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Original Research Article

Effect of fentanyl on low dose hyperbaric bupivacaine in comparison with hyperbaric ropivacaine for day care anorectal surgeries: A case comparative study

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Abstract

Background: The core idea of 'day-care surgeries', or 'ambulatory surgeries', is to admit the carefully selected patients on the day of surgery, prepare them for the planned elective surgery and then discharge them on the same day to their familiar environment. (1) Day care surgeries are supposed to be more cost effective as compared to inpatient surgeries and also carry less risk of iatrogenic infections and also reduction in thromboembolism due to early mobilisation. (2) General principles of day care anaesthetic techniques include rapid/reliable onset and offset of effect from anaesthetic agents or procedures, early return of cognition and minimal PONV (Postoperative Nausea and Vomiting), dizziness and more importantly it should have minimum stress and provide maximum comfort to patient by early return to normalcy.(3)

Various adjuvants are added intrathecally to enhance the anaesthetic potential of local anaesthetic and also to provide better postoperative analgesia with minimal effect on motor blockade and thereby facilitate early discharge. (4, 5)

Conventionally hyperbaric bupivacaine has been used for these procedures. Recently hyperbaric Ropivacaine 0.75% which is an S enantiomer of propivacaine has been introduced which provides a favourable intraoperative anaesthetic condition with early mobilisation and recovery post operatively.

There are very few studies which have compared the synergistic effect of intrathecal fentanyl with hyperbaric bupivacaine in comparison to hyperbaric ropivacaine in day care perianal surgeries.

Methodology: Total 60 patients of ASA grade I and II posted for perianal surgeries were divided into 2 equal groups, group Bupivacaine and Group Ropivacaine by random generated numbers from computers. Using 26-gauge quinke needle, subarachnoid block was given wherein, Group Bupivacaine received 0.4 ml (2 mg) 0.5% Inj. Bupivacaine (hyperbaric) with 0.2 ml (10 ug) Fentanyl, whereas Group Ropivacaine received 0.4 ml (3 mg) 0.75% Inj. Ropivacaine (hyperbaric) with 0.2 ml (10 ug) Fentanyl and patient was made to sit for 5

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minutes for saddle block.
Measurements: Haemodynamic variables like Pulse rate, Systolic pressure, Diastolic pressure, Mean Arterial Pressure, time of onset of sensory block, level and duration of sensory and motor block, Highest sensory level, time to reach Highest sensory level, time to voiding and ambulation, postoperative pain assessment by VAS scoring system, maximum postoperative analgesic consumption, Time of analgesic consumption, complications like nausea, vomiting, Pruritis, PDPH and patient satisfaction score were recorded.
Results: Hemodynamic parameters, highest sensory level, intensity of motor block, time of onset and time to reach highest sensory level, success rate, satisfaction score and complications were comparable in both the groups. Post-operative pain was assessed by VAS score which was comparable in both the groups. The duration of post-operative analgesics was prolonged in Group Bupivacaine (145 minutes) in comparison to Group Ropivacaine (116 minutes) though was not statistically significant. Post-operative ambulation was 248.41 minutes in Group Bupivacaine and 203.35 minutes in Group Ropivacaine and was statistically significant. (P value <0.05) Time to voiding was earlier in Group Ropivacaine (238.94 minutes) compared to Group Bupivacaine (284.14 minutes) and was statistically significantly (p= 0.000).
Conclusion: This study concludes that low dose of 0.75% hyperbaric Ropivacaine with 10 ug fentanyl in saddle block is a very good substitute for conventional local anesthetics for day care perianal surgeries.

