

ORIGINAL RESEARCH

Sensory and motor block with hyperbaric bupivacaine with fentanyl VS. hyperbaric ropivacaine with fentanyl” in subarachnoid block for perineal surgery in tertiary care hospital

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ABSTRACT

Background: In this study, we wanted to compare the effectiveness of intrathecal Hyperbaric Ropivacaine with fentanyl and Hyperbaric Bupivacaine with fentanyl in perineal surgeries, to sensory block and motor block. We also compared the changes in blood pressure, heart rates and complications.

Materials and methods: This was a hospital based non-randomised control comparative study conducted among 40 patients posted for perineal surgeries to Osmania General Hospital, Afzalgunj, Hyderabad, over a period of 24 months after obtaining clearance from Institutional Ethics Committee and written informed consent from the study participants.

Results: The minimum and maximum (time of onset of motor blockade) TOM was 2 and 3 minutes in group ‘A’ and 1 and 2 minutes in group ‘B’. The mean \pm SD TOM is 2.5 ± 0.51 minutes in group ‘A’ and 1.6 ± 0.51 minutes in group ‘B’. There was significant difference between two groups A and B for the parameter time of onset of motor blockade. The minimum and maximum duration of sensory blockade (DOS) was 132 and 172 minutes in group ‘A’ and 96 and 140 minutes in group ‘B’. The mean \pm SD DOS is 153.4 ± 11.94 minutes in group ‘A’ and 112.0 ± 13.86 minutes in group ‘B’. There was significant difference between two groups A and B for the parameter DOS (in minutes). The minimum and maximum DOM was 165 and 198 minutes in group ‘A’ and 120 and 170 minutes in group ‘B’. The mean \pm SD duration of motor blockade (DOM) was 185.2 ± 9.21 minutes in group ‘A’ and 155.8 ± 13.79 minutes in group ‘B’. There was significant difference between two groups A and B for the parameter DOM (in minutes).

Conclusion: Hyperbaric ropivacaine achieves a lesser duration of sensory and motor blockade, and lesser degree of motor blockade when compared with hyperbaric

bupivacaine. Hence, hyperbaric ropivacaine with fentanyl in spinal anaesthesia is a better alternative for perineal day care surgeries.

Keywords: Hyperbaric Ropivacaine, Fentanyl, Subarachnoid, Perineal Surgery

INTRODUCTION

Central neuraxial blockade is one of the most commonly performed techniques in modern anaesthesia. In 1898, August Bier first described "cocainization of the spinal cord". Over the years, the technique has been refined and has evolved into the modern concept of intrathecal, spinal or subarachnoid block. Spinal effects are produced by slow injection of a small volume of local anaesthetic solution containing dextrose (to make it hyperbaric). Among the regional techniques available, spinal anaesthesia is an attractive option when the surgical site is below umbilicus.^[1] It produces dense sensory, motor and sympathetic blockade. It has the advantages of low cost, better post-operative pain relief, decreased post-operative nausea and vomiting (PONV), low incidence of thromboembolism when compared to general anaesthesia. Subarachnoid block is associated with reduced stage one recovery time and patients can resume their normal oral intake quickly. Because of these benefits, spinal anaesthesia is one of the emerging techniques in day care surgeries in recent times. Spinal anaesthesia is beneficial in terms of decreasing intraoperative blood loss, blunting the stress response to surgery and reducing mortality and morbidity in high risk surgical patients. Subarachnoid block is a preferred technique in patients who are prone to aspiration like obesity, full stomach, gastroesophageal reflux disease (GERD) and in patients with reduced respiratory drive. Despite the above benefits, the major limitation of subarachnoid block is short lived duration of anaesthesia. Normally, spinal anaesthesia with bupivacaine heavy lasts for 2 to 2.5 hours.^[2] Addition of adjuvants like opioids, neostigmine and epinephrine to the local anaesthetics intrathecally, results in prolongation of duration of anaesthesia. In 1979, Wang and his colleagues^[3] first used intrathecal opioids for acute pain treatment. Intrathecal opioid is widely used in treating intraoperative, post-operative, obstetric, traumatic and chronic cancer pain. The technique of intrathecal opioid administration along with local anaesthetics is to improve the quality of analgesia and decrease the requirement of post-operative analgesics.^[4] The basis for the combination of local anaesthetics and opioids is that these two groups of drugs provide analgesia by their action at two different sites. Local anaesthetics have their action at the spinal nerve axon and opioids act at the receptor site in the spinal cord.^[5] Various opioids have been used intrathecally like morphine, fentanyl, buprenorphine and nalbuphine to fasten the onset and prolong the duration of sensory and motor blockade.

