

Patients' Expectations and Experiences of Levels of Consciousness during Regional Anesthesia and Monitored Anesthesia Care: A Prospective Study in Indian Population

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Background and Aims: Awareness during regional anesthesia (RA) and monitored anesthesia care (MAC) is a cause of concern and may occur due to unknown or unmet expectations. We aimed to study the preoperative expected level of consciousness and anxiety and their actual experiences intraoperatively in patients undergoing surgery under RA or MAC in a subset of female patients in Indian population.

Material and Methods: It was a prospective observational study, done in a tertiary care teaching public hospital over a period of 6 months and included 80 patients undergoing gynecological and ear, nose, throat surgeries under RA or MAC. A structured valid interview was administered to them. Data was analyzed using SPSS v.15.

Results: The anesthesia provider was the source of expectations regarding level of consciousness for all 80 patients. Seventy three patients (91.25%) reported that their overall anaesthetic experience was "as good as" or "better than" expected. Fifty nine (73.75%) patients were less awake than expected by at least 3 points, 6 (7.5%) patients were more awake than expected by at least 3 points and 15 (18.75%) patients were always within 3 points of expected level of consciousness. Significant correlation was found between preoperative anxiety and pain during procedure.

Conclusion: If the source of expectation is anesthesiologist the expectation and actual experience of the patient did not differ. The patient's perception of general and nongeneral anesthesia is not obvious. Anesthesia providers should allay preoperative anxiety by setting correct expectations and educating patients regarding intraoperative levels of consciousness and postoperative recall thus highlighting the importance of proper communication.

Key Words: Intraoperative awareness, Regional anesthesia, MAC

I. Introduction

Awareness during anesthesia is a cause of major concern during general anesthesia (GA) as well as regional anesthesia and monitored anesthesia care (MAC).¹ Awareness during GA has been given much attention. However there are also reports of patients complaining of intraoperative awareness after regional anesthesia and MAC.^{1,2} Literature has demonstrated similar incidence of intraoperative awareness complaints in patients receiving general anesthesia and regional anesthesia or MAC.^{1,2}

All the patients undergoing surgery under any form of anesthesia most often expect complete unconsciousness. In regional anesthesia and MAC when above expectation is not met, any sensory stimuli may be perceived as intraoperative awareness by the patient. Esaki R. mentioned that this may be due to either unknown or unmet expectations regarding levels of consciousness during regional anesthesia and MAC or wrongly perceiving regional anesthesia as GA.² Also the patient's perception about the difference between general and regional anesthesia is not obvious also preoperative anxiety may be contributing factor. Awareness during anesthesia may possibly lead to psychological and medicolegal consequences.^{3,4} Hence communication and education of the patient in the preoperative period are very essential.

The complaint of awareness in patients receiving non general anesthesia is challenging. With above background we aimed to study the preoperative expected level of consciousness and anxiety and their actual experiences intraoperatively in patients undergoing surgery under regional anesthesia or MAC in a subset of female patients in Indian population. Hence we administered a structured interview to these patients assessing their expectations and subjective experience.

The goal of this study is to improve anaesthesiologist and patient communication regarding anesthesia expectations, and to improve intervention strategies for patients who experience awareness. Thus in future we may be able to set the patients' expectations correct and provide quality anesthesia care.

II. Methods

It was a prospective observational study, done in a tertiary care teaching public hospital over a period of 6 months after obtaining institutional ethics committee approval and written, valid and informed consent. A structured interview was administered to 80 female patients undergoing surgical procedures under regional anesthesia or MAC. We studied American Society of Anesthesiologists (ASA) I & II patients undergoing gynecological and ear, nose, throat (ENT) surgical procedures under regional anesthesia or MAC. Surgical procedures included vaginal hysterectomy, puerperal tubal ligation (TL), tubal recanalisation, MTP with Mini Lap TL, dilatation and curettage (D & C), tympanoplasty, myringotomy and septoplasty. Patients with inability to comprehend the questionnaire, psychiatric disturbance or on antipsychotic drugs and hemodynamically unstable patients were excluded from the study.

We interviewed 80 females by administering them a structured questionnaire (table 1). It was given to them postoperatively after the patients met criteria for discharge according to Modified Aldrete score.⁵ A total score > 8 and at least 1 in each of the criteria was used to define adequate recovery. We did not assess expectations in the preoperative period to prevent conditioning the patients' intraoperative experience.

