ORIGINAL RESEARCH

To determine the effectiveness of Magnesium Sulphate and Dexmedetomidine in inducing controlled hypotension for Functional Endoscopic Sinus Surgery: A Randomised clinical study

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Received date: 22 March, 2024 Acceptance date: 24 April, 2024

ABSTRACT

Aim:To determine the effectiveness of Magnesium Sulphate and Dexmedetomidine in inducing controlled hypotension for Functional Endoscopic Sinus Surgery.**Material and Methods**: A total of 100 patients were recruited for the study and were separated into two equal groups using random assignment: the dexmedetomidine group (n=50) and the MgSO4 group (n=50). The research included patients of both genders, aged 18-60 years, who were scheduled to undergo FESS (Functional Endoscopic Sinus Surgery) under general anesthesia. Only patients classified as ASA grade 1 or 2 were included. Demographic parameters such as gender, age, weight, ASA grade, and operation length were compared between both groups. Hemodynamic parameters, such as Heart Rate (HR), Mean Arterial Pressure (MAP), Systolic Blood Pressure (SBP), and Diastolic Blood Pressure (DBP), were assessed at several time points: baseline, after premedication, after administration of the study drug, during induction or intubation, and after 5 minutes, 10 minutes, 15 minutes, 30 minutes, 60 minutes, and 120 minutes.**Results**: The baseline HR was not significantly different between the groups (p=0.13), significant differences emerged post-administration of the study drug and continued through various time points. Post-administration HR was significantly lower in Group D (68.25 ± 7.16) compared to Group M (70.22 ± 6.48), with a p-value of 0.04. These differences were even more pronounced at 5 minutes (p=0.009), 10 minutes (p=0.002), 15 minutes (p=0.001), 30 minutes (p=0.005), 60 minutes (p=0.01), and 120 minutes (p=0.02), indicating better control of HR in the Dexmedetomidinegroup.Similar to heart rate, MAP was generally lower in Group D compared to Group M at most time points. DBP followed a similar trend to SBP, being generally lower in Group D. Surgeon satisfaction was higher in Group D compared to Group M. In Group D, 30% of surgeons rated the satisfaction as "Excellent" and 50% as "Good", whereas in Group M, 20% rated it as "Excellent" and 40% as "Good". Group D had fewer "Poor" (10%) and "Moderate" (10%) ratings compared to Group M (16% and 24%, respectively). The bleeding score results show significant differences between Group D (Dexmedetomidine) and Group M (Magnesium Sulfate) in terms of intraoperative bleeding.Group D had fewer cases of higher bleeding scores compared to Group M, indicating better bleeding control.**Conclusion**: We concluded that dexmedetomidine is superior to magnesium sulfate in managing intraoperative hemodynamic parameters, minimizing intraoperative bleeding, and improving surgeon satisfaction during functional endoscopic sinus surgery (FESS).

Keywords: Magnesium Sulphate, Dexmedetomidine, Hypotension, Functional Endoscopic Sinus Surgery

INTRODUCTION

Functional endoscopic sinus surgeries are widely conducted on a significant scale globally. The indications may vary, but the most prevalent one is chronic rhinosinusitis. Haemorrhage presents a significant challenge not only for the anesthesiologist but also for the surgeon.[1,2]

