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Original Article

Effectiveness of Clonidine and Bromazepam Premedication in Hypertensive Patients Undergoing Spine Fusion Surgery Under General Anaesthesia

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ABSTRACT

Background: Hypertensive patients undergoing spine fusion surgery are at increased risk of perioperative haemodynamic instability due to exaggerated sympathetic responses. Optimal premedication is essential to improve cardiovascular stability and anaesthetic outcomes. **Objective:** This study aimed to compare the effectiveness of clonidine and bromazepam as premedication agents in hypertensive patients undergoing spine fusion surgery under general anaesthesia. **Methods & Materials:** This double-blinded randomised controlled trial enrolled 50 hypertensive patients (ASA II-III) undergoing lumbar spine fusion surgery at Bangladesh Medical University. Patients were randomly assigned to receive either oral bromazepam (Group A, n=25) or oral clonidine (Group B, n=25) 90 minutes before anaesthesia induction. Standardised general anaesthesia was administered. Haemodynamic parameters, anaesthetic drug requirements, intraoperative events, side effects and surgeon satisfaction scores were recorded and analysed using SPSS version 23. A p-value <0.05 was considered statistically significant. **Results:** Clonidine significantly reduced the requirement of propofol, fentanyl and vecuronium compared with bromazepam (p<0.001). It was associated with fewer hypertensive episodes (0.12 ± 0.33 vs 1.40 ± 1.44, p<0.001) and fewer hypotensive events (0.28 ± 0.61 vs 0.92 ± 1.07, p=0.01). Isoflurane adjustments were also reduced in the clonidine group. Delayed recovery was significantly higher in the bromazepam group (44% vs 8%, p=0.004). Surgeon satisfaction scores were higher with clonidine. **Conclusion:** Clonidine provides superior haemodynamic stability and improved perioperative outcomes compared with bromazepam in hypertensive patients undergoing spine fusion surgery. It is a more effective premedication strategy in this high-risk population.

Keywords: *Clonidine, Bromazepam, Spine surgery, Premedication, Haemodynamic stability, General anaesthesia.*

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INTRODUCTION

Premedication is a fundamental component of anaesthetic practice, typically administered within two hours before induction of anaesthesia [1]. Its primary objectives include achieving amnesia, anxiolysis and sedation and facilitating smooth induction [2]. Additional benefits encompass reduction of gastric secretion and acidity, decreased salivation, vagolytic and sympatholytic effects, analgesia and prevention of postoperative nausea and vomiting (PONV) [3].

Anaesthesia for spinal surgery is inherently challenging, largely due to the prone position, which compresses the abdomen, reduces inferior vena cava blood flow and causes paravertebral and epidural venous congestion. These effects may contribute to increased intraoperative blood loss, impaired cardiac performance, worsened hypoperfusion, acute kidney injury (AKI), perioperative visual loss (POVL) and various nerve injuries. General anaesthesia is the predominant choice for spine surgery, favoured by surgeons, anaesthesiologists and patients alike [4]. However, laryngoscopy and endotracheal intubation during induction stimulate the sympathoadrenal axis, causing cardiovascular responses that include elevation of heart rate, increased myocardial oxygen demand, cardiac arrhythmias and rising arterial blood pressure [5]. These sympathoadrenal surges carry disproportionately higher risks in patients with coronary heart disease, cerebrovascular disease and hypertension [6,7].

Hypertension is the most frequent comorbidity encountered by anaesthesiologists during the perioperative period [8]. Hypertensive patients demonstrate significantly greater arterial blood pressure lability than their normotensive counterparts [9]. After anaesthesia induction, blood pressure tends to drop markedly; however, during stressful stimuli such as intubation, laryngoscopy, surgical incision and extubation, blood pressure may rise excessively [8]. This perioperative haemodynamic instability heightens the risk of severe bleeding and adverse outcomes [9]. There is a reported 25% increase in perioperative cardiovascular complications in hypertensive patients undergoing major non-cardiac surgery [10], a 1.6-fold increase in postoperative acute kidney injury [11] and elevated incidences of postsurgical delirium, intracranial haemorrhage and death [9]. Maintaining haemodynamic stability in this population, therefore, remains a critical challenge for anaesthesiologists.

