

Original Research Article


General versus Spinal Anesthesia on Quality of Life in Women Undergoing Caesarean Delivery: A Prospective Comparative Study

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	International Archives of Integrated Medicine, Vol. 8, Issue 7, July, 2021. Available online at http://iaimjournal.com/ ISSN: 2394-0026 (P) ISSN: 2394-0034 (O)
	Received on: 25-06-2021 Accepted on: 05-07-2021 Source of support: Nil Conflict of interest: None declared.
How to cite this article: Vishnuvardhan Reddy, Srikanth Chirra. General versus Spinal Anesthesia on Quality of Life in Women Undergoing Caesarean Delivery: A Prospective Comparative Study. IAIM, 2021; 8(7): 35-41.	

Abstract

Background: As the rates of caesarean births have increased, the type of caesarean anesthesia has gained importance.

Aim and objectives: To compare the quality of life in women after elective caesarean section under spinal anesthesia as compared with general anesthesia.

Materials and methods: We carried a prospective randomized single blind comparative study on 60 pregnant women with American Society of Anesthesiologists (ASA) class II, scheduled for caesarean section with GA or SA. Participants assessed their state of health with the EuroQoL-5 Dimensions-3 Levels (EQ-5D-3L) self-administered questionnaire at four time points: six hours before caesarean delivery, 24 hours after caesarean delivery, one week and one month after delivery.

Results: More women who underwent spinal anesthesia reported “no problem” with regards to mobility and pain/discomfort. Repeated measurement analysis showed that the two groups started off with the same EQ-VAS score, however, both decreased over time with different slope resulting in different scores at 24 hours after CS. Then the scores increased in both groups over time and ended up being rather close at one month after CS.

Conclusion: Our study demonstrated significant advantages of spinal anesthesia compared to general anesthesia for caesarean delivery regarding postoperatively perceived HRQoL. Unless there is a contraindication, neuraxial anesthesia is the anesthetic technique of choice for caesarean delivery in most countries.

Key words

General Anesthesia, Spinal Anesthesia, Quality Of Life, Caesarean Delivery.

Introduction

The caesarean section (C-section) is the most frequent surgical procedure in Obstetrics and Gynecology. It is the route of delivery in about 30% of live births [1]. As C-section deliveries frequency rises all over the world, and although it has become safer than before, it is still associated with higher maternal and perinatal mortality and morbidity than vaginal deliveries. This higher mortality and morbidity rates are not only because of the surgical procedure but also related are to the anesthesia used [2, 3].

For many years, general anesthesia was the preferred type for use in caesarean procedures. Although it has many advantages, such as faster induction, better cardiovascular stability with lower incidence of hypotension, and good control over ventilation, use of anesthetic drugs that cross the placental barrier can nevertheless produce neonatal depression [4, 5].

Thus, recently, the rates of caesarean section using regional anesthesia have been increasing and regional anesthesia has now become the preferred anesthetic technique for avoiding both maternal and fetal complications. Although many reports have shown that regional anesthesia and general anesthesia have almost identical indexes of neonatal wellbeing, a growing number of anesthesiologists prefers regional anesthesia under elective conditions. Regional anesthesia-related hypotension due to sympathetic blockade may affect neonatal short-term outcomes by impairing uteroplacental perfusion. Additionally, cerebrospinal fluid (CSF) leakage following lumbar puncture may induce headache, nausea and vomiting. Several studies compared anesthesia modalities in caesarean section regarding clinical outcomes such as maternal mortality, post-operative pain and bleeding, but only a few compared health-related quality of life (HRQoL) of women undergoing general anesthesia versus spinal anesthesia [6-9].

The aim of this study was to determine whether pregnant women who undergo general anesthesia (GA) for caesarean delivery compared with spinal anesthesia (SA) differ regarding their perceived HRQoL.