It impairs sight, extends the duration of surgery, raises the need for blood transfusions, and exacerbates postoperative swelling and bruising. To prevent the aforementioned issues, one might use controlled hypotension. Hypotension is often defined as a decrease in systolic pressure below 80–90 mm Hg, a decrease in mean arterial pressure below 60–65 mm Hg, or a 30% decrease from the baseline MAP.[3,4]Dexmedetomidine is a recently developed medication that is utilised by anesthesiologists for this specific reason. Due to its high selectivity as an alpha-2 adrenergic agonist, this substance has a broad range of clinical uses, including premedication, sedation, assisting in regional techniques, inducing controlled hypotension, reducing the hemodynamic response to tracheal manipulation, providing postoperative pain relief, and facilitating awake intubation.[5,6] Considering the information provided, it should be noted that dexmedetomidine is associated with some adverse effects, including hypotension, bradycardia, dry mouth, and nausea. Atipamezole, an antagonist of the alpha2 receptor, may be used to reverse drowsiness and the suppression of sympathetic activity. The effectiveness of this reversal is dependent on the dosage of Atipamezole. Magnesium sulphate (MgSO4) is a potent drug for managing hypotension. Additionally, it serves as a mediator for the activation of the enzymes Na+-K+ATPase and Ca++ATPase, which play a role in the exchange of ions across the cell membrane during the depolarization and repolarization phases, hence maintaining cell membrane stability.[4] Magnesium sulphate (MgSO4) has shown the ability to reduce heart rate (HR) and arterial pressure by inhibiting the release of norepinephrine.[7]Dexmedetomidine is a potent α2 adrenoreceptor agonist that has sedative, analgesic, and anaesthetic-sparing effects. Central sympatholysis leads to a decrease in cardiac output, heart rate, and arterial blood pressure, which depends on the dosage.[8]Additionally, it has powerful analgesic (opioid-sparing) and soothing qualities. This medication is authorised for use in both adult and paediatric patients as a comprehensive anaesthetic and/or sedative-analgesic. It functions by attaching to imidazoline type 1 and central α-2A receptors.[9,10]

AIMS AND OBJECTIVES

To determine the effectiveness of magnesium sulphate and dexmedetomidine in inducing controlled hypotension for functional endoscopic sinus surgery.

MATERIALS AND METHODS

The present study was an interventional randomised control trial that included a sample of 100 patients scheduled for FESS surgery under general anesthesia. The present study has been carried out at the Department of Anaesthesia, Nalanda Medical College and Hospital, Patna, Bihar, India. Each patient provided written informed consent after receiving approval from the ethical committee. The study was carried out over an approximate two-year period, from January 2022 to December 2023.

The research included patients of both genders, aged 18–60 years, who were scheduled to undergo FESS (Functional Endoscopic Sinus Surgery) under general anaesthesia. Data such as name, age, etc. was recorded.

INCLUSION CRITERIA

- Patients were classified as having ASA grades I and II.
- Age between 18 and 60 years.
- Patients to give written informed consent.
- Available for follow-up.

EXCLUSION CRITERIA

- Patients who did not consent to the study.
- The trial excluded those who had a hypersensitivity to the medicine, as well as those with severe cardiovascular and respiratory disorders, general haematological and neuromuscular illnesses, hypotension, sinus bradycardia, and chronic hypertension.
- Patients with immunocompromised status and patients on chemotherapy or steroid treatment.
- Those unable to attend follow-up.

A total of 100 patients were recruited for the study and were separated into two equal groups using random assignment: the dexmedetomidine group (n = 50) and the MgSO4 group (n = 50). The randomization process was conducted using sealed, opaque envelopes that were sequentially numbered and distributed in a 1:1 ratio.

G**roup D:** Patients received an intravenous injection of dexmedetomidine at a dosage of 1 µg/kg over a period of 10 minutes as a loading dose, followed by a continuous intravenous infusion of 0.5µg/kg/h throughout the operation for maintenance.

Group M: Patients received an initial dosage of 40 mg/kg intravenously, followed by a continuous dose of 15 mg/kg/h intravenously for the whole operation.

PROCEDURE

The patient's nil per mouth status was verified, intravenous access was established using an 18-gauge intravenous cannula, and they were started on a maintenance intravenous fluid infusion. An electrocardiogram (ECG), pulse oximetry, non-invasive blood pressure (NIBP), and capnography were connected, and the first readings were recorded. The patient received a premedication consisting of an intravenous injection of glycopyrrolate 0.2 mg and midazolam 1 mg. Following a three-minute period of preoxygenation with 100% oxygen, the patient received an intravenous injection of fentanyl at a dose of 2 micrograms per kilogram. The patient was administered intravenous propofol at a dose of 2 mg/kg to induce anaesthesia, followed by intravenous vecuronium at a dose of 0.08 mg/kg to ease tracheal intubation. Afterwards, anaesthesia was sustained

using a combination of oxygen and nitrous oxide in equal proportions (50:50) together with sevoflurane at a concentration of 1–3%.

