RESEARCH PAPER

A Comparative Study of Peribulbar Block Characteristics Using 2% Lignocaine with 0.5% Bupivacaine Versus 2% Lignocaine with 0.75% Ropivacaine for Cataract Surgery in ASA Grade II Patients: A Randomized Controlled Trial

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Abstract

Background: Peribulbar anaesthesia is widely used for cataract surgery because it provides ocular analgesia and akinesia while avoiding the risks associated with general anaesthesia. Lignocaine provides rapid onset, whereas bupivacaine offers prolonged blockade but has a comparatively less favourable systemic toxicity profile. Ropivacaine offers an alternative with a potentially more favourable cardiovascular safety profile. This study aims to compare the characteristics of peribulbar block using 2% lignocaine with 0.5% bupivacaine versus 2% lignocaine with 0.75% ropivacaine in patients with American Society of Anesthesiologists (ASA) physical status grade II undergoing cataract surgery.

Aim: To compare the onset, duration, quality, haemodynamic effects and adverse events associated with the two anaesthetic regimens.

Materials and Methods: This prospective, randomized, controlled comparative study included 80 ASA grade II patients undergoing elective cataract surgery. Patients were randomized into two groups of 40 each. Group B received 2% lignocaine combined with 0.5% bupivacaine, while Group R received 2% lignocaine combined with 0.75% ropivacaine. The onset and duration of sensory and motor blockade, quality of anaesthesia, need for supplementary anaesthesia, haemodynamic parameters and adverse events were assessed. Statistical significance was set at $p<0.05$.

Results: A total of 80 patients were included, with 40 patients in each group. The baseline demographic and clinical characteristics were comparable between the groups ($p > 0.05$). Group B showed significantly higher intraoperative heart rate (82.35 ± 10.90 vs. 77.90 ± 7.20 beats/min; $p = 0.035$), systolic blood pressure (142.80 ± 15.90 vs. 133.10 ± 10.40 mmHg; $p = 0.002$), and diastolic blood pressure (84.20 ± 10.60 vs. 76.90 ± 7.30 mmHg; $p = 0.001$) compared with Group R. Baseline haemodynamic parameters were comparable between the groups ($p > 0.05$). Intraoperative oxygen saturation was also comparable (98.04 ± 0.87% vs. 97.87 ± 1.08%; $p = 0.439$). Adverse events were more frequent in Group B than in Group R. Inadequate block was observed in 22.5% versus 10.0%, supplementary block requirement in 12.5% versus 5.0%, hypotension in 12.5% versus 2.5%, bradycardia in 10.0% versus 2.5%, pain during injection in 10.0% versus 5.0%, and nausea or vomiting in 7.5% versus 2.5%, respectively.

Conclusion: The lignocaine–Ropivacaine combination demonstrated better intraoperative haemodynamic stability than the lignocaine–bupivacaine combination, with significantly lower mean heart rate, systolic blood pressure, and diastolic blood pressure. Overall, Ropivacaine appears to be a promising choice for peribulbar anaesthesia in cataract surgery confirming its safety and efficacy rather than Bupivacaine.

Keywords: Cataract surgery, peribulbar block, lignocaine, bupivacaine, Ropivacaine, haemodynamic stability.

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INTRODUCTION

Cataract is one of the leading causes of reversible visual impairment worldwide, and cataract extraction remains one of the most commonly performed ophthalmic surgical procedures. The success of cataract surgery depends not only on the surgical technique but also on the provision of effective anaesthesia, adequate analgesia, patient cooperation, and maintenance of physiological stability throughout the procedure. Although advances in surgical techniques have reduced operative time and tissue trauma, appropriate anaesthetic management remains essential, particularly in elderly patients and those with coexisting systemic diseases. The choice of anaesthetic technique should provide satisfactory operating conditions while minimizing discomfort, haemodynamic fluctuations, and procedure-related complications.

