

# Most Preferred Anaesthetic Technique for both elective and Emergency Cesarean Sections is Spinal Anaesthesia in a Tertiary Care Hospital

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## ABSTRACT

**Aim:** To find out the most preferred and frequent anesthetic technique for both elective and emergency cesarean sections in a tertiary care hospital.

**Methods:** This retrospective study was conducted in anaesthesia and obstetric departments of Sir Ganga Ram Hospital Lahore for elective surgery from April 2015 to March 2016 and for emergency surgery from December 2015 to April 2016.

**Results:** Total 5784 cases were operated out of which 5441(94.06%) were given spinal anaesthesia, 310(5.35%) were given general anaesthesia and only 33(0.57%) cases were administered epidural anaesthesia for C Section. In emergency 4840 cases were operated, out of which 4588(94.74%) were given SA and 252(5.2%) were given GA. Whereas 944 cases were operated as elective cases, out of which 853(90.36%) were given SA, 58(6.14%) were given GA and 33(3.5%) received EA. Spinal anaesthesia was the commonest technique used for C section both for emergency and elective cases (94.06%). Comparing the two( $p < 0.05$ ) spinal anaesthesia was more common for emergency cesarean section (94.75%) as compared to elective cesarean section (90.36%). There was no significant difference regarding the minimum or maximum ages of patients coming for elective and emergency cesarean sections.

**Conclusion:** The most, preferred and convenient anaesthetic technique for cesarean section is the spinal anaesthesia both for elective and emergency cases unless otherwise contraindicated.

**Keywords:** Cesarean Section, Spinal Anaesthesia, Tertiary Care Hospital.

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## INTRODUCTION

History of regional anaesthesia dates back to 1855 AD when Friedrich Gaedcke isolated cocaine from coca plant and named the compound erythroxyline<sup>1</sup>. Later in 1885 James Leonard Corning an Australian neurologist injected cocaine between spinous processes of lower lumbar vertebra first in dogs and then in healthy men<sup>2</sup>. However it was German surgeon August Bier who for the very first time performed surgery under spinal anaesthesia in 1898<sup>3</sup>.

The revolution in local anaesthetic use in regional anaesthesia occurred when xylocaine was developed in 1945<sup>4</sup>. Later on many local anaesthetics were discovered like procaine, chlorprocaine, prilocaine and recently bupivacaine and ropivacaine. The frequency of caesarean section (C Section), which is one of the most important interventions in obstetric surgery, is gradually increasing worldwide; however, it constitutes approximately 25% of all births in USA<sup>5,6</sup>.

The anaesthetic technique to be employed for C section is determined according to some parameters

such as urgency of surgery, history of previous cesarean delivery, health problems of mother, and preference and experience of the anaesthetist and surgeon. Considering all these factors, the most appropriate general or regional anaesthetic technique is planned<sup>5,6,7,8,9</sup>.

Regional anaesthesia (RA) is usually preferred unless otherwise contraindicated because of high incidence of maternal mortality under general anaesthesia (GA)<sup>6,10</sup>. While 52% of anaesthesia related maternal mortality is due to GA, 25% occur during RA administration (11). However, according to the data between 1991 and 2002 in USA, a decrease was observed in anaesthesia-induced maternal mortality because of an increased use of RA for birth and C section (1.2 deaths per 1,000,000 live births). Although mortality because of GA has decreased, this rate is increasing with an increased frequency of RA administration<sup>12</sup>.

Mortality because of GA is often related to airway problems such as failure to ventilate and intubate, or oesophageal intubation, aspiration of gastric contents. Whereas RA induced mortality is related to excessively high neural block, total spinal block, cardiac arrest or local anaesthetic toxicity<sup>5,6,11,13-16</sup>. GA has an advantage of being a fast

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and safe technique in emergency cases when there is increased risk of bleeding. Moreover, airway and ventilation control can be achieved rapidly with this technique. In contrast, increased incidence of intubation and ventilation difficulty associated with physiological changes of pregnancy (enlarged breasts and oedema in the laryngopharyngeal regions), gastric fluid regurgitation and pulmonary aspiration risk, hypotension due to rapid sequence induction, airway complications, postoperative pain, nausea and vomiting are the disadvantages of GA. Other disadvantages include low Apgar scores of newborns because of the passage of intravenous anaesthetics through the placenta and haemodynamic and circulatory derangements that are associated with stress response to trauma in mothers using low dose anaesthetic drugs to prevent newborns from being affected by these agents<sup>5,8,9,14,15,17</sup>.

The contribution of regional anaesthesia to the establishment of bonding between the newborn and mother, because of mother's being a witness to the birth, should be taken into consideration. Other advantages of RA include causing less depression in foetus and post-operative pain treatment<sup>5,6,7,8,14</sup>. In contrast, the most important disadvantages of RA are the possibility of developing hypotension and bradycardia, possibility of an inadequate analgesia level, being a time-consuming procedure, sometimes causing surgical difficulty because of not using muscle relaxants, headache depending on the technique, backache, post-operative immobility, possible occurrence of urinary retention and development of local anaesthetics allergy and toxicity<sup>8,9,17</sup>.