For Group D patients: After receiving a loading dose of dexmedetomidine of 1 µg/kg diluted in 100 mL of 0.9% normal saline over a period of 10 minutes, a continuous infusion of 0.5 µg/kg/h was supplied using an infusion pump. In order to prepare the drug for infusion, mix 100 mcg with 49 mL of 0.9% normal saline solution, resulting in a final volume of 50 mL and a concentration of 2 mcg/mL.

For Group M patients: An initial dosage of 40 mg/kg of magnesium sulphate, diluted in 100 mL of 0.9% normal saline, was given over a period of 10 minutes. Subsequently, a continuous infusion of 15 mg/kg/h was delivered via an infusion pump. To get a final volume of 50 mL and a final concentration of 100 mg/mL for infusion, 5 grammes (equivalent to 10 mL) were mixed with 40 mL of 0.9% normal saline solution (NS).

Demographic parameters such as gender, age, weight, ASA grade, and operation length were compared between both groups. Hemodynamic parameters, such as heart rate (HR), mean arterial pressure (MAP), systolic blood pressure (SBP), and diastolic blood pressure (DBP), were assessed at several time points: baseline, after premedication, after administration of the study drug, during induction or intubation, and after 5 minutes, 10 minutes, 15 minutes, 30 minutes, 60 minutes, and 120 minutes.

The first measurements of the patient's pulse rate, systolic blood pressure (SBP), and diastolic blood pressure (DBP) were recorded, and the administration of the infusion began prior to the induction of anaesthesia and endotracheal intubation. The surgeon's level of satisfaction and degree of bleeding were also evaluated and documented. The surgeon's level of satisfaction was evaluated by the surgeon after the procedure using a scale of 1 to 4, where 1 represents poor satisfaction and 4 represents outstanding satisfaction. The assessment of the bleeding score was conducted using the Boezaart scale, which ranges from 0 to 5.

STATISTICAL ANALYSIS

Statistical analysis was performed on the obtained data using SPSS version 22.0 (IBM Corp., 2016) and Microsoft 16. A chi-square test and an ANOVA test were used to find the effectiveness of magnesium sulphate and dexmedetomidine in inducing controlled hypotension for functional endoscopic sinus urgery. A ‘P’ value <0.05 is considered significant.

RESULTS

This randomised clinical study included 100 patients who were scheduled to undergo functional endoscopic sinus surgery (FESS) under general anaesthesia. The participants were evenly distributed into two groups: dexmedetomidine (Group D, n = 50) and magnesium sulphate (Group M, n = 50).

Table 1: Baseline and demographic parameters of the patients

Parameter	Group D (Dexmedetomidine)	Group M (Magnesium Sulfate)	p-value
Gender			
Male	28(56%)	30(60%)	0.12
Female	22(44%)	20(40%)	
ASA Grade			
I	32(64%)	30(60%)	0.37
II	18(36%)	20(40%)	
Age (years)	42.465.35	44.21 ± 3.79	0.14
Weight (kg)	67.99 ± 4.36	68.05 ± 4.36	0.25
Duration of Surgery (min)	84.98 ± 5.78	85.96 ± 5.38	0.33