Peribulbar anaesthesia is widely used for cataract surgery because it provides effective analgesia and varying degrees of ocular akinesia without requiring needle placement within the muscle cone. Compared with retrobulbar anaesthesia, the peribulbar technique is associated with a lower risk of direct injury to the optic nerve and other intraconal structures, although complications such as globe perforation, retrobulbar haemorrhage, inadequate block, and systemic local anaesthetic toxicity remain possible. The effectiveness of peribulbar anaesthesia depends on several factors, including the type and concentration of the local anaesthetic, the volume administered, the injection technique, and individual patient characteristics. An ideal anaesthetic regimen should provide rapid onset, adequate sensory and motor blockade, sufficient duration for surgery, minimal injection discomfort, and a low incidence of adverse events.

Lignocaine is a commonly used local anaesthetic because of its rapid onset of action and reliable sensory blockade. However, its relatively shorter duration may limit its effectiveness when prolonged anaesthesia is required. Consequently, it is frequently combined with longer-acting agents such as bupivacaine or ropivacaine to achieve a balance between rapid onset and sustained anaesthetic effect. Bupivacaine is a long-acting amide local anaesthetic that provides prolonged sensory and motor blockade. Nevertheless, its potential cardiotoxicity, particularly following inadvertent intravascular administration or systemic absorption, warrants careful consideration. Ropivacaine, another long-acting amide local anaesthetic, has been investigated as an alternative because of its comparatively favourable cardiovascular safety profile and potential to provide effective regional anaesthesia with less concern regarding cardiotoxicity. However, its clinical advantages depend on the concentration, dose, technique, and type of regional block employed.

The combination of 2% lignocaine with 0.5% bupivacaine is commonly used for peribulbar anaesthesia because it combines the rapid onset of lignocaine with the prolonged duration of bupivacaine. An alternative regimen comprising 2% lignocaine and 0.75% ropivacaine may provide comparable anaesthetic efficacy while potentially offering advantages in terms of safety and block characteristics. However, differences in the concentrations and pharmacological properties of these agents may influence the onset and duration of sensory and motor blockade, the need for supplementary anaesthesia, and the occurrence of adverse events. A systematic comparison of these outcomes is therefore important when selecting an appropriate anaesthetic regimen for cataract surgery.

Several investigators have examined the comparative efficacy and safety of local anaesthetic combinations used for peribulbar anaesthesia. Samal et al. [1] compared 2% lignocaine with 0.5% bupivacaine against 2% lignocaine with 0.75% Ropivacaine in patients undergoing cataract surgery, providing directly relevant evidence regarding these two combinations. Jain and Bubanale [2] investigated the effects of Ropivacaine and a lignocaine–bupivacaine mixture on intraocular pressure following peribulbar anaesthesia, highlighting the importance of ocular physiological responses in

addition to conventional measures of anaesthetic efficacy.

Nicholson et al. [3] conducted a randomized comparative study of lignocaine combined with either bupivacaine or Ropivacaine for peribulbar anaesthesia in cataract surgery. They reported comparable times to adequate surgical anaesthesia, with fewer patients requiring supplementary anaesthesia in the ropivacaine group.

Panchal et al. [4] compared bupivacaine and ropivacaine for peribulbar anaesthesia, further contributing to the assessment of these long-acting local anaesthetic agents. Rao et al. [5] also compared lignocaine combined with ropivacaine against lignocaine combined with bupivacaine, although the ropivacaine concentration used in their study differed from that employed in the present investigation. Collectively, these studies provide a basis for comparing the efficacy and safety of alternative local anaesthetic combinations, while differences in drug concentrations, study populations, and outcome measures should be considered when interpreting their findings.

Cardiovascular and haemodynamic stability is an important consideration during cataract surgery, particularly in patients classified as American Society of Anesthesiologists (ASA) physical status II. These patients may have mild systemic diseases, including controlled hypertension or diabetes mellitus, which can influence their physiological responses to surgery and anaesthesia. Monitoring heart rate, systolic and diastolic blood pressure, and peripheral oxygen saturation helps assess the patient's response to the anaesthetic technique and identify clinically important changes during the perioperative period. In addition, adverse events such as hypotension, bradycardia, nausea, vomiting, pain during injection, and inadequate ocular blockade may affect patient comfort, procedural safety, and the need for additional intervention. Consequently, assessment of anaesthetic efficacy should extend beyond the onset and duration of blockade to include haemodynamic responses and the incidence of complications.