As Sir Ganga Ram Hospital (SGRH) is a tertiary care hospital and has a very busy Obstetric department dealing with large number of patients, even the complicated ones. So we plan to conduct this retrospective study to find the preferred anaesthetic technique for cesarean section deliveries both for elective and emergency cases.

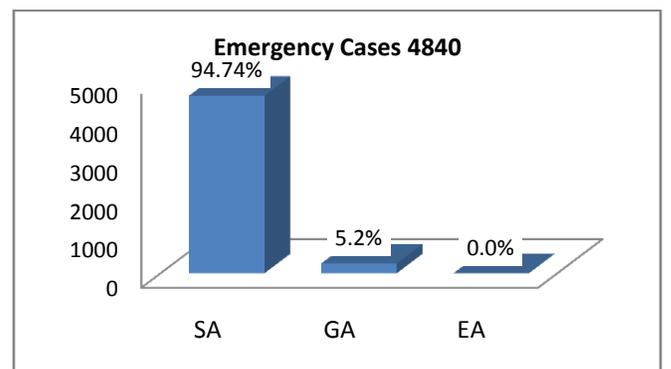
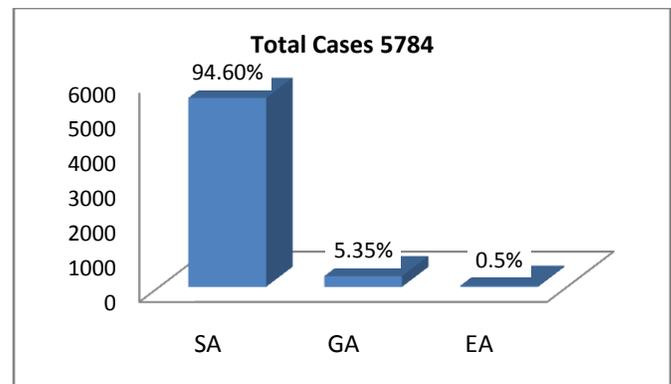
## METHODS

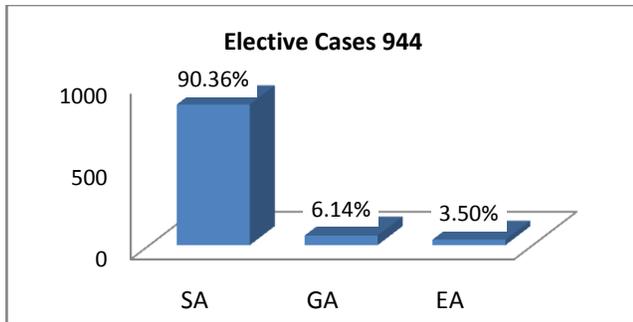
Patients coming to Obstetric department of SGRH Lahore, during April 2015 to March 2016 for elective cesarean section and December 2015 to April 2016 for emergency cesarean section were included in this study. The anaesthetic technique was decided at the time of operation. All data was collected from anesthesia registers for this retrospective study. Data was entered and analyzed on IBM SPSS version 21. Descriptive statistics was used. Age was presented in the form of mean±Standard Deviation. Success in terms of Spinal and General anesthesia with respect

to elective and emergency C Section was presented in the form of frequency and percentage. Student t test was used to compare the frequency of Regional anaesthesia in both elective and emergency C Sections. P Value <0.05 was considered as statistically significant.

## RESULTS

Total 5784 cases were operated out of which 5441(94.06%) were given spinal anaesthesia, 310(5.35%) were given general anaesthesia and only 33(0.57%) cases were administered epidural anesthesia for C Section. In emergency 4840 cases were operated, out of which 4588(94.74%) were given SA and 252(5.2%) were given GA .Whereas 944 cases were operated as elective cases, out of which 853(90.36%) were given SA, 58(6.14%) were given GA and 33(3.5%) received EA. Spinal anesthesia was the commonest technique used for C section both for emergency and elective cases (94.06%). Comparing the two(p<0.05%) spinal anaesthesia was more common for emergency cesarean section (94.75%)as compared to elective cesarean section (90.36%) .There was no significant difference regarding the minimum or maximum ages of patients for elective and emergency cesarean sections.