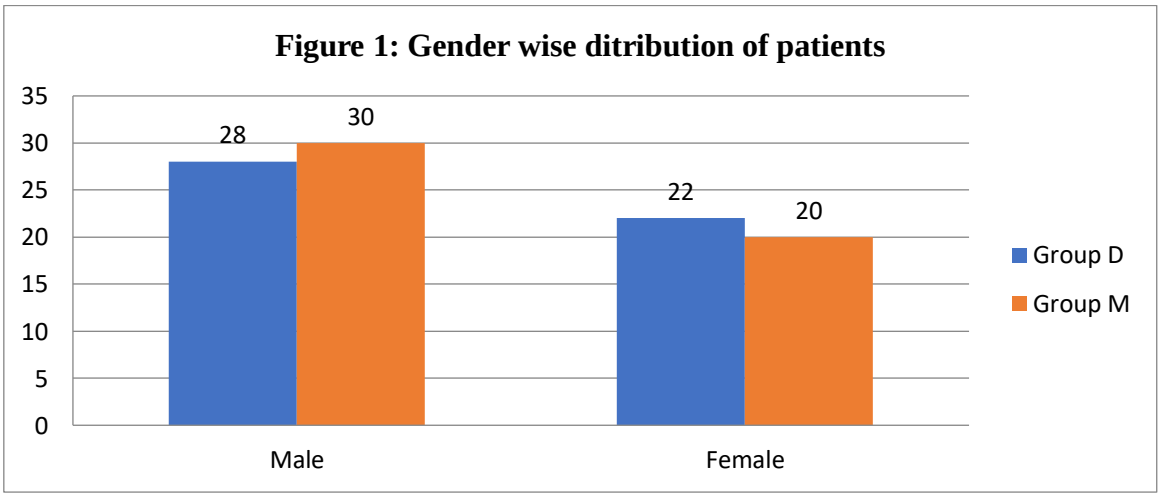

Table 1 and Figure 1 show that the baseline parameters indicate no significant differences between the groups. The gender distribution was similar, with a slightly higher percentage of males in Group M (60%) compared to Group D (56%), but this difference was not statistically significant (p = 0.12). The ASA grade distribution was comparable between the groups, with no significant difference (p = 0.37). The average age was slightly higher in Group M (44.21 ± 3.79 years) compared to Group D (42.46 ± 5.35 years), but this difference was not statistically significant (p = 0.14). Both groups had almost identical mean weights (Group D: 67.99 ± 4.36 kg, Group M: 68.05 ± 4.36 kg) with no significant difference (p = 0.25). The duration of surgery was similar for both groups (Group D: 84.98 ± 5.78 minutes, Group M: 85.96 ± 5.38 minutes) with no significant difference (p = 0.33).

Table 2: Heart Rate (HR)

Time Point	Group D (Dexmedetomidine)	Group M (Magnesium Sulfate)	p-value
	Mean ± SD	Mean ± SD	
Baseline	76.12 ± 8.13	78.15 ± 7.89	0.13
After Premedication	72.24 ± 9.12	75.26 ± 8.57	0.12
Post-administration of Study Drug	68.25 ± 7.16	70.22 ± 6.48	0.04*
5 Minutes	66.33 ± 7.42	68.35 ± 6.45	0.009*
10 Minutes	65.11 ± 6.48	67.13 ± 6.42	0.002*
15 Minutes	64.28 ± 6.65	66.89 ± 5.88	0.001*
30 Minutes	64.42 ± 6.32	65.78 ± 5.85	0.005*
60 Minutes	64.87 ± 6.50	66.73 ± 5.63	0.01*
120 Minutes	65.87 ± 5.78	65.79 ± 5.10	0.02*

*p-value <0.05 (significant)

Table 2 shows that the heart rate was consistently lower in Group D (dexmedetomidine) compared to Group M (magnesium sulphate) across all measured time points. Although the baseline HR was not significantly different between the groups (p = 0.13), significant differences emerged post-administration of the study drug and continued through various time points. Post-administration HR was significantly lower in Group D (68.25 ± 7.16) compared to Group M (70.22 ± 6.48), with a p-value of 0.04. These differences were even more pronounced at 5 minutes (p = 0.009), 10 minutes (p = 0.002), 15 minutes (p = 0.001), 30 minutes (p = 0.005), 60 minutes (p = 0.01), and 120 minutes (p = 0.02), indicating better control of HR in the Dexmedetomidine group.

Table 3: Mean Arterial Pressure (MAP)

Time Point	Group D (Dexmedetomidine)	Group M (Magnesium Sulfate)	p-value
	Mean ± SD	Mean ± SD	
Baseline	98.43 ± 10.32	100.21 ± 9.58	0.13
After Premedication	95.32 ± 8.27	97.35 ± 8.73	0.22
Post-administration of Study Drug	92.54 ± 7.49	94.63 ± 7.42	0.051
5 Minutes	90.38 ± 7.45	92.76 ± 7.60	0.01*
10 Minutes	89.56 ± 7.22	91.53 ± 6.48	0.009*
15 Minutes	88.89 ± 7.70	90.88 ± 6.25	0.004*
30 Minutes	87.98 ± 6.77	89.57 ± 6.62	0.008*
60 Minutes	88.93 ± 6.85	89.97 ± 6.06	0.01*
120 Minutes	89.89 ± 6.43	89.74 ± 5.58	0.01*

