

Original Research

Comparison of general anaesthesia and spinal anaesthesia for caesarean section

¹Kanika Sharma, ²Lalit Kumar Kejriwal

¹Assistant Professor, Department of Obstetrics & Gynaecology, N C Medical College & Hospital, Panipat, Haryana, India;

²Assistant Professor, Department of Anesthesia, Sakshi Medical College and Research Centre, Guna, Madhya Pradesh, India

ABSTRACT:

Background: The present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section (C-section). **Materials & methods:** A total of 100 subjects scheduled for elective C-section were enrolled. Complete demographic and clinical details of all the patients was obtained. All the patients were broadly divided into two groups as follows: Group A: Patients undergoing C-section under general anesthesia, and Group B: Patients undergoing C-section under spinal anesthesia. All the procedures were carried out under the hands of skilled and experienced gynecologist and anesthetist. Outcome was recorded. All the results were recorded in Microsoft excel sheet. **Results:** Postoperative wound infection was seen in 2 patients of group A and among 3 patients of group B. There were no maternal deaths. Babies demonstrated no difference in birthweight (Group A: 3312.2 gram and Group B: 3297.5 gram). Mean Apgar scores among patients of group A and group B at one minute was 6.23 and 8.08 respectively (p-value < 0.05). Mean Apgar scores among patients of group A and group B at five minute was 7.92 and 8.92 respectively (p-value < 0.05). NICU admission was seen in 5 patients of group A and 6 patients of group B. **Conclusion:** GA and SA appear equally safe, but SA was associated with significantly better outcome.

Key words: Spina, General Anesthesia, Caesarean

Received: 13 July, 2018

Accepted: 18 August 2018

Corresponding author: Lalit Kumar Kejriwal, Assistant Professor, Department of Anesthesia, Sakshi Medical College and Research Centre, Guna, Madhya Pradesh, India

This article may be cited as: Sharma K, Kejriwal LK. Comparison of general anaesthesia and spinal anaesthesia for caesarean section. J Adv Med Dent Sci Res 2018;6(9):156-158.

INTRODUCTION

Providing a safe effective anesthetic technique for Cesarean delivery requires a detailed understanding of the physiologic changes associated with pregnancy, labor and delivery. These changes are a result of alterations in the maternal hormone balance, biochemical shifts related to larger metabolic demands of the fetus and placenta, and mechanical forces from the gravid uterus. Although each organ system is affected by pregnancy, the changes to the cardiovascular, respiratory and gastrointestinal systems have specific pertinent anesthetic implications around Cesarean delivery.¹⁻³

Internationally, obstetric anaesthesia guidelines recommend spinal and epidural over general anaesthesia (GA) for most caesarean sections (CSs). The primary reason for recommending regional blocks is the risk of failed endotracheal intubation and

aspiration of gastric contents in pregnant women who undergo GA. While there is evidence that GA is associated with an increased need for neonatal resuscitation, evidence about specific delivery indications and about neonatal outcomes subsequent to resuscitation is limited. Previous studies have usually been single hospital-based and lacked power to confidently detect differences in a rare neonatal outcome such as a low 5-minute Apgar score (Apgar), particularly among sub-groups such as emergency deliveries.⁴⁻⁶ Hence; the present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section.

MATERIALS & METHODS

The present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section. A total of 100 subjects scheduled

for elective C-section were enrolled. Complete demographic and clinical details of all the patients was obtained. All the patients were broadly divided into two groups as follows:

Group A: Patients undergoing C-section under general anesthesia, and

Group B: Patients undergoing C-section under spinal anesthesia

All the procedures were carried out under the hands of skilled and experienced gynecologist and anesthetist. Outcome was recorded. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. Chi-square test and student t test was used for evaluation of level of significance. P-value of less than 0.05 was taken as significant.

RESULTS

Mean age of the patients of group A and group B was 29.2 years and 31.7 years respectively. Estimated blood loss among patients of group A and group B was 813.2 ml and 697.2 ml respectively. Patients undergoing general anesthesia had significantly greater blood loss in comparison to patients undergoing spinal anesthesia. Mean hospital stay among patients of group A and group B was 5.2 days and 5.9 days respectively. Postoperative wound infection was seen in 2 patients of group A and among 3 patients of group B. There were no maternal deaths. Babies demonstrated no difference in birthweight (Group A: 3312.2 gram and Group B:3297.5 gram). Mean Apgar scores among patients of group A and group B at one minute was 6.23 and 8.08 respectively (p-value < 0.05). Mean Apgar scores among patients of group A and group B at five minute was 7.92 and 8.92 respectively (p-value < 0.05). NICU admission was seen in 5 patients of group A and 6 patients of group B.

