Section: Anaesthesiology

Original Research Article

EVALUATION OF THE EFFECT OF SITTING VERSUS LEFT LATERAL POSITION ON SENSORY AND MOTOR BLOCK IN SPINAL ANAESTHESIA IN ELECTIVE CAESAREAN SECTION

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ABSTRACT

Background: The popularity of spinal anesthesia in obstetric practice continues to grow due to its simplicity, rapid effect and the potential for reducing perioperative complications. A critical aspect of spinal anesthesia is the position of the patient during the administration of the local anesthetic in subarachnoid space.[1] The two most commonly employed positions are the sitting and the left lateral positions.[2] The choice of position has been a subject of ongoing research and debate, as it can influence the onset, extent and duration of both sensory and motor block, as well as the incidence of complications such as hypotension and the requirement for vasopressors. This study is done to evaluate the effect of sitting versus left lateral position on sensory and motor block in spinal anaesthesia in elective caesarean section. **Materials and Methods:** The comparative prospective observational study included 70 patients posted for elective caesarean section under spinal anaesthesia. Patients were allocated in two groups. One group of 35 Patients received Spinal anesthesia in Sitting Position (Group S) and other group of 35 patients received Spinal anesthesia in Left Lateral Position (Group L). Onset of sensory, motor block, total time taken to achieve highest sensory level, total time taken to achieve complete motor block, total duration of sensory and motor block in sitting position and left lateral position was evaluated. Heart rate, Systolic blood pressure, Diastolic blood pressure was noted in both the groups at 2, 5-minutes post spinal, then every 5 minutes till end of surgery. **Results:** The mean onset time to achieve sensory T10 level was significantly shorter in Group S (2.74 ± 0.47 minutes) compared to Group L (3.44 ± 0.56 minutes), with a highly significant p-value (<0.0001). Motor Block highest level in the Sitting Position (4.99 ± 0.74 minutes) showed a significantly shorter duration than the Left Lateral Position (5.72 ± 0.61 minutes), with statistical significance ($p = 0.00003$). Despite lack of statistical difference, Group L consistently maintained slightly lower heart and stable BP, suggesting a trend towards enhanced hemodynamic stability. Group L had fewer complications. Notably, hypotension was less frequent (5.56%) in Group L compared to Group S (6.67%). **Conclusion:** The faster onset of both sensory and motor block as well as a faster highest level of block achieved in sitting position compared to the lateral position. However, hemodynamic stability was better maintained in the lateral position than in the sitting position.

INTRODUCTION

Spinal anaesthesia is the method of choice for Caesarean section due to its rapid onset, reliability, and favourable safety profile for both mother and foetus.[3] As a regional anaesthetic technique, spinal anaesthesia offers several advantages over general anesthesia, including avoidance of airway manipulation, reduced risk of aspiration, and decreased maternal and neonatal morbidity.[4] The technique involves the injection of a local anesthetic into the subarachnoid space, resulting in sensory and motor blockade that facilitates surgery while allowing the mother to remain awake and participate in the birth process.

A critical aspect of spinal anesthesia is the position of the patient during the administration of the local anesthetic in subarachnoid space. The two most commonly employed positions are the sitting and the left lateral positions. The choice of position has been a subject of ongoing research and debate, as it can influence the onset, extent, and duration of both sensory and motor block, as well as the incidence of complications such as hypotension and the requirement for vasopressors.[2] Given the lack of consensus and the potential implications for maternal and neonatal outcomes, a comprehensive evaluation of the effects of sitting versus left lateral position on sensory and motor block characteristics, as well as hemodynamic stability, is needed. Understanding these differences is essential for refining anesthesia protocols to improve safety of patients.

MATERIALS AND METHODS

Total 70 patients were included in the study after obtaining institutional ethical committee approval and written informed consent of patients. Female patients willing to participate in the study with written informed consent aged 18 to 45 years, Patients scheduled for elective Caesarean Section under Spinal anaesthesia, ASA II patients were included in the study.

