

Functional Endoscopic Sinus Surgery: A Comparative Study of Monitored Anaesthesia Care and General Anaesthesia.

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ABSTRACT

Background: Functional endoscopic sinus surgery is associated with a high rate of success for symptomatic improvement in patients. This operation can be done under general or local anesthesia. In this study we have tried to compare the efficacy of monitored anesthetic care with general anesthesia for Functional endoscopic sinus surgery. **Methods:** 20 patients each above the age of 18 years, were selected for Monitored anesthesia care (MAC) and for general anesthesia (GA). For MAC, 150mg Tab Ranitidine at BT/6AM, Tab Perinorm 10mg at BT /6AM, Tab Diazepam 5mg at BT /6AM was given as pre medication schedule. Inj Pentacozine 30mg + Inj Promethazine 25mg I/M was given 30–45 mins before the patient was shifted to OT. On the table Inj. Midazolam 1-3 mg was given which has 3–4 Ramsey sedation score .Inj Fantanyl 1mcg/kg weight was given for break-through pain. The GA technique used was Inj. Fantanyl 1 mcg/ kg weight + Inj Midazolam 1-2 mg; Inj Propofol 2mg/kg, Sch 2mg/kg was given, intubated by intermittent positive pressure ventilation (IPPV). Vecuronium 0.1mg/kg + Isoflurane 0.6–1% + N2O 2l/mt +o2 1l/mt was given followed by neostigmine 2.5mg+Glycopyrrolate 0.4mg. **Results:** There was a 15% increase in heart rate within 12 minutes of sedation in MAC and 20% in GA. The percentage of variation after 15 minutes remained at 15% in case of GA but it reduced to 5% in MAC and remained steady at this rate. 10% of the patients started to respond almost immediately after surgery in the MAC category and 100% of them were conscious within 90mins of surgery, while under general anesthesia, only 80% of them attained consciousness after 120 minutes. It took about 120 minutes for all patients under MAC for ambulation while it took more than 150 minutes for the patients under GA for ambulation. No patient under MAC had any side effects while 60% of the patient under GA ha nausea, vomiting or both. **Conclusion:** With no complications of extubation and mechanical ventilation, having faster recovery time, with hardly any post operative nausea and vomiting, Monitored anesthetic care is a better choice of anesthesia compared to general anesthesia for elective surgeries like Functional Endoscopic Sinus surgery.

Keywords: Functional endoscopic sinus surgery, General anesthesia, Monitored anesthetic care.

INTRODUCTION

Functional endoscopic sinus surgery (FESS) is a surgical treatment of sinusitis and nasal polyps, including bacterial, fungal, recurrent acute, and chronic sinus problems. FESS uses nasal endoscopes to restore drainage of the paranasal sinuses and ventilation of the nasal cavity. It is mainly done to unblock the sinuses into the nose. This allows the linings of the sinuses to heal and decreases the discharge, pain and pressure that occurs with blocked sinuses. As most of the breathing is through the mouth, there could be a lot of difficulty in maintaining and managing the airway passages during surgery.^[1-4]

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FESS in one of the common surgical procedures which is associated with a high rate of success for symptomatic improvement in patients. Complications

are very rare, and occur mainly due to the close proximity of the nasal and paranasal sinuses to the orbits and brain.^[5] Major complications include dural puncture, cerebrospinal fluid leak, meningitis, orbital and optic nerve trauma and extensive hemorrhage.^[6,7] This operation can be done under general or local anesthesia.

General anesthesia does not need the patients' cooperation as the sedation and analgesic effect would allow the intubation and ventilation to be maintained. In case of local anesthesia, anxiety and pain may be felt by the patient. But the advantage is that there is no intubation and ventilation, less occurrence of sore throat and dry mouth, usually seen after GA and the changes in blood pressure is minimized. In case of complications in local anesthesia, intubation or general anesthesia may be given.^[4]

According to the American Society of Anesthesiologists (ASA), a monitored anesthesia care (MAC) is a planned procedure during which the patient undergoes local anesthesia together with sedation and analgesia². MAC involves administration of s combination of drugs for anxiolytic, hypnotic, amnesic and analgesic effect. It should cause minimal psychological disturbance and rapid recovery than General anesthesia.^[3]

The purpose of this study was to compare the efficacy of monitored anesthetic care with general anesthesia for Functional endoscopic sinus surgery.