AIMS AND OBJECTIVES

- To compare the effectiveness of intrathecal hyperbaric ropivacaine with fentanyl and hyperbaric bupivacaine with fentanyl in perineal surgeries.
- To assess the quality and duration of sensory and motor block with heavy ropivacaine plus fentanyl vs heavy bupivacaine with fentanyl.
- To study the changes in blood pressure and heart rates to study the complications.

MATERIALS AND METHODS

This was a hospital based non-randomised control comparative study conducted among 40 patients posted for perineal surgeries to Osmania General Hospital, Afzalgunj, Hyderabad, over a period of 24 months after obtaining clearance from Institutional Ethics Committee and written informed consent from the study participants.

INCLUSION CRITERIA

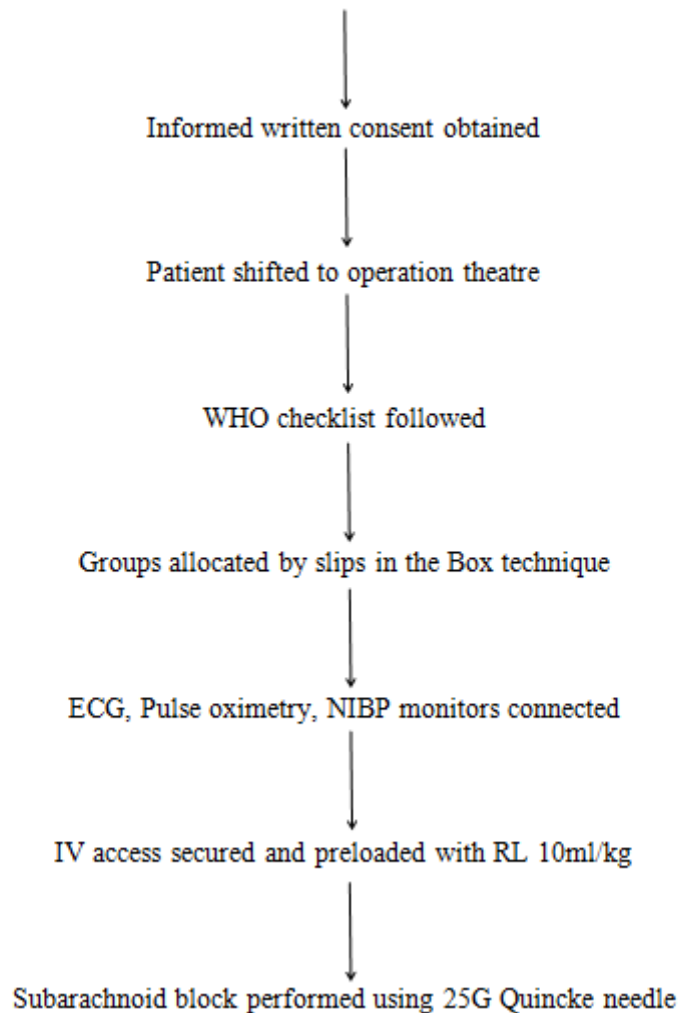
- American society of Anaesthesiologists grade - I and grade - II
- Age group between 18 years and 50 years
- Patients posted for perineal surgery
- Patients who gave informed written consent

