



A COMPARATIVE STUDY BETWEEN INJECTION BUPRENORPHINE HYDROCHLORIDE VS INJECTION DEXMEDETOMIDINE WITH INJECTION 0.375% ROPIVACAINE IN TRANSVERSUS ABDOMINIS PLANE BLOCK FOR POST OPERATIVE ANALGESIA IN PATIENT UNDERGOING ELECTIVE GYNECOLOGICAL EXPLORATORY LAPAROTOMY PROCEDURES: A RANDOMIZED DOUBLE BLINDED CONTROLLED STUDY.

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Abstract:

BACKGROUND: The present study is a comparison of analgesic efficacy between injection buprenorphine hydrochloride versus injection dexmedetomidine as an adjunct to local anesthetic agent, injection ropivacaine hydrochloride 0.375% in the procedure of transversus abdominis plane block for postoperative analgesia in patients undergoing elective gynecological laparotomy surgeries in a randomized double blinded controlled study design.

AIMS AND OBJECTIVES:

Primary objective- comparison of duration of analgesia between three study groups (Group P, Q, R). Duration of analgesia is the time from TAP block administration till time of administration of first rescue analgesic.

Secondary objective- comparison of quality of analgesia based on VAS score and hemodynamic parameters, side-effects if any between the three study groups. The study parameters will be measured in postoperative period at 1, 2,4,6, 8,12,18 and 24 hours respectively

MATERIAL AND METHODS: Sixty consented adult female patients of ASA I and ASA II grade undergoing elective gynecological laparotomy procedure were randomly allocated into three groups, group P, Q, R respectively, (n=20) in each group by computer generated randomization method. Each group received bilateral transversus abdominis plane block as follows: Group P received 20 ml of 0.375% ropivacaine hydrochloride + 0.5 ml 0.9% normal saline (control), Group Q received 20 ml of 0.375% ropivacaine hydrochloride+ injection dexmedetomidine 0.5 ml (50 mcg), Group R received 20 ml of 0.375% ropivacaine hydrochloride + injection buprenorphine 0.5ml (150 mcg).TAP block was performed using anatomical landmark technique immediately after completion of surgical procedure and before emergence from anesthesia as per random allocation described previously. All

patient were taught to evaluate visual analog score during their pre-anesthetic checkup. Patient in all three groups were assessed for pain, sedation, hemodynamic status, side effects if any in postoperative period. Primary objective was - comparison of duration of analgesia between three study groups (Group P, Q, R). Secondary objective-comparison of quality of analgesia based on VAS score and hemodynamic parameters, side-effects if any between the three study groups.

RESULTS: The duration of analgesia comparison between the three study groups revealed that in Group R the mean duration of analgesia was (7.66 ± 1.3) hours while in Group P and Group Q it was (2.48 ± 0.8) hours and (4.86 ± 0.7) hours respectively. Thus duration of analgesia was found to be comparatively higher in Group R as compared to Group P and Q, p value < 0.0001 considered statistically significant. The quality of analgesia based on vas score was found superior in Group R in comparison to Group P and Q. Side effects were less in both Group P and Group R When compared with Group Q. No serious side effects like respiratory depression, heavy sedation were observed in any of the study groups.

CONCLUSION: The result of this randomized double blinded controlled study revealed that injection buprenorphine when used as an adjuvant to local anesthetic in transversus abdominis plane block yield better quality as well as prolonged duration of analgesia with lesser side effects as compared injection dexmedetomidine in transversus abdominis plane block procedure for postoperative analgesia.

Key words : Transversus abdominis plane block, buprenorphine hydrochloride, dexmedetomidine, ropivacaine, laparotomy procedures.