Group S (n = 35): Patients received Spinal anesthesia in Sitting Position

Group L (n = 35): Patients received Spinal anesthesia in Left Lateral Position

ASA III or IV, indicating severe or life-threatening systemic disease, Coagulation disorders, which pose a contraindication to regional blocks and may increase procedural risk, Presence of significant systemic illnesses, such as: Cardiac conditions (e.g., congestive heart failure, arrhythmias), respiratory diseases (e.g., COPD, restrictive lung disease), Neurologic or neuromuscular disorders (e.g., epilepsy, myopathies), Allergy or hypersensitivity to local anesthetics, particularly agents, Short stature were excluded from study.

All pre-anesthetic evaluation of the patients was performed by an anesthesiologist a day before the surgery. All patients were kept nil by mouth for 8 hours prior to surgery. A written informed valid consent was obtained from the patients who satisfy the inclusion criteria, after explaining about the procedure and technique of subarachnoid block. In the pre operative room, a peripheral intravenous access will be secured using 18 Gauge cannula. Baseline heart rate, non-invasive blood pressure, electrocardiograph, pulse oximetry will be recorded after attaching multipara monitor. Premedication done with intravenous injection Ondansetron 4 mg and Pantoprazole 40 mg. Patients in both the groups hydrated with 10 ml/kg of Ringer's lactate. Spinal anesthesia was performed at the L3-4 intervertebral space in the sitting position in Group S and in left lateral position in Group L with a 25 G Quincke spinal needle using the midline approach. After confirming free flow of clear cerebrospinal fluid, a total of 2 ml bupivacaine 0.5% heavy given with cephalad orientation of the spinal needle. Then the spinal needle was removed and supine position was given to the patient. The end of the injection was defined as time ‘zero’.

Sensory Block assessed by pinprick using blunted 22-G hypodermic needle. Monitored every 1 minute until T10 achieved. Then every 2 minutes until the highest level of sensory block achieved. T6 level required to proceed with surgery. Sensory block reassessed every 10 min during surgery. After surgery, monitored every 10 min in recovery for 2-segment sensory regression, time was also noted for regression of sensory level to S2.

Time to achieve onset and highest motor block and time to achieve complete motor block regression was also noted.

Onset of sensory blockade is the time required for loss of pinprick sensation at umbilicus (T10) level. T8, T6 sensory level and maximum sensory level (above T4) was also noted. Two dermatome regression is regression from highest sensory level. Regression to Sensory level S2 is the total duration of sensory block.

Motor blockade: onset, duration and degree of motor blockade noted

Degree of motor blockade was assessed by straight leg raising while patient was lying supine and was graded according to Modified Bromage scale (MBS). Onset of motor block was defined as time taken from injection of drug to achievement of MBS grade 1.

Duration of motor block was defined as time taken from injection of drug to ability of patient to again move hip against gravity (MBS 0).

Motor Block evaluated using Modified Bromage Scale:

0 = No paralysis

1 = Unable to raise extended leg

2 = Unable to flex knee

3 = Unable to flex ankle, knees, hips

Heart rate, Systolic blood pressure, Diastolic blood pressure and Spo2 was noted in patients in both the groups before the administration of the subarachnoid block and these readings considered as baseline and then noted in both the groups at 2, 5-minute post spinal, then every 5 minutes till end of surgery.

Maintenance infusion of Ringer’s lactate (RL) was continued throughout the surgery at rate of 5ml/kg/hr. Complications like Hypotension, Nausea, Vomiting, Post-Dural Puncture Headache, Shivering, Pruritus, Bradycardia were noted.

Hypotension was defined as a decrease in mean systolic blood pressure of more than 30% from baseline and it was treated with 6 mg of mephentermine.

Bradycardia, defined as a heart rate of less than 60 beats per minute. It was treated with 0.6 mg of atropine intravenously (IV) as a stat dose, if Heart Rate less than 50 beats per minute or less than 60 beats per minute if patient is symptomatic.

Postoperatively patients shifted to recovery room and Continued monitoring of HR, NIBP, SpO_2, respiratory rate and Sensory block level checked every 10 min till regression to S2.

