Section: Anaesthesiology

Original Research Article

EFFECTS OF HYPOTENSIVE ANAESTHESIA ON REDUCING INTRA OPERATIVE BLOOD LOSS IN ENT SURGERY

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ABSTRACT

Background: Hypotensive Anaesthesia is a method of reducing the blood pressure of a patient at some point of surgical treatment to reduce the quantity of blood loss. The most commonly used approach for micro vascular surgeries however it can be used in a wide range of surgeries.

Materials and Methods: The observation study was conducted at the Main operation theatre of Dhanalakshmi Srinivasan University 6 months after the approval from hospitals ethical committee and after obtaining written informed consent study was conducted among 60 patients and they were divided among two groups i) Normtensive and ii) Hypotensive.

Results: The Mean Blood Loss for carried out under Hypotensive Anaesthesia 92.96+ or – 6.53ML and Normotensive Anaesthesia 169.66+ or – 14.49ML respectively.

Conclusion: Hypotensive Anaesthesia is a really good method for reducing the blood loss during intra op than comparing with the Normotensive patients.

Keywords: Hypotensive Anaesthesia, Blood loss, Normotensive, Blood pressure, ENT surgery.

INTRODUCTION

Blood pressure is one of the most essential vital sign that are monitored anesthetists. In general, a normal blood pressure is an indicator of preserved cardiac output and good organ function, management of the patient often focuses on maintaining a normal blood pressure. Therefore, maintaining a patients stable blood pressure within normal limits during surgery) is one of the indices skillful Anaesthesia, and (Normotensive) anaesthesia is usually considered to be gold standard for Anaesthesia.[1,2]

For the past few years, the Hypotensive technique which lowers blood pressure under anesthesia has been used. A natural survival mechanism is the physiological concept behind Hypotensive anesthesia. Blood pressure drops as bleeding happens. Reduced bleeding, stabilized Blood pressure & recovery.[3]

Consequently, lowering the patient's blood pressure during surgery may lessen overall hemorrhage. The surgical field's operating conditions are enhanced there bleeding as well. Patients having spine surgery, hip or knee replacements, Crainosynostosis, hepatic resections, robotic surgery, and maxillofacial procedures are thought to benefit from Hypotensive anesthesia as an anesthetic approach.[4]

Hypotensive Anaesthesia is most widely accepted in ENT surgery controlled Hypotensive Anaesthesia is a widely used technique for decreasing intra operative bleeding and improving the visibility of the operating field. Hypotension is described as controlled reduction and maintenance of BP in range of MAP between 50 and 65 mmhg or intra operative reduction of baseline MAP from 20% to 30%.[5]

The Auto regulation of CBF force remains operational during what can be categorized as the safe minimal blood pressure limit. The patient's blood pressure has to be kept within the range of the preoperative blood pressure readings for Normotensive anesthesia. The baseline MAP of the patient is lowered by 30% during Hypotensive

anesthesia. The MAP is lowered to 50–65 mmHg, while the systolic blood pressure readings are roughly 80–90 mmhg.

According to numerous reports, intra operative blood loss was significantly lower in surgeries performed under Hypotensive anesthesia than in those performed under Normotensive anesthesia. In order to induce Hypotensive anesthesia, the ideal Hypotensive medication should be simple to administer, have a short half-life, have a carefully regulated dosage, have a rapid clearance rate, and not produce any undesirable side effects.[6,7]

Many Hypotensive drugs with different mechanism and duration of action have been investigated for Hypotensive Anaesthesia. The drugs may be alone or may be used in combination in order to limit the dose of each drug and occurrence of adverse effects of the other agents. Hypotensive Anaesthesia is not suitable for all patients because of reducing the blood pressure is potentially unsafe in some patients. Hypotensive Anaesthesia is widely accepted in ENT surgery. In previous medical history, patient's age, previous medical records and preoperative BP need to be taken into consideration'.[8,9]