Spine fusion surgery is a common procedure for treating a range of spinal disorders, including degenerative disc disease, spondylolisthesis, deformity and trauma [4,12]. Approximately 57% of patients with low back pain suffer from lumbar spinal instability [13]. Establishing a

relatively bloodless surgical field is essential, as minor bleeding can significantly obscure the surgical view and prolong the procedure [14]. The prolonged prone position further complicates the surgical outcome, particularly in hypertensive individuals. The anaesthetic objective in such cases is to blunt the perioperative stress response, sustain haemodynamic stability and promote early recovery.

Various pharmacological approaches have been explored to manage haemodynamic instability during the intraoperative period [6]. Premedication with oral pregabalin or clonidine during laparoscopic cholecystectomy has demonstrated efficacy in maintaining haemodynamic stability [15]. Earlier comparisons of oral bromazepam with diazepam have assessed their effectiveness on haemodynamic parameters and comparative studies of oral clonidine against atenolol and placebo have established clonidine's superior efficacy in heart rate control [16].

Clonidine, an imidazoline derivative and centrally acting alpha-2 adrenergic agonist, binds to presynaptic alpha-2 receptors in the brainstem's vasomotor region, reducing norepinephrine release and consequently lowering peripheral vascular resistance and blood pressure [17]. Beyond antihypertensive effects, clonidine also exerts sedative, anxiolytic, anti-sialagogue and analgesic actions and reduces narcotic and anaesthetic requirements without the opioid- or benzodiazepine-related adverse effects of tolerance, withdrawal, or respiratory depression [5,18]. Its antihypertensive and cardioprotective profile makes it pharmacologically well-suited for hypertensive patients undergoing major surgery. Bradycardia and hypotension are recognised adverse effects that warrant monitoring [19].

Bromazepam, a long-acting benzodiazepine, enhances GABA receptor-mediated chloride channel activity, producing anxiolytic, sedative and hypnotic effects [20]. It is commonly used as a premedication in various surgical settings. However, it confers no analgesic benefit and its adverse effects include tolerance, withdrawal, dizziness, drowsiness, respiratory depression and delayed recovery [21]. Although benzodiazepines may attenuate blood pressure through stress response reduction, they lack the direct antihypertensive and analgesic properties of clonidine, which are particularly advantageous for hypertensive patients undergoing prolonged surgery [22].

While numerous studies have examined premedication strategies for normotensive patients, there is a notable paucity of evidence on safe and effective premedication for hypertensive patients undergoing major spine surgery. This study was conducted to address this gap by comparing the effectiveness of oral clonidine versus oral bromazepam as premedication on perioperative haemodynamic stability, anaesthetic drug consumption, side effects and surgeon satisfaction in hypertensive patients undergoing lumbar spine fusion surgery under general anaesthesia.

OBJECTIVES

The objective of this study was to evaluate and compare the effectiveness of oral clonidine versus oral bromazepam as premedication on perioperative haemodynamic stability, anaesthetic drug requirements, side effects and surgeon satisfaction in hypertensive patients undergoing lumbar spine fusion surgery under general anaesthesia.

METHODS & MATERIALS

This study was conducted as a double-blinded randomized controlled trial (RCT) at the Orthopaedic operation theatre, under the Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangladesh Medical University (BMU), Dhaka, Bangladesh. The study was carried out from 28 September 2024 to 31 August 2025. The study population comprised hypertensive patients who presented for lumbar spine fusion surgery in the orthopaedic operating theatre at BMU. A total of 50 patients (25 per group) who fulfilled the eligibility criteria were enrolled in the study.

Inclusion criteria:

1. Adult hypertensive patients (on regular antihypertensive medication), either male or female, between the ages of 18 and 64 years.
2. ASA physical status class II or III.
3. Scheduled to undergo lumbar spine fusion surgery under general anaesthesia requiring controlled ventilation.

Exclusion criteria:

1. Patient refusal to participate or to sign informed consent.
2. Resting heart rate below 50 beats per minute.
3. Frail patients.
4. Patients with pre-existing psychological disease.
5. Uncontrolled diabetes mellitus.