Statistical Analysis

The data was collected and entered in Microsoft excel and analysed using IBM SPSS.

Statistics 20.0 The quantitative data was expressed in terms of mean and standard deviation. The qualitative data was expressed in terms of numbers and percentages. Independent t test was used to compare mean between two independent group. Fisher exact test was applied to determine the association between the two categorical variables. p value < 0.05 was considered significant.

RESULTS

The demographic characteristics (age, height, weight), duration of surgery of our study was comparable between the two groups and was not significant statistically.

Table 1: Comparison of demographic variables between two groups

VARIABLE	GROUP S		GROUP L		P value
	MEAN	SD	MEAN	SD	
Age	23.17	2.74	23.09	2.54	0.8923
Weight(kg)	61.54	4.86	61.17	4.60	0.7437
Height(cm)	152.60	4.89	152.03	4.68	0.981
Duration of surgery(minutes)	52.80	4.04	52.23	4.14	0.561

Table 2: Comparison of Sensory Block Onset Time to T10, T8, T6 and T4 between Group S and Group L

Sensory Level	Group	N	Max (min)	Min (min)	Mean ± SD (min)	*p*-value
T10	Left Lateral (Group L)	35	4.4	2.2	3.44 ± 0.56	**<0.0001**
	Sitting (Group S)	35	3.35	1.5	2.74 ± 0.47	
T8	Left Lateral (Group L)	35	6.1	4.1	4.96 ± 0.45	0.2921
	Sitting (Group S)	35	7.15	4.1	5.10 ± 0.60	
T6	Left Lateral (Group L)	35	8.1	5.3	6.73 ± 0.70	**0.0442**
	Sitting (Group S)	35	7.3	5	6.42 ± 0.56	
T4	Left Lateral (Group L)	35	8.5	5.4	7.2 ± 0.75	**0.0552**
	Sitting (Group S)	35	7.5	5.1	6.5 ± 0.50	

A statistically significant faster onset was observed in the sitting group at both T10 ($p < 0.0001$),T6 ($p=0.0442$) and T4 ($p = 0.0552$), indicating that this position may promote more rapid spread of local anesthetic. At the T8 level, although the Sitting group showed a slightly faster mean onset time, the difference was not statistically significant ($p = 0.2921$).

Table 3: Comparison of Motor Block Onset Time and highest level of motor block and motor block duration between Group S and Group L

Parameter	Group	n	Max	Min	Mean ± SD	*p* value
Motor Block Onset	Group S	35	3.55	2.1	2.92 ± 0.44	**0.0394**
	Group L	35	4.55	2.3	2.94 ± 0.44	
Motor Block Highest level	Group S	35	6.2	3.3	4.99 ± 0.74	**0.00003**
	Group L	35	6.55	4.3	5.72 ± 0.61	
Motor block duration	Group S	35	178	158	182.91 ± 7.13	**0.0232**
	Group L	35	172	150	179.46 ± 5.16	

Motor Block Onset: The sitting Position (Group S) resulted in a faster onset (2.92 ± 0.44 minutes) compared to the Left Lateral Position (2.94 ± 0.44 minutes).

Motor Block highest level: The Sitting Position (4.99 ± 0.74 minutes) showed a significantly shorter duration of motor block to achieve highest level than the Left Lateral Position (5.72 ± 0.61 minutes), with statistical significance ($p = 0.00003$). Sitting Position is advantageous for rapid onset and rapid highest level.

Group L (Left Lateral Position: 179.46 ± 5.16 minutes) exhibited a significantly shorter motor block duration compared to Group S (Sitting Position) (mean ± SD: 182.91 ± 7.13 minutes), with a statistically significant difference ($p = 0.0232$).

