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Original Research Article

An Open Label Clinical Comparative Assessment of Patient Satisfaction with Regional Anesthesia and General Anesthesia in Upper Limb Surgeries

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Abstract

Aim: To compare patient satisfaction between regional anesthesia (RA) and general anesthesia (GA) in patients undergoing upper limb surgeries.

Material & Methods: In this open label study, the participants were cross-sectionally assessed to compare patient satisfaction following RA and GA in Department of Anesthesiology, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India, over a period of one year.

Results: The mean scores of the following items were higher in RA—the kindness shown to them, information provided, feeling of safety, meeting demands, providing attention, and feeling of wellbeing. The GA group had higher scores for postoperative nausea and vomiting and feeling of anxiety items**.**

Conclusion: RA for upper limb surgeries provides better patient satisfaction than GA, along with a longer duration of analgesia and lesser duration of hospital stay.

Key words: General anesthesia, patient satisfaction, regional anesthesia

Introduction

The expression "patient satisfaction" was introduced into the clinical practice in the 90's and since then we have acknowledged its huge subjectivity and how difficult it is to measure. Presently, patient satisfaction is a major indicator of medical care quality that contributes to evaluate the structure, the process and the outcomes of health care services [1-7].

Rates of chronic pain among survivors of combat-related injuries surpass 80%. [8-9] Many who suffer from chronic pain also experience post-traumatic stress disorder (PTSD), traumatic brain injuries (TBI), depression, and reduced physical function. [10] Survivors require substantial and costly long-term treatment, rehabilitation, and pain management.

Adequately managing acute pain in the immediate post injury period may reduce chronic pain and thereby enhance rehabilitation and recovery efforts. Battlefield

pain management has been associated with decreased acute pain intensity and reduced psychological sequelae. [11-13] Regional anesthesia (RA) can block afferent painful stimuli, decrease acute pain intensity, and possibly prevent central sensitization and the subsequent development of chronic pain. [14] Previous research examining RA for the prevention of chronic pain has been limited to studies often with less than 12 months of follow-up and conducted in postoperative civilian populations. [15]

There are no systematic studies in India that have compared patient satisfaction between RA and GA. In this context, we assessed and compared the patient satisfaction following GA and RA in upper limb surgeries and also compared the duration of analgesia and length of hospital stay in between these two groups of Indian patients.

Material & Methods:

In this open label study, the participants were cross-sectionally assessed to compare patient satisfaction following RA and GA in Department of Anesthesiology, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India, over a period of one year.

50 patients in each group of RA and GA were included in the study after the approval from the Institute's ethics committee. The following were the inclusion criteria of the study: a) patients aged between 18 years and 60 years, b) physical status of American Society of Anesthesiologists (ASA) grade 1, 2, and 3, c) undergoing upper limb surgeries lasting more than 30 min, and d) staying in the hospital for more than 24 h postoperatively.

Exclusion criteria were patients on anti-platelet or anticoagulant drugs, patients admitted in intensive care unit (ICU), patients having local infection at site of block, bleeding coagulopathy, delirium or confusion, and uncooperative patients.

The treating team anesthesiologist who did the preoperative evaluation, discussed the pros and cons of GA and RA with the patient for the intended surgery and the kind of anesthesia (RA v/s GA) to be administered was finally decided by the patient's preference. Ultrasound-guided brachial plexus block is the technique practiced in our institute for RA in upper limb surgeries. For patients in RA group, blocks were performed using 15 ml of 0.5% bupivacaine with 20 ml was deposited as supraclavicular brachial plexus block and 10 ml as axillary brachial plexus block. The doses were well within the toxic limits (3 mg/kg for bupivacaine and 5 mg/kg for lignocaine). Supraclavicular brachial plexus block with axillary block was performed for forearm surgeries, whereas only supraclavicular brachial plexus block was performed for distal humerus surgery under ultrasound guidance by a qualified anesthesiologist. Patients in GA were given intravenous glycopyrrolate 10 µg/kg and midazolam 0.05 mg/kg as premedication, fentanyl 2 µg/ kg as analgesic, propofol 2 mg/kg as induction agent, atracurium 0.5 mg/kg as muscle relaxant, while depth of anesthesia was maintained with sevoflurane as inhalational agent and intravenous atracurium 0.1 mg/ kg. At the end of the surgery, residual neuromuscular blockade was reversed with neostigmine 0.05 mg/ kg and glycopyrrolate 10 µg/kg. Other intraoperative analgesics used in GA were intravenous diclofenac (1–2 mg/kg) or paracetamol (10–15 mg/kg).

The study participants were educated about the nature of the study, scales used, the basis of rating of the perioperative questionnaire as well as the Visual analogue score (VAS). Written and informed consent was taken from each patient willing to participate in the study.

All the routine investigations required for preoperative evaluation and the proposed surgeries were done. All the patients were pre-medicated with tablet alprazolam 0.5 mg overnight and on the morning of surgery.

Patients were allowed for a period of absolute fasting of at least 8 h.

Patients satisfaction was measured using a 10-item predesigned perioperative questionnaire, [2] in which each item was rated on a numerical rating scale between 0 and 10. [2] This questionnaire has got good psychometric properties to measure patient satisfaction with good reliability (Kappa value >0.75 and Cronbach's alpha 0.84) and validity. [2] To achieve a good multidimensional aspect of satisfaction, first four questions are related to the relational aspects between medical staff and patient; next four were about patient's emotional aspects and last two being physical aspects [Table 1].