*p-value <0.05 (significant)

Table 3 shows that, similar to heart rate, MAP was generally lower in Group D compared to Group M at most time points. The baseline MAP was not significantly different (p = 0.13), but post-administration of the study drug, Group D showed a lower MAP (92.54 ± 7.49) compared to Group M (94.63 ± 7.42), though this was marginally non-significant (p = 0.051). Significant differences were observed at 5 minutes (p = 0.01), 10 minutes (p = 0.009), 15 minutes (p = 0.004), 30 minutes (p = 0.008), 60 minutes (p = 0.01), and 120 minutes (p = 0.01), indicating more stable MAP in Group D.

Table 4: Systolic Blood Pressure (SBP)

Time Point	Group D (Dexmedetomidine)	Group M (Magnesium Sulfate)	p-value
	Mean ± SD	Mean ± SD	
Baseline	120.35 ± 12.35	122.78 ± 11.55	0.23
After Premedication	118.52 ± 10.84	120.56 ± 10.62	0.32
Post-administration of Study Drug	115.89 ± 9.52	118.63 ± 9.17	0.21
5 Minutes	113.78 ± 9.04	116.52 ± 8.64	0.13
10 Minutes	112.58 ± 8.76	115.50 ± 8.33	0.06
15 Minutes	111.78 ± 8.57	114.75 ± 8.06	0.05
30 Minutes	110.79 ± 8.25	113.63 ± 7.77	0.04*
60 Minutes	111.27 ± 8.04	113.87 ± 7.54	0.02*
120 Minutes	112.86 ± 7.83	114.53 ± 7.36	0.01*

Table 4 shows that SBP was generally lower in Group D compared to Group M. While baseline SBP was not significantly different ($p = 0.23$), significant differences were observed at later time points. At 30 minutes, Group D had a significantly lower SBP (110.79 ± 8.25) compared to Group M (113.63 ± 7.77), with a p-value of 0.04. This pattern continued at 60 minutes ($p = 0.02$) and 120 minutes ($p = 0.01$), demonstrating that dexmedetomidine was more effective in controlling SBP.

Table 5: Diastolic Blood Pressure (DBP)

Time Point	Group D (Dexmedetomidine)	Group M (Magnesium Sulfate)	p-value
	Mean ± SD	Mean ± SD	
Baseline	72.18 ± 7.62	74.58 ± 7.25	0.12
After Premedication	70.35 ± 6.83	72.34 ± 6.54	0.27
Post-administration of Study Drug	68.53 ± 5.92	70.71 ± 5.65	0.11
5 Minutes	66.78 ± 5.46	68.55 ± 5.36	0.18
10 Minutes	65.55 ± 5.33	67.84± 5.02	0.13
15 Minutes	65.70 ± 5.21	67.33 ± 4.85	0.13
30 Minutes	64.23 ± 4.29	66.45 ± 4.64	0.07
60 Minutes	64.68 ± 4.18	66.97 ± 4.45	0.07
120 Minutes	65.66± 4.46	66.55 ± 4.23	0.04*

Table 5 shows that DBP followed a similar trend to SBP, being generally lower in Group D. While there were no significant differences at baseline ($p = 0.12$) or immediately after premedication ($p = 0.27$), the DBP at 120 minutes was significantly lower in Group D (65.66 ± 4.46) compared to Group M (66.55 ± 4.23), with a p-value of 0.04. This indicates that dexmedetomidine provided better long-term control over DBP.

Table 6:Surgeon's Satisfaction Score

Group	1 (Poor)	2 (Moderate)	3 (Good)	4 (Excellent)	Total
Group D (Dexmedetomidine)	5	5	25	15	50
Group M (Magnesium Sulfate)	8	12	20	10	50
Total	13	17	45	25	100

Table 6 showsshows that surgeonsurgeon satisfaction was higher in Group D compared to Group M. In Group D, 30% of surgeons rated the satisfaction as "excellentexcellent" and 50% as "good," good," whereas in Group M, 20% rated it as "excellentexcellent" and 40% as "good.good.". Group D had fewer "poorpoor" (10%) and "moderate" (10%) ratings compared to Group M (16% and 24%, respectively).