Table 4: Comparison of Sensory Block Regression between Group S and Group L

Parameter	Group	n	Max	Min	Mean ± SD	p-value
Sensory regression by 2 segments (min)	Group S	35	68	48	58.00 ± 5.36	0.747
	Group L	35	66	50	57.60 ± 4.97	
Sensory regression up to S2 level (min)	Group S	35	258	226	242.97 ± 6.38	0.8155
	Group L	35	255	230	17.63 5.85	

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The mean time for sensory regression by 2 segments was slightly higher in the sitting group (58.00 ± 5.36 min) than the lateral group (57.60 ± 4.97 min), but the difference was not statistically significant (p = 0.747). Similarly, the mean time for regression up to the S2 dermatome was 242.97 ± 6.38 min in Group S and 242.63 ± 5.85 min in Group L, also showing no statistically significant difference (p = 0.8155). These findings suggest that the position of the patient during administration of spinal anesthesia (sitting vs lateral) does not significantly influence the regression rate of sensory blockade, both in early stages (2 segment regression) and in total duration (up to S2 level).

Table 5: Comparison of Intraoperative Heart Rate between Group S and Group L

Time	Group S Mean	Group S SD	Group L Mean	Group L SD	P Value
0 MIN	87.03	6.09	86	5.72	0.62881
2 MIN	87.89	6.99	86.91	6.33	0.54418
4 MIN	88.6	8.73	87.4	7.52	0.53972
6 MIN	89.37	8.4	88.71	7.48	0.73074
10 MIN	89.03	8.28	88.17	7.15	0.6445
15 MIN	89.74	7.39	89.03	6.81	0.67545
20 MIN	89.09	7.13	88.54	6.91	0.74733
25 MIN	86.8	6.32	86.34	6.14	0.75991
30 MIN	86.03	6.18	85.91	6.23	0.93878
35 MIN	85.14	6.31	84.8	6.4	0.82211
40 MIN	84.74	5.77	84.43	5.91	0.82248
45 MIN	84.74	5.83	84.11	5.84	0.65389
50 MIN	84.31	5.42	83.97	5.67	0.79676
55 MIN	84.06	5.38	83.63	5.59	0.74503
60 MIN	83.8	5.3	83.6	5.5	0.73111

Throughout the observation period, both groups followed a similar heart rate pattern—an initial increase peaking around 15 minutes, followed by a gradual decline toward baseline. Notably, Group L consistently demonstrated slightly lower mean Heart rates compared to Group S, particularly during the later half of the intraoperative period. While none of the differences reached statistical significance (p > 0.05 at all-time points), the consistent trend toward lower Heart rates in Group L suggests a potentially more favorable hemodynamic profile. This may reflect improved autonomic modulation or reduced sympathetic stimulation in the lateral position. However, as the observed differences were not statistically significant, this interpretation should be considered indicative rather than conclusive.

Table 6: Comparison of Intraoperative Systolic Blood Pressure between Group S and Group L

Time	Group S Mean (mmHg)	Group S SD	Group L Mean (mmHg)	Group L SD	p-value
0 MIN	131.09	6.19	130.31	6.21	0.604
2 MIN	127.94	7.83	127.71	7.44	0.901
4 MIN	120	9.47	120.46	9.58	0.841
6 MIN	114.86	11.34	114.69	11.08	0.949
10 MIN	112.86	10.85	113.03	10.12	0.946
15 MIN	111.8	9.43	111.91	6.72	0.954
20 MIN	112.86	7.08	112.4	4.97	0.756
25 MIN	113.6	5.84	112.57	4.16	0.399
30 MIN	114.34	5.75	112.8	4.53	0.217
35 MIN	114.4	5.61	113.26	4.8	0.363
40 MIN	115.77	5.08	114.91	4.37	0.452
45 MIN	116.63	5.37	115.94	4.46	0.563
50 MIN	117.14	5.21	116.69	4.63	0.699
55 MIN	117.89	5.04	117.94	4.74	0.961
60 MIN	117.91	5.64	118.03	5.34	0.931