Keywords: Fentanyl, hyperbaric bupivacaine, hyperbaric ropivacaine

Introduction

Day care surgery has seen a steady growth over the last two to three decades due to advancement in the anaesthetic and surgical techniques. Ideal technique should be of rapid-reliable onset and offset of anaesthesia, good post-operative analgesia with early recovery of micturition control and ambulation with minimal side effects. General anaesthesia with short acting newer agents was the preferred method for long. But if regional anaesthetic is used in proper technique with proper drugs combinations it can be a better technique. To minimize the sympathetic blockade and motor blockade thereby to facilitate early ambulation we can use low volume spinal drug in sitting position to achieve saddle block.
Conventionally, lidocaine was the agent of choice in this setting, but the high incidence of transient neurological symptoms (TNS) of around 5% has been recorded in previous studies [6]. In 1950s an ester local anaesthetic, 2-chlorprocaine was introduced which was unique for its rapid and short duration of action as it was metabolized by pseudocholinesterase. It was a 3% solution with sodium metabisulphite as a preservative intended for epidural space. But due to inadvertent spinal administration it had caused permanent neurological deficit probably because of preservative or because of the high concentration of the drug [7]. But later in 2004 a plain 2-chlorprocaine 1% preparation was introduced for intrathecal purpose with a very low risk of TNS, whose neurotoxicity was no more different than the other local anesthetics. As the Plain 2-chloroprocaine 1% is isobaric, it is difficult to achieve saddle block for perianal procedures [7].
Hyperbaric bupivacaine has been the drug of choice for lower abdominal and perianal surgeries for a long time. But with the conventional dose it causes significantly prolonged motor blockade with delayed discharge where as low dose bupivacaine offers a rapid recovery profile.
Ropivacaine is an S enantiomer of propivacaine which has a similar property to bupivacaine, with a better safety profile [8]. But the concern is that of post-operative analgesia which is shorter compared to bupivacaine [9]. This can be overcome by adding different adjuvants to

intrathecal ropivacaine without compromising its favorable characteristics like early mobilization and early voiding [11].

Variety of adjuvant drugs are added intrathecally to facilitate post-operative analgesia such as opioids, ketamine, clonidine, dexmedetomidine and so on. Opioids like morphine and fentanyl enhances the therapeutic potential of low or ultralow dose of bupivacaine, with added benefit of shortening the onset of action and prolonging duration of analgesia without added adverse hemodynamic effects [4, 5].

Opioids acts on substatntia gelatinosa of dorsal horn of spinal cord and inhibit the release of neuro transmitters by opening up K^+ channels. It also blocks the conduction in nociceptive afferent pathway by inhibiting the calcium channels [11]. A lipophilic compound like fentanyl is rapid acting and having minimal respiratory depression. With the recommended intrathecal dose of 10 to 25 micrograms, fentanyl prolongs the analgesia without any effect on motor blockade [12].

Hence this study was conducted to assess the effect of intrathecal fentanyl 10 ug on low dose 0.4 ml (2mg) of hyperbaric bupivacaine 0.5% in comparison with 0.4 ml (3mg) of hyperbaric Ropivacaine 0.75% in day care perianal surgeries by saddle anaesthetic block.

Materials and Methodology

Total 60 Adult patients of ASA grade I and II, of both sex aged between 18 to 60 years, posted for perianal surgeries like Fissurectomy, Fistulotomy, Hemorrhoidectomy, Perianal abscess under spinal Anaesthesia were recruited for this Prospective**,** Double-blinded, randomized case control study. Patients with neurological diseases, vertebral pathology, abnormal clotting profiles/ disorders, local infections at the lumbar area, uncontrolled diabetes and systemic Hypertension and those who were not willing for regional Anaesthesia were excluded from study. Study was carried over 4 months in Chamarajanagar Institute of Medical Sciences. Institutional Ethical Committee clearance was obtained. Written informed patient consent was taken. Study was blinded properly wherein; anesthesiologist who prepared the drug and who performed the procedure was unaware of the group allocation. The data was recorded and analyzed by other anesthesiologist. Surgeon and patients were also unaware of allocation.

Anaesthetic Protocol

Patients were assessed preoperatively and were nil by mouth for 6 hours. Patient were premedicated with proton pump inhibitors like Inj. Pantoprazole 40 mg and an antiemetic like Inj. Ondansetron 4 mg intravenously half an hour before the procedure and an intravenous infusion of 500 ml Ringer lactate solution were started after securing the line. All patients were monitored using routine monitors like non-invasive blood pressure monitoring, Pulse oximetry and Electrocardiography.

Patients were randomly assigned by computer generated numbers to either Group Bupivacaine or Group Ropivacaine. Group Bupivacaine received intrathecal 0.4 ml (2 mg) 0.5% Inj. Bupivacaine (hyperbaric) with 0.2 ml (10 ug) Fentanyl, whereas Group Ropivacaine received 0.4 ml (3 mg) 0.5% Inj. Ropivacaine (hyperbaric) with 0.2 ml (10 ug) Fentanyl. In both the groups, spinal anesthesia was performed at the L3-L4 or L4-L5 space in the sitting position using a 26 Gauge Quincke spinal needle by midline approach in a strict aseptic technique. Drug was given over 10-12 seconds, after ensuring clear and free flow of CSF and patient was made to sit for 5 minutes. After this patients were placed in lithotomy position.

Episodes of bradycardia (Heart rate of less than 50 beats per minute) were treated with Inj. Atropine and perioperative Hypotension (Mean Arterial Pressure of less than 20%) was

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treated with intravenous ephedrine and bolus of fluids.