Data Collection Procedure

After obtaining institutional ethical clearance (IRB No: BSMMU/2024/10711(7), Registration No: 5261) and informed written consent from each participant, patients were randomly assigned to one of two groups using a computer-generated randomisation method in the pre-anaesthetic check-up clinic. Group A received oral bromazepam (3 mg for a 60 kg patient, with an incremental dose of 0.75 mg for every 10 kg weight increase) and Group B received oral clonidine (100 micrograms for a 60 kg patient, with an incremental dose of 25 micrograms for every 10 kg weight increase), administered 90 minutes before anaesthesia induction. Double-blinding was maintained; drugs were prepared according to body weight, sealed in coded envelopes and administered by the duty physician, while the investigator collected outcome data without knowledge of drug allocation. Decoding was performed only after full data collection was complete.

Preoperative vital parameters were recorded, an intravenous line was inserted and fluid deficits were corrected with crystalloids at 1.5 ml/kg/hour. Standard monitoring, including electrocardiography (ECG), non-invasive blood pressure and pulse oximetry (SpO2), was established in the operating theatre and baseline haemodynamic parameters were recorded. Following preoxygenation, anaesthesia was induced with fentanyl 2 micrograms/kg and propofol 1.5 to 2 mg/kg intravenously. After confirming the ability to mask-ventilate, succinylcholine chloride 2 mg/kg was administered and tracheal intubation was performed by an experienced anaesthesiologist using an appropriately sized cuffed endotracheal tube. Tube placement was confirmed by auscultation and capnography. Ventilation was maintained with 70% N2O and 30% O2 alongside isoflurane at 0.8 MAC. Neuromuscular blockade was maintained with vecuronium bromide 0.1 mg/kg IV as a loading dose, followed by one-third of the loading dose as maintenance. Multimodal analgesia included intravenous paracetamol 1 g. Residual neuromuscular blockade was reversed with neostigmine 0.05 mg/kg and atropine 0.02 mg/kg IV, followed by extubation.

Haemodynamic parameters, including heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP), were recorded at the following time points: before induction, 1 minute after induction, 5 minutes after induction, 10 minutes after induction, just after surgical incision, 15 minutes after incision, 30 minutes after incision, 1 hour after incision, 2 hours after incision, just before extubation, 1 minute after extubation and 5 minutes after extubation. Blood pressure exceeding 20% above baseline was controlled with propofol by syringe pump; when propofol reached its maximum dose of 800 micrograms/kg/hour, isoflurane adjustments were made. Side effects such as hypotension, hypertension, bradycardia

and delayed recovery were documented and surgeon satisfaction with the surgical site was assessed at the end of surgery using a 5-point Likert scale.

Ethical Consideration

Ethical approval was obtained from the Institutional Review Board (IRB), BMU (Ref: BSMMU/2024/10711(7)). Written informed consent was obtained from all participants. Confidentiality and anonymity were strictly maintained. Patients were informed of their right to withdraw at any time without affecting standard treatment. All procedures complied with the Declaration of Helsinki.

Statistical Analysis

Data were analyzed using SPSS version 23.0. Continuous variables were expressed as mean ± standard deviation and compared using an independent-samples t-test. Repeated measures ANOVA was used for within-group comparisons over time. Categorical variables were analyzed using a chi-square test. A p-value <0.05 was considered statistically significant with a 95% confidence interval.

RESULT

A total of 55 patients were assessed for eligibility, of whom five were excluded (three declined to participate and two had uncontrolled diabetes mellitus). The remaining 50 patients were enrolled and randomly allocated to two groups of 25 each. No participant was lost to follow-up during the study. Group A received oral bromazepam and Group B received oral clonidine as premedication.

Table I shows the Demographic characteristics of the study population. The mean age was slightly higher in the clonidine group (48.24 years) compared to the bromazepam group (44.92 years), but this difference was not statistically significant (p=0.22). Mean BMI was also similar between groups (26.97 kg/m2 vs 27.18 kg/m2; p=0.82). Male patients predominated slightly in the clonidine group (56.0%), while females were more frequent in the bromazepam group (52.0%); however, this difference did not reach statistical significance (p=0.57).

Table I

Demographic variables of study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Variable	Group A (Bromazepam) (n=25) Mean ± SD	Group B (Clonidine) (n=25) Mean ± SD	p-value
Age (years)	44.92 ± 9.37	48.24 ± 9.36	0.22
BMI (kg/m²)	26.97 ± 2.86	27.18 ± 3.43	0.82
Gender			
Male	12 (48.0)	14 (56.0)	0.57
Female	13 (52.0)	11 (44.0)	

Table II shows that operative and anaesthetic durations were comparable between groups. The mean duration of surgery was 3.27 hours in the bromazepam group and 3.07 hours in the clonidine group (p=0.14). The mean duration of anaesthesia was 3.74 hours in the bromazepam group and 3.55 hours in the clonidine group (p=0.26). Neither difference was statistically significant, confirming procedural comparability between the two groups.