Table 1: Structured Questionnaire

Questionnaire for Interview after Regional Anaesthesia or Monitored Anaesthesia Care

1. What level of consciousness did you expect before the procedure? Rate on a scale of 1-10 with 1 being completely asleep and 10 being completely awake.
2. During the actual procedure, what was your highest and lowest level of consciousness? Rate on a scale of 1-10 with 1 being completely asleep and 10 being completely awake.
3. How was your actual experience compared with your expectation?
 - a. as expected
 - b. better than expected
 - c. worse than expected
4. Who was your source of expectation for the level of consciousness during your procedure?
 - a. Anaesthesiologist
 - b. Surgeon
 - c. Nurse/ Sister
 - d. My personal expectation
 - e. Other (please specify)
 - f. Do not know / do not remember
5. How much anxiety did you have before the procedure, Rate on a scale with 1 being no anxiety and 10 being extreme anxiety
6. How much pain did you have during the procedure, Rate on a scale with 1 being no anxiety and 10 being extreme anxiety

Patients were asked to identify their expected level of consciousness on a 1-10 scale, with 1 being complete unconsciousness and 10 being complete wakefulness. The highest and lowest levels of consciousness they experienced during the procedure was also assessed. Patients were also asked about their preoperative anxiety and intraoperative pain on 1-10 scale, as well as overall satisfaction in terms of as expected / better / worse. Also their source of expectation was noted whether it was anaesthesiologist, surgeon, others. The interview was conducted in a language the patient could understand and after confirming patient comprehension.

III. Statistical Analysis

Logistic regression was used to determine risk factors for having at least a 3-point difference between the experienced and expected levels of consciousness. All *P* values were two tailed, and a significance threshold of 0.05 was used. SPSS v.15 (SPSS, Chicago, IL) was used for analysis.

IV. Results

Eighty valid interviews were conducted using structured interview (Table 1). The anesthesia provider was the source of expectations regarding level of consciousness for all eighty patients. Thus the source of expectations did not differ between patients and did not influence the expected level of consciousness. Seventy three patients (91.25%) reported that their overall anaesthetic experience was "as good as" or "better than" expected (Table 2)

Table 2: Actual

	Actual experience of patient	
	Frequency	Percent
As expected	28	35
Better	45	56.25
Worse	7	8.75
Total	80	100

experience of patient

Table 3: Expected level of consciousness, along with the highest and lowest levels of consciousness subjectively experienced

Level of consciousness	Expected level of consciousness		Highest level experienced		Lowest level experienced	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
1 to 3	0	0%	0	0	26	32.5
4 to 7	31	38.75	33	41.25	54	67.5
8 to 10	49	61.25	47	58.75	0	0

Table 3 lists the expected level of consciousness, along with the highest and lowest levels of consciousness subjectively experienced. Complete consciousness (“10”) was the modal response for the expected level of consciousness (20 patients, 25%). Three (“3”) was the modal response (19 patients, 23.75%) for the lowest level of consciousness and seven (“7”) was the modal response for the highest level of consciousness (25 patients, 31.25%).

Figure 1 shows the deviations of the experienced level of consciousness from the expected level of consciousness. Out of eighty, 59 (73.75%) patients were at some time less awake than expected by at least 3 points, whereas 6 (7.5%) patients were at some time more awake than expected by at least 3 points. 15 (18.75%) patients were always within 3 points of expected level of consciousness. Preoperative anxiety was not found to be a significant predictor of a patient being less awake than expected by 3 points or more ($P=0.7$ i.e. > 0.05) or of a patient being more awake than expected by 3 points or more ($P=0.367$ i.e. > 0.05). Significant correlation was found between preoperative anxiety and pain during procedure ($P= 0.000$ i.e. < 0.05).

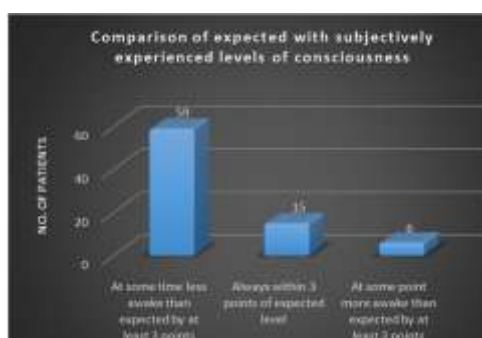


Figure 1 deviations of the experienced level of consciousness from the expected level of consciousness.