Measurements: Demographic data of the patients, type and duration of surgery and success of the block were recorded**.** Hemodynamic variables like Pulse rate, Systolic blood pressure, Diastolic blood pressure, Mean Arterial Pressure were recorded before, immediately after and 5 minutes after spinal anaesthesia in sitting position. After putting the patient in lithotomy position, hemodynamics were noted at 5min, 10min and at the end of surgery. Patient was put to supine position once surgery was concluded and hemodynamics were noted, the same parameters were measured in PACU at 30 min, 60 min, 120 min, 180 min and 240 min. Time of onset of sensory block, highest sensory level, time to reach highest sensory level was assessed by pin prick sensation. Sensory level was assessed every minute till maximum sensory level was reached.
Modified Bromage score was used to assess the motor block wherein
G**rade 0:** Patient is able to move hip, knee and ankle.
Grade 1: Patient can move knee and ankle but unable to move Hip.
Grade 2: Patient is able to move ankle but unable to move hip and knee.
Grade 3: Patient is unable to move hip, knee and ankle.

Motor block was assessed before lithotomy, end of surgery in supine and in PACU at arrival followed by 120 min, 240 min and 360 min. Visual Analogue Scale of 0 to 10 was used to assess the intensity of postoperative pain where 0 was no pain and 10 was the severe pain. It was assessed every 2 hourly till 8 hours. Patients with Visual Analogue score of more than 4 were given 50 mg I.V Tramadol. Maximum postoperative analgesic consumption, Time of analgesic consumption, time to voiding, time of ambulation and complications like nausea, vomiting, Pruritis, PDPH were recorded. Patient satisfaction score which was Grade 0-unsatisfactory Grade 1-comfortable Grade 2-Very Good was assessed after 8 hours.

Statistical analysis
Sample size was calculated based on the similar study observations, indicating that approximately minimum of 30 patients should be included in each group in order to ensure a power of 80 with alpha error of 95%.
Data was be entered into Microsoft excel data sheet and was be analyzed using SPSS21 version software.
Categorical data was summarized as proportion/percentage and chi square was the test of significance. Continuous data was represented as mean and standard deviation and independent sample t test was the test of significance to identify the mean difference between two groups. P value less than 0.05 was considered as statistically significant.

Results

There were no statistically significant demographic parameter variations between the groups.

Table 1: Demographic parameters

Parameters	Group Bupivacaine	Group Ropivacaine	P Value
AGE in years	37.0	39.2	0.113
Gender Male Female	 18 12	 17 13	 0.578
Weight in kg	63.14	64.74	0.472
Height in cm	157.41	159.52	0.275

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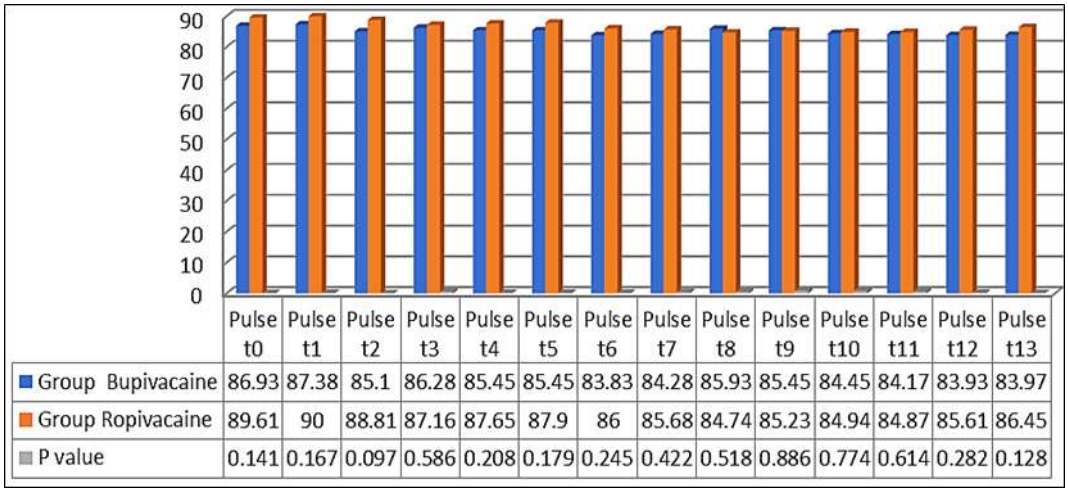
Table 2: Duration of surgery and type of surgery were also comparable among groups

Parameter	Group Bupivacaine	Group Ropivacaine	P Value
Duration of surgery in min	31.72	29.58	0.359
Type of surgery Fistulectomy Fissurectomy Heammoroidectomy	 11 10 9	 10 12 8	0.457

Since the spinal anesthesia achieved the desirable level none of the patients were converted to general anesthesia.

