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Original Research Article

# A Descriptive Cross-Sectional Study to Assess the Intraoperative Awareness during General Anesthesia Leads to Anxiety, Depression and Post-Traumatic Stress Disorder

**Vinay Kumar[1], Archana Shashi[2], Ajay Chaudhri[3], Vijayendra Prasad[4]**

[1]Senior Resident, Department of Anesthesia, Vardhman Institute of Medical Science, Pawapuri, Nalanda, Bihar, India

[2]PG, Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

[3]Junior Resident, Department of Anesthesiology and Critical care, Patna Medical College and Hospital, Patna, Bihar, India.

[4]Assistant Professor and HOD, Department of Anesthesia, Vardhman Institute of Medical Science, Pawapuri, Nalanda, Bihar, India

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**Corresponding Author: Dr. Archana Shashi**
**Conflict of interest: Nil**

**Abstract**

**Aim:** The aim of the present study was to assess the intraoperative awareness during general anesthesia leads to anxiety, depression and post-traumatic stress disorder.

**Methods:** It was a retrospective, observational and questionnaire-based type of study, patients involving in study were undergoing general Anesthesia and had blood loss of 20% or more at Department of Anesthesia, Vardhman Institute of Medical Science, Pawapuri, Nalanda, Bihar, India from December 2016 to November 2017. Written informed consent from the patients involved in study, total 50 patients were enrolled in study.

**Results:** The demographic data including age less than 20 years of 16%,21-40 years 40%, 41-60 years were 34% and>60 years 10%. Male patients around 74% and females were 26%. ASA 1 patients were 68% and ASA2 were 32%. Blood loss of 20-30% blood volume was 32 patients, 30-40 % was 15 patients and more than 40%were 3 patients.

**Conclusion:** The present study concluded that awareness should always be kept in mind whenever there is blood loss. The dreaming without pain is also considered sometimes as pleasant. But pain followed by auditory type of awareness is always unpleasant for patients.

**Keywords:** intraoperative awareness, blood loss, prospective.



## Introduction

Subarachnoid block (SAB) is a safe, time-tested technique in anesthesia due to its rapid onset and effective sensory, and motor blockade. SAB with bupivacaine is a popular method. In orthopedic surgeries, the severity of pain is more with the involvement of periosteum. In SAB, adding adjuvants to local anesthetic is synergistic for producing quality anesthesia and prolonging the duration of analgesia. [1-3] Nalbuphine is a highly lipid-soluble opioid analgesic. It acts at the kappa receptor as an agonist and as an antagonist at the mu receptor to provide potent analgesia of visceral nociception. [4]

Studies have shown that intrathecal nalbuphine with bupivacaine improved the quality of intraoperative and postoperative analgesia with minimal respiratory depression [5] Spinal anesthesia is a very commonly used anesthesia technique for various lower abdominal and lower limb surgeries. This approach has various advantages like cost effectiveness, better performance, enhanced margin of safety, and also helps in providing good post-operative analgesia. The stress response associated with general anesthesia and side effects of various drugs used for general anesthesia were also blunted. Various adjuvants including opioids, have been used with local anesthetics in spinal anesthesia to reduce complications as well as to increase peri and postoperative analgesia. Nalbuphine is a semi synthetic opioid with mixed antagonist and k agonist properties [6-7]

Spinal anesthesia is a well-established technique as it safe and simple. However, it has the limitation of providing analgesia for a brief duration. Therefore,

many adjuvants have been used along with local anesthetics to enhance the duration of analgesia. This also allows the dose of local anesthetic to be reduced thereby minimizing the incidence of side effects. Some of these drugs are clonidine, opioids, ketamine, alpha2 agonists, etc. The discovery of opioid receptors and endorphins in spinal and supra spinal regions popularized the use of spinal opioids [8] Nalbuphine, a synthetic opioid analgesic with agonist-antagonist activity, acts as antagonist to mu receptors and agonist at kappa receptors and has been used to provide effective analgesia with very few side effects [9-11] Dexmedetomidine is an alpha 2 agonist which acts by binding with presynaptic C-fibers and post-synaptic dorsal horn neurons. It depresses release of C fiber transmitters and causes hyperpolarization of postsynaptic dorsal horn neurons [12] Bupivacaine is a well-established, long-acting local anesthetic commonly used as a spinal anesthetic. However, it has a limited duration of analgesia when used alone [13]

The aim of the present study was to assess the intraoperative awareness during general anesthesia leads to anxiety, depression and post-traumatic stress disorder.