Quick onset the safe minimal blood pressure limit that maintains the Autoregulation of CBF force is what it can be categorized as. Acute kidney damage, cardiac infarction, and brain Hypo perfusion are examples of end organ ischemia that can be caused by Hypotensive anesthetics. Therefore, it is crucial to ascertain whether the dangers of Hypotensive anesthesia are justified and the necessary level. As part of the consent process, the patient must be fully informed about the technique's intended use during a comprehensive preoperative evaluation. It is essential that the drug employed for Hypotensive anesthesia be readily titratable in order to guarantee a brief and quickly reversible phase of hypotension. Propofol is used as a drug of choice for induction and in maintain the Hypotensive Anaeshesia.

MATERIALS AND METHODS

Inclusion Criteria

- Age 25- 40 years
- Asa I & II
- men and women
- An Elective planned surgery under general Anaesthesia

Exclusion Criteria

- Less than 25 years
- More than 41 years
- On site infection
- The Patient 's refusal

Following a brief discussion, the institutional ethical committee accepted the project. The ethical committee provided guidance in the preparation of the informed consent forms used in this investigation. Each participant was counted in accordance with the institutional ethical committee's requirements. Following permission, the study was conducted for six months, during which time data was collected in-person using pre-structured proforma that were distributed.

Materials

- The inclusion criteria were applied to the sample population.
- Patients gave their written and informed consent before the study began;
- Prior to the study, the patients gave their written and informed consent;
- Subject demographics:
- Name, age, sex, diagnosis, surgery types, height, weight, and vital signs (blood pressure, pulse rate, and respiratory rate);
- Assessment (Hypotensive or Normotensive blood pressure, blood loss, and MAP);
- Blood loss and blood pressure interpretation scales for ENT surgery
- Normotensive
- Hypotensive

6o patients who had ENT surgery performed under general anesthesia at Srinivasan medical college and hospital in Samyapuram, Trichy were included in the observational study. The following inclusion criteria and exclusion criteria were used.

Methodology: 60 patients who were scheduled for ENT surgery were included in this study using the predetermined selection criteria after providing their informed consent.

The study's methodology is provided in the given points

- Randomly divided 30 pts in Normotensive and another 30 patients in Hypotensive group
- Pre anaesthtic check up of PT age, sex & vital signs
- Evaluate BP in both groups
- Evaluate BP, blood loss, MAP In group A
- Evaluate BP, blood loss, MAP IN Group B
- Goal of the study is maintain Hypotensive in ENT surgery.

Data Analysis: Data an Analyasis is collected by SPSS software.

RESULTS

Table 1: Assessment of age of the samples

Age	Hypotension	Normotensive
Mean	29.90	33.63
S.D	4.04	3.58
Median	29.0	33.0

[Table 1] describes the patient age in Group A (HYPOTENSIVE) and Group B (NORMOTENSIVE). Mean for hypotension is 29.90, S.D is 4.04, MEDIAN 29.0 Mean for

Normotensive 33.63,S.D is 3.58, MEDIAN 33.0. Table 2 describes the pt sex in Group A & Group B. the Hypotensive group female ratio is 46.7% and male ratio is 53.3%.and Normotensive group female ratio is 40.0% and male ratio is 40.0%.

Table 2: Comparison of Blood Pressure among the samples in Group A (Hypotension) and Group B (Normotensive)

Blood Pressure	Group A (Hypotension) (Mean ± S.D)	Group B (Normotensive) (Mean ± S.D)	p-value
Systolic	106.50±6.31	138.66±8.19	0.0001* (S)
Diastolic	52.33±7.73	85.0±5.08	0.0001* (S)

*p<0.05, S – Significant

[Table 3] describes comparison of BP in Hypotensive & Normotensive group.
In Hypotensive group in SBP is 106.50+ or – 6.31DBP is 52.33+ or- 7.73 and p –value is significant In Normotensive group in SBP is 138.66+ or- 8.19, DBP is 85.0+ or – 5.08 and p- value is significant.