Materials and methods

We carried a prospective randomized single blind comparative study on 60 pregnant women with American Society of Anesthesiologists (ASA) class II, scheduled for caesarean section with GA or SA. The study was carried in the department of anesthesiology, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana state, from January 2019 to December 2020 (two years), after obtaining institutional ethical committee approval and consent from all the participants.

Inclusion criteria

- Patients of American Society of Anesthesiologists (ASA) class II status,
- Patients scheduled for caesarean delivery with GA or SA.

Exclusion criteria

- Those refused to give informed consent
- Patients scheduled for normal delivery
- Those with contraindications for neuraxial anesthesia (Intrathecal bupivacaine and meperidine).

Informed consent was obtained from each woman and study started after obtaining institutional ethical clearance. Both modes of anesthesia (GA and SA) were standardized and administered in conventional ways. Induction of anesthesia was done by propofol and succinylcholine and 0.05 mg/kg of morphine was given intravenous, 15 minutes to the end of the operation. Spinal anesthesia was given by intrathecal administration of 8 mg bupivacaine 0.5% and 20 microgram of fentanyl. Post-operative analgesia was provided by patient-

controlled analgesia in both groups with bolus doses of 1 mg morphine per 15 minutes lock time. An anesthesiology resident obtained demographic information and past obstetric history. Participants assessed their state of health with the EuroQoL-5 Dimensions-3 Levels (EQ-5D-3L) self-administered questionnaire at four time points: six hours before caesarean delivery, 24 hours after caesarean delivery, one week and one month after delivery.

Data were analyzed using IBM SPSS Statistics software version 20.0. Independent t-test was used to compare mean between groups;

Chi-square test for categorical variables. A P value of <0.005 was considered as significant.

Results

There was no statistically significant difference regarding age groups, education level, number of abortions, and number of previous general anesthesia. In the SA group, 20 (33.33%) of women had the experience of spinal anesthesia before, while this number was 10 (16.66%) for GA group (p = 0.000) (**Table - 1** and **Graph - 1**).

Table - 1: Comparison of Demographic and Clinical Characteristics of Women Who Underwent Spinal Anesthesia Versus General Anesthesia.

Character		Spinal anesthesia (SA)		General anesthesia (GA)		P value
		No.	%	No.	%	
Age in years	< 25	15	25	17	28.3	0.6839
	25-35	36	60	33	55	
	>35	9	15	10	16.7	
Education	Up to 7 th class	30	50	32	53.3	0.15
	High school	17	28.3	19	31.7	
	Graduates	13	21.7	9	15	
No. of children	0	6	10	5	8.3	0.024*
	1	35	58.3	31	51.7	
	≥2	19	31.7	24	40	
Previous anesthesia experience	Yes	20	33.3	10	16.7	0.0365*
	No	40	66.7	50	83.3	

*=Significant

Graph - 1: Comparison of Demographic and Clinical Characteristics of Women Who Underwent Spinal Anesthesia Versus General Anesthesia.

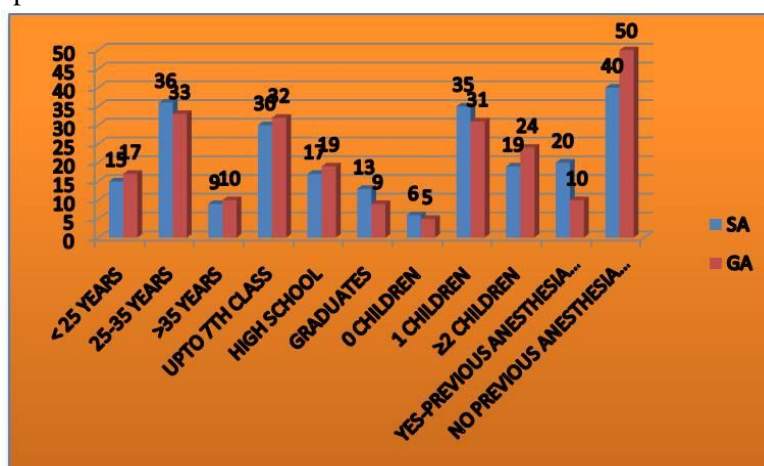


Table - 2: Frequency of Reported Problems in Both the Groups.

