Effect of lumbar epidural and spinal anesthesia in elective caesarean section in Bangladeshi women

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Abstract
Objective: to evaluate effect of lumbar epidural and spinal anesthesia in elective caesarean section in Bangladeshi women.
Methods: This experimental study is conducted at tertiary medical college hospital, from January 2019 to January 2020 where written informed consent from 150 patients was obtained for this experimental study.
Result: During the study, where in group-A 52.02% women were in their first pregnancy followed by 28.28% were 2nd pregnancy, 19.7% were multi gravid women. Where in group-A, 35% had hypotension where as in group-B it was 11%. Group-A, 30% patients were Highly satisfied where as in group-B it was 65%. The patients selected for the study was divided into two groups: Group – I (Spinal): 50 Patients selected, Group – II (Epidural): 50 patients selected.
Conclusion: From our study we can conclude that, women anaesthetized with the spinal anaesthesia technique needs treatment for hypotension more often than the epidural method. Since hypotension can affect the baby adversely, future research aimed at investigating the effects of spinal anaesthesia on neonatal outcomes is needed. Also, continuous epidural technique which allowed mother early breastfeeding and ambulation.
Keywords: Lumbar epidural anaesthesia, spinal anaesthesia, cesarean section (CS).

Introduction
The caesarean section (C/S) is preferably done under regional techniques like spinal and epidural anesthesia. Both these techniques are also preferable to general anaesthesia which allows the mother to remain awake during caesarean delivery.1
A Cesarean Section (CS) is usually performed when a vaginal delivery would put the baby’s or mother’s life at risk. But in recent times it is also performed upon request of mother. In case of an elective CS, there is enough time to evaluate the mother and to determine the type of anesthesia. Regional anesthesia has the advantage over general anesthesia by allowing mother to remain awake during delivery.1 Postoperative pain is also better managed with regional anesthesia. Moreover, in regional anesthesia, the patients are able to share the experience of delivery, which may enhance parents baby bonding. Beside this, anesthesia related maternal mortality is also decreased when CS is done under regional anesthesia.2,3
But regional anesthesia is not without side effect. Potential adverse effects common to both spinal and epidural anesthetic techniques include: failure to provide adequate anesthesia, maternal hypotension, post dural puncture headache (PDPH), nerve and vascular injury and backache and infection over the injection site etc.\textsuperscript{4,5} Though both spinal and epidural techniques are the popular regional anesthesia for CS; but the acceptability differs in different regions of the world in different time.

In this study our main goal is to evaluate effect of lumbar epidural and spinal anesthesia in elective caesarean section in Bangladeshi women.

**Objective**

**General Objective**
- To assess effect of lumbar epidural and spinal anesthesia in elective caesarean section in Bangladeshi women

**Specific Objective**
- To detect intra operative events between two groups
- To identify the level of maternal satisfaction between two groups.

**Methodology**

| Type of study          | Experimental study |
|------------------------|--------------------|
| Place of study         | Tertiary medical college and hospital |
| Study period           | January 2019 to January 2020 |
| Study population       | Written informed consent from 150 patients were obtained for this experimental study. |
| Sampling technique     | Purposive |

**Method**

During the study, after taking consent from the patients. The patients had the normal history of single pregnancy and an ASA physical status I & II. Pre-anaesthetic assessments were done on the day before surgery. The patients with suspected or manifest bleeding disturbances, gross abnormality in vertebral column, infection in the back, presence of liver and kidney diseases, patient taking anticoagulant and patient with pregnancy induced hypertension (PIH) or preeclampsia were excluded from the study. The patients selected for the study was divided into two groups: Group – I (Spinal): 75 Patients selected, Group – II (Epidural): 75 patients selected.

**Data Analysis**

After collection, data were entered into a personal computer and were edited, analyzed, plotted in graphs and tables. Data were analyzed by chi square test, Mann Whitney U tests, using the statistical package for social sciences (SPSS) version 20.

