

A Prospective Randomized Study Comparing Spinal with General Anesthesia for Patients Undergoing Caesarean Section

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ABSTRACT

Anesthetic management of operative delivery in cesarean section is one of the most important sub-specialties of anesthesia. Due to the profound physiological changes, pregnant women respond differently than non-pregnant ones to anesthetic techniques used. The present study was conducted to compare the operative benefits of spinal versus general anesthesia for caesarean section delivery. Present study was conducted at the Santosh medical college & Hospital, Ghaziabad, UP, India. 140 full term pregnant females (age range 18 to 35 years) selected for lower segment caesarean section on emergency or elective bases were included to participate for study and divided into two groups consisting of 70 patients each. Females with full term live singleton pregnancy were included. Informed consent was taken from each patient to participate in study. Age distribution revealed that 51.43 % patients were from 18-23 years. The study revealed that after spinal anesthesia; mean duration of hospital stay was 3.12 ± 0.89 while after general anesthesia; mean duration of hospital stay was 4.83 ± 1.34 days. Throat irritation, chest infection and post-operative cough were found to be less common among spinal anesthesia group and being significantly higher in the general anesthesia group ($p < 0.05$). However, headache, backache, nausea & vomiting were found to be less common among general anesthesia group and being significantly higher in the spinal anesthesia group ($p < 0.05$). In the GA Control group the difficulties of the intubation were observed in 11 patients. In conclusion, this study demonstrates spinal anesthesia to be superior to general anesthesia in reducing post-operative hospital stay as well as difficulty in intubation for general anesthesia patients were encountered in present study. We believe SA to be superior to GA in patients undergoing caesarian section.

KEYWORDS: Caesarean Section, General Anesthesia, Spinal Anesthesia.

INTRODUCTION

Anesthetic management of operative delivery in cesarean section is one of the most important sub-specialties of anesthesia. Due to the profound physiological changes that occur in pregnancy, pregnant women respond differently than non-pregnant ones to anesthetic techniques used. It is likely that there are many influences on neonatal outcome after cesarean delivery. These include severity of the maternal and fetal condition, anesthesia, and surgical management. Fetal development is related to gestational age and to chronic uteroplacental insufficiency, which results in intrauterine growth restriction. In addition, any acute maternal deterioration may impact unfavorably on fetal outcome.¹

Both general and regional anesthesia techniques are effectively used for caesarean section. In the past decade, regional anesthesia, in particular spinal anesthesia, has become the first choice for operative delivery in elective cesarean delivery for greater safety, largely because of the recognition of the dangers of failed intubation, which occurs approximately eight times more frequently in the obstetric population than in the general surgical population.² Recent work has indicated that regional anesthesia for caesarean section offers distinct advantages for a newborn over general anaesthesia.³ Postoperative complications were more commonly associated with general anesthesia, as

commonly known are difficult intubation, due to the edema of the respiratory tract, anatomical variations of neck (short/thick), large tongue and need for induction delivery time to be less. Thus anticipated and unanticipated problems of the airway must be looked for and taken care of.⁴ Pulmonary complications are reported to occur more frequently with GA compared with regional anesthetic techniques.⁵

However caesarean section can be performed under any one of the above mentioned techniques. The choice depends upon indications for operation, degree of surgical urgency and desire of patient herself.⁶ It has been quoted by anesthesiologists who concur that multiple factors such as patients themselves, nature of surgery, method of regional or general anesthesia and quality of pre-operative care also influence surgical outcome.⁷ The present study was conducted to compare the operative benefits of spinal versus general anesthesia for caesarean section delivery.

MATERIALS & METHODS

Present study was conducted at the Santosh medical college & Hospital, Ghaziabad, UP, India. 140 full term pregnant females (age range 18 to 35 years) selected for lower segment caesarean section on emergency or elective bases were included to participate for study and divided into two groups consisting of 70 patients each. Females with full term live singleton pregnancy were

included. Informed consent was taken from each patient to participate in study. Patients who did not agree for caesarean section, premature pregnancy <37 weeks of gestation, liver, kidney or heart failure associated with pregnancy, uncontrolled metabolic disorders (diabetes mellitus, hypertension, thyrotoxicosis etc.), multiple foetus pregnancy, intra-uterine death of foetus were excluded from study.

The study population was full term hospitalized pregnant women registered for caesarean section. Their demographic data was taken for age, gestational complications, previous mode of deliveries and parity. They were allocated Group A: study (spinal anesthesia) and Group B: control (general anesthesia). Randomization was performed using a sealed opaque envelope with a computer-generated block random allocation.

