Research Article
Open Access
CrossMark

Factors influencing selection of anesthesia types among pregnant mothers who underwent cesarean section In Jimma University specialized hospital

Abstract

Background: Caesarean delivery is one of the most commonly performed surgical procedures all over the world. The choice of anesthesia for caesarean section is regional and general anesthesia. Some of the factors influencing the choice of anesthesia type for cesarean section are degree of urgency, maternal and fetal condition, and willingness of mother, experience of the anesthetists and availability of all anesthesia equipment. Hence, the aim of this study was to identify factors influencing types of anesthesia selection for cesarean section.

Methods: A prospective cross sectional study design was conducted on factors influencing the choice of anesthesia type for mothers who underwent cesarean section in Jimma specialized hospital from April to June, 2018. All mothers underwent cesarean section were included. Regular supervision and follow up was made. Descriptive statistics were used to identify factors influencing types of anesthesia. Data was entered and analysis was done using SPSS versions 25.

Results: A total of 65 pregnant mothers who underwent cesarean section were included. Nearly half of them, 32 (49.2%) were between 26-30 years old. Among all, 52.3% were undergone under spinal anesthesia. Majority, 78.5% of the mother underwent cesarean section were emergency in which 40% underwent under general anesthesia and 38.5% under spinal anesthesia. Ketamine, 61.3% took majority of induction agent during general anesthesia. 16.1% of pregnant mothers who came with fetus in distress and hypotension were given general anesthesia.

Conclusion: Generally, almost the entire mother who came with stable maternal and fetal condition underwent spinal anesthesia. Three- fourth of emergency cases were undergoing with general anesthesia. Therefore, reduce use of general anesthesia in elective cases.

Keywords: Types of anesthesia, influencing factors, pregnant mothers, cesarean section

Volume 14 Issue 1 - 2022

Ashebir Nigussie Yirgu, Moges Daba Bikila, Aman Safawo Dalecha
Negelle Arsi General Hospital and Medical College, Department of Anesthesia, Ethiopia

Correspondence: Ashebir Nigussie Yirgu, Negelle Arsi General Hospital and Medical College, Department of Anesthesia, Ethiopia, Tel +251967286821/+251962022082, Email ashebirnigussie3@gmail.com

Received: November 15, 2022 | **Published:** January 31, 2022

Introduction

Caesarean delivery is one of the most commonly performed surgical procedures all over the world. The choice of anesthesia for caesarean section is regional and general anesthesia depending on maternal and fetal condition and other factors.[1]

The choice of anesthesia for any caesarean section depends on multiple factors such as the indication and urgency of cesarean section, Surgeons experience, history of previous cesarean section, maternal and fetus pre-operative conditions and types of uterine incision.[2] Regional anesthesia technique is currently the most commonly used method for providing anesthesia for Caesarean section and also can used in conditions like preeclampsia and placenta previa which was considered an indication for general anesthesia. Most common indication for general anesthesia are urgency of cesarean section, maternal refusal of regional techniques, inadequate or failed regional attempts, and regional contraindications including coagulation or spinal abnormalities.[3]

Although the use of general anesthesia for cesarean delivery has dramatically decreased during recent decade, it is still necessary for the management of several situations, including maternal hemorrhage, overt coagulopathy, and life treating fetal condition and a case in which patients refused regional anesthesia.[4]

The Royal College of Anesthetists in the United Kingdom has proposed that more than 95% of elective caesarean deliveries and more than 85% of emergency caesarean deliveries should be performed using regional anesthetic techniques.[5] Nevertheless, there is no adequate information regarding to this topic particularly in Ethiopia. The present study was conducted to assess the factors influencing types of anesthesia selection who underwent cesarean section in Jimma university specialized hospital, which is found in western part of Ethiopia.

Materials and methods

Study area and setting: - The study was conducted at Jimma University Specialized Hospital which is located in Jimma town 352 km southwest of Addis Ababa. It is one of the oldest public hospitals in the country established in 1930 E.C by the Italians for the service of their soldiers and used to be named as St. Mary Hospital. It is one of the oldest teaching hospitals in the country giving services to people living in Jimma zone and currently it is the only teaching and referral hospital in the southwestern part of the Ethiopia. It provides services for approximately 15,000 inpatients, 160,000 outpatient attendants, 11,000 accident and emergency cases, and around 6000 conducted in 2015 coming to the hospital from the catchment area. Currently, JUSH has about 21 units and 503 beds. The maternity ward is one that has around 65 beds & provides delivery service for the community around the area.

Study design and period: Hospital based prospective cross sectional study design was conducted in Jimma University Specialized Hospital from April to June, 2018.

Study design

Cross sectional study design was used.

Source population

All mothers who gave birth at Jimma University Specialized Hospital.

Study population

All women who delivered by C/s within specified study period.

Sampling technique

Consecutive sampling method was conducted.