MATERIALS AND METHODS

This study was conducted in the Department of Anesthesia at Malla Reddy Hospital during last two years. 20 patients each were selected for Monitored anesthesia care (MAC) and 20 for general anesthesia (GA). Patients below 18 years of age, those who were anxious and apprehensive or with acute infections were excluded from the study. All the patients to whom nerve block could not be given due to

pathological or anatomical reasons were also excluded from the study.

For MAC, 150mg Tab Ranitidine at BT/6AM, Tab Perinorm 10mg at BT /6AM, Tab Diazepam 5mg at BT /6AM was given as pre medication schedule. Inj Pentacozine 30mg + Inj Promethazine 25mg I/M was given 30–45 mins before the patient was shifted to OT. On the table Inj. Midazolam 1-3 mg was given which has 3–4 Ramsey sedation score .Inj Fantanyl 1mcg/kg weight was given for break though pain. The field block given by the surgeon was the block of spheno-palatine nerve along it’s major branches and anterior ethmoidal nerve on either side. The Ramsey Sedation score which was considered is given in [Table 1].

Table 1: Ramsey Sedation Score

| Score | Response |
|-------|--|
| 1 | Anxious, Agitated, restless |
| 2 | Co-operative, Oriented, Tranquil |
| 3 | Responds to commands only |
| 4 | Asleep with brisk response to stimuli |
| 5 | Asleep with sluggish response to stimuli |
| 6 | Asleep with no response to stimuli |

The GA technique used was Inj. Fantanyl 1 mcg/ kg weight + Inj Midazolam 1-2 mg; Inj Propofol 2mg/kg, Sch 2mg/kg was given, intubated by intermittent positive pressure ventilation (IPPV). Vecuronium 0.1mg/kg + Isoflurane 0.6 – 1% + N2O 2l/mt +o2 1l/mt was given followed by neostigmine 2.5mg+Glycopyrrolate 0.4mg. Local infiltration was done by the surgeon. Pulse oximetry, NIBP, ECG and ET CO2 in General Anesthesia was continuously monitored.

RESULTS

There was a 15% increase in heart rate within 12 minutes of sedation in MAC and 20% in GA. The percentage of variation after 15 minutes remained at 15% in case of GA but it reduced to 5% in MAC and remained steady at this rate [Figure 1].

Very similar results were observed in the blood pressure of the patients also [Figure 2].

The SpO2 levels were maintained between 96 – 100% in both the cases [Figure 3].

Majority of the cases (90%), under MAC were done in optimal operating conditions and no case was done in non operative condition, while under GA, only 60% of the cases were performed under optimal conditions while 10% of them were done under non optimal conditions [Figure 4].

The post anesthetic recovery assessment was done based on modified Aldrete Score and modified Steward Score. The common parameters which were

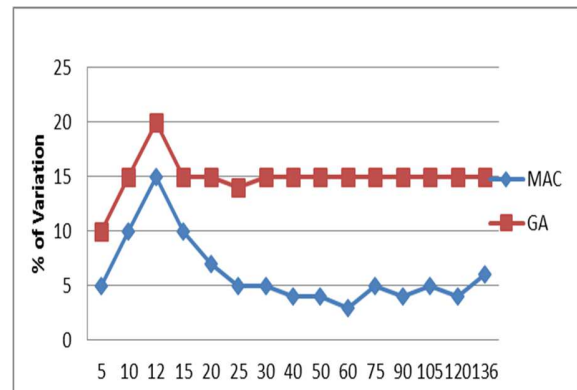


Figure 1: Percent of variation in perioperative heart rate.