Age Data

	Max.	Min	Mean
Emergency cases	36	21.5	28
Elective cases	40	23	31
Total cases	40	21.5	29.5

Indications for emergency C-Sections

	n	%age
Fetal distress	4270	94.38
Placental abruption	39	0.86
Placenta previa	57	1.25
Eclampsia	55	1.21
Others	103	2.27
Total	4524	100

Indications for elective C-Sections

	n	%age
Previous C sections	756	80.08
Non-reactive CTG	57	6.03
Placenta prevea	22	2.33
Breach	18	1.90
GDM+PIH	52	5.53
Others	39	4.13
Total	944	100

DISCUSSION

Caesarean section is one of the most common obstetric surgery being done these days. The rate of cesarean section that was reported by WHO with respect to maternal and perinatal mortalities was 15%. In developed European countries, the rate varies between 16.6% (Norway) and 37.4% (Italy) as of 2008<sup>18</sup>. Although advances in anesthetic and surgical techniques and better post operative care have decreased cesarean induced mortality and morbidity , but the risk of bleeding, blood transfusion, thromboembolism, infection , longer hospital stay, prolonged time for recovery and post operative pain still continued<sup>17</sup>.

The anaesthetic technique for cesarean section is usually decided depending on several factors such as urgency of cesarean delivery, patient's existing systemic problems, patient's preference and preferences and experiences of the anaesthetist and surgeon both. However the maternal and foetal well

being should be given priority while planning anesthetic technique for C section<sup>5,6</sup>.

Though in previous days C sections were done under general anesthesia but now there is a significant move towards regional anesthesia. Spinal anesthesia has recently gained popularity over general and epidural anesthesia for C section, because general anesthetic potential complications related to the airway and aspiration of gastric contents and complexity of the procedure of epidural anesthesia have led anesthesiologists to choose spinal anesthesia as a method of choice for C section<sup>7,8</sup>. Spinal anesthesia is easy to administer, has short learning curve for residents, good patient compliance, rapid onset, predictable effects, associated with less complications and also provides post operative analgesia<sup>5,6,7,8,9</sup>.

In our study the common indications for emergency cesarean section were fetal distress (94.38%), CPD (2.27%), Placenta Previa (1.25%), Eclampsia (1.21%) and Placental abruption (86%).Where as Common indications for elective cesarean section were previous C-Section (80.08%), non reactive CTG (6.03%), GDM+ PIH (5.53%), Placenta Previa (2.33%) and Breech Presentation (1.90%). Yalinkaya et al<sup>19</sup> in their study similarly reported previous cesarean as most common indication for elective and fetal distress for emergency caesarean deliveries.

Regional Anaesthesia is also preferred being a safer technique for the mother and baby as compared to GA<sup>6,7,10</sup>. In addition, the use of regional anesthesia in cesarean section has increased over the years because of increased knowledge and skills of anaesthetist in using these techniques<sup>8</sup>. However the pace of this increased is not the same in all countries. In developed countries, the preference for regional anaesthetic techniques for cesarean section is increasing<sup>5,6</sup> and rate of GA administration has reduced to 0.5% to 1%. In developing countries where there is lack of modern anesthetic equipment and shortage of trained anesthetists , spinal anesthesia remains the preferred technique for cesarean deliveries. Pakistan is also a developing country and in our retrospective study we found that SA remained the preferred anesthetic technique for C section, total 5784 cases were operated out of which 94.06% (5441) were given spinal anaesthesia, 5.35%(310) were given general anaesthesia and only 33(0.57%) cases were administered epidural anesthesia for C Section.

Toker et al reported that the rate of cesarean section was 36.1% in their study. They found that the rate of RA in university hospital was 50% in 2005. In state hospitals, this rate increased from 10% to 30% and in private hospitals it increased from 43% to 65%. They

observed that RA was applied at the rate of 77% in cesarean cases and were similar to the rates of RA administration in the Western European countries<sup>7</sup>. Though RA is mostly used as a preferred technique for c section in their study (77%) as in our study but the rate is less when compared with our study (94.06%). This difference in the result could be due to the fact that their study was conducted in a developed country with better facilities for GA and availability of trained anesthesiologists.

In our study, 944 cases were operated as elective cases during a year, out of which 853(90.36%) were given SA, 58(6.14%) were given GA and 33(3.5%) received EA. The overall use of Regional Anaesthesia for Cesarean Section performed in one year period for elective cases was 93.86% (n=886) and in 5months period for emergency cases was 4588(94.79%). In Nigeria, which is a developing country Okafor and his colleagues conducted a study and they found that 47.6% of cesarean section were performed under General Anesthesia while 51.3% and 1.1% were performed under spinal and epidural anaesthesia respectively. The use of RA over the years was observed 18% in 2003, 48% in 2004, 72.6% in 2005 and 71% in 20016. Based on these results, a tendency to use RA in cesarean section was observed, which is consistent with our results<sup>10</sup>.

One of the limitations of our study is that regional anaesthesia induced complications such as nausea, vomiting, bradycardia, hypotension and PDPH could not be evaluated because it was a retrospective study as was the study of Toker et al<sup>7</sup>. Further studies are required to compare the incidence of these complications in both regional and general anesthesia.

## CONCLUSION

The most preferred ,safer and convenient anaesthetic technique for caesarian section is the spinal anaesthesia both for elective and emergency caesarian sections unless otherwise contraindicated in a tertiary care hospital.

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