Data collection tools and procedure

A structured questionnaire was used to collect information about the socio-demographic characteristics of respondents like age of mother, maternal and fetal condition, and urgency of c/s, type of anesthesia administered and anesthetic related complication of c/s. The questionnaire was developed by English to collect the data. Data was collected by 4 students of Anesthesia and supervised by one Bsc holder Anesthetist.

Data quality assurance

Pretest was done on 5% of sample size. The collected data will be checked for its completeness, accuracy, clarity and consistency every day by the investigator. Data collectors were trained on each item in the study tools. During data collection, regular supervision and follow up was made.

Data analyzing and processing

Data was checked manually for completeness and then was coded and entered in to Epi info version 7 computer software by investigator and exported to SPSS version 20 computer program for cleaning and analysis. Descriptive statistics was used to summarize data and tables.

Ethical consideration

Ethical clearance was obtained from research and ethical review committee of institute of health science, Jimma University. After explaining the importance of study, an informed verbal consent was obtained from the study participants. Confidentiality of the participants' information was kept throughout the research processes.

Operational definition

Elective C/s included all cases performed as scheduled for the day.

Emergency C/s included non-scheduled cases.

General anesthesia is a combination of loss of consciousness: amnesia: analgesia and muscle relaxation.

Spinal anesthesia is local anesthetic drug administered in the subarachnoid space.

Result

Age distributions of respondents

A total of 65 pregnant mothers who underwent c/s were involved. Nearly half of the pregnant mother, 49.2% was found between 26-30 years of age (Table 1).

Table 1 Age distribution of mother who underwent C/S in Jimma University specialized hospital from April to June, 2018 (n= 65) (Table 1)

Variable	Category (in years)	Frequency	Percentage (%)
Age	< 20	6	9.2
	21-25	10	15.4
	26-30	32	49.2
	31-35	9	13.8
	36-40	6	9.2
	>41	2	3.1

Maternal and fetal pre-operative conditions and types of anesthesia selection

Majority of mother who were stable pre-operatively delivered under General anesthesia, 22(71%) and spinal anesthesia 33(97%). All mothers with Pre-operative hypotension (16.1%) and APH (6.4%) were delivered under general anesthesia. 25(80.6%) and 32(94.1%) of the fetus who were stable pre operatively delivered under General anesthesia and spinal anesthesia respectively. Those fetuses with distress, 16.1% all delivered under general anesthesia (Table 2).

Table 2 Distribution of maternal and fetal pre-operative condition and type of anesthesia given in Jimma University specialized hospital from April to June, 2018

Conditions		Type anesthesia			
		General anesthesia		Spinal anesthesia	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Maternal	Stable	22	71	33	97
	Hypotension	5	16.1	-	
	APH	2	6.4	-	
	Others	2	6.4	1	2.9
	Total	31		34	
Fetal	Stable	25	80.6	32	94.1
	Fetal distress	5	16.1		
	Others	1	3.2	2	5.9
	Total	31		34	

Distribution of urgency of cesarean section and type of anesthesia selection

Elective c/s were done for 14(21.5%) and the rest 51(78.46%) were emergency cesarean section. 5(7.7%) of elective cases underwent general anesthesia and the rest spinal anesthesia. Majority, 26(40%) of emergency cases were delivered under general anesthesia (Figure 1).

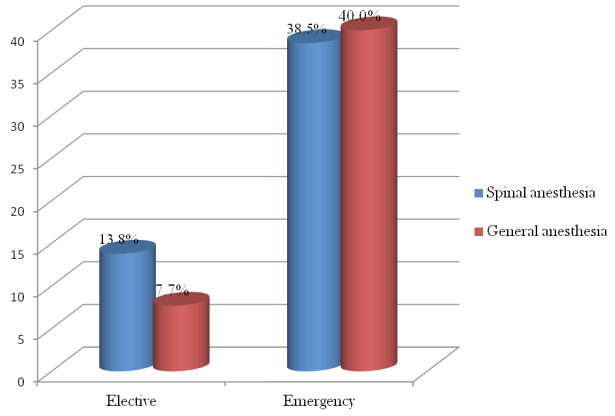

Figure 1 Distribution of urgency of cesarean section and type of anesthesia given in Jimma University specialized hospital from April to June, 2018.

Distribution of type of induction agent used for general anesthesia

According to the study, those cases done under general anesthesia, ketamine was the first induction agent by 19(61.3%) and propofol is 12(38.7%) (Figure 2).

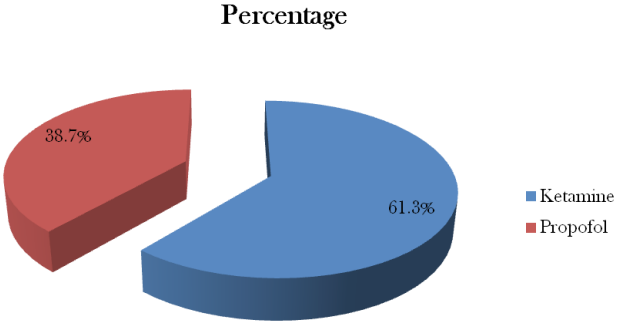

Figure 2 Distribution of type of induction agent used for General anesthesia during C\S in Jimma University specialized hospital from April to June, 2018.

