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Original Research Article

A Cross-Sectional Clinical Comparison Study of Patient Satisfaction with Regional Anaesthesia and General Anaesthesia during Upper Limb Procedures

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Abstract

History and Objectives: Patient happiness is a crucial indicator of the quality of healthcare. However, there aren't many research that look into this issue. The main goal of this study was to assess patient satisfaction in patients undergoing upper limb procedures under regional anaesthesia (RA) and general anaesthesia (GA). The secondary goals were to compare the duration of analgesia and hospital stay between the two procedures.

Methods: This cross-sectional investigation was conducted in a teaching hospital for tertiary care. The study comprised patients undergoing upper limb procedures who were between the ages of 18 and 60 and had an American Society of Anesthesiologists (ASA) grade 1-3 physical status. A 10-item pre-designed post-operative questionnaire was used to gauge patient satisfaction with anaesthesia in patients getting GA and RA, with 100 patients in each group, at least 24 hours following the procedure. The Mann-Whitney-Wilcoxon test was used to compare continuous variables between groups, while the Chi-square test was employed for categorical data.

Results: Regarding each of the 10 questionnaire questions individually as well as the overall score, the patients in group RA demonstrated noticeably greater satisfaction levels than those in group GA (P 0.001). Additionally, the analgesic duration was noticeably longer in RA than GA (P 0.001). Additionally, the time spent in the hospital was much longer in GA than in RA (P 0.001).

Conclusions: In addition to prolonged analgesia and a shorter hospital stay, RA for upper limb procedures offers better patient satisfaction than GA.

Keywords: localised anaesthesia, general anaesthesia, and patient satisfaction

Introduction

In order to further raise the bar for hospital care standards and as a quality control measure, it is crucial to analyse patient satisfaction following anaesthesia. [1,2] In

the healthcare sector, patient satisfaction is viewed as a multidimensional construct that balances performance against expectations. [1,2] It comprises elements like the simplicity of the anaesthesia technique, the negative effects of anaesthetic medications, and interpersonal and emotional elements. [3] Patient satisfaction, according to Pascoe, is the result of the patient's "cognitive evaluation" and "emotional response" to the care they get. [1] Numerous sociodemographic variables, cultural influences, and patient cognition have also been shown to affect patient satisfaction. [2]

For procedures on the upper limbs, general anaesthesia (GA) and regional anaesthesia (RA) are the two most often utilised treatments.[4] However, the anesthesiologist's method may not always produce the greatest level of patient pleasure. [1,2] The lack of psychometric analytic methods in research has resulted in the lack of a single, reliable assessment tool to gauge patient satisfaction with anaesthesia. [5] However, research from western nations has revealed that, as compared to GA, patients who receive RA for upper limb procedures report higher levels of satisfaction and longer analgesia durations with shorter hospital stays. [6] There isn't any research comparing patient satisfaction with RA and GA overall. Additionally, it is well established that socioeconomic and cultural factors affect patient satisfaction. [6] There are no formal studies comparing patient satisfaction between RA and GA in India. In this context, we evaluated patient satisfaction after GA and RA in upper limb procedures and compared it to other groups of Indian patients. We also compared the length of analgesia and length of hospital stay between these two groups of patients.

Methods

In this open label study, participants in a tertiary care teaching hospital were cross-sectionally evaluated to compare patient satisfaction following RA and GA. Between October 2018 and October 2019, the study's patient recruitment period took place. Following permission from the Institute's ethical committee, 100 patients from each group with RA and GA were enrolled in the study. The study's inclusion criteria were as follows: Patients between the ages of 18 and 60, those with ASA grades 1, 2, or 3, those having upper limb procedures that take longer than 30 minutes, and those who stay in the hospital for more than 24 hours postoperatively are all considered to be under this category. Patients on anti-platelet or anticoagulant medications, those admitted to an intensive care unit (ICU), those with a local infection at the site of the block, those with bleeding coagulopathy, those in delirium or confusion, and uncooperative patients were all excluded.

The preoperative evaluation's treating team anaesthesiologist reviewed the advantages and disadvantages of GA and RA with the patient for the planned operation, and the choice of anaesthesia (RA vs. GA) was ultimately made based on the patient's preference. Our institute uses the ultrasound-guided brachial plexus block treatment for RA during upper limb procedures. Patients that experienced block failure were not included in the investigation. In accordance with Figure 1, 100 patients who received GA were placed in Group GA, and 100 patients who received RA were placed in Group RA. Blocks were administered to patients in the RA group using a total volume of 30 ml, comprised of 15 ml of 0.5% bupivacaine and 15 ml of 2% lignocaine. This total volume of 30 ml was deposited as a supraclavicular brachial plexus block for distal humerus procedures, and 20 ml as a supraclavicular brachial plexus block and 10 ml as an axillary brachial plexus block for forearm surgeries.