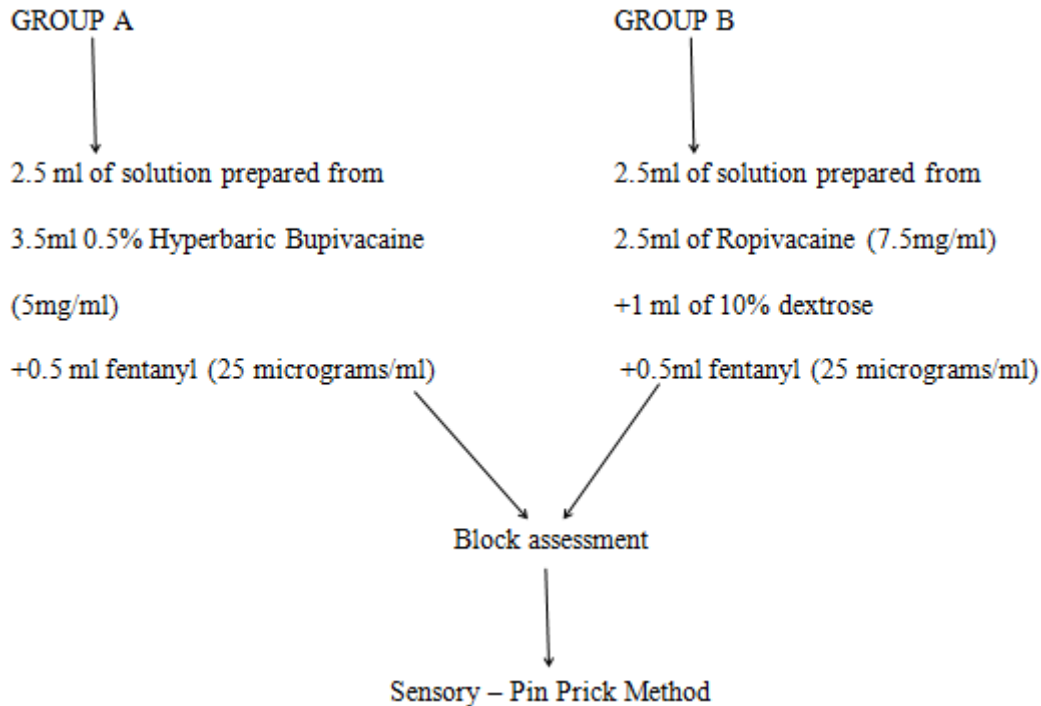
EXCLUSION CRITERIA

- American society of Anaesthesiologists grade - III and above
- Patients with history of allergy to study drugs
- Patients contraindicated for subarachnoid block
- Age less than 18 years and greater than 50 years
- Baseline heart rate less than 60 beats per minute
- Baseline blood pressure 90/50 mm of Hg

PATIENT FLOW CHART

CLINICAL ASSESMENT: ASA I and ASA II (20-40 years of age) cases posted for perineal surgeries





The specific gravity of the solution prepared with 2.5ml of Ropivacaine (7.5mg/ml) +1 ml of 10% dextrose was assessed by urinometer (1.0227-1.0278) which was similar to hyperbaric Bupivacaine.

STATISTICAL METHODS

Data was analysed by Microsoft excel and GraphPad Prism software. Data was summarized by mean \pm SD for continuous data and % for categorical data. The comparison between two groups was done by unpaired t-test for continuous normal data and Mann Whitney U test for continuous non-normal data. The comparison between two groups was done by Fisher's exact test for categorical data. All p-values less than 0.05 were considered as statistically significant.

RESULTS

The minimum and maximum age is 20 and 49 years in group 'A' and 19 and 49 years in group 'B'. The mean \pm SD age is 36.9 ± 9.41 years in group 'A' and 40.3 ± 9.83 years in group 'B'. There is no significant difference between two groups A and B for the parameter age (in years).

The minimum and maximum height is 142 and 162 cm in group 'A' and 140 and 163 cm in group 'B'. The mean \pm SD height is 153 ± 6.12 cm in group 'A' and 150.8 ± 6.87 cm in group 'B'. There is no significant difference between two groups A and B for the parameter height (in cm). The minimum and maximum weight is 55 and 80 kg in group 'A' and 60 and 79 kg in group 'B'. The mean \pm SD weight is 69.9 ± 6.69 kg in group 'A' and 67.3 ± 5.18 kg in group 'B'. There is no significant difference between two groups A and B for the parameter weight (in kg).

Groups	N	Minimum	Maximum	Mean	SD	P-Value
A	20	20	49	36.9	9.41	0.271
B	20	19	49	40.3	9.83	
<i>The Comparison between Two Groups for the Parameter Age (in Years)</i>						
Groups	N	Minimum	Maximum	Mean	SD	P-Value
A	20	142	162	153.0	6.12	0.281

B	20	140	163	150.8	6.87	
<i>The Comparison between Two Groups for the Parameter Height (in cm)</i>						
Groups	N	Minimum	Maximum	Mean	SD	P-Value
A	20	55	80	69.9	6.69	0.177
B	20	60	79	67.3	5.18	
<i>Table 1: The Comparison between Two Groups for the Parameter Weight (in kg)</i>						