**Materials and Methods**

It was a retrospective, observational and questionnaire-based type of study, patients involving in study were undergoing general Anesthesia and had blood loss of 20% or more at Department of Anesthesia, Vardhman Institute of Medical Science, Pawapuri, Nalanda, Bihar, India from December 2016 to November 2017. written informed consent from the patients involved in study, total 50 patients were enrolled in study.

**Exclusion Criteria Were as Follows:**

- mentally retarded patients
- chronic drug abuse patients
- Chronic pain patients.
- Neurosurgery patients.
- Patients refusal
- ASA 3 and 4
- age <18 and >65

preanesthetic evaluation, baseline investigations, and written informed consent was obtained from patients who fulfilled the inclusion criteria. patients were shifted to operation theatre. After securing intravenous access, standard monitors were applied. All patients received injection Midazolam (0.03-0.05mg/kg) as premeditation. Induction of Anesthesia was done with Injection fentanyl(1-2micrograms/kg), Injection propofol (1- 2mg/kg) and Injection vecuronium (0.1mg/kg). Anesthesia was maintained with isoflurane in added with oxygen and nitrous (50-50%). Inhalation agents were titrated to maintain blood pressure, MAP above60% and dial settings were adjusted to maintain hemodynamic. Target MAC of 1% was kept with inhalation agents. The patients were ventilated with tidal volume of 6-8ml/kg, respiratory rate of 8-12breaths per minute to maintain end tidal CO2 between 30-35mmHg. Vital parameters such as HR, SBP, DBP, MAP, electrocardiogram (ECG), oxygen saturation (SpO2), MAC value, dial settings were maintained and recorded intraoperatively. If any episode of hypotension followed by blood loss was observed, then inhalation agents were titrated. Blood loss estimation was based on blood sucked in suction bottles and soaked gauze. total blood volume was calculated as 70ml/kg, thus percentage volume of blood lost was calculated. Injection Fentanyl 0.5micrograms/kg was repeated as per vitals and requirements for analgesia. Injection Paracetamol 10mg/kg was given for postoperative analgesia. Inhalational agents were stopped just before the last stitch of skin closure. Patients were reversed with Injection neostigmine 0.05mg/kg + Injection Glycopyrrolate 0.08mg/kg. patients fulfilling extubating criteria, endotracheal tube extubated. Patients were followed on next day of surgery to assess awareness, patients were asked Brice questionnaire as follow7,

1. what was last thing you remember before going to sleep(being in preoperative are, Mask on face, seeing operating room)
2. What was first thing you remember after waking up?(feeling breathing tube, mask on face, in recovery room)
3. Did you had any pain during surgery. ( Yes/ No)
4. Did you hear or see something during surgery. (Talking, noises, seeing light on head)
5. Did you had any dream during surgery; if yes then what was dream like.
6. During surgery weather you had feeling of anxiety or helplessness. ( Yes/No)

Based on answers patients gave, were classified into aware, not aware and had dream

1. Aware-able to recall event's during Anesthesia and surgery
2. Not aware- not able to recall anything
3. Dreaming- special entity, not considered as awareness.

Statistical analysis: All collected data entered in Microsoft excel sheet, it was then transferred to SPSS statistics for windows, version 17 for statistical analysis. Quantitative data was presented as mean and standard deviation. Qualitative data was presented as frequency and percentage. Graphical presentation was done where deemed necessary. Data were described in terms of mean(+/- standard deviation), frequencies and percentage where appropriate.