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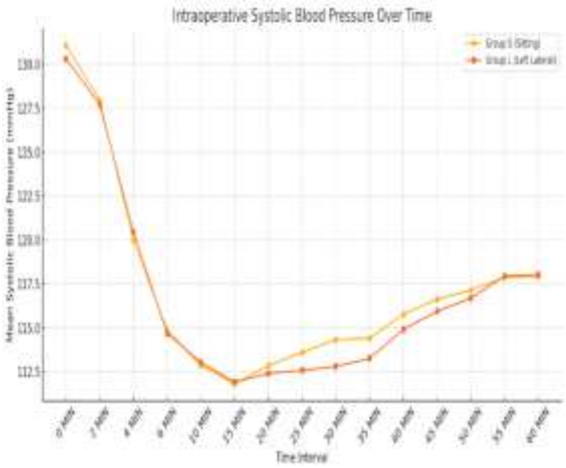
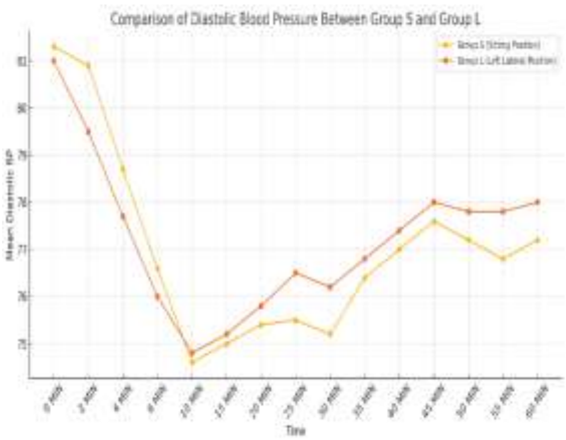


No statistically significant differences were observed between the groups, indicating comparable intraoperative systolic blood pressure profiles. The visual overlap of the two lines across all intervals supports the conclusion that both positions maintain comparable hemodynamic stability during surgery, as measured by systolic blood pressure.

Table 7: Comparison of Intraoperative Diastolic Blood Pressure between Group S and Group L

Time	Mean (Group S)	SD (Group S)	Mean (Group L)	SD (Group L)	P-Value
0 MIN	81.3	5.62	81	5.66	0.9066
2 MIN	80.9	5.3	79.5	5.87	0.5827
4 MIN	78.7	5.17	77.7	5.81	0.689
6 MIN	76.6	5.66	76	5.73	0.8165
10 MIN	74.6	5.42	74.8	5.18	0.9337
15 MIN	75	4.45	75.2	4.34	0.9201
20 MIN	75.4	4.43	75.8	4.26	0.8393
25 MIN	75.5	4.4	76.5	3.92	0.5984
30 MIN	75.2	4.64	76.2	4.26	0.6218
35 MIN	76.4	4.3	76.8	4.24	0.8364
40 MIN	77	4.03	77.4	4.12	0.8286
45 MIN	77.6	4.4	78	4.32	0.8398
50 MIN	77.2	4.92	77.8	4.66	0.7827
55 MIN	76.8	5.18	77.8	4.66	0.6555
60 MIN	77.2	4.64	78	4.32	0.6945



No statistically significant difference in diastolic blood pressure was observed between the two groups at any time interval. That means both positioning techniques maintained similar intraoperative diastolic stability.

Table 9: Comparison of Post-Spinal Anaesthesia Complications Between Group S and Group L

Complication	Group S Freq (n=35)	Group S (%)	Group L Freq (n=35)	Group L (%)
No Complication	25	72.22%	28	80.56%
Hypotension	6	16.67%	2	5.56%
Shivering	4	11.11%	5	13.89%

A higher percentage of patients in Group L (80.56%) experienced no complications compared to Group S (72.22%). Additionally, the proportion of hypotension was significantly lower in Group L (5.56%) than in Group S (16.67%). These findings suggest that the left lateral position for spinal anesthesia is associated with fewer complications and is therefore more favourable in terms of patient safety and postoperative outcomes.

DISCUSSION

Spinal anesthesia is the preferred technique for elective Caesarean sections due to its rapid onset, reliable block, and favourable safety profile for both

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mother and fetus. However, the optimal patient position for subarachnoid block sitting versus left lateral remains a subject of debate, as it influences sensory and motor block characteristics, hemodynamic stability, and postoperative outcomes. This study aimed to evaluate these effects by comparing the onset, duration, and extent of sensory and motor blocks, intraoperative hemodynamic parameters (Heart Rate, SBP, DBP, SpO_2) in 70 parturient undergoing elective Caesarean sections. The rationale for this investigation stems from the physiological changes in pregnancy, such as increased intra-abdominal pressure and altered CSF dynamics, which impact anesthetic spread and necessitate optimized positioning to enhance efficacy and safety.