Although previous studies have compared bupivacaine- and ropivacaine-containing regimens, further evaluation of their block characteristics and safety outcomes in ASA grade II patients remains clinically relevant. Differences in the duration of sensory and motor blockade may influence postoperative recovery, while differences in haemodynamic responses and adverse events may inform anaesthetic selection in patients with systemic comorbidities. Evaluating these outcomes within a randomized controlled trial can provide a structured comparison of the two regimens under similar clinical conditions.

Therefore, the study was conducted to compare the two anaesthetic combinations with respect to the onset and duration of sensory and motor blockade, perioperative haemodynamic parameters, and the incidence of adverse events. The findings may help clarify the relative performance of these regimens and support evidence-based selection of peribulbar anaesthesia for cataract surgery in patients with mild systemic disease.

Therefore, a study was conducted to compare the characteristics of peribulbar block using 2% lignocaine with 0.5% bupivacaine versus 2% lignocaine with 0.75% ropivacaine in ASA grade II patients undergoing cataract surgery.

MATERIALS AND METHODS

A prospective, randomized, controlled comparative study was conducted in the Department of Anaesthesiology in collaboration with the Department of Ophthalmology at a tertiary care hospital after receiving Institutional Ethical clearance. The study included 80 patients with ASA physical status grade II scheduled for elective cataract surgery under peribulbar anaesthesia.

A total of 80 eligible patients were enrolled and randomly allocated into two groups, with 40 patients in each group.

- **Group B** (n = 40): Peribulbar anaesthesia using 2% lignocaine combined with 0.5% bupivacaine.
- **Group R** (n = 40): Peribulbar anaesthesia using 2% lignocaine combined with 0.75% ropivacaine.

Inclusion criteria

Patients aged 50–80 years undergoing elective cataract surgery, classified as ASA physical status grade II, suitable for peribulbar anaesthesia following pre-anaesthetic assessment, ready to provide written informed consent.

Exclusion criteria

Patients with a known allergy or contraindication to lignocaine, bupivacaine, ropivacaine or any additive used, with significant coagulation abnormalities or infection at the proposed injection site, with orbital

anatomical abnormalities that make the block unsuitable, uncontrolled systemic illness or a clinical condition requiring a different anaesthetic approach, unable to cooperate with the procedure or provide informed consent. Patients with relevant pre-existing ocular pathology that could interfere with assessment of the block.

Randomization and allocation

After eligibility assessment and consent, patients were randomly allocated in a 1:1 ratio to Group B or Group R. A computer-generated random sequence and sequentially numbered, opaque, sealed envelopes were used to ensure allocation concealment.

Pre-anaesthetic assessment

A detailed medical history and physical examination was performed before surgery. Baseline assessment included age, sex, weight, relevant comorbidities, medication history, ASA grade, heart rate, systolic blood pressure, diastolic blood pressure, respiratory rate and peripheral oxygen saturation. An electrocardiogram and other investigations were reviewed as clinically indicated. Baseline visual and ophthalmic examinations were documented. Intraocular pressure was recorded.

Anaesthetic intervention

After standard monitoring and preparation, the assigned local anaesthetic solution was administered using an institutionally approved peribulbar technique by a trained anaesthesiologist.

Group B: Patients received a combination of 2% lignocaine and 0.5% bupivacaine. [Inj. Xylocaine 4ml+4ml Bupivacaine]

Group R: Patients received a combination of 2% lignocaine and 0.75% ropivacaine. [Inj. Xylocaine 4ml +Inj. Ropivacaine 4ml]

Assessment of block characteristics

The following parameters were recorded using predefined assessment criteria:

Onset of sensory blockade: Time from completion of injection to the first predefined evidence of adequate ocular sensory anaesthesia.

Onset of motor blockade: Time from completion of injection to achievement of the pre-specified degree of ocular akinesia.

Duration of blockade: Time from establishment of the block to recovery according to the predefined sensory and motor criteria.

Quality of akinesia: Extraocular muscle movements were assessed using a consistent, pre-specified scoring system.

Supplementary anaesthesia: The need for additional local anaesthetic, repeat block or other rescue intervention were recorded.