Groups	N	Minimum	Maximum	Mean	SD	P-Value
A	20	2	3	2.5	0.51	< 0.0001
B	20	1	2	1.6	0.51	
<i>The Comparison between Two Groups for the Parameter Time of Onset of Motor Blockade (TOM) (in Minutes)</i>						
Groups	N	Minimum	Maximum	Mean	SD	P-Value
A	20	132	172	153.4	11.94	< 0.0001
B	20	96	140	112.0	13.86	
<i>The Comparison between Two Groups for the Parameter Duration of Sensory Blockade (DOS) (in Minutes)</i>						
Groups	N	Minimum	Maximum	Mean	SD	P-Value
A	20	165	198	185.2	9.21	< 0.0001
B	20	120	170	155.8	13.79	
<i>Table 2: The Comparison between Two Groups for the Parameter Duration of Motor Blockade (DOM) (in minutes)</i>						

The minimum and maximum TOM is 2 and 3 minutes in group 'A' and 1 and 2 minutes in group 'B'. The mean \pm SD TOM is 2.5 ± 0.51 minutes in group 'A' and 1.6 ± 0.51 minutes in group 'B'. There is significant difference between two groups A and B for the parameter time of onset of motor blockade (in minutes). The minimum and maximum DOS is 132 and 172 minutes in group 'A' and 96 and 140 minutes in group 'B'. The mean \pm SD DOS is 153.4 ± 11.94 minutes in group 'A' and 112.0 ± 13.86 minutes in group 'B'. There is significant difference between two groups A and B for the parameter DOS (in minutes). The minimum and maximum DOM is 165 and 198 minutes in group 'A' and 120 and 170 minutes in group 'B'. The mean \pm SD DOM is 185.2 ± 9.21 minutes in group 'A' and 155.8 ± 13.79 minutes in group 'B'. There is significant difference between two groups A and B for the parameter DOM (in minutes).

Time (in minutes)	Groups	N	Minimum	Maximum	Mean	SD	P-Value
Pre-OP	A	20	60	112	86.7	11.32	0.447
	B	20	62	102	83.8	12.09	
2	A	20	60	118	85.2	11.40	0.367
	B	20	66	104	82.1	10.04	
10	A	20	55	102	84.7	10.63	0.395
	B	20	62	99	81.9	9.93	
30	A	20	61	102	82.8	9.78	0.756
	B	20	63	93	81.9	8.36	
45	A	20	67	100	81.2	9.82	0.499
	B	20	63	93	83.2	8.68	
60	A	20	68	98	79.9	8.54	0.389
	B	20	60	92	82.3	8.53	
90	A	20	66	92	81.2	7.15	0.753
	B	20	62	93	82.0	8.72	

120	A	20	68	96	83.0	7.34	0.865
	B	20	64	96	83.4	9.19	
150	A	20	70	98	83.9	6.55	0.887
	B	20	64	96	83.6	8.72	
240	A	20	70	98	84.6	8.29	0.107
	B	20	70	104	89.5	10.35	

Table 3: The Comparison between Two Groups for the Parameter PR (in BPM) for Different Time Points