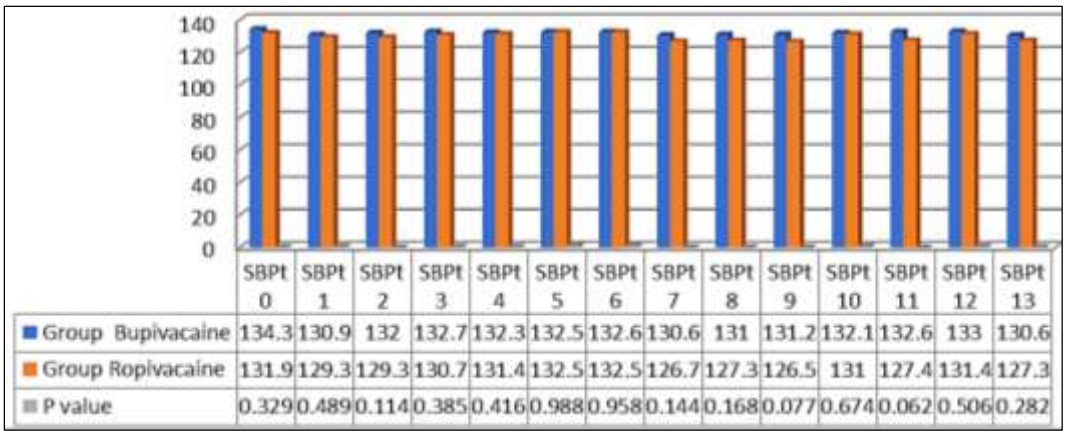
Mean pulse rate among the groups were as tabulated and the p value was found to be more than 0.05 and was statistically insignificant.



	Pulse t0	Pulse t1	Pulse t2	Pulse t3	Pulse t4	Pulse t5	Pulse t6	Pulse t7	Pulse t8	Pulse t9	Pulse t10	Pulse t11	Pulse t12	Pulse t13
Group Bupivacaine	86.93	87.38	85.1	86.28	85.45	85.45	83.83	84.28	85.93	85.45	84.45	84.17	83.93	83.97
Group Ropivacaine	89.61	90	88.81	87.16	87.65	87.9	86	85.68	84.74	85.23	84.94	84.87	85.61	86.45
P value	0.141	0.167	0.097	0.586	0.208	0.179	0.245	0.422	0.518	0.886	0.774	0.614	0.282	0.128

Fig 1: Pulse Rte in Beats per minute

The mean systolic blood pressures were also comparable between the groups at all the time intervals. The p value was found to be more than 0.05 and was statistically insignificant.



	SBPt 0	SBPt 1	SBPt 2	SBPt 3	SBPt 4	SBPt 5	SBPt 6	SBPt 7	SBPt 8	SBPt 9	SBPt 10	SBPt 11	SBPt 12	SBPt 13
Group Bupivacaine	134.3	130.9	132	132.7	132.3	132.5	132.6	130.6	131	131.2	132.1	132.6	133	130.6
Group Ropivacaine	131.9	129.3	129.3	130.7	131.4	132.5	132.5	126.7	127.3	126.5	131	127.4	131.4	127.3
P value	0.329	0.489	0.114	0.385	0.416	0.988	0.958	0.144	0.168	0.077	0.674	0.062	0.506	0.282

Fig 2: Systolic Blood Pressure in mm of Hg

Similar observations were noted in the variation of diastolic blood pressure among the groups in various time intervals and the p value was found to be more than 0.05 and was statistically insignificant.