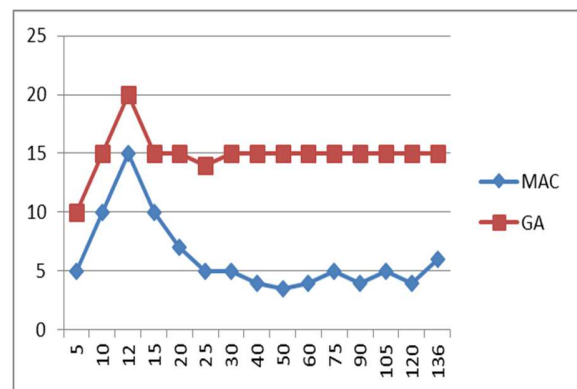


Figure 2: Variations in perioperative BP

Included: Level of consciousness, Ambulation, PONV, Pain, Surgical bleeding. 10% of the patients

started to respond almost immediately after surgery in the MAC category and 100% of them were conscious within 90mins of surgery, while under general anesthesia, only 80% of them attained the score of 2 after 120 minutes [Figure 5].

Note: Score: 0-Responding, 1-Arousable on stimulation, 2-Fully awake.

It took about 120 minutes for all patients under MAC for ambulation while it took more than 150 minutes for the patients under GA for ambulation [Figure 6].

Note: Score: 0-None/ Dizzy, 1-With assistance, 2-steady gait/ no dizziness.

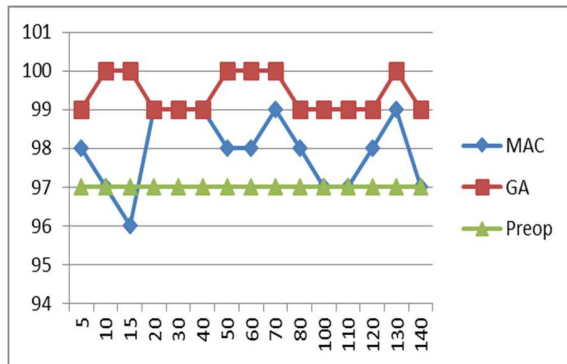


Figure 3: Percent of SpO2 levels

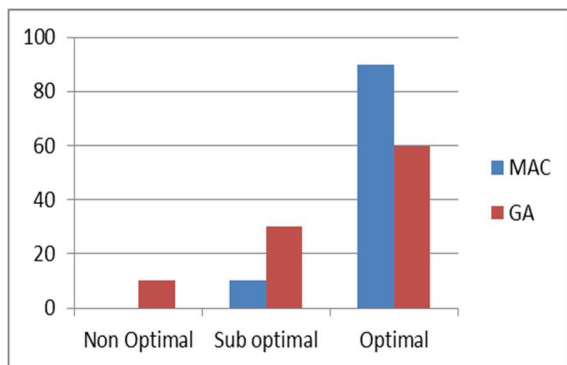


Figure 4: Operative field conditions

Minimal or no post-operative nausea or vomiting was seen in 100% of patients under MAC regime while in Patients under GA only 40% of patients showed no PONV [Figure 7].

30% of GA patients complained of pain while 100% of patients under MAC showed no pain.

DISCUSSION

Functional endoscopic sinus surgery can be performed under both general anesthesia as well as monitored anesthesia care (MAC). MAC is done by administration of local anesthesia with IV sedation, anxiolytics and analgesics. There is no need for

intubation or mechanical ventilation which is essential in general anesthesia as it gives a safe airway during surgery. But, the advantage of the lack of ventilation is shorter operation time, no need for extubation, awakening and shorter recovery time.