Table II

Duration of surgery and anaesthesia of study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Clinical Feature	Group A (Bromazepam) (n=25) Mean ± SD	Group B (Clonidine) (n=25) Mean ± SD	p-value
Duration of Surgery (hours)	3.27 ± 0.63	3.07 ± 0.56	0.14
Duration of Anaesthesia (hours)	3.74 ± 0.64	3.55 ± 0.59	0.26

Table III shows the anaesthetic drug requirements. Anaesthetic drug requirements were consistently and significantly lower in the clonidine group. Propofol consumption during induction was 1662.35 micrograms/kg in the bromazepam group versus 1443.27 micrograms/kg in the clonidine group (p<0.001). During the intraoperative maintenance period, propofol requirements were markedly higher in the bromazepam group (381.60 vs 82.36 micrograms/kg/hour; p<0.001). Similarly, intraoperative fentanyl requirements were significantly reduced in the clonidine group (0.08 vs 0.24 micrograms/kg/hour; p<0.001), as were vecuronium requirements (16.74 vs 21.42 micrograms/kg/hour; p<0.001).

Table III

Required doses of propofol, fentanyl and vecuronium in study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Drug	Period	Group A (Bromazepam) (n=25) Mean ± SD	Group B (Clonidine) (n=25) Mean ± SD	p-value
Propofol	During induction (µg/kg)	1662.35 ± 203.11	1443.27 ± 94.87	<0.001
	During intraoperative period (µg/kg/hour)	381.60 ± 270.29	82.36 ± 161.43	<0.001
Fentanyl	During intraoperative period (µg/kg/hour)	0.24 ± 0.12	0.08 ± 0.07	<0.001
Vecuronium	During intraoperative period (µg/kg/hour)	21.42 ± 4.72	16.74 ± 1.72	<0.001

Table IV shows the comparison of isoflurane manipulation in study participants. Isoflurane manipulation was required in 20.0% of patients in the bromazepam group compared with 8.0% in the clonidine group, reflecting a clinically relevant but not statistically significant difference (p=0.22). The lower requirement for isoflurane adjustment in the clonidine group is consistent with the more stable haemodynamic profile observed throughout the operative period.

Table IV
Comparison of isoflurane manipulation in study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Isoflurane Manipulation	Group A (Bromazepam) (n=25)	Group B (Clonidine) (n=25)	p-value
Yes	5 (20.0)	2 (8.0)	0.22
No	20 (80.0)	23 (92.0)	

Table V shows the comparison of side effects in study participantsDelayed recovery was significantly more frequent in the bromazepam group, affecting 44.0% of patients compared with 8.0% in the clonidine group (p=0.004). Patients in the bromazepam group were 9.04 times more likely to experience delayed recovery than those in the clonidine group (OR: 9.04; 95% CI: 1.74 to 46.89). The incidence of bradycardia was identical in both groups, occurring in 24.0% of patients in each arm, with no statistically significant difference (p=1.00).

Table V
Comparison of side effects in study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Side Effect		Group A (Bromazepam) (n=25)	Group B (Clonidine) (n=25)	p-value / OR (95% CI)
Delayed Recovery	Yes	11 (44.0)	2 (8.0)	0.004 / 9.04 (1.74–46.89)
	No	14 (56.0)	23 (92.0)	
Bradycardia	Yes	6 (24.0)	6 (24.0)	1
	No	19 (76.0)	19 (76.0)	

Table VI presents the comparison of events of hypotension and hypertension in study participants. The frequency of haemodynamic events was substantially higher in the bromazepam group. Episodes of intraoperative hypertension occurred on a mean of 1.40 occasions per patient in the bromazepam group compared with 0.12 in the clonidine group (p<0.001). Similarly, hypotensive episodes were more frequent in the bromazepam group (mean 0.92 vs 0.28; p=0.01). These findings collectively reinforce the haemodynamic instability associated with bromazepam premedication in this patient population.