INTRODUCTION

The incidence of postoperative pain varies with individual. Upper abdominal surgeries particularly explorative laparotomy procedures are associated with large surgical incision, extensive manipulation and gut handling, as a pathophysiological response to surgical stress there occurs sympathetic activation leading to hemodynamic alteration, a complex cascade of inflammatory cytokine release at the site of injury that need to be controlled by adequate level of analgesia both during intraoperative as well as post operative period. Otherwise, it adds to patient morbidity, delayed recovery, post operative complications, long-term in hospital stay even sometimes such patient may require ICU admission due to degradation of clinical condition in post operative period, if adequate pain control is not achieved, so postoperative analgesia plays a significant role in patients recovery following major surgeries like explorative laparotomy procedures. The present study aims to compare the analgesic efficacy between injection dexmedetomidine and injection buprenorphine as an additive to local anesthetic for transversus abdominis plane block (TAP-block) procedure for providing postoperative analgesia in patients undergoing elective gynecological exploratory laparotomy surgeries. The conventional method of postoperative pain management includes administration of opioids analgesics by intravenous route or where opioid is contraindicated NSAIDs drugs are generally used. However, administration of conventional pain killers like opioids or NSAIDs are also associated with side effects like nausea, vomiting, constipation, urinary retention, nephrotoxicity. Opioids use may also cause respiratory depression, hormonal and immunological disturbances, sedation and postoperative ileus. Transversus abdominis plane block is a technique of peripheral nerve block of anterior abdominal wall where the afferent neurons of the abdominal wall are blocked by injecting local anesthetic into the plane between internal oblique and transversus abdominis muscle where lies the anterior rami of lower six thoracic nerve from T7 to T12 and 1st lumbar nerve. This provides analgesia to the parietal peritoneum as well as skin and muscle of anterior abdominal wall. In several studies on TAP block it has been found that TAP block administration is associated with fewer side effects as compared to conventional analgesia method. Also TAP block is better in terms of postoperative recovery, early mobilization of patient and lesser duration of in hospital stay.

Dexmedetomidine is a selective α_2 agonist with a 1600:1 preference for α_2 receptors. The α_2 adrenergic receptors agonist have been widely used in the modern anesthesia practice primarily because of producing calming effect without respiratory depression. Dexmedetomidine causes reduction in sympathetic tone, increase in parasympathetic tone, causing a decrease in heart rate, myocardial contractility and systemic vascular resistance, this results in decrease in myocardial oxygen requirement. It also causes attenuation of neuroendocrine and hemodynamic responses to anesthesia and surgery, reduces anesthetic and opioid requirement, causes sedation and analgesia. There are several clinical studies on Dexmedetomidine which demonstrate potentiation of neuraxial local anesthetics, decrease in intraoperative anesthetic requirement with prevention of intraoperative awareness and improved postoperative analgesia when epidural dexmedetomidine was used in conjunction with general anesthesia^{1,2,3}.

Buprenorphine is a centrally acting synthetic analgesic derived from opioid alkaloid thebaine and possess high binding affinity for opioid receptors. It is estimated that the affinity of buprenorphine for μ receptors is 50 times greater than that of morphine and subsequent slow dissociation from these receptor accounts for its long duration of action. It has a bell-shaped dose response relation and ceiling effect on respiratory depression but not analgesia. It is highly lipophilic and slow dissociation from receptor possess resistance to antagonism with naloxone. Buprenorphine is 25 times more potent than morphine and has a low-level physical dependence⁴. It enhances the sensory blockade of local anesthetic without affecting the sympathetic activity. Side effects may include nausea, vomiting, pruritus (incidence less as compared to morphine), drowsiness and respiratory depression.

There have been several studies comparing the analgesic efficacy between buprenorphine with dexamethasone, fentanyl as adjuvant to local anesthetics in intrathecal block, Transversus abdominis plane block, similarly studies are also available on comparison of dexmedetomidine with dexamethasone, fentanyl in transversus abdominis plane block procedure. There was no recent literature available comparing the analgesic efficacy between buprenorphine and dexmedetomidine in TAP block procedure and thus the present study was undertaken to compare the same.

MATERIAL AND METHOD

The present study was conducted in Institute of Post Graduate Medical Education and Research & Seth Sukhlal Karnani Hospital (IPGME & SSKM Hospital) Kolkata, under Department of Anesthesiology, after obtaining approval from institutional ethical committee (vide notification no: IPGME&R/IEC/2024/0828). The study is registered with clinical trial registry of India, CTRI no-CTRI/2025/06/087998.