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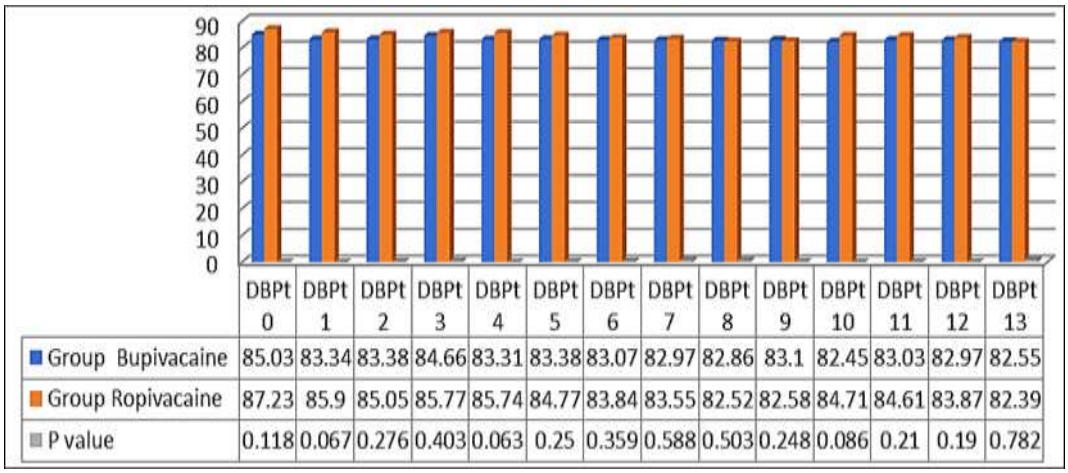

	DBPt 0	DBPt 1	DBPt 2	DBPt 3	DBPt 4	DBPt 5	DBPt 6	DBPt 7	DBPt 8	DBPt 9	DBPt 10	DBPt 11	DBPt 12	DBPt 13
Group Bupivacaine	85.03	83.34	83.38	84.66	83.31	83.38	83.07	82.97	82.86	83.1	82.45	83.03	82.97	82.55
Group Ropivacaine	87.23	85.9	85.05	85.77	85.74	84.77	83.84	83.55	82.52	82.58	84.71	84.61	83.87	82.39
P value	0.118	0.067	0.276	0.403	0.063	0.25	0.359	0.588	0.503	0.248	0.086	0.21	0.19	0.782

Fig 3: Diastolic Blood Pressure in mm of Hg

None of the patients in the study required Injection atropine or injection ephedrine.
Mean pain scores of the patients in two hourly interval post operatively is tabulated as below and the variations thus found were statistically insignificant.

Table 3: Mean pain scores

	Pain score at 0hr	**Pain score at 2hr**	**Pain score at 4hrs**	**Pain score at 6hours**	**Pain score at 8 hours**
Bupivacaine group	0	0.38	0.76	1.76	1.79
Ropivacaine group	0	0.35	0.81	1.97	1.84
P value	--	0.865	0.856	0.524	0.816

The mean amount of analgesic in form of Injection Tramadol consumed were comparable among the groups and the p value was greater than 0.05.

Table 4: The mean amount of analgesic

	Mean Analgesic consumption in mg	**P value**
Group Bupivacaine	15.52	0.842
Group Ropivacaine	16.13	

Total duration of post-operative analgesia among the groups in minutes were comparable among the groups and p value found was statistically insignificant.

Table 5: Total duration of post-operative analgesia

	Duration of analgesia in min	**P value**
Group Bupivacaine	145	0.584
Group Ropivacaine	116	

With the given dosage all the patients in both the groups had a sensory level of S2 dermatome and time to reach the level is as below, even though block of S2 was achieved quickly in group Bupivacaine it was statistically insignificant.

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Table 6: Time to reach S max

	Time to reach S max	P value
Group Bupivacaine	5.79	0.226
Group Ropivacaine	5.97	

No patients in both the groups had motor blockade.
There was a significantly early voiding in Group Ropivacaine compared to Group Bupivacaine.

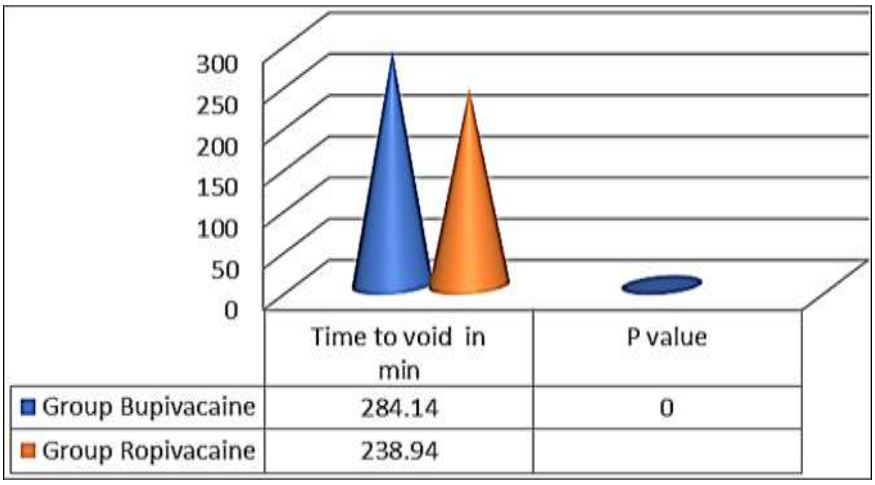

Fig 4: Time for voiding in minutes

The patients in Ropivacaine group had statistically significant early ambulation time.
Similar result was also found in time to ambulate the patients.