EQ-5D Dimension		Before CS			24 hrs after CS			1 week after CS			1 month after CS		
		SA	GA	P	SA	GA	P	SA	GA	P	SA	GA	P
Mobility	No	58	56	0.64	38	18	0.00*	59	55	0.14	60	58	0.35
	Yes	2	4		22	42		1	5		0	2	
Self Care	No	60	58	0.53	21	14	0.001*	60	58	0.55	60	58	0.24
	Yes	0	2		39	46		0	2		0	2	
Usual Activities	No	59	57	0.63	44	29	0.252	54	36	0.00*	59	48	0.00*
	Yes	1	3		16	31		6	24		1	12	
Pain/ Discomfort	No	51	45	0.26	12	6	0.006	12	8	0.56	36	21	0.0067
	Yes	9	15		48	54		38	52		24	39	
Anxiety/ Depression	No	40	35	0.54	56	54	0.78	48	42	0.072	48	42	0.75
	Yes	20	25		4	6		12	18		12	18	

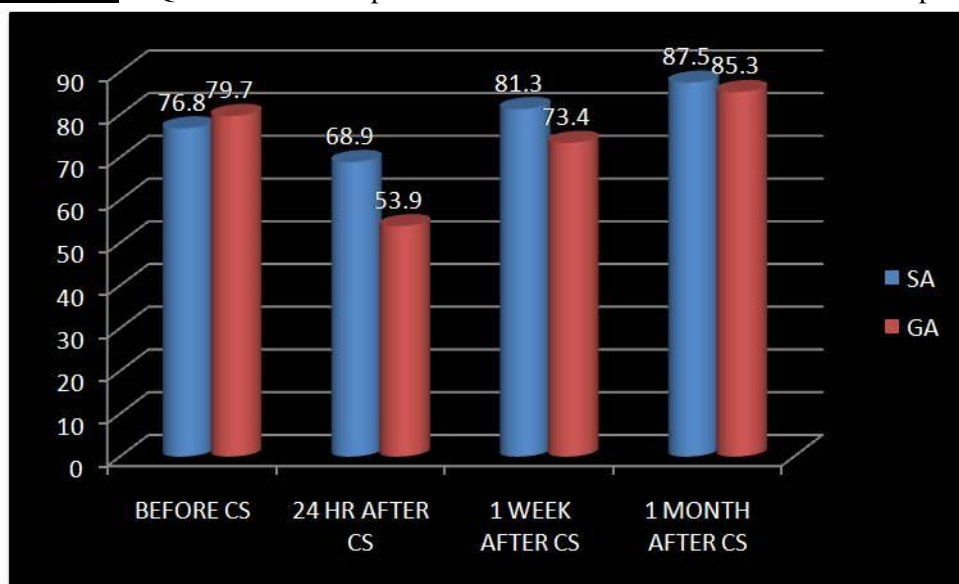
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Table - 3: EQ-VAS Score in Spinal Anesthesia and General Anesthesia Groups.

TIME LAPSE	SA (MEAN ±SD)	GA (MEAN±SD)	P VALUE
BEFORE CS	76.8 ± 12.1	79.7 ± 18.2	0.183
24 HR AFTER CS	68.9 ±17.4	53.9 ± 15.9)	0.001*
1 WEEK AFTER CS	81.3 ±14.6	73.4± 17.8	0.0064
1 MONTH AFTER CS	87.5 ±17.1	85.3± 21.2	0.521

*=Significant

Graph - 2: EQ-VAS Score in Spinal Anesthesia and General Anesthesia Groups.



Regarding mobility in the first 24 hours after caesarean delivery (CD), more women in SA group reported no problems compared to women in the GA group (38 vs. 18 women, P = 0.00). There was no statistical difference in mobility at one week or one month after caesarean delivery.

Similarly, the self-care dimension was only different at 24 hours after CS (21 women in SA group reported no problems vs. 14 in the GA group, p = 0.001).