Table 1: 10 points Questionnaires

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)

Patients' satisfaction was assessed either in English or Hindi (regional language of the study centre) using this questionnaire, in a face-to-face interview by one of the investigating anesthesiologists. The interview to assess the patient satisfaction was done at least 24 hours after the surgery and as soon as the patient became co-operative to take part in the study. Postoperative analgesia was assessed as per a VAS of 0–10 (Score 0 = no pain, score 10 – most severe pain imaginable) at 12, 24, and 48 h after surgery. Duration of analgesia was recorded as the time for 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. The length of stay in the hospital was calculated in days from the day of surgery till the day of discharge.

All data were analyzed using Statistical Package for the Social Sciences (SPSS) software version 24. The data was not normally distributed as per the Shapiro–Wilk test. The continuous variables were compared between the groups using independent t-test and for categorical variables Chi-square test was used.

Results:

The mean age of the patient and the gender distribution were comparable between the groups [Table 2].

Table 2: Demographic data of the subjects

Variable	General anesthesia (Mean±SD)	Regional anesthesia (Mean±SD)	P
Mean age in years	43.6 ± 13.8	41.6±13.8	0.102
Sex			
Female	21	33	0.330
Male	29	17	

ASA			
1	34	24	0.261
2	16	26	
3	0	1	

The types of surgeries done in the groups were not statistically significant between the groups [P=0.524, 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	26	32	p=0.542
Radius fracture	16	11	
Ulna fracture	7	6	
Distal humerus fracture	1	1	

The mean scores of the following items were higher in RA—the kindness shown to them, information provided, feeling of safety, meeting demands, providing attention, and feeling of wellbeing. The GA group had higher scores for postoperative nausea and vomiting and feeling of anxiety items [Table 4].

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

Variable	General anesthesia (Mean±SD)	Regional anesthesia (Mean±SD)	P
Kindness score	7.5±0.9	8.4±0.8	< 0.001
Information score	8.3±1.3	9.3±0.9	< 0.001
Feeling of safety score	7.6±1.1	8.7±0.7	< 0.001
Demands met score	6.3±1.2	8.3±0.8	< 0.001
Attention given score	6.7±1.1	8.2±0.7	< 0.001
Relaxed feeling score	6.1±1.0	8.8±0.8	< 0.001
Wellbeing score	6.9±1.2	8.9±0.9	< 0.001
Pain score (VAS)	4.3±0.8	2.7±0.7	< 0.001
Nausea score	1.2±0.9	1.4±0.5	< 0.001
Anxious score	1.4±0.7	1.1±0.4	< 0.001

Mean pain scores, as per VAS after 12 h, 24 h, and 48h of surgery were significantly less in RA (4.03±1.16, 4.02±1.04, and 4.06±1.041 vs. 2.38±0.60, 2.67±0.65, and 2.66±0.72; P < 0.001). Duration of analgesia was significantly more in RA than in GA

(6.28±1.69 h vs. 2.31±1.09 h; P < 0.001). Mean duration of hospital stay in days was also significantly less in RA than in GA (4.65±1.04days vs. 3.42±0.614days; 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 anesthesia	Regional anesthesia	P
Pain score after 12 h	4.03±1.16	2.38±0.60	<0.001
Pain score after 24 h	4.02±1.04	2.67±0.65	<0.001
Pain score after 48 h	4.06±1.04	2.66±0.72	<0.001
Duration of analgesia in hours	2.31±1.09	6.28±1.69	<0.001
Stay duration in days	4.65±1.04	3.42±0.614	<0.001

Discussion:

An earlier retrospective study of 126 combat-injured military personnel found that receiving RA was associated with a 1.5-point decrease in pain intensity over 7 days postoperatively. [16] Despite the combat-related mechanisms of injury experienced by our participants, average pain scores at 24 months were similar to those reported in samples of civilians with moderate and severe injuries. [17]

Investigations of trauma patients receiving CPNB in civilian tertiary care settings have reported mean catheter infusions of 9 days, our observational study was unable to accurately capture the average length of placement due to limited documentation of day of initial administration of CPNB prior to arriving at definitive care. [18] There is evidence supporting the use of RA to prevent persistent postsurgical pain, yet rarely is the duration of CPNBs reported in studies conducted in definitive care settings. [19]

The duration of analgesia after RA in our study is similar to an earlier study from India on upper limb surgeries using RA. [20] Since majority of the patients experienced postoperative pain, the longer duration of analgesia may assist the postoperative comfort and recovery. [21] In our study, the duration of analgesia was longer in RA than in GA with lesser incidences of post-operative nausea and vomiting in RA in our study. Longer duration of analgesia has its advantages like decreased opioid consumption and decreased length of hospital stay. [22] This most likely would have been psychologically more comforting to the patients in the RA group who would feel that more care has been given to them. Another aspect of our study was RA versus GA in Indian population. India is a developing nation and increase in number of drugs used or increase in length of hospital stay adds on to financial burden. [23,24]

Conclusion:

RA for upper limb surgeries provides better patient satisfaction than GA, along with a longer duration of analgesia and lesser duration of hospital stay.

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