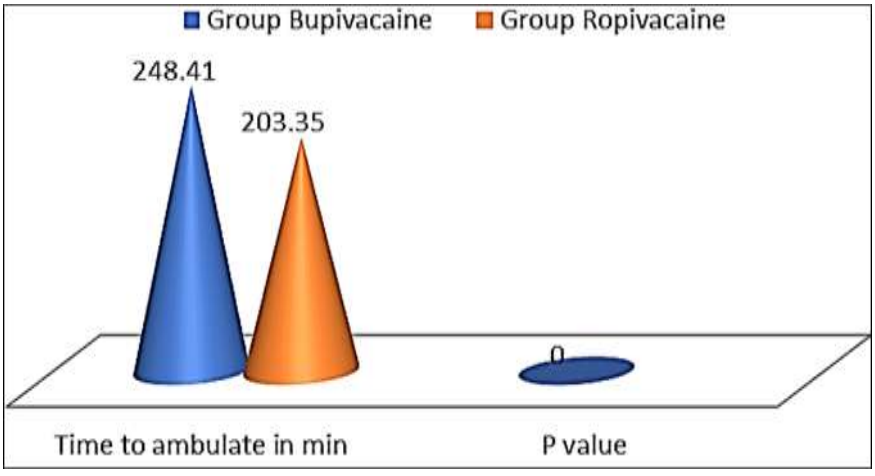

Fig 5: Time to ambulate in minutes

Two patients in both the groups had purities.
Nausea and vomiting was found in two patients belonging to Bupivacaine group and 3 patients of Ropivacaine group the p value for the same was found to be 0.703 and was statistically insignificant.
One patient in Ropivacaine group had features of Post dural puncture head ache on 0 post op day and one patient in Bupivacaine group had features of Post dural puncture head ache on first post-operative day which responded to conservative management. The variation thus found was statistically insignificant.

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Table 7: The mean patient satisfaction score

	Patient satisfaction score	P value
Group Bupivacaine	1.83	0.114
Group Ropivacaine	1.65	

Discussion

Now a day's Perianal surgeries are commonly done as day care procedures. Preferred anesthetic technique for ambulatory surgeries should provide optimal anaesthetic condition with minimal side effects and which can facilitate early recovery and ambulation [13]. Saddle block is one of the commonly used techniques which fulfill most of the criteria for day care anaesthesia.

Conventionally hyperbaric Bupivacaine has been used intrathecally which in usual doses produces a prolonged sensory and motor blockade which delays ambulation and hence discharges. Low dose bupivacaine favors early discharge but at the cost of inadequate post-operative analgesia. To overcome these opioids like fentanyl has been tried intrathecally with local anesthetics which acts synergistically to prolong the sensory blockade and postoperative analgesia without affecting motor blockade or recovery [14, 15].

Recently, Ropivacaine a new S-enantiomer of Bupivacaine has been introduced which is hyperbaric and is less lipid soluble agent. This has a very favorable unique characteristics like efficient sensory analgesia with lesser motor blockade due to preferentially block of sensory nerve fibers (Aδ and C fibers) than the motor fibers (Aβ fibers) and is less cardiotoxic and neurotoxic compared to Bupivacaine which makes it an ideal choice of local anesthetic agent for short day care procedures [16, 17].

There are very few studies to assess the effect of fentanyl with low dose Bupivacaine in comparison with low dose of Ropivacaine in day care perianal surgeries. Opioids like fentanyl when administered intrathecally, nociceptive fibers are selectively inhibited in comparison with dorsal root axons or motor fibers [18]. Fentanyl being a lipophilic opioid has a faster onset of action and lasts for a moderate duration of 1 to 4 hours and has a minimal risk of respiratory depression. The safe and effective dose of intrathecal fentanyl recommended is 10-25 μg [19, 12].

In one of the study, anaesthetic effect of intrathecal fentanyl 20 ug with hyperbaric lidocaine 25 mg has been compared with hyperbaric Ropivacaine 4 mg, which concluded that hyperbaric Ropivacaine is an acceptable short acting alternative to lidocaine for anorectal surgeries with no documented neurological side effects [20].