Sixty consented adult female patients belonging to American Society of Anesthesiologist (ASA) grade I and grade II and between age groups 20-60 years, who underwent elective gynecological exploratory laparotomy surgery were included in this study. Following a prospective double blinded randomized controlled study design the patients were randomly allocated using computer generated randomization into three equal study group of (n=20) each, Group P, Q and R respectively. Each group was subjected to receive bilateral Transversus Abdominis Plane Block (TAP) as follows: Group P received 20 ml of 0.375% ropivacaine hydrochloride + 0.5 ml 0.9% normal saline (control), Group Q received 20 ml of 0.375% ropivacaine hydrochloride + injection dexmedetomidine 0.5 ml (50 mcg) and Group R received 20 ml of 0.375% ropivacaine hydrochloride + injection buprenorphine 0.5ml (150 mcg). Blinding was done by allocation concealment method by using coded sealed opaque envelope containing the study drug which were opened just prior to administration of TAP block, both the drug administrator and the patient being unaware of the study drug administered.

The Inclusion criteria was - ASA I, ASA II, 20-60 years of age, female, BMI- 25 to 35 kg/m², elective gynecological explorative laparotomy surgery.

The Exclusion criteria was - patient refusal, known hypersensitivity to local anesthetics, BMI >35 kg/m², psychiatric or physical illness leading to debility or inability to cooperate, history of

coagulopathy or bleeding diathesis, opioid dependence, infection at injection site, NYHA class>2, chronic pain.

For Sample size calculation, using conventional values of $\alpha=0.05$, $\beta=0.20$, the ROT (rule of thumb method) for calculating, n, the per group sample size is, $n=16/\delta^2$. δ (effect size) = standardized difference – absolute difference/ standard deviation(σ)⁵. Considering an effect size(δ)=0.90 as per ROT method, the calculated sample size (n) for each group will be, $n=16/\delta^2=16/(0.09)^2=16/0.81=19.75=20$ (rounded off).

Statistical analysis-Data was summarized by routine descriptive statistics, namely mean and standard deviation for numerical variables that were normally distributed (MEAN $\pm$ SD), median and interquartile range for skewed numerical variables, counts and percentages for categorical variables. Numerical variables were compared between groups by Student's independent samples t test, for normal distribution, or by Mann-Whitney U test, if otherwise. Fisher's exact test or Pearson's Chi-square test were employed for intergroup comparison of categorical variables. The differences among the 3 groups were analyzed by using one way analysis of variance (ANOVA Test). Statistical significance level was set at $p < 0.05$ for all comparisons. Statistical analysis was performed using SPSS for Windows/ Graph pad prism software.

All patients were explained about the procedure and were taught to evaluate the visual analog score pre-operatively, proper informed written consent was taken and were advised for fasting 6 hours for solid food and 2 hours for clear liquid diet. Patient were then randomly allocated to one of the three groups by a computer- generated randomization.

On arrival to OT as per ASA standard monitoring protocol, monitoring probes were attached to each patient and baseline HR, BP, SpO₂, temperature, RR, standard 5 lead ECG were obtained. Proper intra venous-access was secured and IV drip started. All patient received appropriate premedication (injection. Glycopyrrolate 0.2 mg IV, injection midazolam 2 mg IV, Injection fentanyl 2mcg/kg IV, Injection ondansetron 4mg iv) and preoxygenated with 100% oxygen for 3 to 5 minutes. For induction of anesthesia injection propofol 2mg/kg IV, injection succinylcholine 1.5 mg/kg was administered and airway secured by endotracheal tube of appropriate size, which was confirmed by end tidal capnography. Maintenance of depth of anesthesia achieved by intermittent IV boluses of injection atracurium besylate @ 0.1 mg/kg IV, sevoflurane@ 1.1-2 mac, 60% nitrous oxide with oxygen to achieve a BIS value within a range of 40-60. Patient were mechanically ventilated with appropriate setting to maintain a ETCO₂ value within 35-45 mm of Hg. Meticulous intraoperative monitoring carried out for all patient and necessary step taken whenever required. Immediately after end of surgical procedure before reversal of the patient, TAP block was performed as per random allocation described previously.