Intraoperative analgesia: Patient-reported pain or a predefined pain score was documented at specified time points.

Haemodynamic monitoring: Heart rate, systolic blood pressure, diastolic blood pressure and peripheral oxygen saturation were documented at baseline, after administration of the block, during surgery and in the postoperative observation period. Electrocardiographic monitoring was performed according to the institutional protocol.

Any clinically significant hypotension, hypertension, bradycardia, tachycardia, oxygen desaturation, neurological symptoms or suspected local anaesthetic toxicity were documented, managed promptly and reported as an adverse event.

Data was entered into a structured database and analysed using appropriate statistical software. Continuous variables were assessed for distribution and presented as mean ± standard deviation or median with interquartile range. Categorical variables were expressed as frequency and percentage.

Between-group comparisons used the independent-samples t-test for approximately normally distributed continuous outcomes and the Mann–Whitney U test for non-normally distributed outcomes. Categorical outcomes were compared using the chi-square test or Fisher's exact test, as appropriate.

A two-sided p-value of less than 0.05 was considered statistically significant.

RESULT

Table 1. Demographic characteristics

Parameter	Group B (n=40)	Group R (n=40)	p-value
Age (years), mean ± SD	66.05 ± 5.23	65.55 ± 5.75	0.685
Weight (kg), mean ± SD	66.18 ± 6.25	64.72 ± 8.80	0.394
Male, n (%)	22 (55.0)	21 (52.5)	0.823
Female, n (%)	18 (45.0)	19 (47.5)	0.823
Hypertension, n (%)	21 (52.5)	21 (52.5)	1.000
Diabetes mellitus, n (%)	10 (25.0)	13 (32.5)	0.459

The mean age was 66.05 ± 5.23 years in Group B and 65.55 ± 5.75 years in Group R (p = 0.685). The mean weight was 66.18 ± 6.25 kg and 64.72 ± 8.80 kg, respectively (p = 0.394). Males constituted 55.0% of Group B and 52.5% of Group R (p = 0.823). Hypertension was present in 52.5% of patients in both groups (p = 1.000), while diabetes mellitus was observed in 25.0% of Group B and 32.5% of Group R (p = 0.459). No statistically significant differences were observed in the baseline demographic and clinical characteristics between the two groups (all p > 0.05).

Table 2. Comparison of peribulbar block characteristics

Parameter	Group B, mean ± SD	Group R, mean ± SD	p-value
Onset of sensory block (min)	3.33 ± 0.78	3.35 ± 0.63	0.850
Onset of motor block (min)	7.39 ± 1.42	7.46 ± 1.53	0.839
Sensory block duration (min)	290.68 ± 54.43	257.05 ± 41.74	0.003
Motor block duration (min)	231.28 ± 41.49	210.35 ± 31.59	0.013

The onset of sensory block was comparable between Group B (3.33 ± 0.78 min) and Group R (3.35 ± 0.63 min; p = 0.850). Similarly, the onset of motor block was 7.39 ± 1.42 min in Group B and 7.46 ± 1.53 min in Group R (p = 0.839), with no statistically significant differences. However, the sensory block duration was significantly longer in Group B (290.68 ± 54.43 min) than in Group R (257.05 ± 41.74 min; p = 0.003). The motor block duration was also significantly longer in Group B (231.28 ± 41.49 min) compared with Group R (210.35 ± 31.59 min; p = 0.013).

Table 3. Comparison of haemodynamic parameters

Haemodynamic parameter	Group B: Lignocaine 2% + Bupivacaine 0.5% (n=40), Mean ± SD	Group R: Lignocaine 2% + Ropivacaine 0.75% (n=40), Mean ± SD	p-value
Heart rate (beats/min)			
Baseline	74.74 ± 8.97	77.18 ± 7.71	0.195
Intraoperative	82.35 ± 10.90	77.90 ± 7.20	0.035
Systolic blood pressure (mmHg)			
Baseline	133.97 ± 12.29	133.86 ± 12.77	0.971
Intraoperative	142.80 ± 15.90	133.10 ± 10.40	0.002
Diastolic blood pressure (mmHg)			
Baseline	77.51 ± 7.91	76.45 ± 8.29	0.561
Intraoperative	84.20 ± 10.60	76.90 ± 7.30	0.001
Peripheral oxygen saturation (%)			
Intraoperative	98.04 ± 0.87	97.87 ± 1.08	0.439