Despite numerous studies, the literature lacks consensus due to heterogeneity in study designs, anesthetic regimens, and outcome measures. Few studies comprehensively assess sensory and motor block characteristics alongside hemodynamic stability and analgesia needs within a single framework, highlighting a critical research gap. Our study addresses these inconsistencies by providing a holistic evaluation, aiming to guide evidence-based practice in obstetric anesthesia. The findings, particularly the faster sensory and motor block onset in the sitting group, contribute valuable insights to optimize maternal outcomes and inform anaesthesiologists' positional choices.

The results of our study, involving 70 parturient undergoing elective Caesarean sections, provide valuable insights into the effects of sitting (Group S) versus left lateral (Group L) positions during spinal anesthesia induction. The findings are compared with the existing literature to contextualize the results, identify consistencies and discrepancies, and discuss their clinical implications.

The study found no significant differences in age (Group S: 23.17 ± 2.74 years; Group L: 23.09 ± 2.54 years, p = 0.8923), weight (61.54 ± 4.86 kg vs. 61.17 ± 4.60 kg, p = 0.7437), or height (152.60 ± 4.89 cm vs. 152.03 ± 4.68 cm, p = 0.981) between groups. This homogeneity aligns with most studies in the literature review, such as Rucklidge et al. (2005), Dumanlar Tan et al. (2014) and Befkadu et al. (2023), which reported comparable baseline demographics, ensuring that differences in outcomes are attributable to positioning rather than patient characteristics.

The mean surgical duration was similar between groups (Group S: 52.80 ± 4.04 min; Group L: 52.23 ± 4.14 min, p = 0.561), consistent with Dumanlar Tan et al. (2014), who reported no significant difference in surgery duration. This similarity ensures that variations in block characteristics or complications are not confounded by operative time, a critical factor given that prolonged surgery could influence anesthesia requirements or hemodynamic stability.

The study observed significantly faster sensory block onset to achieve T10, T6 and T4 level in the sitting position. Fast onset of sensory block in sitting position may be due to rapid spread of local anesthetic in subarachnoid space. But no significant difference was observed at T8. These findings align with several studies like Mutreja et al. and Hallworth et al.

The Sitting group exhibited a significantly faster onset of motor block compared to Group L and highest-level of block was also achieved faster in sitting position. These findings align with Manouchehrian et al., who reported a higher motor block score at 5 minutes in the sitting group, Befkadu et al., who found faster grade 4 motor block onset in the sitting group. Group L exhibited a significantly shorter motor block duration compared to Group S with a statistically significant difference. These findings suggest that while the sitting position may be beneficial for procedures requiring prolonged motor blockade, the left lateral position may offer the advantage of faster motor recovery and earlier patient mobilization.

No significant differences were observed between two groups in sensory block regression by two segments and sensory regression up to S2. This is consistent with Mutreja et al. who found comparable regression times. However, Dumanlar Tan et al. reported longer regression times to T10 and L1 in the lateral group, possibly due to higher bupivacaine doses (10 mg vs. the 2 ml used here) or differences in assessment methods. The similarity in regression times suggests that while onset is faster in the sitting position, the duration of sensory block is less affected by initial positioning, likely due to the fixed dose and hyperbaric nature of bupivacaine.

No significant differences were observed in Heart rate, systolic, diastolic blood pressure and SpO_2 between groups, though Group L showed a trend toward slightly lower Heart rates and stable blood pressure.

