

ORIGINAL ARTICLE

A comparative study to assess preoperative anxiety in obstetric patients undergoing elective or emergency cesarean section

Teena Bansal, DA, DNB¹, Akanksha Joon, MD²

¹Assistant Professor; ²Ex Senior Resident

Department of Anesthesiology & Critical Care, Pt. B.D. Sharma University of Health Sciences, Rohtak-124001, Haryana, (India)

Correspondence: Dr. Teena Bansal, 2/8 FM, Medical Campus, PGIMS, Rohtak-124001, Haryana, (India); Mobile: +91-9315839374; E-mail: aggarwalteenu@rediffmail.com

ABSTRACT

Background: A common response to stress is anxiety which is present in patients undergoing surgery. As compared to general surgical population, a higher level of preoperative anxiety has been reported in obstetric patients. The present study was conducted to assess and compare preoperative anxiety in obstetric patients undergoing elective or emergency cesarean section.

Methodology: A total of 200 obstetric patients, having physical status II according to the American Society of Anesthesiologists, undergoing elective (n=100) or emergency [Grade 2] (n=100) cesarean section were included in the study. State version of state trait anxiety inventory scale (S-STAI) and Visual analogue scale for anxiety (VAS-A) were used as study tools.

Results: A high level of anxiety in patients undergoing emergency cesarean section as compared to elective patients [S- STAI (67.29 ± 8.51 vs 48.35 ± 10.29) and VAS –A (73.61 ± 5.31 vs 52.43 ± 4.16)] was observed in present study, the difference found to be statistically highly significant (p < 0.001). Overall 110 (55%) patients had anxiety. Out of these 40 patients (40%) belonged to elective group and 70 patients (70%) were of emergency group. Anxious patients had higher education level. The difference in hemodynamic parameters was highly statistically significant between the two groups.

Conclusion: Every patient requiring surgery whether elective or emergency should be assessed for the presence of anxiety in their routine preoperative anesthesia assessment and the patients found to have a high level of anxiety should be scheduled for an additional counselling session .

Key words: Preoperative anxiety, obstetric patient, cesarean section

Citation: Bansal T, Joon A. A comparative study to assess preoperative anxiety in obstetric patients undergoing elective or emergency cesarean section. *Anaesth Pain & Intensive Care* 2017;21(1):25-30

Received: 21 Dec 2016; **Reviewed:** Feb 2017; **Corrected & Accepted:** Feb 2017

INTRODUCTION

Anxiety is an emotional state characterized by apprehension and fear resulting from anticipation of a threatening event. In adult patients the incidence of preoperative anxiety ranges from 11% to 80% and there is variation among different surgical groups. Higher doses of induction agents and postoperative analgesia are required in anxious patients. In patients scheduled for any type of surgery, the assessment of anxiety is important as anxious patients respond differently to anesthesia

than non-anxious patients.¹

Various factors influencing anxiety in a patient planned for surgery include cultural diversity, the extent & type of surgery, age, gender, previous surgical experiences, optimism, susceptibility to and ability to cope with stress and preoperative information.²

As compared to general surgical population a higher level of preoperative anxiety has been reported in obstetric patients.^{3,4} One of the most common surgical procedures performed on obstetric patients

anxiety in obstetric patients undergoing cesarean section

is cesarean section which can be either elective or emergency. For measuring anxiety, there are several instruments. Objective methods include indirect measurement of sympathicoadrenal activity with the help of heart rate and blood pressure while more direct measurements of this activity are plasma cortisol and urinary catecholamines.^{5,6,7} State trait anxiety inventory (STAI), hospital anxiety and depression scale (HADS), visual analogue scale for anxiety (VAS-A) and others can be used as subjective tools for assessment of anxiety.

Various studies have been conducted to measure the preoperative anxiety in different surgical groups using different scales.⁸⁻¹²

However, to the best of our knowledge, there is no study in literature to assess and compare preoperative anxiety in obstetric patients undergoing elective or emergency cesarean section. Hence, the present study was carried out.

METHODOLOGY

This cross sectional study was conducted in the Department of Anesthesiology & Critical Care, University of Health Sciences Rohtak (INDIA) from April 2015 to March 2016. After written consent of the patient, a total of 200 obstetric patients, having ASA physical status II undergoing elective or emergency (Grade 2) cesarean section, were included in the study.

Exclusion criteria were known psychiatric illness, language barrier, patient taking any antianxiety or antidepressant medication, bad obstetric history, complicated pregnancy or having congenital fetal anomaly. Patient with medical disease like hypertension, diabetes mellitus, malignancy and chronic disease, and those unwilling to participate in the study were also excluded.