Procedure:

TAP block – Transversus abdominis plane block using anatomical landmark technique. The triangle of Petit was the landmark used where the TAP was approached. The triangle of petit is situated between iliac crest and subcostal margin, base is formed by iliac crest, bounded anteriorly by external oblique muscle, posteriorly by latissimus dorsi. The iliac crest was palpated in anterior to posterior direction and insertion of latissimus dorsi was identified (petit triangle is just anterior to latissimus dorsi). A 5cm 25 gauges blunt tipped needle was inserted in petit triangle (midpoint between subcostal margin and highest point on iliac crest) perpendicular to skin in coronal plane till a “double pop” sensation is felt. The first pop indicates that the needle has crossed external oblique muscle, the second pop indicate the needle has crossed internal oblique muscle and lies at a plane between internal oblique and transversus abdominis muscle, commonly known as TAP plane. Drug was administered in this plane in increment while performing negative aspiration for blood. The injectate via this approach spreads to T7 to L1. This technique provides analgesia to the parietal peritoneum as well as skin and muscle of anterior abdominal wall.

After administration of TAP block, anesthesia was terminated and all patient were reversed after adequate return of protective airway reflexes, sustained head lift for 5 secs, sustained handgrip, patient

obeying command with BIS showing value 80-90, TOF >0.9, extubation was done. All patient thereafter transferred to PACU and there assessed for pain, sedation, hemodynamic parameters which were assessed at 0min (on arrival to PACU) and then at 1,2,4,6,8,12,18 and 24 hours respectively. Patient complaining of pain correlating with VAS score >4, rescue analgesic injection tramadol 100mg IV was administered. Duration of analgesia which was the primary objective of this study was assessed from the time of TAP block administration till the time there was requirement of rescue analgesic. All patient was monitored for any side effects, hemodynamic parameters and were compared between three groups accordingly which was the secondary objective of the present study.