Table 1: Comparison of blood loss

Blood loss (ml)	Group A	Group B
Mean	813.2	697.2
SD	53.8	69.1
p-value	0.001 (Significant)	

Table 2: Comparison of hospital stay

Hospital stay (days)	Group A	Group B
Mean	5.2	5.9
SD	1.3	1.1
p-value	0.117	

Table 3: Comparisons of Apgar scores

Mean Apgar score	Group A	Group B	p-value
One minute	6.23	8.08	0.001*
Five minutes	7.92	8.92	0.023*

*: Significant

Table 4: NICU admission

NICU admission	Group A	Group B	p-value
Number	5	6	0.65
Percentage	10	12	

DISCUSSION

Mother and fetus well-being should be taken into account while planning for anesthetic for cesarean delivery. Regional anesthesia is safer for the mother than general anesthesia and the most common method of anesthesia for delivery because it allows the mother to be awake and immediately interact with her baby. Spinal and combined spinal epidural anesthesia are more commonly used than epidural anesthesia because it has a more rapid onset and lower incidence of failed block than pure epidural techniques. The use of spinal anesthesia for cesarean delivery was facilitated by the popularization of pencil-point needles, which dramatically reduced the incidence of postdural puncture headache.⁷⁻⁹

In an epidural, the anesthetic is injected into the "epidural space" surrounding the spinal cord in the thoracic or lumbar regions of the spine. This only numbs the nerves that lead to the region of the spinal cord where the anesthetic was injected. Epidurals start relieving pain after 10 to 20 minutes. In spinal anesthesia, also known as a spinal block, the medication is injected closer to the spinal cord: into the cerebrospinal fluid in the "subarachnoid space." This causes the entire lower half of the body to feel numb. Spinal blocks work faster than epidurals, and a smaller amount of anesthetic medication is needed.⁶⁻⁸ Hence; the present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section.

Mean age of the patients of group A and group B was 29.2 years and 31.7 years respectively. Estimated blood loss among patients of group A and group B was 813.2 ml and 697.2 ml respectively. Patients undergoing general anesthesia had significantly greater blood loss in comparison to patients undergoing spinal anesthesia. Mean hospital stay among patients of group A and group B was 5.2 days and 5.9 days respectively. Postoperative wound infection was seen in 2 patients of group A and among 3 patients of group B. In a previous study conducted by Hodgson CA et al, authors compared elective caesarean section under general anaesthesia with spinal anaesthesia. When the uterine incision - delivery interval was less than 3 min, neonates in the spinal group exhibited a higher Apgar score at 1 min (P<0.002) and a higher mean umbilical venous pH (P<0.05) than the equivalent general anaesthesia group; a significantly greater proportion of the neonates delivered under general anaesthesia had an umbilical venous pH<7.28 at delivery (P<0.05), a fact which previous work suggests is important. Among anaesthetized mothers inspired oxygen concentration (33% or 50%) before delivery had no significant effect upon neonatal outcome. It is concluded that

neonates delivered at elective Caesarean section under spinal anaesthesia are in better condition than those delivered under general anaesthesia.¹⁰

In the present study, there were no maternal deaths. Babies demonstrated no difference in birthweight (Group A: 3312.2 gram and Group B:3297.5 gram). Mean Apgar scores among patients of group A and group B at one minute was 6.23 and 8.08 respectively (p-value < 0.05). In another previous study conducted by Agrawal NK et al, authors evaluated the effect of induction delivery time on the Apgar score of the baby in patients undergoing lower segment caesarean section under spinal anaesthesia. Sixty term parturients undergoing lower segment caesarian section under spinal anaesthesia during the study period were randomly selected. They allocated 60 patients under two groups of 30 each- Group A (Induction delivery time< 20min) and Group B (Induction delivery time>20min). The mean induction delivery time and the Apgar score of both the groups were compared statistically. Here they concluded that induction delivery time is prolonged under spinal anaesthesia there is a significant decrease in the Apgar score.¹¹