The minimum and maximum PR is 60 and 112 beats per minute (BPM) in group 'A' and 62 and 102 BPM in group 'B' of pre-op. The mean \pm SD PR is 86.7 ± 11.32 BPM in group 'A' and 83.8 ± 12.09 BPM in group 'B' of pre-op. The minimum and maximum PR is 60 and 118 BPM in group 'A' and 66 and 104 BPM in group 'B' of 2 minutes. The mean \pm SD PR is 85.2 ± 11.40 BPM in group 'A' and 82.1 ± 10.04 BPM in group 'B' of 2 minutes. The minimum and maximum PR is 55 and 102 BPM in group 'A' and 62 and 99 BPM in group 'B' of 10 minutes. The mean \pm SD PR is 84.7 ± 10.63 BPM in group 'A' and 81.9 ± 8.36 BPM in group 'B' of 10 minutes. The minimum and maximum PR is 61 and 102 BPM in group 'A' and 63 and 93 BPM in group 'B' of 30 minutes. The mean \pm SD PR is 82.8 ± 9.78 BPM in group 'A' and 81.9 ± 8.36 BPM in group 'B' of 30 minutes. The minimum and maximum PR is 67 and 100 BPM in group 'A' and 63 and 93 BPM in group 'B' of 45 minutes. The mean \pm SD PR is 81.2 ± 9.82 BPM in group 'A' and 83.2 ± 8.68 BPM in group 'B' of 45 minutes. The minimum and maximum PR is 68 and 98 BPM in group 'A' and 60 and 92 BPM in group 'B' of 60 minutes. The mean \pm SD PR is 79.9 ± 8.54 BPM in group 'A' and 82.3 ± 8.53 BPM in group 'B' of 60 minutes. The minimum and maximum PR is 66 and 92 BPM in group 'A' and 62 and 93 BPM in group 'B' of 90 minutes. The mean \pm SD PR is 81.2 ± 7.15 BPM in group 'A' and 82.0 ± 8.72 BPM in group 'B' of 90 minutes. The minimum and maximum PR is 68 and 96 BPM in group 'A' and 64 and 96 BPM in group 'B' of 120 minutes. The mean \pm SD PR is 83.0 ± 7.34 BPM in group 'A' and 83.4 ± 9.19 BPM in group 'B' of 120 minutes. The minimum and maximum PR is 70 and 98 BPM in group 'A' and 64 and 96 BPM in group 'B' of 150 minutes. The mean \pm SD PR is 83.9 ± 6.55 BPM in group 'A' and 83.6 ± 8.72 BPM in group 'B' of 150 minutes. The minimum and maximum PR is 70 and 98 BPM in group 'A' and 70 and 104 BPM in group 'B' of 240 minutes. The mean \pm SD PR is 84.6 ± 8.29 BPM in group 'A' and 89.5 ± 10.35 BPM in group 'B' of 240 minutes. There is no significant difference between two groups A and B for the parameter PR (in BPM) for all time points.

Parameter	Time (in Minutes)	Groups	N	Minimum	Maximum	Mean	SD	P-Value
SBP	Pre-OP	A	20	105	140	124.5	8.63	0.235
		B	20	112	136	121.7	5.77	
	2	A	20	108	148	122.5	9.36	0.514
		B	20	110	130	120.5	5.10	
	10	A	20	98	150	116.9	11.05	0.138
		B	20	102	130	119.2	6.43	
	30	A	20	102	130	114.9	6.877	0.156
		B	20	107	124	117.5	4.046	
	45	A	20	102	130	115.3	8.053	0.059
		B	20	103	126	117.9	4.626	
	60	A	20	100	128	115.4	8.312	0.104
		B	20	106	124	118.6	4.806	
	90	A	20	95	130	116.3	8.221	0.103
		B	20	108	125	119.8	5.126	

120	A	20	100	132	117.4	7.029	0.279
	B	20	101	128	119.8	6.504	
150	A	20	107	134	119	7.388	0.107
	B	20	109	128	122.3	5.273	
240	A	20	108	134	119.1	6.786	0.130
	B	20	109	129	122	5.15	

Table 4: The Comparison between Two Groups for the Parameter SBP (in mmHg) for Different Time Points