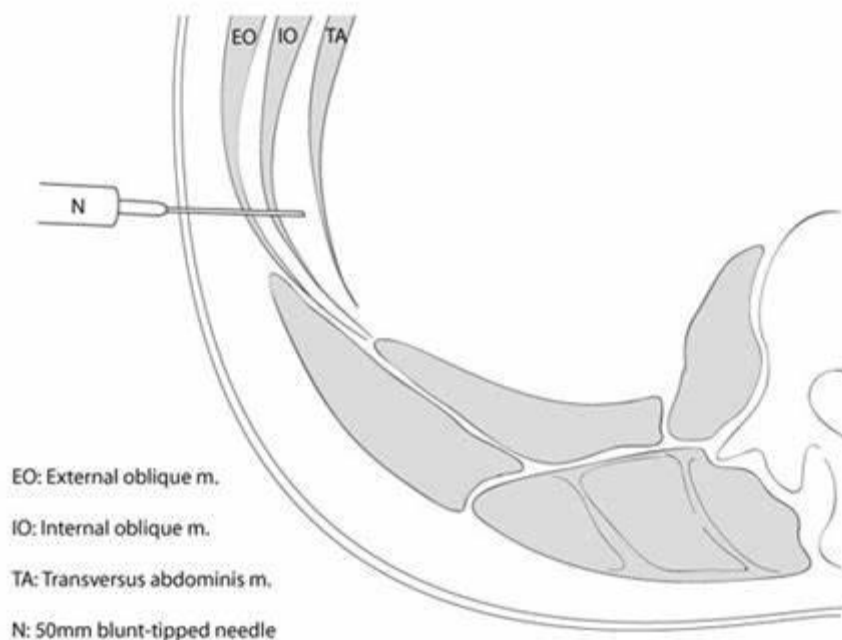


Figure 1: site of TAP block administration

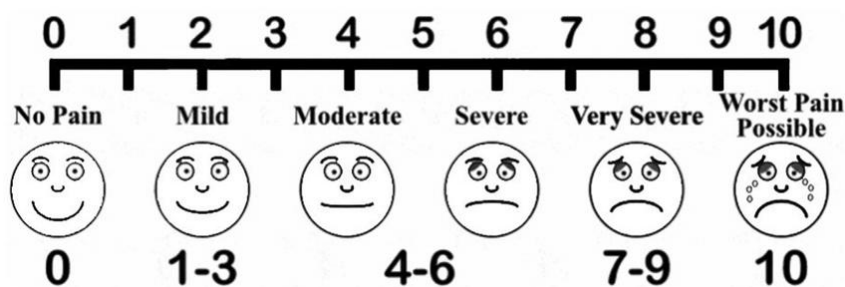


Figure 2: VISUAL ANALOG SCALE

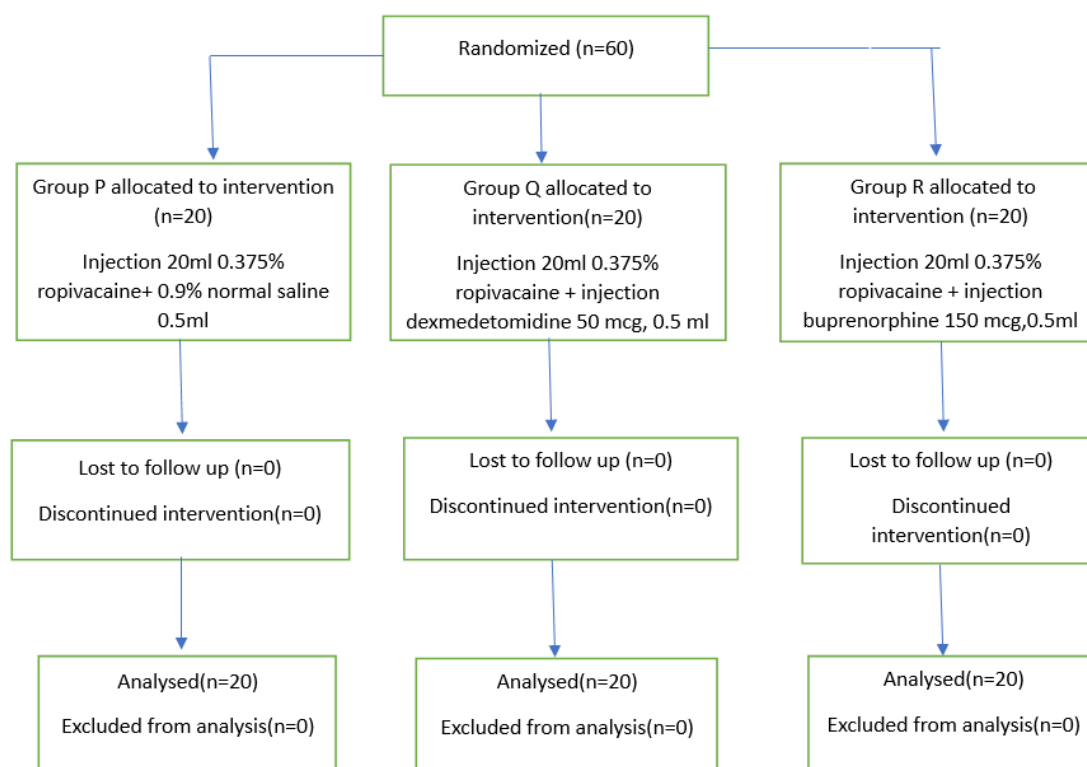


Figure 3: consort flow diagram of participation

RESULT

In the present study sixty patients were recruited (n=20) per group. All the patients completed study. No

Significant difference was found among the study groups in terms of age, BMI, height and ASA physical status.

