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COMPARISON OF SPINAL ANESTHESIA VERSUS GENERAL ANESTHESIA FOR PATIENTS UNDERGOING CAESAREAN SECTION: OPERATIVE BENEFITS

Ashok V. Deshpande¹, Sanjeevani A. Deshpande²

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ABSTRACT: The objective of the study was to compare the operative benefits of spinal versus general anesthesia for caesarean section delivery. It is a Randomized control trial done at Sanjivan Hospital, Sangli from April 2008 to March 2012. Total of 100 full term pregnant hospitalized registered patients were selected. They were divided into two groups- Study (Spinal) and Control (General). Age of the patients was from 18–37 years. Outcome variables were post-operative hospital stay, throat infection, post-operative cough, chest infection, headache, backache, nausea and vomiting. The data was analyzed by SPSS–10 for significance where applicable. The study revealed that the post-operative hospital stay in both groups were insignificant ($p > 0.05$). However throat infection, post-operative cough, chest infection were significantly less frequent in study group ($p < 0.05$). The difficulties in the Obstetric Airways, both anticipated and unanticipated were a matter of significance. The post-operative benefits of spinal anesthesia cannot be ruled out. **CONCLUSION:** Comparison of complications of caesarean section after spinal and general anesthesia revealed no significant major differences. Minor differences were handled by the best hospital care and experienced personals. This study concluded that each type of anesthesia can be used safely.

KEYWORDS: Co morbid post-operative outcome, Caesarean Section, General Anesthesia, Spinal Anesthesia.

INTRODUCTION: Obstetric anesthesia is one of the most important sub-specialties of anesthesia. Pregnant women respond differently than non-pregnant ones in a number of important ways due to the physiological changes of pregnancy. Both general and regional anesthesia techniques are effectively used for caesarean section. However for greater safety, regional anesthesia is given more emphasis.¹ Recent work has indicated that regional anesthesia for caesarean section offers distinct advantages for a newborn over general anaesthesia.²

The uses of regional techniques for caesarean section have been increased because postoperative complications were more commonly associated with general anesthesia. The intubation difficulties in the obstetric cases are known. They are due to the edema of the respiratory tract, short neck, thick neck, 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. The mortality and morbidity have been found to be quite low with spinal as compared to general anesthesia because spinal is safe and cost effective.³

In addition the patient is awake and conscious. She can describe/relate timely indicators of complication. 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 anaesthesia.⁴ However caesarean section can be performed under any one of the above mentioned techniques. The choice depends upon indications for operation, degree of surgical

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urgency and desire of patient herself.⁵ 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.⁶

Regional anesthesia provides excellent anesthesia and analgesia for many surgical procedures but both anesthesiologists and patients must understand the risks in addition to benefits of regional anesthesia to make an informed choice of anesthesia technique.^{7, 8, 9}

MATERIAL AND METHOD:

Setting and Duration: The study was conducted at the Sanjivan Hospital Sangli from April 2008 to March 2012.

Study Population: All full term pregnant women selected for Lower Segment Caesarean Section on emergency or elective bases.

Objective of Study: The objective of this study was to: Compare the postoperative benefits of spinal versus general anesthesia for lower segment caesarean section.

Sampling Method: A sample of 100 patients chosen for caesarean section was selected by convenience sample method dividing them into two groups consisting of 50 patients each.

Inclusion Criteria:

1. Patients were selected from age range 18 to 37 years.
2. Full term live singleton pregnancy.
3. Informed written consent.
4. Anaesthesia fitness report was also taken for inclusion.

Exclusion Criteria:

1. Did not agree for caesarean section.
2. Premature pregnancy <37 weeks of gestation.
3. Liver, kidney or heart failure associated with pregnancy.
4. Uncontrolled metabolic disorders
(Diabetes Mellitus, Hypertension, Thyrotoxicosis)
5. Multiple foetus pregnancy
6. Intra-uterine death of foetus

Study Design: The study design was randomized control trial.

PROCEDURE: 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 study (spinal anesthesia) and control (general anesthesia) groups according to 'odd' and 'even' registration numbers respectively. 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. Those who did not agree were excluded. 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

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were- Hospital stay, throat irritation, post- operative cough, chest infections, headache, backache and nausea/vomiting.

The data was collected, processed and statistically analyzed by SPSS-10 where applicable.

RESULTS: A total number of 100 patients selected for caesarean section were studied. They were divided into spinal group and general groups having 50 patients in each for spinal and general anesthesia respectively.

Their age stratification revealed that 58 (58%) patients were from 18-22 years, 24(24%) from 23-27 years, 12 (12%) from 28-32 years and 06 (6%) from 33-37 years.

Age in yrs.	No. of patients	Percentage
18 - 22	58	58 %
23- 27	24	24%
28- 32	12	12%
33- 37	06	06%
Table1: Age incidence		

The parity of patients was categorized. It was found that Primi para were 34 (34%), Para-2 were 18 (18%), Para-3 were 28 (28%), Para-4 were 8(8%) and more than four parity were among 12(12%) patients.