For the study a proforma consisting of 3 parts was prepared. Part 1 included demographic profile i.e. name, age, medical record number, education level, occupation, parity, information of previous surgeries if any and preoperative information. Part 2 included S-STAI scale and Part 3 included VAS-A. Patients scheduled for elective cesarean section had preanesthetic checkup by anesthetist in preanesthetic checkup (PAC) clinic. In addition, on the evening prior to surgery they were visited by anesthetist. Patients were asked to fill the form of STAI in a standardized time of 10 minutes. Patients scheduled for emergency cesarean section (Grade 2) were visited by anesthetist before surgery. The preanesthetic check-up of patients was done and

they were asked to fill the form in 10 min. In addition, all the patients were shown a 100 mm straight line. They were asked to mark the line below with a vertical stroke to show how anxious they felt at the moment. STAI score of 44 and above and VAS score of 50 and above was taken as presence of anxiety.

Pulse rate and blood pressure were recorded. The patients were divided into two groups. Group I (n=100) & Group II (n=100) undergoing elective or emergency (Grade 2) cesarean section respectively.

The study tools used were S-STAI and VAS-A

Hindi version of STAI was used. For measuring anxiety, the STAI form Y is the definitive instrument. It is ideal for evaluating individuals with lower educational backgrounds due to its simplicity. It includes two forms Y-1 and Y-2 each having 20 items with four possible responses to each. Form Y-1 measures the state anxiety (how the respondent feels 'right now' at this moment.) Form Y-2 measures the trait anxiety (how the respondent feels 'generally'). A weighted score of 1 to 4 is given to each STAI item. Scores can vary from a minimum of 20 to a maximum of 80 for both the S-anxiety and the T-anxiety scales. The individual's score is sum of the scores on all items. Alpha coefficient reliability for state anxiety and trait anxiety is very high such as .92. But test retest reliability is high only for trait anxiety because a valid measure of state anxiety should reflect the influence of unique situational factors that exist at the time of testing.¹³

For evaluation of preoperative anxiety VAS-A is a useful and easily applicable method which allows assessment of high anxiety levels in various surgical groups. The VAS comprises a 100 mm line, at the left hand of which is a statement indicating zero anxiety ('no anxiety at all') and at the right hand the statement 'most anxious I can imagine'. Patients are asked to mark the line to indicate the degree of their anxiety.⁸

At the end of the study, the data were calculated regarding age, level of education, previous exposure of surgery, S-STAI, VAS-A and hemodynamic parameters (systolic & diastolic blood pressure and pulse rate) and analyzed statistically. Quantitative variables were calculated as mean \pm SD. Qualitative variables was presented as percentage. Quantitative variables between the two groups were compared with the help of unpaired student's t test using software SPSS version 16.5. A p-value of < 0.05 was considered significant and p-value of < 0.001 was

considered highly significant.

RESULTS

The average age of patients in Group I was 25.18 ± 3.24 years, while in Group II, it was 23.29 ± 2.67 years, the difference being statistically insignificant. Overall 110 (55%) patients had anxiety. Out of these 40 patients (40%) were of elective group and 70 patients (70%) of emergency group [Table 1]

Anxious patients had education level matric and above. Overall 50 matriculate patients (56.18%) had anxiety. Out of these 20 (39.21%) patients belonged to Group I and 30 patients (78.94%) were of Group II. Further, more of the patients had anxiety as the level of education increased. Total 38 patients (90.47%) having intermediate qualification had anxiety. In elective group, anxiety was observed in 16 patients (88.88%) and in emergency group, anxiety was observed in 22 patients (91.66%) having intermediate qualification. 10 patients (76.92%) having anxiety were of postgraduate level, out of which 4 patients (80%) belonged to Group I and 6 patients (75%) were of Group II [Table 1]. Highest level of anxiety was observed in patients having

postgraduate qualification.

98 patients (61.25%) had anxiety among the patients who had no experience of prior surgery, out of which 36 patients (46.15%) belonged to Group I and 62 patients (75.6%) were of Group II. Further, 12 patients (30%) had preoperative anxiety among the patients who had experienced past surgery, out of which 4 patients (18.18%) belonged to elective group and 8 patients (44.44%) belonged to emergency group [Table 1].

In the elective group (n=100), who visited PAC clinic, 40 patients (40%) had anxiety while 60 patients (60%) did not have anxiety indicating the importance of PAC visit in alleviating anxiety.