Statistical test: Welch's independent-samples t-test

Group B showed significantly higher intraoperative heart rate (82.35 ± 10.90 vs. 77.90 ± 7.20 beats/min; p = 0.035), systolic blood pressure (142.80 ± 15.90 vs. 133.10 ± 10.40 mmHg; p = 0.002), and diastolic blood pressure (84.20 ± 10.60 vs. 76.90 ± 7.30 mmHg; p = 0.001) compared with Group R. Baseline haemodynamic parameters were comparable between the groups (p > 0.05). Intraoperative oxygen saturation was also comparable (98.04 ± 0.87% vs. 97.87 ± 1.08%; p = 0.439). These findings suggest better intraoperative haemodynamic stability with lignocaine–Ropivacaine (Group R) than with lignocaine–bupivacaine (Group B).

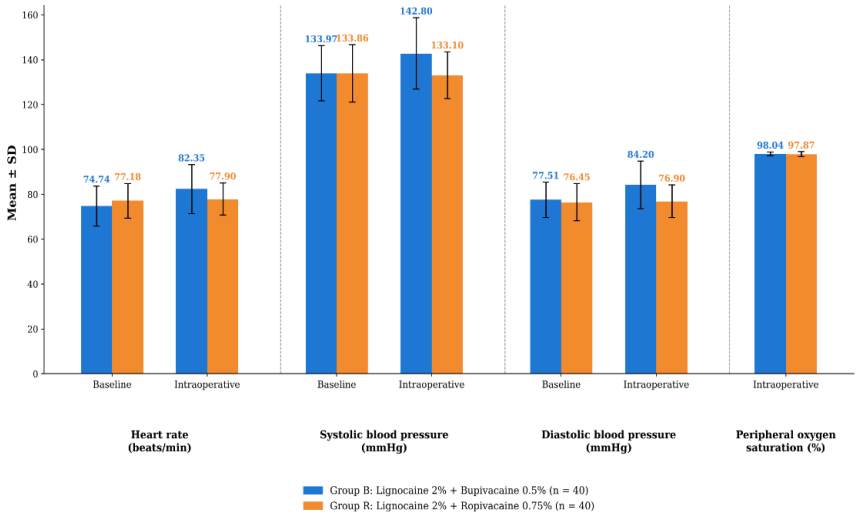


Fig.1 Comparison of haemodynamic parameters between groups

Table 4. Comparison of adverse events between the two groups

Adverse event	Group B (n=40), n (%)	Group R (n=40), n (%)	p-value
Pain during injection	4 (10.0%)	2 (5.0%)	0.675
Inadequate block / unsatisfactory block	9 (22.5%)	4 (10.0%)	0.130
Supplementary block required	5 (12.5%)	2 (5.0%)	0.432
Hypotension	5 (12.5%)	1 (2.5%)	0.201
Bradycardia	4 (10.0%)	1 (2.5%)	0.359
Nausea or vomiting	3 (7.5%)	1 (2.5%)	0.615

Statistical test: Fisher's exact test.

Adverse events were more frequent in Group B than in Group R. Inadequate block was observed in 22.5% versus 10.0%, supplementary block requirement in 12.5% versus 5.0%, hypotension in 12.5% versus 2.5%, bradycardia in 10.0% versus 2.5%, pain during injection in 10.0% versus 5.0%, and nausea or vomiting in 7.5% versus 2.5%, respectively. However, none of these differences was statistically significant (p > 0.05).

Overall, Group R showed a lower incidence of adverse events, suggesting a potentially better tolerability profile than Group B.