Heart rate was slightly lower in Group L across all 15 intraoperative time points, but no statistically significant differences were observed. This trend suggests a potential for reduced sympathetic activation in the lateral position. These findings are similar to studies done by Mutreja et al., E. A. E. H-Hakons et al. Heart rate stability is maintained across positions when preload and vasopressor support are standardized. The slightly lower heart rate trend in Group L, though not statistically significant, may indicate reduced aortocaval compression or sympathetic stimulation in the lateral position before supine repositioning. This aligns with the physiological rationale that lateral positioning minimizes vena cava compression, potentially stabilizing heart rate. The lack of significant differences suggests that both positions are safe for heart rate stability when managed appropriately.

SBP showed nearly identical patterns in both groups, with a mild drop after induction that stabilized thereafter. No statistically significant differences were observed at any points intraoperatively. These findings are similar to studies done by Mutreja et al. The absence of significant SBP differences in our study suggests that both positions can maintain stable intraoperative SBP when combined with appropriate preload (e.g., Ringer's lactate) and vigilant monitoring. The mild initial drop observed in both groups is typical of spinal anesthesia due to sympathetic blockade, but the lack of significant divergence indicates that aortocaval compression, which is more pronounced in the supine position post-induction, was adequately mitigated by left uterine displacement in both groups.

DBP trends were similar between groups, with no statistically significant differences at any intraoperative time point. Mean values remained stable after the initial post-induction period. These findings are similar to studies done by Mutreja et al. The comparable DBP trends in our study suggest that both positions provide similar hemodynamic stability in terms of diastolic pressure. The stability may be attributed to effective preload and left uterine displacement, which minimize the impact of positioning on venous return and cardiac output. The lack of significant differences aligns with studies using similar anesthetic and management protocols, indicating that DBP is less influenced by initial positioning than by subsequent supine positioning and vasopressor support.

Group L had fewer complications, with a lower hypotension incidence (5.56% vs. 16.67%). This aligns with Befkadu et al., Arshed et al. who reported reduced hypotension in the lateral position. However, Wen et al., found no significant difference in hypotension or nausea/vomiting incidence. The lower hypotension rate in Group L may reflect reduced aortocaval compression while administrating spinal anaesthesia in lateral positions., as suggested by Lewis et al who noted improved 1-minute Apgar scores in the lateral group, potentially due to better uteroplacental perfusion.

The faster sensory and motor block onset in the sitting makes it advantageous for scenarios requiring rapid surgical readiness, such as urgent Caesarean sections. Our study demonstrates that the sitting position to administer spinal anaesthesia for elective Caesarean sections offers faster sensory and motor block onset compared to the Lateral position. Anesthesiologists should consider these factors, alongside institutional protocols and patient characteristics, to optimize spinal anesthesia administration.

The limitations of our study were that we included only small sample size, Long-term Outcomes warrant further investigation, Continuous monitoring or more frequent intervals (e.g., every minute initially) could capture transient differences missed by less frequent assessments.

CONCLUSION

From our study, we conclude that faster onset of both sensory and motor block as well as a faster highest level of block achieved in sitting position compared to the lateral position. However, hemodynamic stability was better maintained in the lateral position than in the sitting position.