## Results

**Table 1: Baseline characteristics**

| Age groups in years | N | % |
|---|---|---|
| Less than 20 | 8 | 16 |
| 21-40 | 20 | 40 |
| 41-60 | 17 | 34 |
| >60 | 5 | 10 |
| **Gender** | | |
| Male | 37 | 74 |
| Female | 13 | 26 |
| **ASA** | | |
| ASA I | 34 | 68 |
| ASA II | 16 | 32 |
| **Blood loss** | | |
| 20-30% | 32 | 64 |
| 30-40% | 15 | 30 |
| >40% | 3 | 6 |

The demographic data including age less than 20 years of 16%,21-40 years 40%, 41-60 years were 34% and>60 years 10%. Male patients around 74% and females were 26%. ASA 1 patients were 68% and ASA2 were 32%. Blood loss of 20-30% blood volume was 32 patients, 30-40 % was 15 patients and more than 40%were 3 patients.

## Discussion

Awareness under general Anesthesia is unexpected and explicit recall by patients of events that occurred during general Anesthesia. As many as 1 to 2 per 1000 patients who receive general Anesthesia experience awareness, and the incidence may be even higher among children. [14,15] Though awareness is rare, it leads to unfavorable postoperative consequences such as anxiety, post-traumatic stress disorder, depression and sleep disturbances. Patients who suffer awareness fear's future surgery and Anaesthesia. [16]

The demographic data including age less than 20 years of 16%,21-40 years 40%, 41-60 years were 34% and>60 years 10%. Male patients around 74% and females were 26%. ASA 1 patients were 68% and ASA2 were 32%. Blood loss of 20-30% blood volume was 32 patients, 30-40 % was 15 patients and more than 40%were 3 patients. Awareness was in the form of stretching type of pain and was remembered by patients on second post operative day. It was seen in patients who bled intraoperatively more than 20% of blood volume and had hemodynamic instability, in this patient depth of Anesthesia was decreased to maintain hemodynamic. Lopez and colleagues administered two interviews adapted to children's cognitive abilities in 410 patients aged6-16 years, respectively, within 24h and 1 month of surgery. Awareness was defined as the coding of' awareness and third adjunct or as possible awareness. This resulted in an incidence of awareness 1.2%. [17] Davidson and colleagues administered a structured postoperative interview to 864 children aged 5-12 yr within 24h, and at 3 and 30 days after surgery. Cases were classified as awareness when all 4-adjudicator agreed on this. Thus, seven cases classified as awareness, giving incidence of 0.8%. [18] As previous research in adults has demonstrated an increased risk of awareness in severely ill patients ASA physical status 3 and 4 undergoing major surgery. Older studies reports incidence of awareness between 0% and 5%. [19,20] Auditory perception without pain being most common occurrence during emergence from Anesthesia. female gender being more prone for awareness. Anesthetic techniques using muscle relaxant without inhalation agents and light plan of Anesthesia increase awareness 2-3 times. [21]

## Conclusion

The present study concluded that awareness should always be kept in mind whenever there is blood loss. The dreaming without pain is also considered sometimes as pleasant. But pain followed by auditory type of awareness is always unpleasant for patients.

## References

1. Michael RM, Mehta M. Comparison between dexmedetomidine and nalbuphine as an adjuvant to bupivacaine in spinal anesthesia. Int J Adv Res. 2016;3:1024-45.
2. Shukla D, Verma A, Agarwal A, Pandey HD, Tyagi C. Comparative study of intrathecal dexmedetomidine with intrathecal magnesium sulfate used as adjuvants to bupivacaine. Journal of anaesthesiology clinical pharma cology. 2011 Oct 1;27(4):495-9.