The minimum and maximum SBP is 105 and 140 mmHg in group 'A' and 112 and 136 mmHg in group 'B' of pre-op. The mean \pm SD SBP is 124.5 ± 8.63 mmHg in group 'A' and 121.7 ± 5.77 mmHg in group 'B' of pre-op. The minimum and maximum SBP is 108 and 148 mmHg in group 'A' and 110 and 130 mmHg in group 'B' of 2 minutes. The mean \pm SD SBP is 122.5 ± 9.36 mmHg in group 'A' and 120.5 ± 5.10 mmHg in group 'B' of 2 minutes. The minimum and maximum SBP is 98 and 150 mmHg in group 'A' and 102 and 130 mmHg in group 'B' of 10 minutes. The mean \pm SD SBP is 116.9 ± 11.05 mmHg in group 'A' and 119.2 ± 6.43 mmHg in group 'B' of 10 minutes. The minimum and maximum SBP is 102 and 130 mmHg in group 'A' and 107 and 124 mmHg in group 'B' of 30 minutes. The mean \pm SD SBP is 114.9 ± 6.88 mmHg in group 'A' and 117.5 ± 4.05 mmHg in group 'B' of 30 minutes. The minimum and maximum SBP is 102 and 130 mmHg in group 'A' and 103 and 126 mmHg in group 'B' of 45 minutes. The mean \pm SD SBP is 115.3 ± 8.05 mmHg in group 'A' and 117.9 ± 4.63 mmHg in group 'B' of 45 minutes. The minimum and maximum SBP is 100 and 128 mmHg in group 'A' and 106 and 124 mmHg in group 'B' of 60 minutes. The mean \pm SD SBP is 115.4 ± 8.31 mmHg in group 'A' and 118.6 ± 4.81 mmHg in group 'B' of 60 minutes. The minimum and maximum SBP is 95 and 130 mmHg in group 'A' and 108 and 125 mmHg in group 'B' of 90 minutes. The mean \pm SD SBP is 116.3 ± 8.22 mmHg in group 'A' and 119.8 ± 5.13 mmHg in group 'B' of 90 minutes. The minimum and maximum SBP is 100 and 132 mmHg in group 'A' and 101 and 128 mmHg in group 'B' of 120 minutes. The mean \pm SD SBP is 117.4 ± 7.03 mmHg in group 'A' and 119.8 ± 6.50 mmHg in group 'B' of 120 minutes. The minimum and maximum SBP is 107 and 134 mmHg in group 'A' and 109 and 128 mmHg in group 'B' of 150 minutes. The mean \pm SD SBP is 119.0 ± 7.39 mmHg in group 'A' and 122.3 ± 5.27 mmHg in group 'B' of 150 minutes. The minimum and maximum SBP is 108 and 134 mmHg in group 'A' and 109 and 129 mmHg in group 'B' of 240 minutes. The mean \pm SD SBP is 119.1 ± 6.79 mmHg in group 'A' and 122.0 ± 5.15 mmHg in group 'B' of 240 minutes. There is no significant difference between two groups A and B for the parameter SBP (in mmHg) for all time points.

The minimum and maximum DBP is 68 and 90 mmHg in group 'A' and 60 and 90 mmHg in group 'B' of pre-op. The mean \pm SD DBP is 82.3 ± 6.77 mmHg in group 'A' and 77.7 ± 7.44 mmHg in group 'B' of pre-op. The minimum and maximum DBP is 60 and 98 mmHg in group 'A' and 60 and 92 mmHg in group 'B' of 2 minutes. The mean \pm SD DBP is 79.8 ± 8.12 mmHg in group 'A' and 74.6 ± 9.86 mmHg in group 'B' of 2 minutes. The minimum and maximum DBP is 62 and 100 mmHg in group 'A' and 60 and 90 mmHg in group 'B' of 10 minutes. The mean \pm SD DBP is 77.4 ± 9.63 mmHg in group 'A' and 74.4 ± 9.00 mmHg in group 'B' of 10 minutes. The minimum and maximum DBP is 60 and 90 mmHg in group 'A' and 60 and 90 mmHg in group 'B' of 30 minutes. The mean \pm SD DBP is 77.2 ± 7.90 mmHg in group 'A' and 74.6 ± 8.13 mmHg in group 'B' of 30 minutes. The minimum and maximum DBP is 60 and 90 mmHg in group 'A' and 60 and 86 mmHg in group 'B' of 45 minutes. The mean \pm SD DBP is 73.9 ± 9.65 mmHg in group 'A' and 74.2 ± 7.11 mmHg in group 'B' of 45 minutes. The minimum and maximum DBP is 58 and 88 mmHg in group 'A' and 62 and 88 mmHg in group 'B' of 60 minutes. The mean \pm SD DBP is 73.6 ± 9.57 mmHg in group 'A' and 74.7 ± 7.12 mmHg in group 'B' of 60 minutes. The minimum and

maximum DBP is 60 and 90 mmHg in group 'A' and 62 and 88 mmHg in group 'B' of 90 minutes. The mean \pm SD DBP is 74.9 ± 8.39 mmHg in group 'A' and 76.8 ± 7.20 mmHg in group 'B' of 90 minutes. The minimum and maximum DBP is 60 and 89 mmHg in group 'A' and 66 and 88 mmHg in group 'B' of 120 minutes. The mean \pm SD DBP is 76.4 ± 7.38 mmHg in group 'A' and 78.6 ± 6.74 mmHg in group 'B' of 120 minutes. The minimum and maximum DBP is 60 and 91 mmHg in group 'A' and 66 and 90 mmHg in group 'B' of 150 minutes. The mean \pm SD DBP is 75.3 ± 7.85 mmHg in group 'A' and 79.3 ± 7.46 mmHg in group 'B' of 150 minutes. The minimum and maximum DBP is 60 and 86 mmHg in group 'A' and 65 and 88 mmHg in group 'B' of 240 minutes. The mean \pm SD DBP is 74.6 ± 7.65 mmHg in group 'A' and 78.8 ± 7.22 mmHg in group 'B' of 240 minutes. There is no significant difference between two groups A and B for the parameter DBP (in mmHg) for all parameters.