They were ethically informed about the merits and demerits of the type of anesthesia allocated. Their informed written consent was taken before anesthesia intervention to combat attrition problem. The matching of controls was done by comparing their age, gestational age, previous caesarean and parity. The variables included to measure post-operative out-come were- hospital stay, throat irritation, post-operative cough, chest infections, headache, backache and nausea/vomiting.⁸ The data was collected, processed and statistically analyzed by SPSS-19 version.

Table 1: Age distribution.

Age in yrs.	No. of patients	Percentage
18 - 23	72	51.43 %
24- 29	43	30.71%
30- 35	25	17.86%

Table 2: Distribution according to parity

Parity	No. of patients	Percentage
Primi	46	32.86 %
Para – 2	26	18.57 %
Para -3	39	27.86%
Para-4	14	10%
Above -4	15	10.71%

Table 3: Gestational Record of study participants.

Gestational problem	No. of patient	Percentage
Previous LSCS	69	49.29%
Transverse lie	13	09.29%
Breech presentation	12	08.57%
Fetal distress	24	17.14%
Placenta previa	14	10%
Contracted pelvis	04	02.86%
P/ V Bleeding with chorionitis	04	02.86%

Table 4: Morbidity factors studied.

Morbidity Factor	Spinal Anesthesia		General Anesthesia	
	No. of patient	Percentage	No. of patient	Percentage
Throat irritation	08	11.43%	43	61.43%
Chest infection	03	04.29%	19	27.14 %
Post op. cough	07	10%	39	55.71%
Backache	29	41.43%	11	15.71%
Headache	37	52.86%	06	08.57%
Nausea vomiting	23	32.86%	09	12.86%

RESULTS

Age distribution revealed that 51.43 % patients were from 18-23 years. (Table1) It was found that Primi para were 32.86 %, Para-2 were 18.57 %, Para-3 were 27.86%, Para-4 were 10% and more than four parity were among 10.71% patients. (Table2) It was noted that a history of previous caesarean section was among 49.29%, Transverse lie 09.29%, Breech presentation 08.57%. (Table 3)

The duration of post-operative hospital stay of patients after caesarean section was noted. The study revealed that after spinal anesthesia; mean duration of hospital stay was 3.12 ± 0.89 while after general anesthesia; mean duration of hospital stay was 4.83 ± 1.34 days. Difference was statistically significant for post-operative hospital stay. (P value < 0.05)

Throat irritation, chest infection and post-operative cough were found to be less common among spinal anesthesia group and being significantly higher in the general anesthesia group ($p < 0.05$).

However, headache, backache, nausea & vomiting were found to be less common among general anesthesia group and being significantly higher in the spinal anesthesia group ($p < 0.05$). (Table 4)

In the GA Control group the difficulties of the intubation were observed in 11 patients. The difficulties were unanticipated anterior cord position, narrow tracheal diameter due to airway edema, retention of fluid in the respiratory tract, lower respiratory tract infections, maintaining the induction delivery time of the baby. Depression of the baby due to prolonged induction delivery time, late extraction of baby leads to morbidity of the new born.

DISCUSSION

In present study, we have found that 51.43 % of patients were from 18-23 years of age. Similar findings were reported by Ashok V Deshpande and Sanjeevani A Deshpande⁸ in Indians. Voigt and Rochow⁹ mentioned 14.5% caesarean deliveries in this age group; which is lower than reported in present study. This may be attributed to structural and ethnic differences of populations studied. We have found intra uterine fetal distress among 17.14 % cases which is higher than as

depicted in previous studies by Ashok V Deshpande and Sanjeevani A Deshpande⁸, Trujillo-Hernandez et al.¹⁰

The duration of post-operative hospital stay of patients after caesarean section was noted. The study revealed that after spinal anesthesia; mean duration of hospital stay was 3.12 ± 0.89 while after general anesthesia; mean duration of hospital stay was 4.83 ± 1.34 days. Difference was statistically significant for post-operative hospital stay. (P value < 0.05) Similar findings were reported by Haq MA et al.¹¹. Ashok V Deshpande and Sanjeevani A Deshpande⁸ reported no significant difference in post-operative hospital stay.

In the past, research workers Spielman and Corke¹² mentioned operative complications of Headache, Backache and Nausea/vomiting to be more common after spinal anesthesia. This description is similar and correlates with our findings also. Similar findings were reported by Ashok V Deshpande and Sanjeevani A Deshpande⁸ in Indians. The throat irritation, post-operative cough, chest infection, muscular pain due to the muscle relaxants was more in general anesthesia group than spinal group.

