and and surgical technique . 70 patients of either sex who underwent elective laparoscopic cholecystectomy under spinal and general anaesthesia between the academic years of Januaury 2025 and June 2025 participated in the study after giving their informed consent in accordance with medical ethics. Patients between the ages of 16 and 60 with ASA (american society of anesthesiology) physical status I and II participated in the study. Patients with ASA grades III and IV high risk status, all emergency procedures, disorders of bleeding, serious cholecystitis, serious pancreatitis, and severe cholangitis, previous upper abdominal open surgery, a contraindication for pneumoperitoneum, heart disease. And respiratory illnesses, renal and liver disorders, circulatory instabilities, patients more than age of 60 , uncooperative patients, and patients with known local anaesthetic sensitivity were excluded from the study. All of

the patients underwent examinations to determine their before operation health, demographic information, and routine wise investigations, all of which were briefly documented. Patients divided into two group 35 each were created from the patients: group A was put under general anaesthesia, while group B was put under spinal anaesthesia. Last six months from January 2025 to June 2025. A simple random sampling technique used for the study. The method is simple and based on the patient's eligibility to participate in the study.a) Adult patients undergoing laproscopic the operation who are American society of anesthesiology (ASA) I/II patients: (b) General anaesthesia and spinal anaesthesia, respectively, (c) Pain assessment using a visual analogue scale The tools used in this study included the complete by interviewing the patient records, personal characteristics (patient record) assessment if vital sign with help of questionnaire. Male and female patient age 16-60 years with healthy and normal mental and intellectual state, able to walk and communicate Maximum duration 60 to 90 min .No language restriction. Patient were excluded with low survival rate ,Traumatic patient ,Uncooperative patient ,older more than 60 years, Coagulation disorders, Severe cholecystitis, severe pancreatitis, and severe cholangitis, any previous open surgery in upper abdomen. Data were collected by patient in written form with help of questioniore and ensure at least two postoperative feedback visits. Written consent was taken prior to taking data. Data analysis were done through SPSS Version 22 SOFTWARE .Approval from instituational review committee was taken through proper channel prior to commencement of the study.

RESULT

Statistical analysis was performed using the SPSS program. Student's t-test is used to examine group differences in the standard deviation and mean for continuous data with a normally distributed distribution. The chi-square test is used to analyze categorical variables that are presented as numbers and percentages. Statistics are considered significant at P<0.05.Therefore, the following p-value was found to be significant: P>0.05 indicates no significance, P<0.05 indicates some significance, while P<0.01 indicates highly significant results. There were no patient withdrawals of permission or conversions to open cholecystectomy.

Table 4.1: Show the Distribution of Respondents by Age,

Age (Years)	Group A (n=35)	%Age	Group B (n=35)	%Age	Total (N=70)
< 30	17	48.6%	18	51.4%	35
31–45	15	42.9%	14	40.0%	29
45 and above	3	8.5%	3	8.6%	6
TOTAL	35	100%	35	100%	70

Table 4.1: show the distribution of respondents by age, The maximum number of respondents was in the age Group under 30, which was Group A 48.6% and Group B 51.4%.It was followed by 31 to 45 years in Group A 42.93% and Group B was 40% or Only 8.5% were over 45 in Groups A and B were 8.6%.The age profiles of the two groups of patients were compared using the chi-square test, but no significant distinction was detected. X2=0.185 and p=0.912 which was non significant.

TABLE 4.2: Show the Distribution of Respondent According to Their Sex

Male	23	65.7%	22	62.9%	45
Female	12	34.3%	13	37.1%	25
Total	35	100%	35	100%	70

Table 4.2: show the distribution of respondent according to their sex Maximum number of respondents were in male group A which was 65.7% followed by female group was 37.1% .Maximum number of respondents in group B Male was 62.9 and followed by female 37.1%. Using the chi-square test, the sex profiles of the two patient groups were compared, but no significant variations were identified.(x2=0.062,p=0.803).

TABLE 4.3: Show Comparision In Intraoperative Complication In Both Group

Group A	**5**	**14.3%**	**4**	**11.4%**	**0.695**

Group B	6	17.1%	3	8.6%	0.399

Table 4.3: Showed In Group B, hypotension (defined as a drop in blood pressure of 20% or more) was reported in 6(17.1%) cases; only in 3(8.6%) of these cases was adrenaline 0.01 ml/kg administered; the remaining cases were treated with intravenous fluids. In Group A, hypotension was noted in 5(14.3%) cases; all of these cases were treated with intravenous fluids. Group A and B Right shoulder pain or discomfort was reported in 4(11.4%) cases, in Group B however only 3(8.6%) of those patients required a single 25 mg bolus of intravenous fentanyl because it was so severe. Right shoulder massages helped people relax. The other patients didn't require any more care.There no significent difference between both Group according to chi-square tes (p=0.695).