Intrathecal hyperbaric Ropivacaine 3 ml has been even compared with equivolume of hyperbaric intrathecal Bupivacaine and Levobupivacaine to conclude that for surgeries where early mobilsation is required, hyperbaric Ropivacaine has a useful recovery profile with early reversal of motor blockade which favors early ambulation and aids in physiotherapy in orthopedic cases [21].

Effect of intrathecal 0.5% hyperbaric Ropivacaine 18 mg with Fentanyl 10 ug has been studied in a cohort of pregnant patients posted for elective caesarian section, which concluded that the combination of the drugs improves the quality of intraoperative Anaesthesia and also provides a quality postoperative analgesia for a prolonged period of time [5].

In an experimental model wherein isolated guinea pig hearts were tested with the isomers of increasing concentrations of Ropivacaine vs Bupivacaine to assess the cardiotoxic effects of local anesthetics. They measured different parameters like heart rate, atrioventricular conduction time, coronary flow, oxygen tensions and left ventricular pressure. The study confirmed that atrioventricular conduction time was delayed more with fat soluble agent like bupivacaine than less lipophilic Ropivacaine. Also, cardio depressant effects were more pronounced with isomers of bupivacaine than the isomers of Ropivacaine probably because

of replacement of the butyl by a propyl group at the terminal end [23].

In a cohort of parturients coming for labor analgesia, to facilitate painless ambulatory delivery, randomized comparative study was done wherein as a part of combined spinal epidural technique one group received intrathecal 2.5 mg of 0.5% heavy Bupivacaine and another group received 2.5 mg 0.5% heavy Ropivacaine, both with 25 ug fentanyl. Bupivacaine group had motor blockade in 40% of women whereas in Ropivacaine group it was just 5% which was statistically significant. Study concluded that for providing rapid and safe labour analgesia, as a part of Combined Spinal Epidural technique, intrathecal solution of 25 ug fentanyl with low dose 2.5 mg Ropivacaine is a very good substitute for 25 ug fentanyl with 2.5 mg Bupivacaine with added advantage of less motor blockade [24].

In one of the study, synergistic effect of fentanyl with different doses of intrathecal bupivacaine in a group of patients posted for caesarian section was assessed. The aim of the study was to minimize the effective dose of intrathecal bupivacaine thereby reducing the unwanted feto maternal side effects associated with conventional dose of bupivacaine. Study population was divided into 6 groups wherein 3 groups received intrathecal fentanyl 12.5 ug with 8mg, 10 mg and 12.5 mg of 0.5% heavy bupivacaine whereas another 3 groups received 8mg, 10 mg, 12.5 mg of 0.5% heavy bupivacaine alone. The study showed that speed of onset of anaesthesia, hemodynamic stability, and ability to blunt visceral pain and post-operative analgesia was significantly better with bupivacaine and fentanyl groups with lesser side effects. They concluded that fentanyl has a synergistic and potentiating effect on bupivacaine and it also aids in reducing the dose of bupivacaine in caesarian section and therefore its harmful effects [25].

Similarly in another study of cohort of patients posted for ambulatory perianal surgeries, the lowest effective dose of intrathecal bupivacaine which would provide a quality intraoperative anaesthesia with a comparable post-operative analgesia and patient satisfaction score was assessed. Study population was divided into three groups wherein group LB received intrathecal low dose (3 mg) 0.5% heavy bupivacaine, ULBF received Ultra low dose (2 mg) 0.5% heavy bupivacaine with 10 ug fentanyl and group ULB received only 0.5% heavy bupivacaine (2 mg). The study showed that 2 mg of bupivacaine alone was insufficient to provide successful saddle anaesthesia for perianal surgeries and hence all patients in ULB group received general anesthesia to start the surgery. In group LB and group ULBF satisfactory sensory loss to pinprick was achieved, motor block was not present and mean time of ambulation and urine voiding was comparable and was shorter than the ULB group. But these two groups differed in post-operative analgesic requirements wherein group ULBF had better postoperative VAS score with lesser analgesics requirement with better patient satisfaction score. This study concludes that intrathecal fentanyl 10 ug with 2 mg 0.5% heavy Bupivacaine provides a good intraoperative condition for perianal surgeries with better post-operative analgesia and early recovery [26].

The present study has shown that for perianal surgeries, using intrathecal fentanyl 10 ug with 0.5% hyperbaric bupivacaine 2mg or 0.75% hyperbaric Ropivacaine 3 mg in a saddle block has provided satisfactory intraoperative anaesthetic conditions. Both the groups had shown a relatively stable hemodynamic which was comparable in both the groups and none of the patients required atropine or ephedrine to maintain the hemodynamic. This was probably attributed to the lowest dose of anesthetics which was used in both the groups. This was similar to the study done by Kuldeep *et al.* [26] which showed that there was no significant difference in hemodynamics among the three groups at different time intervals.