Regarding “usual activities”, more women in SA group reported no problems compared to women in the GA group at one week (44 vs. 29) and one month (59 vs. 48) after caesarean delivery. More women who underwent spinal anesthesia reported no pain/discomfort at 24 hours after CS compared to the GA group, 12 vs. 6 ($p = 0.0068$). There was no difference in anxiety/depression dimension between the two groups at all time points (**Table - 2**).

There was no difference in the mean EQ-VAS score at baseline between the two groups (76.8 ± 12.1 vs. 79.7 ± 18.2 in SA group and GA group, respectively, $p = 0.18$). At 24 hours after CS, the mean EQ-VAS score was higher in SA group compared to GA group (68.9 (17.4) vs. 53.9 (15.9), $p = 0.001$). Similarly, EQ-VAS score was higher one week after CS in SA group (81.3 (14.6) vs. 73.4 (17.8), $p = 0.0064$). One month after CS, the mean EQ-VAS scores were 87.5 (17.1) in SA group and 85.3 (21.2) in the GA group, which was not statistically different ($p = 0.521$) (**Table - 3** and **Graph - 2**).

Discussion

In 2012, Afolabi and Lesi conducted a systematic review of 20 studies and reviewed 1793 women who underwent caesarean delivery to compare the effect of regional anesthesia versus general anesthesia on the outcomes of caesarean delivery. In that review, only one trial measured satisfaction level using visual analogue score but did not find any differences in satisfaction between regional and general anesthesia. The authors stated that patient satisfaction would need to be evaluated in further researches [10]. Our results indicate that fewer women who chose spinal anesthesia as their anesthesia modality reported “Pain/Discomfort” at 24 hours and one month after caesarean delivery.

Neuroaxial anesthesia provides anesthesiologists with an effective and convenient route of opioid administration, and in many countries it is being used as the preferred method of postoperative pain management after caesarean delivery. In a

previous study, spinal anesthesia was shown to be more effective than general anesthesia in terms of pain control during the first two hours post-operatively in transurethral procedures [11]. This is in agreement with our findings in patients with SAG who reported less pain scores immediately after CS.

A retrospective study conducted on 857 subjects who underwent elective caesarean delivery found that the higher pain scores remembered in the immediate postoperative period is an independent risk factor for development of persistent pain after caesarean delivery [12].

Moreover, Eisenach et al. reported that women with severe acute post-partum pain had a 2.5-fold increased risk of persistent pain compared to mild postpartum pain [13].

It has been shown that successful pain control after caesarean delivery increases the quality of life, which is more often accomplished by spinal anesthesia than general anesthesia. A potential explanation for this is that pain relief enables the new mother to be more caring, energetic and active in this period, in which they undertake the role of maternity that consists of many new activities such as nursing and baby care. In our study, more pregnant women who chose spinal anesthesia as their anesthesia modality reported “no problem” with respect to “mobility” and “Self-care” 24 hours after caesarean delivery. In addition, more women in this group had “no problem” in their “usual activities” at one week and one month after caesarean delivery time points [9-12].

Consistent with our findings, Gursoy, et al. showed that neuraxial anesthesia enables patients to return to normal daily activities earlier than general anesthesia. Moreover, the EQ-5D general health score was higher 24 h after caesarean delivery with regional anesthesia compared to general anesthesia [14].

In our study, more women in the SA group had previous experience of spinal anesthesia compared to GA group, which may be due to

high satisfaction level with spinal anesthesia. One study showed that the women who underwent caesarean delivery under spinal anesthesia demonstrated a high rate of patient satisfaction and would choose spinal anesthesia in the future, if required [15].

Conclusion

Spinal anesthesia is the technique of choice for caesarean delivery, not only because it avoids the risks of a general anesthetic which includes the risk of failed intubation and its consequences, but also because it provides more effective pain control, early ambulation, hence, fast return to daily activities for new mothers thereby increasing their quality of life.

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