TABLE 4.4: Intraoperative and Post Operative Comparision Of Pulse Rate

Time interval	Group A (Mean ± SD)	Group B (Mean ± SD)	t-test	P Value
Pre ops	80.5 ± 9.1	74.5 ± 8.4	2.87	0.005 S
Before insufflation	105.6 ± 10.4	77.6 ± 10.3	11.34	0.000 S
After insufflation	112.4 ± 8.1	74.1 ± 10.2	17.45	0.000 S
20 min	114.7 ± 11.4	81.4 ± 5.9	15.42	0.000 S
40 min	104.2 ± 9.8	73.4 ± 7.1	15.06	0.000 S
60 min	103.3 ± 9.1	71.2 ± 6.9	16.65	0.000 S
Post ops 0 min	101.4 ± 9.4	74.2 ± 8.1	12.98	0.000 S
2 hrs	105.8 ± 10.2	72.1 ± 10.1	13.91	0.000 S
4 hrs	105.1 ± 11.5	71.2 ± 6.2	15.48	0.000 S
6 hrs	104.1 ± 9.8	73.5 ± 7.0	15.02	0.000 S
8 hrs	100.7 ± 6.6	72.8 ± 6.5	17.82	0.000 S

Table 4.4: intraoperative and postoperative comparision of Group A and B .These values evaluated the results of two separate t-tests.there was significent difference found at pre ops interval between two group as value (80.5±9.1 VS 74.5±8.4). We discovered that there was a significant difference in PR value after insuffulation in Group A and group B (112.4±8.1 VS 74.1±10.2) with the difference being statistically significant (p< 0.05) and being substantially lower in Group B.

TABLE 4.5: Showed Systolic BP between Two Group

Time interval	Group A (Mean ± SD)	Group B (Mean ± SD)	t-test	P Value
Pre ops	121.7 ± 11.1	121.3 ± 7.3	0.18	0.85 NS
Before insufflation	144.2 ± 9.7	119.5 ± 8.8	11.16	0.00 S
After insufflation	151.4 ± 8.0	119.9 ± 10.0	14.53	0.00 S
20 min	141.2 ± 10.2	108.5 ± 6.8	15.77	0.00 S
40 min	140.3 ± 9.7	104.0 ± 6.1	18.84	0.00 S
60 min	140.7 ± 9.8	101.1 ± 6.6	19.86	0.00 S
Post ops 0 min	142.2 ± 7.8	114.9 ± 6.9	15.53	0.00 S
2 hrs	134.3 ± 5.7	112.6 ± 7.1	14.13	0.00 S
4 hrs	129.6 ± 6.2	107.8 ± 8.1	12.67	0.00 S
6 hrs	144.7 ± 4.6	113.3 ± 8.0	19.98	0.00 S

Table 4.5: values for both Groups were displayed.Two separate t-tests were used to compare these values.We discovered that the SBP values (121.7±11.1 VS 121.3±7.3) at baseline did not significantly different at pre operative interval.However, there was a significant difference in SBP values (151.4+8.0 VS 119.9±10.0) between these two groups after insuffulation at the specified period. Values in Group B were comparatively low, and a significant difference was discovered. (p<0.05).

TABLE 4.6: Comparision of DBP between two Groups A and Group B

Time interval	Group A (Mean ± SD)	Group B (Mean ± SD)	t-test	P Value
Pre ops	74.7 ± 7.1	79.1 ± 3.3	3.32	0.01 NS
Before insufflation	89.8 ± 7.1	73.2 ± 5.2	11.18	0.00 S
After insufflation	97.4 ± 8.3	76.7 ± 4.2	13.19	0.00 S
20 min	87.4 ± 7.3	63.4 ± 4.1	17.02	0.00 S
40 min	85.5 ± 6.9	61.3 ± 3.4	18.55	0.00 S
60 min	87.0 ± 7.2	68.0 ± 4.2	13.52	0.00 S
Post ops 0 min	89.1 ± 10.5	73.0 ± 4.2	8.52	0.00 S
2 hrs	83.1 ± 6.7	73.1 ± 4.1	7.55	0.00 S
4 hrs	79.1 ± 5.4	74.2 ± 5.1	3.90	0.00 S
6 hrs	88.1 ± 4.4	74.3 ± 4.4	13.12	0.00 S