The highest sensory level (HSL) reached was S2 in both the groups and time to reach HSL was 5.79 minutes in Bupivacaine groups and was 5.97 minutes in Ropivacaine group which was not statistically significant. (p>0.05)

Analgesia in the perianal region during the study duration of 8 hours of postoperative period was assessed by mean VAS score which was less than 4, indicating that patients in both the

groups had an acceptable pain relief during the immediate postoperative period. Even though the duration of post op analgesia was 145 minutes in group Bupivacaine and 116 minutes in group Ropivacaine, p value was 0.586 which was statistically insignificant. This was similar to study done by Kuldeep *et al*. [26] wherein the group with low dose of 2 mg of bupivacaine and 10ug fentanyl had a better postoperative analgesics profile with low VAS score, less analgesics requirement and longer duration of analgesia. It was also similar to another study done by Gurbet A *et al*. [27] which showed that 2.5 mg bupivacaine with 25 ug fentanyl provides a better postoperative analgesia with less requirement of analgesics in the postoperative period.

Patients in both the groups showed full range of motion of knees and feet throughout the study. Mean time of ambulation was 248.41 minutes in Bupivacaine group compared to 203.25 minutes in Ropivacaine group with p value of <0.05 which was statistically significant. This showed that patients in RF group had early mobility and was similar to previous studies [21, 24].

Mean time of urination was 284.14 minutes in Bupivacaine group and 238.94 minutes in Ropivacaine group with p value of <0.05 which was statistically significant. This showed that patients in RF group had early bladder emptying capacity which was probably attributed to shorter duration of sensory block with Ropivacaine in comparison to bupivacaine. And also proves the fact that urinary retention is relatively less with lipophilic opioid like fentanyl in comparison to hydrophilic opioid like morphine. One of the studies comparing the 3 ml of 0.17% heavy bupivacaine with or without 10 ug fentanyl intrathecally for arthroscopy patients showed that addition of 10 ug of fentanyl prolongs the sensory blockade without affecting the time to first voiding [15]. Another study used 5% lidocaine with or without 20 ug fentanyl intrathecally and concluded that fentanyl group did not show any prolongation of time to first voiding [28].

Similarly, comparison was made between 2.5 mg 0.5% bupivacaine with 25ug fentanyl vs 5 mg 0.5% bupivacaine alone in a group of patients posted for perianal surgeries. They found that two groups were comparable with respect to intraoperative outcomes whereas recovery of bladder function and discharge time was significantly earlier in fentanyl group [27].

Pruritus was seen in 2 of patients of both the groups. Similarly Ben David *et al*. [15] had shown that pruritus was less common with 10 ug fentanyl.

Kuldeep *et al*. [26] also showed that pruritus was seen in only 1 patient out of 30 patients in ULBF group who were given 0.4 ml of 0.5% heavy bupivacaine with 10 ug fentanyl.

A clinical trial done on parturients to assess the dose response relationship of analgesia, pruritus and ventilation to different doses of intrathecal fentanyl (5, 7.5, 10, 15, 20, 25 ug) showed that pruritus incidence was proportional to the incremental dose of fentanyl and was identical to dose response relationship seen for analgesia [29].

Post Dural Puncture Headache was also not seen any of the groups. Patient satisfaction score was comparable in both the groups with p value of greater than 0.05.

Conclusion

This study concludes that the satisfactory intraoperative anaesthesia with a stable hemodynamics can be achieved for perianal surgeries using either the low dose of 2 mg of 0.4 ml of 0.5% heavy bupivacaine with 10 ug fentanyl (Bupivacaine group) or with 3 mg of 0.4 ml of 0.75% heavy Ropivacaine with 10 ug fentanyl (Ropivacaine group) in saddle block. Though Bupivacaine group had prolonged postoperative analgesia in comparison to Ropivacaine group it was not statistically significant. Group Ropivacaine had an early ambulation and urine voiding which favors early discharge from the day care center. Side effects were less and comparable in both the groups. This study concludes that low dose of 0.75% hyperbaric ropivacaine with 10 ug fentanyl in saddle block is a very good substitute

for conventional local anesthetics for day care perianal surgeries. Considering the cardio stability, more studies are required to explore the possibilities of this drug being used in high-risk cases for day care procedures.

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