Discussion

The findings of this study showed that maternal condition and fetal conditions were among the main factors that affect selection of anesthesia types. Therefore, identifying factors affecting selection of anesthesia types is very important.

Current study showed that among elective cases only 7.7% of them underwent cesarean section under general anesthesia. This study coincides with the study 5% in the United States, 4% in Belgium and 10% in Germany. But 30% in Spain, 34% in Italy and 44% in Czech Republic were use general anesthesia for elective cesarean delivery.[6]

This study found that 78.5% of cesarean section was emergency and all fetal distress women were done under general anesthesia. Study done in Norway in April 2003 shows that out of 2778 deliveries ,cesarean section accounts 69.7% out of this emergency c/s accounts 64 .3% while elective c/s accounts 5.4%. The common indication for c/s during this period were fetal distress (21.9%), Preeclampsia (6.2%) and maternal request (7.6%).[7]

In this study, out of the pregnant mothers who underwent cesarean section 21.5% were elective and 78.5% were emergency. The types of anesthesia given were 47.7% general anesthesia and 52.3% spinal anesthesia. Also, a retrospective analysis of c\s in maternity hospital in Eretria showed that out of the total 8293 deliveries ,cesarean section account(11.2%) out of these elective c\s account (7.8%) and (92.2%) were emergency c\s. The type of anesthesia given were general anesthesia (63.6%) and spinal anesthesia (36,4%).[8] In our study, 21.5% were elective cesarean section and 49.2% of the mother's age was between 26-30 years. Also, the study done at Tikur Anbessa teaching hospital in 1991 to 1992 out of the total deliveries of 3237, 10% were cesarean section. Among these, 82% were emergency c\s and 18% were elective c\s. Majority, 57% of the age's group of mother was between 20- 30 years.[9]

Conclusions and recommendation

Three fourth of all cesarean section were done as emergency; out of these 40% were done under general anesthesia. The most important indications for general anesthesia were fetal stress. The hospital has to supply all the required material for spinal anesthesia and the Anesthetist has to select regional anesthesia to reduce maternal and fetal complications.

Funding

Nil.

Competing interests

No conflict of interest between authors.

Authors' contributions

AN and MD has contributed to conducting case, performed analysis and interpretation of data and drafted manuscript, revision of manuscript; AS has supervised the design, conception, drafted manuscript and revision of manuscript. All authors read and approve the final manuscript.

Authors' information's

AN has Master in Anesthesia and now working in NAGHMC, department of Anesthesia as lecturer. MD and AS have Bachelor degree in Anesthesia and now working in NAGHMC, department of Anesthesia as Assistant lecturer.

Acknowledgment

Our heartfelt thanks go to all study participants and data collectors who participated in the study. The authors would like to thanks Jimma University, Jimma Specialized Hospital for the provision of facilities to conduct the study.

References

1. Bucklin BA, Hawkins JL, Anderson JR. Obstetric Anesthesia Workforce Survey. Twenty–year update. *Anesthesiology.* 2005;103(3):645–653.
2. Wilson SH, Fecho K, Marshall J. Factors influencing cesarean delivery operative times: a prospective observational cohort study. *Int J Obstet Anesth.* 2010;19:417–421.
3. Tsen LC. Anesthesia for cesarean delivery. In: Chestnut DH, editor. Obstetric anesthesia principles and practice. Philadelphia: Elsevier Inc.; 2009. p. 521.

4. Hawkins JL, Koonin LM, Palmer SK, et al. Anesthesia related deaths during obstetric delivery in the USA, 1979–1990. *Anesthesiology.* 1999;86:227–284.

5. Russell IF. Raising the standard: a compendium of audit recipes. Techniqueof anesthesia for caesarean sections, 2006; pp. 166–167.

6. Stourac P, Blaha J, Klozova R, et al. Anesthesia for cesarean delivery in the Czech Republic: a 2011 national survey. *Anesth Analg.* 2015;120:1303–1308.

7. Kolås T, Hofoss D, Daltveit AK, et al. Indications for cesarean deliveries in Norway. *American journal of obstetrics and gynecology*. 2003;188(4):864–870.

8. Journal of Eritrean medical association in Orotta maternity hospital. 2007.

9. Tadesse E, Adane M, Abiyou M. Caesarean section deliveries at Tikur Anbessa Teaching Hospital, Ethiopia. *East Afr Med J.* 1996;73:619–622.

Citation: Yirgu AN, Bikila MD, Dalecha AS. Factors influencing selection of anesthesia types among pregnant mothers who underwent cesarean section In Jimma University specialized hospital. *J Anesth Crit Care Open Access.* 2022;14(1):28–31. DOI: 10.15406/jaccoa.2022.14.00502