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ORIGINAL ARTICLE

Comparison between Pendant Positions versus Traditional Sitting Positions for Successful Spinal Puncture in Patients Undergoing Caesarean Deliveries

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ABSTRACT

Aim: To determine the effectiveness among pendant position and traditional sitting position in term of successful spinal puncture in patients underwent caesarean deliveries.
Study Design: Randomized control trial
Place and Duration of Study: Department of Anaesthesia, Ghurki Trust Teaching Hospital, Lahore from 1st April 2020 to 31st March 2021.
Methodology: One hundred and eighty patients were included. Patient's detailed demographics were recorded after taking written consent. Patients were aged between 20-50 years. Patients were equally divided into two groups, group I had 90 patients underwent pendant position and group II had 90 patients and underwent for traditional sitting. Randomly one of two positions was performed with the L3-L4 interface in spinal puncture. Time for successful spinal puncture, number of needle to bone contacts and total number of attempts were calculated.
Results: Mean age of the patients in group I was 27.6±17.04 years with mean BMI 24.25±2.63 kg/m^2 and in group II, mean age was 29.23±14.24 years with mean BMI 26.55±6.36 kg/m^2. Mean height of patients in group I was 2.6524±1.0054 meter and in group II was 2.6516±1.0042 meter. Weight of the patients in group I 63.48±22.13 kg and in group II was 65.46±17.19 kg. Success rate after first attempt in group I was 80 (94.44%) and group II was 72 (80%). For spinal needle insertion, fewer mean times was observed in group I 19.55±11.221 sec as compared to group II 28.14±18.226 sec. Number of needle to bone contacts was higher 66.7% in group I and in group II 40%. Number of attempt was less in group I as compared to group II.
Conclusion: The pendant position in the pregnant women who had a caesarean sector was much better than the standard position in order to provide the 1st attempt of spinal puncture.
Keywords: Caesarean, Spinal anaesthesia, Traditional sitting, Pendant position

INTRODUCTION

In women who are pregnant, a lumbar hyperlordosis, usually during pregnancy, can be difficult to perform lumbar flexion. The connection between vertebrae surface anatomy and vertebral columns can be changed by hyperlordosis. The intervertebral areas during pregnancy are small and can make the median approach of spinal puncture harder due to these changes.[1-3]

The success rate of the positioning of spinal needles in the subarachnoid space was affected by vertebral anatomy, the correct location of the patient and the anesthesiologist's experience. Incorrect position led to several attempts at insertion which led to the inconvenience and complications of patients.[4] Often associated with the post-spinal back pain were some introductive attempts.[2,3,5] Precise intervertebral space identification and interlaminal foramen can reduce contact between the spinal needle and the bone. Diminution of lumbar lordosis during spinal anaesthesia may promote this recognition.[6,7]

Shabanianet al[8] indicated that axillary support can increase intervertebral spaces during sitting. This location is referred to as a pendant. The vertical pressure due to gravity decreases during location. This location thus increases the intervertebral area and the spinal needle is more precise in the subarachnoid space.

Pryambodho et al[9] reported that traditional sitting positions in Indonesia's caesareans population and determined that the duration of the first attempt at spinal perforation is considerably better (p=0.0007), needle-to-bear (p=0.0005) and spinal time was substantially lower (9 sec versus 12 sec, p = 0.001). Fisher et al[6] also reported that the number of needle-to-bone interactions is comparable in both locations during epidural analgesia.

Mohammadi et al[7] reported that in pregnant women spinal contacts were recorded in spinal contact in sitting position less than in sitting position (222 versus 230 p = 0.01 correspondingly). Traditional sitting position has been identified as the optimum site by Tashayod et al[10] to minimize lower and lower limb surgery, and non-pregnant persons have also been studied. The reverse position is newly added for spinal anesthesia.

The purpose of this analysis is to compare the pending position with the conventional sitting position in the success rate of the first attempt of spinal pinch, number of needle contact and the length of the spinal pinch between the two positions in cesarean patients.

MATERIALS AND METHODS

This randomized control trial was conducted at Department of Anesthesia, Ghurki Trust Teaching Hospital Lahore from 1st April 2020 to 31st March 2021 and comprised of 180 cases. Patient's detailed demographics were recorded after

taking informed written consent. Patients did not give written agreement and patients who had fetal head imprisonment, umbilical cord propagation, foot disease, eclampsia, cardiovascular disease were excluded. Pregnant females between the ages of 20 and 50 years were included. Patients were equally divided into two groups, group I had 90 patients underwent pendant position and group II had 90 patients and underwent for traditional sitting. Randomly one of two positions was performed with the L3-L4 interface in Spinal puncture. Time was calculated for successful spinal puncture, number of bone contacts and total number of tries. Complete data was analyzed by SPSS 24.

RESULTS

Mean age of the patients in group I was 27.6±17.04 years with mean BMI 24.25±2.63 kg/m^2 and in group II mean age was 29.23±14.24 years with mean BMI 26.55±6.36 kg/m^2. Mean height of the patients in group I was 2.6524±1.0054 meter and in group II was 2.6516±1.0042 meter. Weight of the patients in group I 63.48±22.13 kg and in group II was 65.46±17.19 kg (Table 1).