The doses (3 mg/kg for bupivacaine and 5 mg/kg for lignocaine) were far under the toxic limits. Forearm procedures required both a supraclavicular brachial plexus block

and an axillary block, but a distal humerus surgery under the supervision of a skilled anesthesiologist required only a supraclavicular brachial plexus block. In order to prepare the patients for general anaesthesia, intravenous glycopyrrolate 10 mg/kg and midazolam 0.05 mg/kg were given. Fentanyl 2 mg/kg was given as an analgesic, propofol 2 mg/kg was given as an induction agent, and atracurium 0.5 mg/kg was given as a muscle relaxant. Neostigmine 0.05 mg/kg and glycopyrrolate 10 g/kg were used to reverse any remaining neuromuscular blockade after surgery. Paracetamol (10–15 mg/kg) and intravenous diclofenac (1-2 mg/kg) were additional intraoperative analgesics utilised in GA. The purpose of the study, the scales employed, the methodology for scoring the perioperative questionnaire, and the visual analogue score were all explained to the study participants (VAS). Every patient who was interested in taking part in the trial provided their written, informed consent. All regular investigations needed for the prospective procedures and preoperative evaluation were completed. All of the patients received 0.5 mg alprazolam tablets the night before and the morning of the procedure. Patients were permitted for an absolute fasting duration of at least 8 hours, which was measured using a 10-item predesigned preoperative questionnaire [2] with a numerical rating scale from 0 to 10. [2]

This questionnaire has high psychometric qualities to measure patient satisfaction with good validity (Cronbach's alpha of 0.84) and reliability (Kappa value >0.75). [2] The first four questions were concerning the relationships between the patient and the medical personnel; the following four were about the patient's emotional elements; and the final two were physical aspects [Table 1]. In a face-to-face interview with one of the investigating anesthesiologists, the patients' satisfaction was evaluated using this questionnaire in either English or Kannada (the local tongue of the study centre). As soon as the patient agreed to participate in the study and at least 24 hours had passed since the surgery, an interview was conducted to gauge how satisfied the patient was. At 12, 24, and 48 hours following surgery, postoperative analgesia was evaluated using a VAS scale of 0-10 (score 0 = no pain, score 10 – the most severe pain possible). The length of the hospital stay was calculated in days from the day of surgery until the day of discharge. The duration of analgesia was recorded as the time for the first rescue analgesia with 10-15 mg/kg of intravenous paracetamol, which was the time taken by the patient to first report pain significant enough to require analgesia postoperatively.

Statistical Package for the Social Sciences (SPSS) version 24 was used to analyse all data. The Shapiro-Wilk test revealed that the data was not regularly distributed. Independent t-test was used to compare continuous data between groups, and the Chi-square test was employed for categorical variables.

Table 1: 10 points Questionnaire:

QUESTIONNAIRE	NUMERICAL RATING SCALE (0-10)
Kindness/regard of caregivers	0 (Not kind)→10 (Very kind)
Information given by anaesthetist	0 (No information given) → 10 (Given)
Demands promptly answered	0 (Demands not met) → 10 (Demands met)
Attention to the patient	0 (Attention not given) → 10 (Given)
Feeling safe	0 (Not safe) → 10 (Feeling safe)
Feeling relaxed	0 (Not relaxed) → 10 (Completely relaxed)
Feeling of well being	0 (Not feeling well) → 10 (Feeling well)
Feeling anxious/frightened	0 (No anxiety/not frightened) → 10 (Excessive)

Pain at the site of surgery	0 (No Pain) → 10 (Worst Pain)
Vomiting/nausea	0 (No vomiting/nausea) → 10 (Excessive)

Results

The patient's gender distribution and average age were comparable between groups [Table 2].

Table 2: Demographic data of the subjects

Variable	General anaesthesia (Mean±SD) or Percentage	Regional anaesthesia (Mean±SD) or Percentage	*P*
Mean age in years	43.57±12.3	41.45±12.4	0.2
Sex			
Female	30	34	0.57
Male	70	66	
ASA			
1	72	51	
2	28	48	0.06
3	0	1	

There was no statistically significant difference between the groups in the types of procedures performed [P = 0.81, Table 3].