Table 7:Bleeding Score (Boezaart scale, 0-5)

Bleedingscore	Group D (Dexmedetomidine)	Group M (Magnesium Sulfate)	p-value
0	2(4)	0	0.14
1	5(10)	0	0.17
2	26 (52)	11(22)	0.04*
3	12(24)	7(14)	0.02*
4	3(6)	21 (42)	0.03*
5	2(4)	11(22)	0.04*

Table 7 show that The bleeding score results show significant differences between Group D (dexmedetomidine) and Group M (magnesium sulphate) in terms of intraoperative bleeding. Group D had fewer cases of higher bleeding scores compared to Group M, indicating better bleeding control. Specifically, 52% of patients in Group D had a bleeding score of 2, compared to only 22% in Group M, with a statistically significant p-value of 0.04. Additionally, Group D had 24% of patients with a bleeding score of 3, while Group M had 14%, also significant (p = 0.02). Conversely, higher bleeding scores (4 and 5) were more common in Group M. For instance, 42% of patients in Group M had a bleeding score of 4, compared to only 6% in Group D, with a significant p-value of 0.03. Furthermore, 22% of patients in Group M had the highest bleeding score of 5, while only 4% of Group D reached this score, which was also statistically significant (p = 0.04). Lower bleeding scores of 0 and 1 were observed in Group D (4% and 10%, respectively) but not in Group M, though these differences were not statistically significant (p = 0.14 and 0.17, respectively).

DISCUSSION

The FESS is conducted via a fiberoptic endoscope equipped with a high-intensity camera. During FESS, a sterile and moisture-free surgical area has been established utilising a range of methods. Local vasoconstrictors and hypotension are two methods used to decrease capillary bleeding, which is the primary factor that impacts the clarity of the surgical site.[11] A single droplet of blood may efficiently obstruct the operative region. Various approaches have been used to reduce this issue, such as topical vasoconstriction medications, Fowler position, alpha-2 adrenergic and beta-2 adrenergic inhibitors, and preoperative steroids. However, these procedures are associated with significant side effects. Pharmaceuticals have been used to deliberately lower blood pressure via intentional hypotension. The present experiment used dexmedetomidine and MgSO4. Dexmedetomidine, a specific agonist of alpha-2 adrenoceptors, induces a decrease in blood pressure, deceleration of heart rate, drowsiness, and analgesia. The decrease in blood pressure mostly results from the suppression of central sympathetic outflow.[12]Dexmedetomidine is a strong and selective agonist of the central 2-receptor, which specifically binds to adrenoreceptors that are G protein-binding and located on the transmembrane. Unlike other sedatives, this particular one stands out due to its analgesic effects, which are referred to as opioid-sparing, anxiolytic, and sympatholytic qualities in the field of anaesthesia.[12]Additionally, it induces drowsiness without eliciting respiratory depression. Magnesium sulphate decreases blood pressure by inhibiting N-type calcium channels at nerve terminals, thereby preventing the release of norepinephrine.[13]The notable pain-relieving effect of magnesium during surgery also elucidates its association with hypotension. Magnesium's analgesic effects may be attributed to its antagonistic action on N-methyl D-aspartate receptors.[13]The research revealed that dexmedetomidine was more effective than MgSO4 in achieving the desired level of low blood pressure in the participants undergoing FESS. Dexmedetomidine and magnesium have been used in several additional trials to induce controlled hypotension. Research conducted by Bayram A et al. has shown that dexmedetomidine is more effective in achieving controlled hypotension.[14] The study conducted by Patel DD et al.[11] aimed to assess the effects of dexmedetomidine and nitroglycerin on controlled hypotension. The results showed that dexmedetomidine had the advantage of enhancing cardiovascular stability.Dexmedetomidine and magnesium have been used to generate controlled hypotension in many additional investigations as well.[15,16]Dexmedetomidine outperforms MgSO4 in obtaining the desired mean arterial pressure (MAP) more quickly, using a lower infusion dosage.[15] The gender distribution, ASA grade, age, weight, and length of operation were similar across the two groups, indicating that these parameters did not have an impact on the results. In their research on managed hypotension during FESS, Lemmenset al.[17] observed no statistically significant variations in baseline variables, such as gender distribution, ASA grade, and age, when comparing dexmedetomidine with other hypotensive medications. In their research comparing dexmedetomidinewith remifentanil, Richaet al.[18] highlighted the significance of having comparable baseline parameters to assure the reproducibility of the observed effects. The heart rate in Group D (dexmedetomidine group) was consistently lower than in Group M (magnesium sulphate group) at all assessed time periods after treatment. Bajwaet al.[19] reported comparable findings, demonstrating that dexmedetomidine effectively reduced heart rate (HR) in comparison to esmolol during FESS. The sustained drop in heart rate seen with dexmedetomidine is consistent with its pharmacological characteristics as an alpha-2 agonist, which reduces sympathetic nervous system activity. Kaygusuzet al.[20] also found that dexmedetomidine efficiently reduced HR in comparison to remifentanil, indicating its suitability for inducing controlled hypotension during surgical procedures. The MAP was consistently lower in the dexmedetomidine group compared to the magnesium sulphate group at most time points. While the initial mean arterial pressure (MAP) did not indicate a significant difference, the MAP after administering dexmedetomidine showed notable decreases in Group D. This suggests that dexmedetomidine is more successful in maintaining a stable and controlled MAP. The research conducted by Gopalakrishnaet al.[21] showed that dexmedetomidine was more effective in controlling MAP than propofol in middle ear procedures, which aligns with the results of the