Success rate after first attempt in group I was 80 (94.44%) and group II was 72 (80%). For spinal needle insertion, fewer mean times was observed in group I 19.55±11.221 sec as compared to group II 28.14±18.226 sec (Table 2). Number of needle to bone contacts was higher 66.7% in group I and in group II 40%. Number of attempt was less in group I as compared to group II (Table 3)

Table 1: Demographics information of the patients

Variable	Group I (n=90)	Group II (n=90)
Age (years)	27.6±17.04	29.23±14.24
Body mass index (kg/m^2)	27.6±17.04	26.55±6.36
Height (meter)	2.6524±1.0054	2.6516±1.0042
Weight (kg)	63.48±22.13	65.46±17.19

Table 2: Association of success rate and time between both groups

Variables	Group I	Group II
Success rate		
Yes	80 (94.44%)	72 (80%)
No	10 (5.56)	28 (20%)
For spinal needle insertion		
Mean Time (sec)	19.55±11.221	28.14±18.226

Table 3: Comparison among number of needle to bone contacts and number of attempts in both groups

Variables	Group I	Group II
Needle to bone contacts		
No	60 (66.7%)	36 (40%)
Yes	30 (33.3%)	54 (60%)
Number of attempts		
Frequency	1.08±0.48	2.33±1.68

DISCUSSION

Worldwide caesarean sections are becoming increasingly popular, obstetric and associated risks and challenges need to be well versed in the anesthesiologists.[11,12] Increased morbidity and mortality in obstetrics was caused mainly by difficulty with airways control and aspiration to favor neuraxial anaesthesia in general anaesthesias in obstetrics.[13-15]

In this study mean age of the patients in group I was 27.6±17.04 years with mean BMI 24.25±2.63 kg/m^2 and in group II mean age was 29.23±14.24 years with mean BMI 26.5 ±6.36 kg/m^2. Mean height of the patients in group I was 2.6524±1.0054 meter and in group II was 2.6516±1.0042 meter. Weight of the patients in group I 63.48±22.13 kg and in group II was 65.46±17.19 kg.As a result, with a growing age, decreased lumbar flexion and narrowing of interverteberal disks made it impossible for patients between the ages of 20 and 50 to enter the study.[16] As a result of abdominal obesity and fat distributions, palpation is impossible and patients cannot mostly return to tough spinal perforations with many tries and needle-to-bone contacts, as a result of the patient's increased BMI lordosis.[17] The mean time observed in our analysis was more than as reported by Pryambodho et al.[9] The initiator and subsequently the spinal needle were inserted in time. Nevertheless, both investigations indicate that spinal access is achieved in a pendulum posture in less medium time.

Success rate after first attempt in group I was 80 (94.44%) and group II was 72 (80%).For spinal needle insertion, fewer mean times was observed in group I 19.55±11.221 sec as compared to group II 28.14±18.226 sec. Number of needle to bone contacts was higher 66.7% in group I and in group II 40%. Number of attempt was less in group I as compared to group II. These results were comparable to the previous studies.[18,19]

A number of encounters between the needles and the bones have been linked to anxiety and fear that affect the patient's bleeding, e.g. tachycardia and sometimes hypertension. We found the Pryambodhoet al[9] almost identical (54 percent vs.35 percent for Group A and B). Pryambodho et al[9] also reported about 92% of patients pending spinal puncture in 1st versus 78% in traditional sitting position. 96.55% and 94.82% of our researchers respectively got spinal punctures in the first and traditional sitting position (not significant). This mismatch could have been created by the usage of the introductory needle and pencil point needle. No systematic pendency notion has been established to date. Shabanian and al[8] reported that the position was carried out by helping a patient underarms cantilever or board.

Different study trials in order to ensure good spinal puncture were carried out at least in different sitting positions. For active spinal puncture for cesarean supplies, We examined the efficacy of pendant positions over traditional sitting position. Few factors, including anesthetic experience and introductory use, have remained consistent in all patients, influencing effective spinal puncture. In addition, factors such as needles, administered LA dose, injection site and velocity were held constant for a sensory block stage. The reasons for patients in both groups were comparable, so outcomes in both groups were comparable. Some studies have shown that the motor block marking can determine effective spinal anaesthesia. However, the present study has identified a success for spinal anaesthesia when a spinals needle has been established in the subarachnoid area as well as a good blood free and clear CSF outflow from the spinal needle.[19]

The present study showed that during the position of the pendants in pregnant patients, the rate of success of the 1st attempt was significantly higher, and that the contact with spinal mustards with the spinal mustard was reduced and spinal needle punched shorter compared to the traditional position of the saturated needle was shortened. Not only location of patient was responsible for the failure of spinal anaesthesia. Factors like the structure of the anatomy of the patient, experience of anaesthetists and use of the introducer have also been significant.

CONCLUSION

The pendant position in the pregnant women who had a caesarean sector was much better than the standard position in order to provide the 1st attempt of spinal puncture.

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