



INCIDENCE OF HYPOTENSION DURING CESAREAN SECTION UNDER SPINAL ANAESTHESIA AND ITS RELATION WITH ABDOMINAL CIRCUMFERENCE

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ABSTRACT

Background: Spinal anaesthesia is widely preferred for cesarean section but frequently results in maternal hypotension. Abdominal circumference, a surrogate marker of intra-abdominal pressure, may influence aortocaval compression and venous return. **Objective:** To evaluate the association between abdominal circumference and the incidence of hypotension during cesarean section under spinal anaesthesia and its correlation with ephedrine requirement. **Methods:** A prospective observational study was conducted on 60 term parturients undergoing elective cesarean section under spinal anaesthesia. Abdominal circumference was measured preoperatively. Hypotension was defined as a fall in systolic blood pressure $>30\%$ from baseline or <90 mmHg. Ephedrine 6 mg IV was administered when required. Statistical analysis was performed using Pearson correlation with $p < 0.05$ considered significant. **Results:** Mean abdominal circumference was 100.95 ± 5.92 cm. Forty-five percent developed hypotension requiring vasopressors. No statistically significant correlation was found between abdominal circumference and hypotension or ephedrine requirement. **Conclusion:** Abdominal circumference alone is not a reliable predictor of spinal-induced hypotension. A multifactorial risk assessment is recommended.

KEYWORDS :

INTRODUCTION

Spinal anaesthesia remains the technique of choice for cesarean section due to rapid onset, dense sensory block, and avoidance of airway manipulation. However, spinal-induced hypotension remains the most common complication, with reported incidence ranging from 50% to 80%. Hypotension may compromise uteroplacental perfusion and fetal oxygenation.

Physiological changes during pregnancy, including increased intra-abdominal pressure and inferior vena cava compression, predispose parturients to exaggerated sympathetic blockade effects. Abdominal circumference reflects gravid uterine size and intra-abdominal pressure and may influence venous return and block spread.

This study was undertaken to evaluate whether abdominal circumference can predict hypotension during spinal anaesthesia in cesarean section.

MATERIALS AND METHODS

After Institutional Ethics Committee approval and informed consent, 60 ASA II term parturients scheduled for elective cesarean section under spinal anaesthesia were included.

Abdominal circumference was measured at the level of the umbilicus in supine position. Baseline systolic blood pressure (SBP) and heart rate were recorded.

Spinal anaesthesia was administered at L3–L4 interspace using 0.5% hyperbaric bupivacaine. Blood pressure was recorded every minute for 10 minutes post-spinal.

Hypotension was defined as SBP <90 mmHg or $>30\%$ decrease from baseline. Ephedrine 6 mg IV bolus was administered as required.

Data were analysed using Pearson correlation and descriptive statistics. $P < 0.05$ was considered statistically significant.

RESULTS

The mean age was 25.4 ± 3.2 years. Mean abdominal circumference was 100.95 ± 5.92 cm.

Hypotension occurred in 27 patients (45%). Among them, 21 required one dose of ephedrine and 6 required two or more doses.

Mean SBP decreased significantly within 3 minutes of spinal anaesthesia and gradually recovered with management.

Pearson correlation analysis demonstrated no statistically significant association between abdominal circumference and incidence of hypotension ($p > 0.05$). No significant correlation was observed between abdominal circumference and total ephedrine dose required.

DISCUSSION

Spinal anaesthesia induces sympathetic blockade resulting in vasodilation and reduced venous return. Pregnancy-related aortocaval compression further predisposes to hypotension.

Although abdominal circumference theoretically reflects intra-abdominal pressure, our findings align with studies by Kuok et al. (2016) and Sofi et al. (2023), which demonstrated no significant association between abdominal girth and hypotension incidence.

Other predictors such as baseline blood pressure, sensory block height, BMI, and autonomic tone may play a greater role. Thus, abdominal circumference alone may not be a reliable predictor.

LIMITATIONS

The sample size was modest and limited to a single centre. Only systolic blood pressure was used for defining hypotension. Larger multicentric studies are required.

CONCLUSION

Abdominal circumference does not independently predict hypotension during cesarean section under spinal anaesthesia. Comprehensive risk assessment and vigilant monitoring remain essential.

Conflict Of Interest

None declared.

Source Of Funding

None.

ETHICAL APPROVAL

Approved by Institutional Ethics Committee, SSIMS, Davangere. Informed consent obtained from all participants.

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