	GROUP P	GROUP Q	GROUP R	P value
Age (years)	41.6±9.3	38.5±9.2	44.2±7.6	0.1467
BMI	29.9±3.7	28.7±3.1	30.4±3.4	0.3107
Height (cm)	154±3.4	153.7±3.7	153.3±2.6	0.8428
ASA class I	12(60%)	15 (75%)	13(65%)	0.6046
ASA class II	8 (40%)	5 (25%)	7 (35%)	

TABLE 1 : DEMOGRAPHIC PARAMETERS

The mean duration of analgesia was comparable between the three study groups. In Group R the mean duration of analgesia was 7.66±1.33 hours which was higher than Group P and Group Q respectively. In Group P the mean duration of analgesia was found to be 2.48±0.8 hours while in Group Q it was 4.86±0.7 hours. The p value was found to be <<0.0001 which is considered statistically very significant.

TABLE 2: MEAN DURATION OF ANALGESIA

Duration of analgesia	GROUP P	GROUP Q	GROUP R	p-value
Mean±SD	2.48±0.8	4.86±0.7	7.66±1.3	P<<0.0001 Considered extremely significant.
	Min: 1hour Max: 4 hours	Min: 3.5 hours Max: 6.5 hours	Min:5.45 hours Max:10.5 hours	

The quality of analgesia which was one of the secondary objectives of our study was assessed based on Visual Analog Score between the study groups. The VAS score at 4 hours, 6 hours and 8 hours respectively was comparable between the three study groups. At 4 hours, 6 hours and 8 hours the VAS score in Group R was significantly much better as compared to Group P and Group Q which indicates that patient in Group R were pain free far more time than patients in Group P and Group Q. The p value at 4,6,8 hours was < 0.0001 which was considered very much statistically significant.

TABLE 3: QUALITY OF ANALGESIA (VAS SCORE)

Time	GROUP P	GROUP Q	GROUP R	p-value
0 minute	2.1±0.64	1.8±0.69	1.9±0.55	0.3187
1 hour	2.65±0.87	2.2±0.61	2.35±0.58	0.1300
2 hours	2.85±0.67	2.5±0.60	2.5±0.51	0.1457
4 hours	3.55±0.60	3±0.72	1.8±0.61	3.54262e ⁻¹¹ which is < 0.0001
6 hours	5.05±0.88	3.55±0.6	2.55±0.51	P < 0.0001
8 hours	6.5±1.0	5.9±0.71	3.3±0.48	P < 0.0001
12 hours	7.1 ±0.6	6.9±0.84	5.8±1.1	0.0001
18 hours	7.35±0.67	7.15±0.67	7.05±0.68	0.3666
24 hours	7.57±0.67	7.0±0.7	7.23±0.62	0.0662

The hemodynamic parameters comparison between the study groups revealed that patients in dexmedetomidine group, Group Q Showed fluctuation in heart rate at 1st hour, 4th and 6th hour as compared to other two study groups. However significant very low heart rate was not observed in any of the study groups.

On comparing mean arterial pressure between the three study groups not much significant difference was noted except at 6th hour of observation, few patients in Group Q showed a drop in mean arterial pressure

TABLE 4: MEAN ARTERIAL PRESSURE (MAP) comparison between study group

MAP	GROUP P	GROUP Q	GROUP R	P value
0 min	71.05±6.15	69.8±5.85	67.95±5.29	0.2414
1 hour	69.55±4.90	65.1±6.69	69.5±5.83	0.0281
2 hours	71.05±5.13	71.57±6.43	70.42±4.97	0.9383
4 hours	70.26±5.31	65.21±6.28	70.36±7.04	0.0197
6 hours	71.84±6.71	62.84±6.96	70.5±7.22	0.0003*
8 hours	72.26±7.23	70.15±6.44	70±4.71	0.6749
12 hours	74.47±6.14	73.52±6.97	73.84±6.90	0.9783
18 hours	75.05±7.27	74.26±6.11	73.15±4.07	0.6197
24 hours	75.47±8.52	73.10±6.32	72.47±5.91	0.3868