A high level of anxiety in patients undergoing emergency cesarean section as compared to elective patients [S-STAI (67.29 ± 8.51 vs 48.35 ± 10.29) and VAS-A (73.61 ± 5.31 vs 52.43 ± 4.16)] was observed in present study, the difference found to be statistically highly significant ($p < 0.001$) (Table 2).

Hemodynamic parameters i.e. systolic & diastolic blood pressure and pulse were compared in both

Table 1: Demographic profile of patients in two groups

Variable	Group I (n=100)		Group II (n=100)	
	Total no of patients	No of patients with anxiety	Total no of patients	No of patients with anxiety
Level of education				
Illiterate	26	0	30	12 (40%)
Matriculate	51	20 (39.21%)	38	30 (78.94%)
Intermediate	18	16 (88.88%)	24	22 (91.66%)
Postgraduate	5	4 (80%)	8	6 (75%)
Previous exposure of surgery				
No surgery	78	36 (46.15%)	82	62 (75.6%)
Previous surgery	22	4 (18.18%)	18	8 (44.44%)

Table 2: Showing VAS-A and S-STAI in patients of Group I & Group II

Scale	Group I (n=100) Mean \pm S D	Group II (n=100) Mean \pm S D	p value
VAS-A	52.43 \pm 4.16	73.61 \pm 5.31	< 0.001
S-STAI	48.35 \pm 10.29	67.29 \pm 8.51	< 0.001

Table 3: Showing blood pressure & pulse in patients of Group I & Group II

Variables	Group I Mean \pm S D	Group II Mean \pm S D	p value
Systolic BP (mmHg)	104.65 \pm 9.75	119.81 \pm 10.15	< 0.001
Diastolic BP (mmHg)	73.53 \pm 6.62	92.69 \pm 6.03	
Pulse/min	70.24 \pm 11.20	85.89 \pm 8.52	

the groups. In Group I, mean systolic blood was 104.65 ± 9.75 mm Hg compared to 119.81 ± 10.15 mm Hg in Group II. Statistically highly significant difference was observed ($p < 0.001$). Mean diastolic blood pressures in Group I and Group II were 73.53 ± 6.62 mmHg and 92.69 ± 6.03 mm Hg respectively, the difference was statistically highly significant ($p < 0.001$). The mean pulse rate was 70.24 ± 11.20 /min in elective group and 85.89 ± 8.52 /min in emergency group ($p < 0.001$) (Table 3).

DISCUSSION

A common response to stress is anxiety which is present in patients undergoing surgery. Various problems like difficult venous access, delayed jaw relaxation, coughing, autonomic fluctuations and increased anesthetic requirement during induction of anesthesia are found to be associated with preoperative anxiety. In addition, preoperative anxiety is also associated with increased pain, nausea and vomiting in the postoperative period, prolonged recovery and increased risk for infection.¹⁴

Assessment of presence of anxiety and its quantification is difficult similar to pain. A variety of subjective methods are available for measuring preoperative anxiety like HAD, STAI, VAS-A, the Amsterdam preoperative anxiety and information scale (APAIS), multiple affect adjective check list (MAACL) and linear analogue scale (LAAS)^{15,13,8,16,9}

Various factors such as age, gender, type of surgery, optimism and preoperative information influence anxiety. Decreased level of preoperative anxiety has been observed with increase in age.³ However, in another study Domar et al. did not observe age as a determinant of preoperative anxiety.¹⁷ Female sex is an important factor related to high anxiety, as some previous studies have reported a high level of anxiety in the female gender.^{10,17} Boker et al. and Moerman et al. did not find type of surgery as a determinant of preoperative anxiety while in another study conducted by Kindler et al., the authors observed higher level of anxiety in patients of otolaryngological and thoracic surgeries.^{2,16,10} In present study the average age of patients in Group I was 25.18 ± 3.24 years while in Group II, it was 23.29 ± 2.67 years, the difference being statistically insignificant. However, in present study valid statistical analysis of association between anxiety and age, gender and type of surgery was not possible because all the patients were of same age group. In addition, all patients were females.