Table 4.6: Demonstrated value in both Groups at the given interval. Values were analysed using a separate t test.Regarding the DBP value (74.7±7.1 VS 79.1±3.3) at baseline, we could not find a significant difference between groups A and B ($p>0.05$).Differences between the two Groups' DBP values (97.4±8.3 VS 76.7±4.2)were found Significant at the specified interval of insufflation ($p<0.05$). In comparison to Group A, values were found to be relatively lower in Group B. And the difference was quite significant ($p<0.05$).

TABLE 4.7: Comparison of Postoperative Nausea and Vomiting Between Two Group A and Group B

YES	11	31.4%	2	5.7%	0.005 S
NO	24	68.6%	33	94.3%	
Total	35	100%	35	100%	

Table 4.7: Group A was 11 patient (31.4%) complain of nausea and voimiting and 24 patient (68.6%) was no complain of nausea and vomiting folllowed by Group B 2 patient (5.7%) complain of nausea and vomiting and 33 patient 94.3% was no complain of nause and vomiting.there is significent difference between Group B As compared to Group A($p<0.05$).

TABEL 4.8: Postoperative Pain Evaluation By Vas Scale

VAS 0	7.1 ± 0.8	0.1 ± 0.3	48.15	0.00 S
VAS 2	5.6 ± 0.7	2.0 ± 0.8	19.96	0.00 S
VAS 4	4.7 ± 1.5	4.5 ± 1.1	0.63	0.52 NS
VAS 6	5.3 ± 1.5	4.6 ± 1.0	2.29	0.07 NS
VAS 12	4.9 ± 1.0	4.1 ± 1.9	2.21	0.07 NS

Table 4.8 showed values at fixed interval in both the Groups. The p-test is used for comparing these values. During the postoperative period, there was significant variation between the two groups in terms of vas values untill 2 hours .Values were lower in Group B, and it was determined that the difference was significant.($p< 0.05$).we also found that there was no statiscally difference was found between Group A and B with respect to VAS pain score post operative 4 and 6, 12 hours ($p>0.05$).There were no major side effects such as a severe headache, backache, urine retention, or any others. When asked about overall their happiness with both general and spinal anaesthesia at the time of discharge, all patients expressed a preference for spinal anaesthesia over general anaesthesia.If vas score geater than 5 then analgesia tramadol is give.

DISCUSSION

The current study has demonstrated that spinal anaesthesia is preferable to general anaesthesia in terms of better postsurgical pain control and has shown that it is safe to perform laparoscopic cholecystectomy under spinal anaesthesia as the only anaesthetic procedure. Due to the local anesthetic's continued analgesic effect in the subarachnoid space and the avoidance of general anaesthesia, the spinal group's postoperative pain was significantly lesser than that of the general anaesthesia group at any point during the patients' hospital stay. The spinal anaesthesia group had pain alleviation, which is crucial for a quick and painless