TABLE 5: HEART RATE COMPARISON BETWEEN STUDY GROUPS

HEART RATE	GROUP P	GROUP Q	GROUP R	P value
0 min	72.6±9.32	73.6±9.46	72.3±10.13	0.9029
1 hour	73.2±8.53	61.8±8.01	71.6±9.54	0.0002*
2 hours	74.05±10.44	64.8±8.67	70.9±8.46	0.0085
4 hours	90.4±13.45	69.8±11.76	71.8±6.86	< 0.0001 *
6 hours	82.3±12.17	68.1±9.90	70.6±5.74	< 0.0001 *
8 hours	85.2±13.25	80.65±12.33	74±8.20	0.0116
12 hours	89.7±8.59	90.9±7.51	88.7±10.73	0.7451

18 hours	90.8±8.60	84.5±9.35	88.9±9.67	0.0939
24 hours	88.1±7.73	85.8±6.59	86.4±6.84	0.5695

When side effects were compared between the study groups, the incidence of nausea, vomiting was higher in Group Q (dexmedetomidine) group as compared to Group P and R. The incidence of hypotension and bradycardia was 15% each in dexmedetomidine group while pruritus was observed in One patient in buprenorphine group however no incidence of severe side effects like respiratory depression was observed in Group R (buprenorphine). The incidence of nausea and vomiting may be attributed secondary to fall in BP in few patients in dexmedetomidine group (Group Q). No severe side effects were observed in any of the study groups.

TABLE 6: COMPARISON OF SIDE EFFECTS

Side effects	GROUP P		GROUP Q		GROUP R	
	No of patients	(%)	No of patients	(%)	No of patients	(%)
nausea	1	5%	3	15%	2	10%
vomiting	0	0	2	10%	1	5%
pruritis	0	0	0	0	1	5%
hypotension	0	0	3	15%	1	5%
bradycardia	0	0	3	15%	0	0
Respiratory depression	0	0	0	0	0	0

DISCUSSION

In the present study we have compared the duration of analgesia between the study groups as our primary outcome and comparison of quality of analgesia based on VAS score, hemodynamics parameters and side effects between the study groups as secondary outcome.

There have been several studies comparing injection buprenorphine as adjuvant with local anesthetic in transversus abdominis plane block with intrathecal administration of injection buprenorphine, also injection buprenorphine has been compared with injection dexamethasone as adjuvant in transversus abdominis plane block for postoperative analgesia purpose. In most of the studies injection buprenorphine has been found to be superior in comparison to the corresponding study drug/s in terms of duration of analgesia as well as quality of block.

Injection dexmedetomidine has also been studied as adjuvant to local anesthetics in transversus abdominis plane block and has been compared with injection fentanyl, injection dexamethasone for quality of analgesia, duration of analgesia in several studies.

In our study we have compared injection buprenorphine hydrochloride with injection dexmedetomidine as an adjuvant with 0.375% injection ropivacaine hydrochloride in transversus abdominis plane block procedure for the purpose of postoperative analgesia in patient undergoing gynecologic exploratory laparotomy surgery.

A study conducted by S.Narayan et al on effect of addition of buprenorphine or dexamethasone to levobupivacaine in usg guided transversus abdominis plane block in unilateral hernia surgery found that levobupivacaine with perineural buprenorphine in TAP block facilitates prolonged analgesia and reduced requirement of rescue analgesic compared to perineural dexamethasone without significant side effects. The duration of analgesia was 10.8 hours to 12.08 hours in buprenorphine group while it was 9.36 hours to 10.6 hours in dexamethasone group. The mean rescue analgesic requirement was also lower in buprenorphine group⁶. In the present study the duration of analgesia we found was 5.45 hours to 10.5 hours in buprenorphine group i.e Group R, while the duration of analgesia in dexmedetomidine group, i.e Group Q was 3.5 to 6.5 hours and in Group P (control) group was 1 hour to 4 hours respectively.

E.Rani et al compared intrathecal buprenorphine with buprenorphine as adjuvant in transversus abdominis plane block with local anesthetic and found that patients receiving buprenorphine in TAP

block has prolonged duration of analgesia, lower pain score, lower total analgesic consumption during the first 24 hours and lower side effects compared to patients receiving intrathecal buprenorphine⁷. In our study also we find that patients receiving buprenorphine in TAP block procedure has prolonged duration of analgesia (10.6 ± 2.2) hours as compared to those receiving dexmedetomidine in TAP block procedure (9.4 ± 2.2) hours respectively. The hemodynamic parameters was much more well maintained in buprenorphine group as compared to dexmedetomidine group, incidence of bradycardia and hypotension was more in dexmedetomidine group.