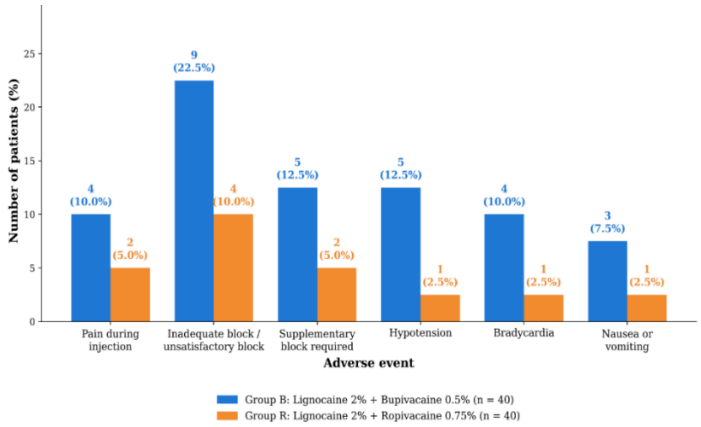


Fig 2. Comparison of Adverse events between the Groups

DISCUSSION

The present study compared the characteristics of peribulbar anaesthesia using 2% lignocaine with 0.5% bupivacaine (Group B) and 2% lignocaine with 0.75% ropivacaine (Group R) in patients undergoing cataract surgery. The principal findings relate to the onset and duration of sensory and motor block, haemodynamic parameters, and adverse events.

Baseline characteristics and comparability

The two groups were comparable in terms of age, weight, gender distribution, hypertension, and diabetes mellitus, with no statistically significant differences (all $p > 0.05$). This baseline comparability supports the interpretation of subsequent between-group comparisons, although it does not exclude the influence of unmeasured confounding factors.

Characteristics of peribulbar block

The onset of sensory block was similar in Group B (3.33 ± 0.78 minutes) and Group R (3.35 ± 0.63 minutes; $p = 0.850$). The onset of motor block was also comparable (7.39 ± 1.42 versus 7.46 ± 1.53 minutes; $p = 0.839$). These findings suggest that both anaesthetic combinations produced a similar onset of block.

However, the duration of sensory block was significantly longer in Group B than in Group R (290.68 ± 54.43 versus 257.05 ± 41.74 minutes; $p = 0.003$). Similarly, motor block lasted longer in Group B (231.28 ± 41.49 minutes) than in Group R (210.35 ± 31.59 minutes; $p = 0.013$). Thus, in this study, the bupivacaine-containing combination provided a longer duration of both sensory and motor blockade. This may be relevant when selecting an anaesthetic regimen according to the anticipated duration of surgery and recovery requirements.

Comparison of Hemodynamic Parameters

In the present study, baseline heart rate, systolic blood pressure, and diastolic blood pressure were comparable between the groups ($p = 0.195$, 0.971, and 0.561, respectively). However, intraoperatively, Group B demonstrated a significantly higher heart rate than Group R (82.35 ± 10.90 vs. 77.90 ± 7.20 beats/min; $p = 0.035$). Similarly, systolic blood pressure was higher in Group B than in Group R (142.80 ± 15.90 vs. 133.10 ± 10.40 mmHg; $p = 0.002$), as was diastolic blood pressure (84.20 ± 10.60 vs. 76.90 ± 7.30 mmHg; $p = 0.001$). These findings indicate a more favourable intraoperative haemodynamic profile with the lignocaine–ropivacaine combination. Nevertheless, measurements at a single intraoperative time point cannot establish the magnitude of change from baseline without an appropriate within-group analysis.

These findings can be discussed alongside the work of Samal et al. [1], who directly compared 2% lignocaine with 0.5% bupivacaine against 2% lignocaine with 0.75% ropivacaine for peribulbar block. Their study provides a particularly relevant comparison because the

anaesthetic concentrations correspond to those used in the present study.

Jain and Bubanale [2], in a comparative study published in the Indian Journal of Ophthalmology in 2022, also found that ropivacaine was associated with a smaller rise in intraocular pressure shortly after injection and significantly lower intraocular pressure at 5 and 15 minutes compared with the lignocaine–bupivacaine combination. The authors nevertheless noted that larger studies were needed before concluding that Ropivacaine was superior.

Earlier, Luchetti et al. [6] studied 2,000 patients undergoing cataract surgery and reported fewer cardiac arrhythmias and a lower requirement for supplementary injections with Ropivacaine than with a bupivacaine–mepivacaine combination. Although their comparator differed from that in the present study, their findings provide supporting evidence for evaluating Ropivacaine as an alternative local anaesthetic for ophthalmic blocks.