Table VI
Comparison of events of hypotension and hypertension in study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Event (During Intraoperative Period)	Group A (Bromazepam) (n=25) Mean ± SD	Group B (Clonidine) (n=25) Mean ± SD	p-value
Event of Hypertension (times)	1.40 ± 1.44	0.12 ± 0.33	<0.001
Event of Hypotension (times)	0.92 ± 1.07	0.28 ± 0.61	0.01

Table VII shows that surgeon satisfaction with the surgical site differed markedly between the two groups. In the clonidine group, 88.0% of surgeons rated the surgical site as good, whereas only 12.0% in the bromazepam group received a good rating. Conversely, 76.0% of patients in the bromazepam group received only a moderate satisfaction rating, compared with 24.0% in the clonidine group. This difference was highly statistically significant (p<0.001), highlighting the added benefit of clonidine premedication in optimising surgical field conditions.

Table VII
Surgeons' satisfaction scores for the surgical site in study participants who underwent spine fusion surgery premedicated with bromazepam (Group A) and clonidine (Group B) (*n*=50).

Surgeons' Satisfaction Score	Group A (Bromazepam) (n=25) n (%)	Group B (Clonidine) (n=25) n (%)	p-value
Moderate	19 (76.0)	6 (24.0)	<0.001
Good	3 (12.0)	22 (88.0)	

DISCUSSION

Endotracheal intubation and laryngoscopy are well-recognised triggers of blood pressure surges, heart rate elevation and cardiac dysrhythmias, all of which carry heightened risk in patients with existing cardiovascular disease or cerebrovascular abnormalities [23]. Attenuating these responses is central to preventing perioperative morbidity and mortality. This is especially pertinent for hypertensive patients, who demonstrate markedly greater haemodynamic lability than normotensive individuals and for whom spine fusion surgery, with its prolonged operative duration and prone positioning, poses considerable additional haemodynamic challenge. In this double-blinded randomised controlled trial, we compared oral clonidine and oral bromazepam as premedication agents for hypertensive patients undergoing lumbar spine fusion surgery. The overall findings demonstrate that clonidine more effectively

maintains haemodynamic stability and reduces anaesthetic requirements while limiting adverse effects and improving surgeon satisfaction.

The clonidine group demonstrated a substantially lower requirement for intraoperative anaesthetic agents. Propofol consumption during induction was significantly lower in patients who received clonidine (1443.27 micrograms/kg) compared to bromazepam (1662.35 micrograms/kg; $p<0.001$) and the disparity was even more pronounced during the maintenance phase (82.36 vs 381.60 micrograms/kg/hour; $p<0.001$). Fentanyl and vecuronium requirements were similarly reduced with clonidine premedication. These findings align closely with several prior investigations. Gupta et al. reported that clonidine premedication reduced propofol and fentanyl requirements during induction compared to gabapentin in normotensive patients undergoing laparoscopic cholecystectomy [15]. Ray et al. similarly found that the clonidine group required less propofol during both induction and the intraoperative period than the magnesium sulphate group [24]. Altan et al. concluded that clonidine significantly reduced the amount of propofol needed to induce and maintain anaesthesia [25]. Laisalmi et al. demonstrated that clonidine premedication reduces narcotic and anaesthetic dose requirements by blunting the stress response to surgical stimuli [26]. The mechanism underlying these reductions is the central sympatholytic action of clonidine, which decreases catecholamine release, attenuates adrenergic drive and provides concurrent sedation, anxiolysis and analgesia. Although prior studies utilised normotensive populations and differing comparator drugs, the mechanisms and directions of effect remain consistent with the present study.

Isoflurane manipulation was required less frequently in the clonidine group (8.0%) than in the bromazepam group (20.0%), though this difference did not reach statistical significance ($p=0.22$). The trend nonetheless reinforces the overall pattern of greater haemodynamic control achieved with clonidine. Sung et al. similarly reported that clonidine premedication attenuated cardiovascular responses to surgical stress and decreased postoperative analgesic requirements, contributing to a smoother recovery trajectory [27].