V. Discussion

Intraoperative awareness is an important source of apprehension for many patients undergoing surgery under any form of anesthesia. As from the patient’s point of view the difference between general and regional anesthesia is not clear. Hence we decided to explore relationship between patient’s pre-procedure expectations and post-procedure perceptions of anesthetic adequacy. Mashour et al. had demonstrated the incidence of intraoperative awareness complaints in patients under general anesthesia (0.023%) and under regional anesthesia or MAC (0.03%) is similar and it was more common among females (1:6) under non general anesthesia.^{1,2}

All the patients undergoing surgery under any form of anesthesia most often expect complete unconsciousness. In regional anesthesia and MAC when above expectation is not met, any sensory stimuli may be perceived as intraoperative awareness by the patient. Thus there is a need for systematic approach for detection and prevention of intraoperative awareness under regional anesthesia and MAC.

We did not assess expectations preoperatively as it may have lead to conditioning the patients’ intraoperative experience. We interviewed eighty female patients who underwent surgical procedure under regional anesthesia or MAC using a structured questionnaire (table 1) postoperatively.

In the current study the anesthesia provider was the source of expectations regarding level of consciousness for all eighty patients. Thus the source of expectations did not differ between patients and did not influence the expected level of consciousness. In contrast only 58% of patients had their expectations set by the anesthesiologist, resident, or nurse anesthetist during the preoperative visit in a study by Esaki.²

There is a possibility that prior patient conversations with nurse or surgical colleagues may establish expectations like complete unconsciousness that are not met. These unmet expectations may be perceived as awareness and can result in patient distress. To avoid such misinterpretation, anesthesia providers should clearly set appropriate expectations preoperatively. Hence preoperative communication between patient and anesthesia provider is very essential.

In the present study out of eighty, 73 patients (91.25%) mentioned that their overall anaesthetic experience was “as good as” or “better than” expected by them. Also 59 (73.75%) patients were less awake than expected. Only 6 (7.5%) patients were at some time more awake than expected. Thus highlighting the point that anesthesia providers should discuss anesthesia plan with patient in detail and clearly set appropriate expectations in the preoperative period itself. Emphasizing the importance of preoperative communication between patient and anesthesia provider is very essential. Mashour et al. had mentioned quite a few patients in their study reported that they heard conversations during their procedure, and thus this level of consciousness was contradictory to their expectations.^{1, 6} However in our study experienced level of consciousness did not differ from the expected level of consciousness in maximum patients.

In the current study preoperative anxiety was not found to be a significant predictor of a patient being less awake than expected or more awake than expected by 3 points ($P=0.7$, 0.367 resp.). However significant correlation was found between preoperative anxiety and pain during procedure ($P= 0.000$).

This is particularly significant as patients with higher preoperative anxiety levels are at risk for lower levels of consciousness during regional anesthesia or MAC. Thus preoperative anxiety is an important factor which is related to awareness of pain intraoperatively, and may be a source of distress postoperatively. Hence allaying anxiety by proper communication is very essential.

Also intraoperative awareness was significantly correlated to psychological sequelae including post-traumatic stress disorder (PTSD).⁷

This study was not without limitations as it was based on assessment of only the subjective experience of the patient hence in further studies objective intraoperative observation may be added. Also we interviewed patients only once in the postoperative period. Moerman et al. Sandin et al. and Sebel et al. found considerably increased reports of awareness during the second interview postoperatively.⁸⁻¹⁰ Future studies could compare preoperatively assessed patient expectations to postoperatively reported experiences in more than one interview and also using objective parameters.

In conclusion, if the source of expectation is anesthesiologist the expectation and actual experience of the patient did not differ. However the patient's perception regarding general and nongeneral anesthesia is not obvious. Anesthesia providers should allay preoperative anxiety by setting correct expectations and educating patients regarding intraoperative levels of consciousness and postoperative recall. Thus this study highlights the point that anesthesia providers should discuss anesthesia plan with patient in detail and clearly set appropriate expectations in the preoperative period itself stressing the importance of proper communication.

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Table Legends

Table 1: Structured Questionnaire

Table 2: Actual experience of patient

Table 3: Expected level of consciousness, along with the highest and lowest levels of consciousness subjectively experienced

Figure 1: Deviations of the experienced level of consciousness from the expected level of consciousness.