recovery. In present study , 70 patient underwent laproscopic cholecystectomy procedure wasassigned equally in GA group and Spinal group . a statistical analysis of age distribution (x2=0.185 , p=0.912) , sex distribution (x2 = 0.062 ,p= 0.803)all were showed to be insignificent .Demographic feature of both group was same and comparable. According to visual analogue scale there was significent difference between Group A and Group B during postoperative period vas 0 , 2, 4 , 12 , , and p value was p<0.05. that was statistical significent and group B was less pain as compared to group A. we also found that there was no statiscally difference was found between group A and B with respect to VAS pain score post operative 4 and 6, 12 hours (p>0.05).Two things were noticed intraoperatively in the spinal group: hypotension and soreness or discomfort in the right shoulder. Hypotension in 6(17.1%) cases in group B and 3(8.6%) cases were treated by adrenaline 0.01ml/kg and remaining were treated with intravenous fluid as compared to group A hypotension 5(14.3%) cases all of these cases were treated with intravenous fluid and results from sympathetic blocking and the mechanical effects of the pneumoperitoneum, whereas pain and discomfort over the right shoulder 4(11.4%) cases are caused by diaphragmatic irritation brought on by the carbon dioxide-filled pneumoperitoneum. There were no significent difference found between these two groups. The majority of this was handled without the use of medications, including reassuring the patient, massaging the right shoulder, maintaining intra-abdominal pressure at 12 mm Hg, and minimising excessive table tilting to prevent diaphragmatic discomfort. Occasionally, this diaphragmatic irritation is so bad that the surgery may have to switch to general anaesthesia. Low pressure pneumoperitoneum was used appropriately, especially with the spinal group since spinal anaesthesia generates a higher level of motor, sensory, and sympathetic blockage than general anaesthesia, which results in better belly muscle relaxation. Following peritoneal insufflations, Group A first rise in pulse beat and blood pressure is a result of both nuerohurmonal and mechanical effects. Pulse beat rate and blood pressure gradually returned to typical baseline levels. In Group B, there was minimal change in pulse and blood pressure following peritoneal insufflation because spinal anaesthesia tends to lower pulse and blood pressure whereas pneumoperitoneum's neurohumoral and mechanical effects tend to raise them. The neurohumoral and mechanical effects are offset after a while, and the heart rate and blood pressure gradually decline. There was significent difference found at pre ops interval between two group as value (80.5±9.1 VS 74.5±8.4). We discovered that there was a significant difference in PR value after insuffulation in group A and group b (112.4±8.1 VS 74.1±10.2) with the difference being statistically significant (p< 0.05) and being substantially lower in Group B.We discovered that the SBP values (121.7±11.1 VS 121.3±7.3) at baseline did not significantly different at pre operative interval. However, there was a significant difference in SBP values (151.4+8.0 VS 119.9±10.0) between these two groups after insuffulation at the specified period. Values in Group B were comparatively low, and a significant difference was discovered.(p<0.05) . Regarding the DBP value(74.7±7.1 VS 79.1±3.3) at baseline, we could not find a significant difference between groups A and B (p>0.05).Differences between the two groups' DBP values (97.4±8.3 VS 76.7±4.2)were found Significant at the specified interval of insufflation (p<0.05).When compared to Group A and Group B lower pulse rate and blood pressure can be attributed to the spinal anesthetic's persistent analgesic impact in the subarachnoid space, which reduces pain.After laparoscopic surgery, nausea and vomiting can be very problematic. Since over 50% of patients required antiemetics, prophylactic antiemetics have been administered often. In terms of postoperative complications, general anaesthesia was associated with a higher incidence of nausea, vomiting, because the trachea was intubated and intravenous medications were used.as our study 11 (31.4%) patient group A with PONV compared with 2 (5.7%) patient in Group B .Group B was lower ponv as compared to Group A .SO incidence was statiscaly significent (p<0.05)Due to decreased postoperative discomfort and difficulties because spinal anaesthesia is a localised block, there are lower procedure-related costs and hospital stays. Previously a study was performed by mohamad ELLAKANY in march 2013 .this study included 40 subject , the subject were split into two equal groups randomly . group A given by general anesthesia with treacheal intubation and mechanical ventation and group B is given by regional anesthesia (spinal anathesia) using 0.5 % bupavacaine spinal .the interior procedure was explained to the patient and written informed

consent was obtained from all participant who agreed to participate in the study.using visual analogue scale is used for estimation of post operative pain. In terms of the thoracic spinal group, all 20 patients underwent spinal anaesthesia without difficulty. All 20 patients had successful spinal block, however five did endure some discomfort. Which was treated with small doses of fentanyl. For their hypotension, eight patients needed ephedrine and atropine. Shorter recovery times and higher patient satisfaction were seen in patients who underwent segmental thoracic spinal anaesthesia. {Ellakany, *et al.*, 2013).previously a study was performed by O Ibraheim in 2019. This study included 50 subject, this subject was split into two equal group randomly .group A is given general anesthesia and group b is given spinal anesthesia. all the procedure explained to the patient and vas score is used for pain assessment postoperatively .vas score was less in SA group as compared to GA GROUP ($P<0.05$). Which was favour in our study .the need of analgesia in SA group is less than GA group .in spinal group 8 patient drop bp and 5 patient in GA group all was mananged by epinephrine .this study showed that SA anesthesia was less complication and less pain postoperatively. (Turkstani *et al.,* 2019).

CONCLUSION

We found that spinal anaesthesia provided greater postoperative pain relief than general anaesthesia in this controlled, randomised, prospective trial that compared the two types of anaesthesia in otherwise healthy laparoscopic patients. According to comparsion of blood presure in both group A have more systolic blood presure or dia systolic and pulse at insuffulation interval and found significent difference. Second, spinal anaesthesia resulted with less complication, less nausea and vomiting, and higher satisfaction in pain relieve after surgery.

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