Table 3: Comparison of MAP, Heart Rate and SPO2 between Group A and Group B

Parameters	Group A (Hypotension) (Mean ± S.D)	Group B (Normotensive) (Mean ± S.D)	p-value
MAP	53.66±4.53	54.0±4.98	0.787 (N.S)
Heart Rate	79.66±7.18	80.33±7.18	0.721 (N.S)
SPO2	98.86±-0.77	98.53±0.57	0.064 (N.S)

N.S – Not Significant

Table 4: Comparison of Blood loss between Group A (Hypotension) and Group B (Normotensive)

Parameter	Group A (Hypotension) (Mean ± S.D)	Group B (Normotensive) (Mean ± S.D)	p-value
Blood Loss	92.96±6.53	169.66±14.49	0.0001* (S)

***p<0.001, S – Significant

Table 5: comparison of gender wise blood loss in Group A & Group B

Group A (Hypotension)	96.25±5.0	89.21±6.15	0.002** (S)
Group B (Normotensive)	171.33±15.97	168.0±13.20	0.539 (N.S)

**p<0.01, S – Significant N.S – Not Significant, p>0.05

[Table 5] describes gender wise blood loss in Group A & Group B Group A is 96.25 + or -5.0, or 89.21+or – 6.15 P value 0.002 **(s) and Group B Normotensive 171.33+ or -15.97or 168.0+ or – 13.20 p value 0.539(N.S).

DISCUSSION

This present analysis is intended to summarize the results of available effects of Hypotensive anesthesia on reducing intra-operative blood loss in ENT surgery. It was predicted that using Hypotensive anesthesia would reduce the requirement for blood transfusion during ENT surgery. The mean arterial pressure in Hypotensive is 53.66 & mean arterial pressure in Normotensive is 54.0. Hypotensive anesthesia is used to reduce blood loss in ENT surgery. While some authors believe Hypotensive anesthesia can reduce bleeding, and blood transfusion.
Normotensive patients are more likely to experience blood loss while undergoing ENT surgery. To assess the decrease in intra operative blood loss during ENT procedures. Hypotensive anesthesia effectively reduces blood loss during ENT procedures. According to this analysis study, Hypotensive anesthesia considerably lowers intra operative blood loss during ENT procedures.
According to earlier research, it is safe for young, healthy patients to have managed hypotension with MAP between 50 and 65 mmHg. In this study, the MAP of the hypotensive group was 55 mmHg.[10-12] Hypotensive anesthesia reduces intraoperative blood loss, according to the study's findings, however there was no statistically significant decrease in operating time. Hypotensive anesthesia did not shorten the surgical procedure's duration, according to another study. Every surgeon uses a different surgical technique.[13,14]
The mean for the Normotensive group is 33.63, the standard deviation is 3.58, and the median is 33.0. In this section, I address how the measures of age and sex differ for the two groups. Women make up 46.7% of the Hypotensive group, while men make up 53.3%. 40.0% of the group with norm tension is female, and 40.0% is male. A and B are not the same as each other. DBP 52.33+ OR - 7.73 and SBP 106.50+ OR - 6.31 in the Hypotensive group. Both the DBP 85.0+ OR – 5.08 and the SBP 138.66+ OR 8.19 p values are significant in the Normotensive group. The heart rate is 79.66+ or - 7.18, the spo2 is 98.86+ or - 0.77, and the Hypotensive group map is 53.66+ or - 4.53 ML. The p-value is not significant in the Normotensive group because of the following: MAP 54.0 + OR- 4.98.

CONCLUSION

In ENT surgery, Hypotensive anesthesia greatly reduce blood loss. During a protracted surgery, Hypotensive anesthesia is most helpful if a significant volume of blood loss and subsequent

blood transfusion are anticipated. It is required through appropriate, ongoing patient monitoring and preoperative evaluation. Thus, in order to reduce blood loss, Hypotensive anesthesia can be strongly advised for healthy ENT patients. Because Hypotension lowers the risk of blood loss as compare to Norm tension.

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