N.Ahmed et al conducted a study on effect of transversus abdominis plane block with or without buprenorphine after inguinal hernia surgery on postoperative pain and found that TAP block with buprenorphine reduced acute postoperative pain severity but they did not found a difference between groups in persistent pain⁸. In our study also buprenorphine provided better quality of analgesia as compared to dexmedetomidine in TAP block procedure.

A study conducted by Rajshree et al compared analgesic efficacy of intrathecal buprenorphine with buprenorphine in TAP block after caesarean section under spinal anesthesia, found that addition of buprenorphine to intrathecal hyperbaric bupivacaine has advantage over USG guided TAP block for postoperative analgesia after caesarean section in terms of longer duration of postoperative analgesia, lower analgesic requirement over first 24 hours and cost effectiveness⁹. In our study also the duration of postoperative analgesia was much more with buprenorphine as compared to dexmedetomidine or control group.

PM Sharma et al conducted a study on fentanyl vs dexmedetomidine as an adjuvant to ropivacaine in TAP block procedure for post operative analgesia in infraumbilical surgeries under spinal anesthesia and found that dexmedetomidine was more effective in providing post operative analgesia with low drug demand and without any side effects as compared to fentanyl¹⁰. In our study we compared dexmedetomidine with buprenorphine in TAP block procedure and found that buprenorphine provides more prolonged duration of analgesia as compared to dexmedetomidine.

Another similar study by Kasim et al compared dexmedetomidine with fentanyl in USG guided transversus abdominis plane block in patient undergoing radical cystectomy procedure found that dexmedetomidine was associated with prolonged postoperative analgesia (8.9 ± 2.4) hours as compared to fentanyl (6.5 ± 1.43) hours, less postoperative pain score and low opioid consumption¹¹. However in our study we found buprenorphine providing mean duration of analgesia (7.66 ± 1.3) hours as compared to dexmedetomidine (4.86 ± 0.67) hours.

A study conducted by Qi Chen et al comparing dexmedetomidine with fentanyl in transversus abdominis plane block along with ropivacaine for evaluation of effect on postoperative pain and quality of recovery in gynecological surgery found that use of dexmedetomidine as an adjuvant to TAP block facilitates postoperative analgesia, improve quality of recovery without any complications¹². In the present study dexmedetomidine was compared with buprenorphine which revealed that buprenorphine provided more better quality of analgesia as compared to dexmedetomidine, with lesser side effects. Yaseer et al in their study compared dexmedetomidine with dexamethasone as adjuvant to bupivacaine in usg guided transversus abdominis plane block for postoperative analgesia in patient undergoing elective major gynecological surgeries found that duration of analgesia in dexmedetomidine group is much higher as compared to dexamethasone group however in our present study where we compared dexmedetomidine with buprenorphine as adjuvant with local anesthetic in transversus abdominis plane block¹³, our study revealed buprenorphine group has duration of analgesia ranging from 5.45 hours to 10.5 hours while in dexmedetomidine group duration of analgesia varied between 3.5 hours to 6.5 hours.

CONCLUSION

The result of this present randomized double blinded controlled study revealed that injection buprenorphine as an adjuvant with injection ropivacaine hydrochloride in transversus abdominis plane block procedure provided better quality as well as longer duration of analgesia as compared to

injection dexmedetomidine as adjuvant to TAP block procedure in patients undergoing elective gynecological laparotomy surgeries. The incidence of side effects were less and hemodynamic parameters showed much lesser variation with buprenorphine group as compared to dexmedetomidine group. So we can come to the conclusion that injection buprenorphine offers better quality and prolonged duration of analgesia as compared to injection dexmedetomidine when administered in transversus abdominis plane block procedure along with local anesthetic agent.

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