Parity	No. of patients	Percentage
Primipara	34	34 %
Para – 2	18	18 %
Para -3	28	28%
Para-4	08	08%
Above -4	12	12%
Table2: Parity		

The frequency of gestational problems was assessed. It was noted that a history of previous caesarean section was among 53 (53%), Breech presentation 07 (07%), Transverse lie 08 (08%), P/V bleeding with chorionitis 06 (06%), Placenta Previa 08 (08%), Contracted Pelvic 04 (04%) and Fetal distress was noted among 14(14%) patients who were studied.

Gestational problem	No. of patient	Percentage
Previous LSCS	53	53%
Breech presentation	07	07%
Transverse lie	08	08%
P/ V Bleeding with chorionitis	06	06%
Placenta previa	08	08%
Contracted pelvis	04	04%
Fetal distress	14	14%
Table3: Gestational Problem		

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The duration of post-operative hospital stay of patients after caesarean section was noted. The study revealed that there was no difference statistically after spinal or general anesthesia ($p>0.05$).

Throat irritation was found to be 04 (8%) among spinal and 36 (72%) among general anesthesia group being significantly higher in the latter ($p<0.05$).

Similarly post-operative cough and chest infections were 06 (12%) and 02 (4%) respectively among spinal but 32 (64%) and 12 (24%) respectively among patients who received general anesthesia being significantly higher in the later ($p<0.05$).

However, headache and backache were 24 (48%) and 26 (52%) respectively among spinal group but these were 03 (06%) and 08 (16%) respectively among general group patients. It represented significantly lower proportions ($p<0.05$) among general anesthesia patients.

Similarly, Nausea/ vomiting was among 17 (34%) in spinal and 07 (14%) among general anesthesia group being significantly lower who received general anesthesia ($p<0.05$) as shown in table 4.

Morbidity Factor	Spinal Anesthesia		General Anesthesia	
	No. of patient	Percentage	No. of patient	Percentage
Postop hosp stay	No difference statistically after spinal or general anesthesia			
Throat irritation	04	08%	36	72%
Post op. cough	06	12%	32	64%
Chest infection	02	04%	12	24 %
Headache	24	48%	03	06%
Backache	26	52%	08	16%
Nausea vomiting	17	34%	07	14%

Table4: Morbidity factors

In the GA Control group the difficulties of the intubation were observed in 6 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: Caesarean section is a life-saving surgical procedure. We have found that 58% of patients were from 18-22 years of age. Previous medical workers Voigt and Rochow¹⁰ mentioned 14.5% caesarean at this age; which is lower than that of our work outcome. This may be attributed to structural and ethnic differences of populations studied. According to parity, para-3 was 28% contributing to caesarean sections. We have found intra uterine fetal distress among 14 % cases which is little higher to 12.8% as depicted in previous study by Trujillo-Hernandez et al.¹¹

Caesarean section can be performed under spinal or general anesthesia depending upon operational urgency, choice of patient and surgeon or anaesthetist.⁴ Spinal anesthesia is generally advocated because it avoids airway and intubation failure complications while keeping the patient awake.^{5, 12, 13}

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Difficulties of intubation are a major problem. Fortunately it is less but if difficulty is faced the baby is jeopardized and mother suffers. Neonatal morbidity is the deciding factor while choosing the method. We have noticed anterior positioned vocal cords in two patients. This led to prolonged induction delivery time leading to neonatal depression.

Our study was conducted to compare post-operative outcome of these two types of anesthesia. Similarly, post-operative hospital stay was also studied and we found that difference between patients operated under spinal and general anesthesia was statistically insignificant ($p>0.05$). It is contrary to the earlier study¹⁴ which described post-operative hospital stay being longer after general anesthesia. These opposite findings may be attributed to the nursing care, training of staff and hospital services differences widely among study populations.

In the past, research workers Spielman and Corke¹⁵ 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. The throat irritation, post-operative cough, chest infection, muscular pain due to the muscle relaxants was more in general anesthesia group than spinal group.

As against headache, backache, nausea and vomiting were more in spinal group than general anesthesia. But in spite of the findings; the stay in the hospital postoperatively is less in both group and this is attributed to the good nursing care, personnel attention, physiotherapy, early ambulation in both group. Early ambulation in both group caused the development of the confidence in the patients.

However minor complications can be readily managed by skillful nurses and competent anesthesia personnel. Our study revealed no major difference between post operatively out-come variables under spinal and general anesthesia.

CONCLUSION: There was no difference of post-operative hospital stay after spinal or general anesthesia. The difference of headache, nausea/vomiting and backache can be managed by competent medical personnel. The differences of post-operative major benefits in caesarean delivery to prefer either type of anesthesia are insignificant.

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AUTHORS:

1. Ashok V. Deshpande
2. Sanjeevani A. Deshpande

PARTICULARS OF CONTRIBUTORS:

1. Consultant Anaesthesiologist, Department of Anaesthesia, Sanjivan Hospital, ST Colony Road, Vishrambag, Sangli, Maharashtra, India.
2. Consultant Obstetrician and Gynaecologist, Department of Obstetrics & Gynaecology, Sanjivan Hospital, ST Colony Road, Vishrambag, Sangli, Maharashtra, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Ashok V. Deshpande,
Sanjivan Hospital,
ST Colony Road,
Vishrambag, Sangli - 416415,
Maharashtra, India.
E-mail: drashokvdeshpande@yahoo.co.in

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