Parameter	Time (in Minutes)	Groups	N	Minimum	Maximum	Mean	SD	P-Value
DBP	Pre-OP	A	20	68	90	82.3	6.77	0.050
		B	20	60	90	77.7	7.44	
	2	A	20	60	98	79.8	8.12	0.079
		B	20	60	92	74.6	9.86	
	10	A	20	62	100	77.4	9.63	0.315
		B	20	60	90	74.4	9.00	
	30	A	20	60	90	77.2	7.90	0.312
		B	20	60	90	74.6	8.13	
	45	A	20	60	90	73.9	9.65	0.897
		B	20	60	86	74.2	7.11	
	60	A	20	58	88	73.6	9.57	0.682
		B	20	62	88	74.7	7.12	
	90	A	20	60	90	74.9	8.39	0.459
		B	20	62	88	76.8	7.20	
120	A	20	60	89	76.4	7.38	0.331	
	B	20	66	88	78.6	6.74		
150	A	20	60	91	75.25	7.853	0.107	
	B	20	66	90	79.25	7.461		
240	A	20	60	86	74.6	7.653	0.082	
	B	20	65	88	78.8	7.215		

Table 5: The Comparison between Two Groups for the Parameter DBP (in mmHg) for Different Time Points

DISCUSSION

Current study was done to evaluate the quality and duration of sensory and motor blockade of both the local anaesthetics with added fentanyl. Our results showed that both the groups are comparable with respect to age, gender, height, weight, body mass index (BMI), level of anaesthesia and ASA score (P values > 0.05).

Whiteside et al.^[6] found that there was significant reduction in median duration for regression of sensory block to T10 with hyperbaric ropivacaine 56.5 (28 - 145) min as compared with hyperbaric bupivacaine 118 (80 - 238) min when 3 ml of 0.5 % of hyperbaric ropivacaine and 3 ml of 0.5 % of hyperbaric bupivacaine was used in patients undergoing lower abdominal, perineal, or lower limb surgeries. U Srivastava et al. in their study found that there was significant reduction in duration for regression of sensory block to T10 with hyperbaric ropivacaine (110 ± 12.0 min) as compared to hyperbaric bupivacaine (135 ± 26.8 min) when patients received 15 mg of 0.5 % hyperbaric ropivacaine and 11mg of 0.5% hyperbaric

bupivacaine for caesarean delivery. In our study, we noted that there was statistical significant difference in duration for regression of sensory block to T10 with The mean \pm SD of 153.4 ± 11.94 minutes in hyperbaric bupivacaine group and 112.0 ± 13.86 minutes in hyperbaric ropivacaine.

U Srivastava et al. found that the time for regression of motor block as assessed with Bromage score 0 was significantly less with hyperbaric ropivacaine (127 ± 20.42 min) as compared with hyperbaric bupivacaine (182 ± 30.83 min). In our study, we also found a statistically significant difference in time for regression of motor block to Bromage score 0 with the mean \pm SD 185.2 ± 9.21 minutes in hyperbaric bupivacaine group and 155.8 ± 13.79 minutes in hyperbaric ropivacaine group.

Whiteside et al. found that degree of motor blockade assessed with Bromage score of 3 was achieved in 100 % with hyperbaric bupivacaine, while only in 70 % with hyperbaric ropivacaine. In our study, we found that Bromage score of 3 was achieved in 100 % of group B and in 80 % of group R. Hence, bupivacaine gives a better degree of motor blockade than ropivacaine.

Hemodynamic parameters amongst the two groups were compared. HR, systolic BP, diastolic BP and mean arterial pressure (MAP) decreased after the block in both the groups but were comparatively lower in group B than in group R. Intergroup hemodynamic parameters were well within normal limits. No episodes of bradycardia or hypotension were reported in both the groups in our study.

CONCLUSION

Hyperbaric ropivacaine achieves a lesser duration of sensory and motor blockade, and lesser degree of motor blockade when compared with hyperbaric bupivacaine. Hence, hyperbaric ropivacaine with fentanyl in spinal anaesthesia is a better alternative for perineal day care surgeries.

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