Adverse effects were more pronounced in the bromazepam group. Delayed recovery was observed in 44.0% of patients who received bromazepam, compared with only 8.0% of those who received clonidine, with a statistically significant difference ($p=0.004$) and an odds ratio of 9.04 (95% CI: 1.74 to 46.89). This finding is consistent with the known pharmacokinetics of bromazepam, which, despite its initial rapid redistribution due to high lipid solubility, re-enters the systemic circulation over time and produces a hangover effect. Additionally, bromazepam exerts a synergistic central depressant effect with inhalational and intravenous anaesthetic agents, prolonging the duration of anaesthetic action and impairing timely recovery. Ray et al. reported that patients in the magnesium sulphate group were more prone to delayed recovery than those in the clonidine group, with significantly longer times to extubation, verbal response and orientation [15]. Islam, Banik et al. noted that diazepam caused delayed recovery compared to bromazepam, as measured by the Aldrete recovery score, reinforcing that sedative premedications in the benzodiazepine class are associated with prolonged recovery [16].

Bradycardia was equally distributed between the two groups, occurring in 24.0% of patients in each arm, with no significant difference ($p=1.00$). These finding merits particular attention, given that bradycardia is a recognised and often cited adverse effect of clonidine. Naithani et al. reported a single intraoperative bradycardia episode in only one patient in the clonidine group, which is lower than what was observed in the present study [14]. Sharma et al. found no significant occurrence of bradycardia or arrhythmias in either the clonidine or gabapentin groups in normotensive patients [5]. The relatively higher proportion of bradycardia in both groups in the current study may be attributed to the hypertensive study population and the haemodynamic stresses inherent to spine fusion surgery, which predispose patients to arrhythmias regardless of the premedication agent used.

The incidence of intraoperative hypertensive episodes was markedly higher in the bromazepam group (mean 1.40 vs 0.12 events; $p<0.001$) and hypotensive episodes were also more frequent (0.92 vs 0.28; $p=0.01$). These findings contrast with those of Naithani et al., who reported that none of their patients experienced hypotension during the study period [14]. The discrepancy is likely attributable to differences in study population characteristics and the surgical procedure. Patients in the present study were hypertensive, a group inherently prone to haemodynamic fluctuations and spine fusion surgery represents a more haemodynamically challenging procedure. The lower incidence of both hypertensive and hypotensive events in the clonidine group underscores its superior ability to maintain cardiovascular homeostasis throughout the perioperative period.

Surgeon satisfaction with the surgical site was markedly superior in the clonidine group, with 88.0% of surgeons rating it as good compared to only 12.0% in the bromazepam group ($p<0.001$). This finding reflects the indirect benefit of clonidine's antihypertensive, anxiolytic and analgesic properties in controlling intraoperative bleeding and creating cleaner surgical conditions. Ghorbani et al. found that clonidine produced bleeding control comparable to tranexamic acid during functional endoscopic sinus surgery, with no significant intergroup difference in surgeon satisfaction [28]. Qoreishy et al. demonstrated a statistically significant reduction in bleeding in the clonidine group during pelvic and acetabular surgery [29]. The surgical site quality observed in the present study is consistent with these reports, further supporting the role of clonidine in facilitating optimal surgical conditions.

Taken together, the findings of this study confirm that oral clonidine (weight-adjusted, 100 micrograms for 60 kg) is more effective than oral bromazepam as a premedication agent for hypertensive patients undergoing major spine fusion surgery. Its multifaceted pharmacological profile, encompassing antihypertensive, anxiolytic, sedative and analgesic properties, provides comprehensive perioperative benefit. Previous studies of clonidine premedication were largely conducted in normotensive populations using higher intravenous doses and compared clonidine against agents other than bromazepam, such as gabapentin, magnesium sulphate and beta-blockers. The present study extends existing evidence to a more vulnerable, higher-risk population and demonstrates that even a modest oral dose effectively confers superior haemodynamic stability relative to a standard anxiolytic premedication.

CONCLUSION

Clonidine is more effective than bromazepam as a premedication agent in hypertensive patients undergoing spine fusion surgery under general anaesthesia. It provides superior haemodynamic stability, reduces perioperative anaesthetic requirements, minimizes intraoperative cardiovascular fluctuations and enhances surgical conditions without increasing adverse effects. Bromazepam, while effective for sedation and anxiolysis, demonstrates limited utility in controlling intraoperative sympathetic responses in this high-risk population.

CONFLICTS OF INTEREST

None.

ETHICAL APPROVAL

This study approved by the institutional ethical review committee of Bangladesh Medical University.

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