**Results**

In table-1 shows age distribution of the patients where most of the patients in both groups belong to 31-40 years age group, 54% and 64%. The following table is given below in detail:

| Age group | Group-A, % | Group-B, % |
|-----------|------------|------------|
| 21-30     | 38%        | 30%        |
| 31-40     | 54%        | 64%        |
| 41-50     | 9%         | 6%         |

In table-2 shows educational status of the patients where in group-A, only 5% patients were completed their graduation where in group-B 9%. The following table is given below in detail:

| Education of patients’ parents: | Group-A, % | Group-B, % |
|---------------------------------|------------|------------|
| Illiterate                      | 20%        | 21%        |
| Primary                         | 6%         | 12%        |
| Secondary                       | 21%        | 14%        |
| Higher-secondary                | 43%        | 11%        |
| Graduation or                   | 5%         | 9%         |

In table-3 shows parity distribution of the study group, where in group-A 52.01% women were in...
their first pregnancy followed by 28.29% were 2nd pregnancy, 19.70% were multi gravid women. Where as in group B52% women were in their first pregnancy followed by 29% were 2nd pregnancy,19% were multi gravid women. The following table is given below in detail:

**Table-3:** parity distribution of the pregnant women

| Parity             | Group-A, % | Group-B, % |
|--------------------|------------|------------|
| Primegravida       | 52.01%     | 52%        |
| 2nd pregnancy      | 28.29%     | 29%        |
| Multi gravida      | 19.70%     | 19%        |

In figure-1 shows residential area of the patients where 90% patients were from rural. The following figure is given below in detail

**Figure-1:** Residential area of the patients.

In table-4 shows the baseline values of mean BP and Heart rate where there is no significant change between the two groups. The following table is given below in detail:

**Table-4:** The baseline values of mean BP and Heart rate

| Variable          | Group-A       | Group-B       |
|-------------------|---------------|---------------|
| SBP in mm of Hg   | 117.58±12.10  | 119.31±11.97  |
| DBP in mm of Hg   | 77.58±9.62    | 78.26±9.22    |
| MAP in mm of Hg   | 92.6± 6.49    | 93.8± 5.32    |
| HR in beats per min. | 80.2± 7.30 | 82.48±6.27   |

In figure-2 shows comparison of intra operative events between two groups where in group-A, 35% had hypotension where as in group-B it was 11%. The figure is given below in detail:

**Figure-2:** Comparison of intra operative events between two groups

In table-4 shows Level of maternal satisfaction where in group-A, 35% patients were Highly satisfied where as in group-B it was 60%. The following table is given below in detail:

**Table-4:** Level of maternal satisfaction

| Variable                | Group-A | Group-B |
|-------------------------|---------|---------|
| Highly satisfied        | 35%     | 60%     |
| Fairly satisfied        | 44%     | 25%     |
| Not satisfied           | 21%     | 15%     |

In figure-3 shows post-operative interview of the mothers where 71% patients were complain of pain in the first night where as in group-B it was 6%. The following figure is given below in detail:
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**Table-4: Level of maternal satisfaction**

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![Figure-3: Post-operative interview of the mothers](image)

**Discussion**

The regional anesthetic techniques are widely accepted for elective cesarean section. In the study we tried to find out an ideal regional technique considering better outcome of mother. The parameters taken into account to compare the two techniques are- hemodynamic stability, need for additional analgesics, maternal comfort, postoperative pain management, and overall maternal satisfaction. The present and previous experiences of mothers were also compared. Recommendation of the mothers about anesthetic technique for CS has also been taken into account. Regional anesthesia results in less neonatal exposure to drugs. Hypotension lowers maternal mean arterial pressure (MAP) and uteroplacental perfusion. It was found that mothers of epidural group were highly satisfied in comparison to spinal group and the number of mothers not satisfied with the anesthetic technique is high in spinal group (P< 0.01). Which quite similar to other study. Post-operative pain relief was better maintained by continuous infusion of analgesics through epidural catheter. Whereas, analgesia in the spinal group was maintained with intramuscular opioids or NSAIDs.

In one study reported that, in Spinal group, 20 (68.97%) patients complained of pain in the first night of the post-operative period; while in epidural group the figure was only one (3.45%), (P = 0.000). Fifteen patients from spinal group and twenty-five patients from epidural group have chosen the current anesthetic technique for their future CS and also recommended as an ideal technique for CS. Which was quite similar to our study where we found that In the postoperative interview, a significantly higher number of mothers of epidural group (P<0.01) told that they did not feel pain on the postoperative night. The mothers who were comfortable in the intraoperative period and those who did not feel pain in the post-operative period had chosen the technique for their future cesarean delivery and also recommended the technique as a ideal for elective cesarean section (P< 0.01).

**Conclusion**

From our study we can conclude that, women anaesthetized with the spinal anaesthesia technique needs treatment for hypotension more often than the epidural method. Since hypotension can affect the baby adversely, future research aimed at investigating the effects of spinal anaesthesia on neonatal outcomes is needed. Also, continuous epidural technique which allowed mother early breastfeeding and ambulation.

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