present investigation. Turan et al.[22] found that dexmedetomidine was as effective as nitroglycerin in controlling MAP during surgery, providing more evidence for the effectiveness of dexmedetomidine in maintaining a stable MAP.

The SBP and DBP were consistently lower in the dexmedetomidine group compared to the magnesium sulphate group, especially at later time intervals. Dexmedetomidine has superior efficacy in regulating both systolic and diastolic blood pressures during surgical procedures. Richaet al.[18] found that dexmedetomidine effectively reduced SBP and DBP in comparison to remifentanil. This demonstrates the effectiveness of dexmedetomidine in controlling blood pressure during FESS. The present study's results align with Schmidet al.[23] observation that dexmedetomidine successfully decreased both SBP and DBP. Surgeon satisfaction was much greater in the dexmedetomidine group, as a larger number of surgeons rated their experience as "excellent" or "good.". This may be attributed to improved management of intraoperative circumstances and decreased haemorrhage, resulting in a more advantageous surgical environment. In their study, Bajwaet al.[19] found that surgeons were more satisfied with the use of dexmedetomidine compared to esmolol. This was attributed to the enhanced surgical conditions and decreased intraoperative bleeding associated with dexmedetomidine. Turanet al.[22] also discovered that dexmedetomidine yielded more satisfaction among surgeons when compared to nitroglycerin. This highlights the advantages of dexmedetomidine in improving surgical results. The study of the bleeding score showed notable disparities between the two groups, with the dexmedetomidine group exhibiting superior bleeding management. Group D exhibited a greater proportion of patients with lower bleeding ratings and a smaller number of patients with higher bleeding scores in comparison to Group M, suggesting that dexmedetomidineis more effective in reducing intraoperative bleeding. The research conducted by Schmidet al.[23] discovered that dexmedetomidine was very successful in reducing intraoperative haemorrhage when compared to other hypotensive medications. These findings align with the results of the present investigation. Gopalakrishnaet al.[21] found that dexmedetomidine was more effective than propofol in managing intraoperative haemorrhage.

LIMITATION OF THE STUDY

The shortcoming of the study is the small sample size and the short duration of the study.

CONCLUSION

The authors concluded that dexmedetomidine is superior to magnesium sulphate in managing intraoperative hemodynamic parameters, minimising intraoperative bleeding, and improving surgeon satisfaction during functional endoscopic sinus surgery (FESS).

ACKNOWLEDGEMENT

The authors would like to acknowledge the entire faculty members senior residents and specially our dedicated post graduate students of the Department of Anaesthesia, Nalanda Medical College and Hospital, Patna, Bihar, India, for their valuable support and time-to-time suggestions in undertaking the present study. Special thanks to Dr. (Prof.) Bijoy Kumar, Professor and Head of Department, Department of Anaesthesia, Nalanda Medical College and Hospital, Patna, Bihar, India, for their valuable suggestions during the study.

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