REFERENCES

1. Shahriari A, Khooshideh M, Heidari MH, Mahdavi F, Movaseghi G. Comparative study of effect of spinal anesthesia in sitting and lateral positions on sensory and motor block, hemodynamic condition, and satisfaction in Caesarean section. Anesth Pain Med. 2021;11(1):e110787. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC8241818/
2. Achary AR, Gadani RB, Patel AS, A comparison of time to achieve T5 blockade in lateral and sitting position during subarachnoid block for Caesarean section. J Obstet Anaesth Crit Care. 2020;10(1):5-10. Available from: https://journals.lww.com/joac/fulltext/2020/10010/a_comparison_of_time_to_achieve_t5_blockadein.5.aspx
3. Lee JH, Kim JI, Kim YJ, Park HS, Park JY, Yun MJ, et al. Postural change from lateral to supine is an important mechanism enhancing cephalic spread after injection of intrathecal 0.5% plain bupivacaine for Caesarean section. Int J Obstet Anesth. 2015;24(4):331-7. Available from: https://pubmed.ncbi.nlm.nih.gov/26357934/
4. Rout CC, Rocke DA, Gouws E. A comparison of the haemodynamic effects of lateral and sitting positions during induction of spinal anaesthesia for caesarean section. Int J Obstet Anesth. 2013;22(2):124-9. Available from: https://pubmed.ncbi.nlm.nih.gov/23453465/
5. Lewis NL, Ritchie EL, Downer JP, Bryson M, Nel MR. Left lateral vs. supine, wedged position for development of block after combined spinal-epidural anaesthesia for Caesarean section. Anaesthesia. 2004;59(4):384-90. Available from: https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2044.2004. 03752.x?sid=nlm%3Apubmed.
6. Hallworth SP, Fernando R, Columb MO, Stocks GM. The effect of posture and baricity on the spread of intrathecal bupivacaine for elective Caesarean delivery. Anesth Analg. 2005;100(4):1159-65. Available from: https://pubmed.ncbi.nlm.nih.gov/15781538/
7. Rucklidge MW, Paech MJ, Yentis SM. A comparison of the lateral, Oxford and sitting positions for performing combined spinal-epidural anaesthesia for elective Caesarean section. Anaesthesia. 2005;60(6):535-40. Available from: https://pubmed.ncbi.nlm.nih.gov/15918823/
8. Dumanlar Tan F, Karaca G, Koc Z, Guven S. Comparison of maternal and neonatal effects of combined spinal epidural anaesthesia in either the sitting or lateral position during elective Caesarean section. J Clin Anesth. 2014;26(3):193-9. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC4894102/
9. E. A. E. H-Hakons, El-Shafie MA, Abdel-Hakeem AK, Fouad MM. Prolonged upright position and spinal anesthesia. J Anesth. 2014;28(5):684-9. Available from: https://pubmed.ncbi.nlm.nih.gov/21971743/
10. Mutreja R, Choudhary R, Jiwane R, Sneha P. Comparison of the effect of induction position in spinal anaesthesia on sensory block in pregnant women undergoing elective lower segment caesarean section with hyperbaric bupivacaine. J Clin Diagn Res. 2019;13(2): UC06-UC10. Available from: https://www.academia.edu/129102710/Comparison_of_the_effect_of_induction_position_in_spinal_anaesthesia_on_sensory_block_in_pregnant_women_undergoing_elective_lower_segment_caesarean_section_with_hyperbaric_bupivacaine
11. Manouchehrian N, Khoshraftar E, Fard MZ, Fard MJ. Comparative study of effect of spinal anesthesia in sitting and lateral positions on the onset time of sensory block and hemodynamic condition in Caesarean section: a randomized clinical trial. Anesth Pain Med. 2021;11(3):e113743. Available from: https://brieflands.com/articles/aapm-153617
12. Befkadu T, Gebremedhin MT, Assefa EA, Negash SA. The sitting versus lateral position during induction of spinal anesthesia for elective Caesarean delivery on block characteristics and severity of hypotension: a prospective

randomized clinical trial. J Anesth Clin Res. 2023;14(4):1056. Available from: https://journals.lww.com/ijsopen/fulltext/2024/08000/the_sitting_versus_lateral_position_during.26.aspx
13. Wen Y, Wang M, Zhang J, Li X. Comparison of maternal hemodynamic outcomes and incidence of intraoperative nausea and vomiting in sitting versus lateral positions during spinal anesthesia for Caesarean section. J Clin Anesth. 2024; 90:111234. Available from: https://pubmed.ncbi.nlm.nih.gov/38758837/
14. Gautam V, Bhutani G, Grewal A, Jain S. Comparison of the hemodynamic effects of lateral and sitting positions during induction of spinal anaesthesia for caesarean section using hyperbaric bupivacaine. Asian J Pharm Clin Res.2024;17(2):15. Available from: https://www.journals/index.php/ajpcr/article/view/15523 innovareacademics.in
15. Arshed S, Shahid M, Asghar A, Abbasi SA. Comparison of the hypotension in lateral versus sitting positions during induction of spinal anaesthesia for caesarean section. J Ayub Med Coll Abbottabad. 2021;33(2):200-4. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC8241818.