In the present study, overall 110 patients (55%) had preoperative anxiety with S-STAI score ≥ 44 . The results of present study are similar to a study conducted by Jafar et al. who observed that with S-STAI scores of 44 and above, 186 (62%) patients had preoperative anxiety.³ Preoperative anxiety was prevalent in patients with education level matriculate and above in the present study (Table 1). It may be due to the reason that regarding the complications related to surgery and anesthesia, educated patients were more aware and worried. In addition, information seeking behaviour is more frequent in these patients which itself is associated with high level of anxiety.¹⁶ Our observation of preoperative anxiety in educated patients is supported by a study conducted by Domar et al.¹⁷

Low anxiety levels were found in patients having exposure to prior surgery. The patients who had no experience of previous surgery, 98 patients (61.25%) had anxiety compared to 12 patients (30%) with exposure to prior surgery (Table 1). The patients with previous surgery had less fear of unknown or misconceptions about anesthesia and surgery and so less anxious. The findings of present study are in agreement with other studies.^{10,16}

Our findings are in agreement with the study conducted by Solgajova et al. who observed type of surgery (acute or planned) as the second most predictor of preoperative anxiety.¹⁸ A high level of anxiety in patients undergoing emergency cesarean section as compared to elective patients [S-STAI (67.29 ± 8.51 vs 48.35 ± 10.29) and VAS-A (73.61 ± 5.31 vs 52.43 ± 4.16)] was observed in present study [Table 2]. Type of surgery (i.e. planned or acute) is a significant predictor of anxiety. Patients who require acute surgery, have a short time to adapt to the situation and anxiety is highly common in them.¹⁹

It has been observed by some authors that anesthesia particularly fear of anesthesia leads to the onset of preoperative anxiety.^{19,20} After preanesthetic checkup, patients of planned surgery are informed about surgery and the type of anesthesia for their surgery. In addition, in the preoperative period, information about surgery leads to decreased anxiety. In patients scheduled for elective surgery in the present study they underwent preanesthetic checkup by the anesthetist in the PAC clinic. In addition, they were visited in the evening prior to surgery by the anesthetist which allayed anxiety. This finding is similar to a study conducted by Egbert et al. who observed that preoperative visit by the anesthetist plays a major role to relieve

anxiety.²¹ On the other hand, in the present study, there was comparatively less time for the anesthetist to interact with the patient of emergency cesarean section which may be the reason of high anxiety in these patients compared to elective patients.

In the preoperative period, information about surgery leads to decreased anxiety. To transmit the necessary information and clarify the patients' enquiries, preanesthetic consultation clinic could be the right place. Various studies have demonstrated that consultation at the preanesthetic checkup clinic has a statistically significant positive effect on alleviating patients' anxiety.^{14,22,23} But this may not be feasible for emergency patients.

To the best of our knowledge, there is no study in literature evaluating anxiety in patients undergoing emergency cesarean section in addition to evaluating methods to relieve anxiety in such patients. We evaluated preoperative anxiety in obstetric patients undergoing emergency cesarean section which adds to the strength of the present study. However, we did not evaluate methods to relieve anxiety in such patients which we consider the limitation of the study. Synder-Ramoset et al. suggested that in patients undergoing surgery, use of a documentary video can supplement a patient interview during the preanesthetic visit which may be an effective technique for conveying information.²⁴ We can apply this method to alleviate anxiety of emergency patients in addition to providing information about surgery and anesthesia.

Preoperative pharmacological medications are given to patients to relieve anxiety. Because of depressive effects of sedatives on newborns, pharmacological medications are omitted in obstetric patients. Senel et al. conducted a study including 50 obstetric patients undergoing elective cesarean section. Group I received intravenous premedication with

0.025mg/kg midazolam while the control group (Group II) received equal amount of saline 30 minutes before surgery. The authors evaluated patient anxiety with APAIS and measured newborn well-being using Apgar and the neonatal neurologic and adaptive capacity score (NACS) and concluded that patients receiving midazolam as premedication had significantly low anxiety scores without any adverse effects on the newborns.²⁵ Agarwal et al. evaluated the efficacy of acupressure to alleviate preoperative anxiety. The authors state that it takes around 20-30 minutes for a patient to be moved from the preoperative area to being anesthetized. If the anxiolytic effect of acupressure lasts for 30 minutes or more, then there would be a calm and less anxious patient until the time of induction of anesthesia. This would avoid the need for sedative premedication with its associated side effects.²⁶ However, further long term trials enrolling more number of patients are warranted in this direction to evaluate measures to relieve anxiety in patients undergoing emergency cesarean section.

We should be able to identify increased anxiety in preoperative period and if effective intervention strategies are implemented to reduce it, we would prevent postoperative complications (prolonged hospitalization, more intense and longer pain perception). So every patient requiring surgery whether elective or emergency should be assessed for the presence of anxiety in their routine preoperative anesthesia assessment and the patient found to have a high level of anxiety should be scheduled for an additional counselling session from the anesthetist.

Conflict of interest: None

Authors' declaration: The manuscript has been read and approved by all the authors, the requirement of authorship has been met and each author believes that the manuscript represents honest work.

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