In the present study, mean Apgar scores among patients of group A and group B at five minute was 7.92 and 8.92 respectively (p-value < 0.05). NICU admission was seen in 5 patients of group A and 6 patients of group B.Placement of a spinal anesthetic is technically easier than an epidural blockade. It is more rapid in onset and more reliable in providing surgical anaesthesia from the mid-thoracic level to the sacrum with a failure rate of <1%.The risk of profound hypotension is higher with spinal anaesthesia than with epidural anaesthesia, because the onset of the sympathectomy is more rapid and dosing is not titrated. Maternal hypotension and fetal outcome are improved with avoidance of aortocaval compression (left uterine displacement), hydration and appropriate use of vasopressors. A Cochrane review of strategies to decrease hypotension from spinal anaesthesia noted that the use of either crystalloid or colloid administration reduced the incidence of hypotension. More recent randomized controlled trials found colloid is significantly more effective than a crystalloid preload, and co-loading with colloid has been shown to be equally effective as pre-loading of colloid in the prevention of hypotension.¹²⁻¹⁶

CONCLUSION

GA and SA appear equally safe, but SA was associated with significantly better outcome.

REFERENCES

1. Hawkins JL. Anesthesia-related maternal mortality, Clin Obstetric Gynecol, 2003, vol. 46 (pg. 679-87)
2. D'Angelo R. Anesthesia-related maternal mortality: a pat on the back or a call to arms?, Anesthesiology, 2007, vol. 106 (pg. 1082-4)
3. Clark SL, Belfort MA, Dildy GA, et al. Maternal death in the 21st century: causes, prevention, and relationship to cesarean delivery, Am J Obstetric

- Gynecol, 2008, vol. 199 pg. 36 e1-5; discussion 91-2, e7-11
4. American Society of Anesthesiologists Task Force on Obstetric Anesthesia: Practice guidelines for obstetric anesthesia: an updated report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia. Anesthesiology. 2007, 106: 843-863.
5. Cyna AM, Dodd J: Clinical update: obstetric anaesthesia. Lancet. 2007, 370: 640-642.
6. Bloom SL, Spong CY, Weiner SJ, Landon MB, Rouse DJ, Varner MW, Moawad AH, Caritis SN, Harper M, Wapner RJ, Sorokin Y, Miodovnik M, O'Sullivan MJ, Sibai B, Langer O, Gabbe SG: Complications of anesthesia for cesarean delivery. Obstet Gynecol. 2005, 106: 281-287.
7. Wiswell TE. Delivery room management of the apparently vigorous meconium stained neonate: Result of multicenter, international collaboration trial. Pediatrics 2000;105:1.
8. Drowning JW, Houlton PC, Baeclay A. Extra dural anaesthesia for cesarean section: a comparison with general anaesthesia. Br J Anaesth 1997;51:390-4.
9. Dutta S, Ostheimer GW, Weiss JB. Neonatal effect of prolonged induction for cesarean section. Obstet Gynecol 1981;58:331-5
10. Hodgson CA et al.A comparison of spinal and general anaesthesia for elective caesarean section: effect on neonatal condition at birth. International Journal of Obstetric Anesthesia. 1994; 3(1): 25- 30
11. Agrawal NK, Palan A. Visual Evoked potential: Effect of induction delivery time on Apgar score in lower segment Caesarean section under spinal anaesthesia. PJSR. 2016; 9(1): 20- 23.
12. Riley ET, Cohen SE, Macario A, et al. Spinal versus epidural anaesthesia for cesarean section: a comparison of time efficiency, costs, charges, and complications, Anesth Analg, 1995, vol. 80 (pg. 709-12)
13. Fettes PD, Jansson JR, Wildsmith JA. Failed spinal anaesthesia: mechanisms, management, and prevention, Br J Anaesth, 2009, vol. 102 (pg. 739-48)
14. Cyna AM, Andrew M, Emmett RS, et al. Techniques for preventing hypotension during spinal anaesthesia for caesarean section, Cochrane Database Syst Rev, 2006pg. CD002251
15. Ko JS, Kim CS, Cho HS, et al. A randomized trial of crystalloid versus colloid solution for prevention of hypotension during spinal or low-dose combined spinal-epidural anaesthesia for elective caesarean delivery, Int J Obstetric Anesth, 2007, vol. 16 (pg. 8-12)
16. Carvalho B, Mercier FJ, Riley ET, et al. Hetastarch co-loading is as effective as pre-loading for the prevention of hypotension following spinal anaesthesia for cesarean delivery, Int J Obstetric Anesth, 2009, vol. 18 (pg. 150-5).