Conversely, Perello et al. [7] found no significant differences in heart rate, blood pressure, or oxygen saturation between the anaesthetic regimens they evaluated, highlighting that haemodynamic benefits may depend on the drug combination, concentration, and study protocol. lidocaine 1% mixtures for cataract surgery.

Comparison of Adverse Events

Regarding adverse events (Table 4), Group R showed numerically lower rates of all six recorded events. Inadequate block occurred in 4 patients (10.0%) in Group R compared with 9 (22.5%) in Group B, while supplementary block was required in 2 (5.0%) and 5 (12.5%) patients, respectively. Hypotension occurred in 2.5% versus 12.5%, bradycardia in 2.5% versus 10.0%, pain during injection in 5.0% versus 10.0%, and nausea or vomiting in 2.5% versus 7.5%. However, none of these differences was statistically significant ($p > 0.05$). Therefore, these results suggest a favourable numerical trend for ropivacaine but do not establish a statistically significant reduction in adverse events. Jain and Bubanale [2] and Luchetti et al. [6] provide relevant comparative evidence, although differences in anaesthetic formulations and outcome measures limit direct comparison.

Intraoperative oxygen saturation was comparable between Group B (98.04 ± 0.87%) and Group R (97.87 ± 1.08%; $p = 0.439$), suggesting no meaningful between-group difference in this parameter. Taken together, Tables 3 and 4 indicate that the lignocaine–Ropivacaine combination was associated with lower mean intraoperative heart rate and blood pressure and numerically fewer adverse events making it a safer choice.

CONCLUSION

The lignocaine–ropivacaine combination demonstrated better intraoperative haemodynamic stability than the lignocaine–bupivacaine combination, with significantly lower mean heart rate, systolic blood pressure, and diastolic blood pressure. Adverse events were numerically less frequent in the ropivacaine group. Intraoperative oxygen saturation was comparable between the groups. Overall, Ropivacaine appears to be a promising choice for peribulbar anaesthesia in cataract surgery confirming its safety and efficacy rather than Bupivacaine.

REFERENCES

1. Samal S, Jena S, Mishra J, Nanda P. Evaluation of efficacy of peribulbar block with the combination of 2% lidocaine and 0.5% bupivacaine in comparison with 2% lidocaine and 0.75% Ropivacaine in cataract surgery. Natl J Maxillofac Surg. 2023;14(2):300–304. doi:10.4103/njms.njms_100_22.

2. Jain E, Bubanale SC. Comparative study to assess the effect of Ropivacaine and a mixture of lidocaine and bupivacaine on intraocular pressure after peribulbar anesthesia for cataract surgery. Indian J Ophthalmol. 2022;70(11):3844–3848. doi:10.4103/ijo.IJO_1575_22.

3. Nicholson G, Sutton B, Hall GM. Ropivacaine for peribulbar anesthesia. Reg Anesth Pain Med. 1999;24(4):337–340.

4. Panchal PV, et al. Comparative study between 0.5% bupivacaine versus 0.5% ropivacaine in peribulbar anesthesia for cataract surgery. Asian J Med Sci. 2024;15(3).

5. Rao WP, Jyothi S, Shanthi S, Naik RP. A comparative study of 2% lidocaine plus 0.5% ropivacaine versus 2% lidocaine plus 0.5% bupivacaine for peribulbar anesthesia in cataract surgeries. Int J Contemp Med Res. 2017;4(11):2229–2234.

6.Luchetti M, Magni G, Marraro G. A prospective randomized double-blinded controlled study of ropivacaine 0.75% versus bupivacaine 0.5%–mepivacaine 2% for peribulbar anesthesia. Reg Anesth Pain Med. 2000;25(2):195–200.

7. Perello A, George J, Skelton V, Pateman J. A double-blind randomised comparison of ropivacaine 0.5%, bupivacaine 0.375%–lidocaine 1% and ropivacaine 0.5%–lidocaine 1% mixtures for cataract surgery. Anaesthesia. 2000;55(10):1003–1007.