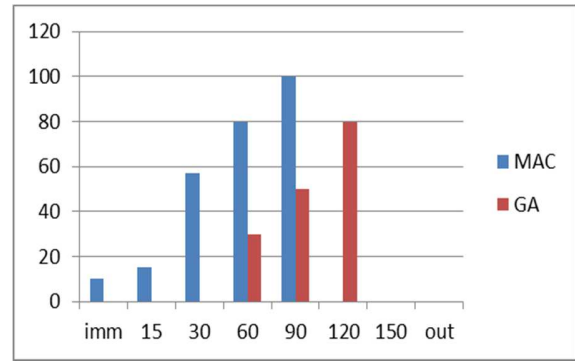


Figure 5: Level of consciousness-Time to attain score of 2.

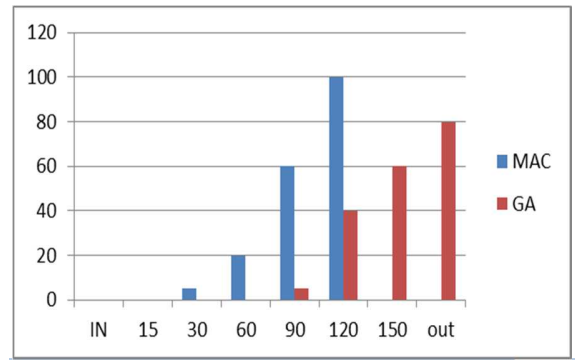


Figure 6: Ambulation-Time taken in % to attain score 2

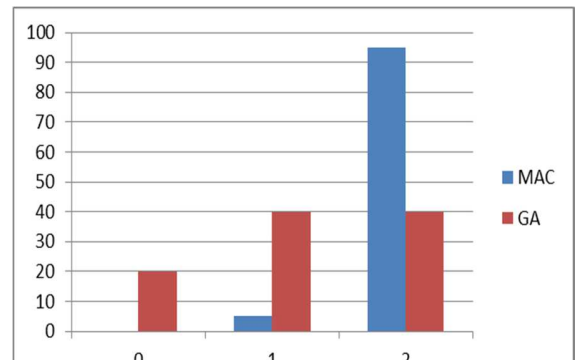


Figure 7: Incidence of PONV percent.

General anesthesia leads to increase in blood pressure and heart rate during operation compared to local anesthesia.^[8] Our study has shown a 20% increase in heart rate within 12 minutes of sedation in GA while in MAC only 15% of increase was observed. After 15 minutes, variation in nheart rate reduced to 5% above normal while it was still 15% under general

anesthesia. Similar results were observed in a study by Manpreet Kaur et al where dexmedetomidine was used as a local anesthetic during septoplasty.^[8]

The saturated O₂ levels were always maintained above 85% in both cases with decrease to lower than 100% in GA only in a few occasions. There was no occurrence of lowered saturation in the oxygen levels either during or after surgery. This was observed and equally maintained in a study by Lee et al.^[4]

100% of the patients had no pain post surgery under MAC while 30% of the patients had pain under GA. Lee et al in another study reported that the local anesthetic agent had a considerable analgesic effect that the patients experienced minimal pain. Though the pain score under general Anaesthesia was also within the limits. Apan et al also reported that local anesthesia allows a more stable intraoperative HR and less postoperative pain^[10] for the use in cataract surgery.

Local anesthesia was effective even in patients with a complicated medical history and difficult-to-manage airway who underwent axillo-femoral bypass graft was reported by Rich et al.^[11] Huncke et al in another study observed local anesthetic agent dexmedetomidine to be useful for patients undergoing vascular procedures.^[12]

More than 90% of the patients in our study showed no post operative vomiting and nausea, while 60% of the patients under General anesthesia had vomiting and nausea. This was corroborated by Lee et al and Moon et al.^[4,13]

CONCLUSION

Though general anesthesia is advantageous during the operation for FESS as the anesthetic effect helps in easy intubation and mechanical ventilation, local anesthesia with a little cooperation from the patients removes the need for the same. Recovery time and the side effects like post operative vomiting and nausea are significantly reduced. Therefore, we conclude that for surgeries like, FESS, it is better to use local monitored anesthetic care rather than general anesthesia.

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