3. Kathuria S, Gupta S, Dhawan I. Dexmedetomidine as an adjuvant to ropivacaine in supraclavicular brachial plexus block. Saudi journal of anaesthesia. 2015 Apr 1;9(2):148-54.
4. Fukuda K. Opioid Analgesics. In: Miller RD, Eriksson LI, Cohen NH, Fleisher LA, Wiener-Kronish JP, Young WL, editors. Miller's Anesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015. pp. 904–5
5. Mukherjee A, Pal A, Agrawal J, Mehrotra A, Dawar N. Intrathecal nalbuphine as an adjuvant to subarachnoid block: What is the most effective dose?. Anesthesia Essays and Researches. 2011 Jul 1;5(2):171-5.
6. Mohan SE, Babu R. A Study Of Comparison Of 0.8 mg Vs 1.4 mg Of Intrathecal Nalbuphine In 3.5 ml Of Inj. Bupivacaine Heavy 0.5% In Lower Ab-dominal And Lower Limb Surgeries. Int J Anesth Res. 2018 Apr 30;6(3):515-9.
7. Millers anesthesia. 7th edition
8. Hindle A. Intrathecal opioids in the management of acute postoperative pain. Continuing Education in Anaesthesia, Critical Care & Pain. 2008 Jun 1;8(3):81-5.
9. Gunion MW, Marchionne AM, Anderson CT. Use of the mixed agonist–antagonist nalbuphine in opioid based analgesia. Acute pain. 2004 Jun 1;6(1):29-39.
10. Culebras X, Gaggero G, Zatloukal J, Kern C, Marti RA. Advantages of intrathecal nalbuphine, compared with intrathecal morphine, after cesarean delivery: an evaluation of postoperative analgesia and adverse effects. Anesthesia & Analgesia. 2000 Sep 1;91(3):601-5.
11. Mukherjee A, Pal A, Agrawal J, Mehrotra A, Dawar N. Intrathecal nalbuphine as an adjuvant to subarachnoid block: What is the most effective dose?. Anesthesia Essays and Researches. 2011 Jul 1;5(2):171-5.
12. Maze M, Tranquilli W. Alpha-2 adrenoceptor agonists: defining the role in clinical anesthesia. The Journal of the American Society of Anesthesiologists. 1991 Mar 1;74 (3):581-605.
13. MJ C. Spinal neural blockade. Neural Blockade in Clinical Anesthesia and Management of Pain. 1988:213-51.
14. Sabel PS, Bowdle TA, Ghoneim MM, Rampil IJ, Padilla RE, Gan IJ. The incidence of awareness during general Anaesthesia a multicente united states study, Anaesthesia analgesia 2004;99:833-9
15. Sadin RH, Enlund G, Samuelsson P. Awareness during Anaesthesia: a prospective case study. Lancet.2000;355:707-11
16. Samuelsson P, Brudin L, Sadin RH. Late psychological symptoms after awareness among consecutively included surgical patients. Anaesthesiology 2007;106-26-32
17. Lopez U, Habre W, Laurençon M, Haller G, Van der Linden M, Iselin-Chaves IA. Intra-operative awareness in children: the value of an interview adapted to their cognitive abilities. Anaesthesia. 2007 Aug;62(8):778-89.
18. Davidson AJ, Huang GH, Czarneck C. et al. Awareness during Anaesthesia in children:A prospective cohort study, Anaesthesia analgesia,2005,vol 10 (pg653-61)
19. Mckie BD, Thorp CA awareness during Anaesthesia in paediatric hospital, Anaesthesia intensive care,1973, volume 1(pg407-14).
20. Hobbs AJ, Bush GH,Downham DY, periopeative dreaming and awareness in children, Anaesthesia,1988, volume 43(560-61).
21. O'Sullivan B. Dreaming and Anaesthesia, Anaesthesia, 1988 vol43 12. Domino KB, Posner KL,Caplan RA. Awareness during Anaesthesia a closed claims analysis. J Am Soc Anaesthesiology. The American society of anaesthesiologist: 1999:90(4):111053-61.