Caesarean section can be performed under spinal or general anesthesia depending upon operational urgency, choice of patient and surgeon or anaesthetist.¹³ Spinal anesthesia is generally advocated because it avoids airway and intubation failure complications while keeping the patient awake.^{6,14}

As headache, backache, nausea and vomiting were more in spinal group than general anesthesia and throat irritation, post-operative cough, chest infection were more in general group than spinal anesthesia. Differences were statistically significant. These minor complications can be readily managed by skillful nurses and competent anesthesia personnel.

But duration of post-operative hospital stay was significantly higher in general anesthesia group as well as difficult intubation in 11 patients was encountered in present study. The spinal technique is less expensive, quick, straight forward and rapid to learn and teach. It requires less experience and provides relief from pain of surgery for several hours as compared to general anaesthesia¹³

In conclusion, this study demonstrates spinal anesthesia to be superior to general anesthesia in reducing post-operative hospital stay as well as difficulty in intubation for general anesthesia patients were encountered in present study. We believe SA to be superior to GA in patients undergoing caesarian section.

REFERENCES

1. Robert A Dyer, Ilse Els, Josef Farbas, Gregory J Torr, Leann K Schoeman, Michael F Jame. Prospective, Randomized Trial Comparing General with Spinal Anesthesia for Cesarean Delivery in Preeclamptic Patients with a Nonreassuring Fetal Heart Trace, *Anesthesiology* 2003; 99:561–9.
2. Hawthorne L, Wilson R, Lyons G, Dresner M: Failed intubation revisited: 17-yr experience in a teaching maternity unit. *Br J Anaesth* 1996; 76:680–4.
3. Dripps RD, Vandam LD. Long term follow up of patients who received 10098spinal anaesthesia. Failure to discover major neurological sequelae. *J A M C* 1954; 156: 1486- 91.
4. Waris S, Yousuf M, Ahmad RA, Shahid M. An experience of Spinal Anaesthesia versus General Anaesthesia in severe Pre-Eclamptic patients undergoing lower segment Caesarean Section. *J Surg Pak Jun* 2002; 2: 25-7 7.
5. Scott NB, Kehlet H. Regional anaesthesia and surgical morbidity. *Br J Surg* 1988;75:299-304.
6. Kazimierak W, Kowalska-Koprek U, Kus E, Berner-Trabska M, Kaczorowska A, Domagalska A et al. The mode of anaesthesia for caesarean section in the opinion of pregnant and delivering women. PMID: 15844566 [PubMed- indexed for Medicine].
7. Gulur P, Nishimori M, Ballantyne J. Regional anaesthesia versus general anaesthesia, morbidity and mortality, best practice and research clinical anaesthesiology. 2009; 20: 2: 249-63.
8. Ashok V Deshpande, Sanjeevani A Deshpande. Comparison of Spinal Anesthesia versus General Anesthesia for Patients Undergoing Caesarean Section: Operative Benefits. *Journal of Evolution of Medical and Dental Sciences* 2014; 3(15); Page: 3958-3963, DOI: 10.14260/jemds/2014/2383
9. Voigt M, Rochow N, Zygmunt M, Strube S, Schneider KTM, Briese V. Risk of pregnancy and birth, birth presentation and mode of delivery in relation to the age of primiparous women. *Z Geburtshilfe Neonatal* 2008; 212: 206-10.
10. Trujillo-Hernandez B, Rios-Silva M, Huerta M, Trujillo X, Vasquez C, Millan-Guerrero R. Frequency of, indications for and clinical epidemiological characteristics of first time caesarean section, compared with repeated caesarean. *Archives of Gynaecology and Obstetrics* 2002; 267: 1: 27-32.
11. Haq MA, Kazmi EH, Hussain Q. Analysis of outcome of General Versus Spinal anaesthesia for Caesarean delivery in severe pre-eclampsia with foetal compromise. *Bio Medica Jun* 2005; 21: 1: 21-7.
12. Spielman FJ, Corke BC. Advantages and disadvantages of regional anaesthesia for caesarean section. A review. *J Reprod Med* 1985; 30: 11.
13. Collins C, Gurung A. Anesthesia for Caesarean Section. *Practical Procedures* 1998; 9: 3: 1-6.
14. Karman S, Akercan F, Akarsu T, Firat V, Ozcan O, Karadadas N. Comparison of the maternal and neonatal effects of epidural block and of combined spinal epidural block for caesarean section. *Eur J Obstet Gynaecol Reprod Biol* 2005; 121: 1: 18- 23.

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