Table 3: The number of patients undergoing different types of upper limb surgeries in the GA and RA groups

Type of surgery	RA	GA	*P*
Fracture of both bones forearm	54	59	*p*=0.81
Radius fracture	26	21	
Ulna fracture	17	16	
Distal humerus fracture	3	2	

A larger number of patients in the GA group fell into the ASA 1 category. In our study population, the overall patient satisfaction score for RA was greater than GA (89.5 4.7 vs. 74.6 6.1; P 0.001). Table 4 lists the scores of the various patient satisfaction items compared between the groups. The compassion exhibited to them, information offered, feeling of safety, satisfying demands, giving attention, and feeling of wellbeing all had higher mean ratings in RA [Table 4]. Postoperative nausea and vomiting as well as feelings of worry received higher marks from the GA group [Table 4].

Table 4: Patient satisfaction scores as measured using a 10-item perioperative questionnaire

Variable	General anaesthesia (Mean±SD)	Regional anaesthesia (Mean±SD)	*P*
Kindness score	7.28±0.3	8.69±0.6	< 0.00
Information score	8.16±1.3	9.19±0.7	< 0.00
Feeling of safety score	7.03±1.3	8.81±0.7	< 0.001
Demands met score	6.87±1.2	8.69±0.8	< 0.00
Attention given score	6.77±1.3	8.71±0.7	< 0.001
Relaxed feeling score	6.38±1.3	8.59±0.8	< 0.00
Wellbeing score	6.49±1.2	8.66±0.7	< 0.001

Pain score (VAS)	4.1±0.8	2.45±0.6	< 0.00
Nausea score	1.81±0.7	1.29±0.4	< 0.001
Anxious score	1.83±0.6	1.21±0.3	< 0.00

After 12 hours, 24 hours, and 48 hours of surgery, the mean pain scores on the VAS were considerably lower in patients with RA (4.0 1.2, 4.1 1.0, and 4.1 1.1 vs. 2.5 0.7, 2.6 0.7, and 2.6 0.7; P 0.001) [Table 5]. In comparison to GA, RA had considerably longer analgesic duration (6.2 1.7 h vs. 2.5 1.1 h; P 0.001) [Table 5]. Additionally, RA had a considerably shorter average hospital stay than GA (4.7 1.0 days vs. 3.8 + 0.6 days; P 0.001) [Table 5].

Table 5: The pain scores, duration of analgesia in hours and stay duration in days between two groups

Variable	General anaesthesia	Regional anaesthesia	*P*
Pain score after 12 h	4.00±1.05	2.46±0.61	<0.001
Pain score after 24 h	4.04±1.03	2.54±0.63	<0.00
Pain score after 48 h	4.04±1.04	2.57±0.74	<0.001
Duration of analgesia in hours	2.51±1.08	6.14±1.63	<0.00
Stay duration in days	4.72±1.01	3.74±0.67	<0.00

Discussion

Based on the history of the anaesthetic technique employed, we included in our study intraoperative as well as interaction and emotional components to assess patient satisfaction. In comparison to GA, patients getting RA were generally better happy with all the aforementioned metrics. Additionally, patients who received RA had shorter hospital stays, more analgesia, and less postoperative nausea and vomiting (PONV). Age, sex, and ASA grading of patients had no effect on satisfaction ratings in our study.

For a patient, satisfaction is a delicate balancing act between prior expectations and judgments of the calibre of medical care they actually received. [1–3] Higher patient satisfaction establishes the standard for patient procedures and methods, whereas lower patient satisfaction highlights the necessity for raising the bar for all aspects of patient care. [1–3] As a result, it is a crucial indicator of the standard of medical care. Clinical trials utilise anaesthetic satisfaction as an outcome metric. [2,7,8] The quality of a service is thought to be directly related to patient pleasure. [7] In order to fulfil performance development and revalidation goals for healthcare workers, it must also be measured. [8] Three dimensions of patient satisfaction—physical, emotional, and interpersonal—are evaluated by the items on the scale that was utilised in this study. [2]

We were able to evaluate the effectiveness of interactions between medical staff and patients in our study by asking questions about "rating of kindness given to patient," "meeting of patient demands," "attention given to patient," and "information offered to them." [9] This is how the interpersonal elements of patient satisfaction are measured. We discovered that people who had RA were happier than patients who had GA. Patient satisfaction is greatly influenced by interpersonal relationships between patients and caregivers, such as anesthesiologists and nursing staff, as well as the amount of information given to patients, as has already been demonstrated. [1,9,10] In these investigations, patients either received GA predominately or GA and RA equally. The emphasis has been placed on caregivers' soft skills to develop relationships, deliver enough information, and be empathic due to the major role of

interpersonal aspects and information provided on patient satisfaction. [10] We were unable to find a study that specifically compared the interpersonal component of patient satisfaction between GA and RA. Because they would be awake intraoperatively and observe the caregivers' active participation, RA patients may have higher patient satisfaction in these interpersonal interaction categories than GA patients. The same factor may also explain why RA group participants scored more favourably on the items assessing the emotional components of patient satisfaction. The following questions on the questionnaire were used to gauge the emotional component of patient satisfaction: "feeling of well-being," "feeling of safety," "feeling relaxed," or "feeling anxious and frightened." The precise cause of Indian patients' higher levels of RA satisfaction will be revealed by carefully collecting and analysing the reasons for their contentment and discontent. According to expectations, patients in the RA group experienced less post-operative pain, as well as less nausea and vomiting, than those in the GA group. This was in line with previous studies that demonstrated that instances done with RA were substantially more effective at managing pain and controlling PONV. [11–14] As demonstrated in earlier studies, the perception of improved interpersonal relationships in RA may also be associated with better postoperative pain management and less nausea and vomiting. [11]

In keeping with prior studies that have showed RA patients to have improved patient satisfaction, we discovered that overall patient satisfaction was considerably higher in RA compared to GA in our research sample. Contradictory results have also been noted, though [15]. A recent study from the Netherlands found that patients having distal upper extremity surgery under GA reported higher levels of satisfaction than those under RA. In this study, insufficient RA and patient discomfort with the insensate and uncontrollable extremity postoperatively were the most frequent causes of patient dissatisfaction with RA. [4] The cultural variables can be the cause of this discrepancy. [16] Patients from India may accept the reasons of patient unhappiness listed above that were seen during RA in the Netherlands as a necessary component of the process. Our study's analgesia recovery time was comparable to that of a prior Indian study on RA-assisted upper limb operations. [17]

The longer duration of analgesia may help with postoperative comfort and recovery as the majority of patients suffered postoperative pain. [18] In our investigation, analgesia lasted longer in RA than in GA, and post-operative nausea and vomiting were less common in RA. There are benefits to prolonged analgesia, such as reduced opioid intake and shorter hospital stays. [19] The patients in the RA group would have likely found this to be psychologically more reassuring because they would have felt as though they had received more attention. Our study also looked at RA against GA in the Indian population. India is a developing country, thus an increase in the quantity of pharmaceuticals taken or in hospital stays lengthens the financial load. [20] In comparison to RA, the number and cost of the drugs utilised in GA are both significantly higher. Fewer analgesic medications are needed since RA provides superior analgesia. Our research revealed that RA required shorter hospital stays than GA did. This may lower postoperative care expenses generally, easing the financial burden on patients and the healthcare system. Given that RA is just as secure and successful for procedures on the upper limbs, our findings may also have considerable cost ramifications for India's health policy authorities. [21]

The following are the limitations of our investigation. The interventions weren't done at random. [22] This would have eliminated the rater's prejudice as well as

the other biases resulting from the preference of patients and caregivers for a particular anaesthetic procedure, ensuring unbiased data collection and analysis. The patient satisfaction survey was not translated into the regional language before it was used. The causes of the patient's dissatisfaction were not able to be systematically investigated. The different types of surgeries performed were also varied, and their impact on patient satisfaction was not quantified. The surgical team likely decided on the length of the postoperative stay based mostly on how well the wound was healing, and we did not investigate any additional potential factors that would have an impact on the length of the hospital stay.

Conclusion

In our facility, patient satisfaction with RA for surgeries on the upper limbs was higher than with GA. Longer postoperative analgesic duration, lower anxiety, less postoperative nausea and vomiting, and shorter hospital stays were all factors in our study. Patients who receive better perioperative care from caregivers, such as information sharing, friendliness, and reacting to needs, feel more at ease, more secure, and less stressed. All of these factors help to improve patient satisfaction, which was higher in RA patients compared to GA patients.

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