WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 1, 1178-1184. Original Article ISSN 2277– 7105

# SADDLE BLOCK ANESTHESIA IN PERIANAL SURGERIES

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Article Received on
23 October 2020,
Revised on 13 Nov. 2020,
Accepted on 03 Dec. 2020
DOI: 10.20959/wjpr20211-19424

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## INTRODUCTION

Pain relief has been one of the most important of all factors that have been governing situations like surgeries during the post-operative period, chronic low back ache, labour analgesia.[1-4] For most of these procedures epidural puncture has been the method of choice to deliver an anaesthetic or other pain relief substitute.[5-9]

From the time epidural anaesthesia came into practice there have been various methods by which epidural space has been identified. Among all the methods available the most important one that is routinely been practice is the loss of resistance or negative pressure that is encountered while entering the epidural space.[10-19]

When lateral position is used, the distance of the epidural space to the skin is measured in the midline in the lumbar region in an adult female normally at the level of lumbar vertebra 3-4 intervertebral disc is most often approximately 4.7 cm in 5% of the subjects it can be more than 7 cm and in 10% of individuals it can be more than 6 cms.[20,21]

The study was conducted within an aim to provide an approximate idea about the depth at which epidural space which would help for successful epidural space identification in patients with different body mass indices.

## MATERIALS AND METHODS

The study was conducted in the Department of Anaesthesiology at father Muller Medical College Hospital over a period from January 2019 to December 2019.

Pre anaesthetic check up was performed in all patients a day before surgery, which included detailed history, general physical and systemic examination. The Body Mass Index of the patients were calculated by weight in kg divided by height in metre square. Examination of spine was done and L2 - L3 space was identified and marked with a marking pen. After patient was shifyted to OT Under all aseptic precautions, area be was cleaned, painted and draped. The skin was anaesthetised by locally infiltrating with 2% lignocaine. The midline approach was used to introduce the needle. The needle was gradually inserted forwards till 2 centimetres mark. After that stylet was removed and loss of resistance syringe was attached. Needle was then pushed gradually till epidural space was identified by loss of resistance technique and a marking was made on the epidural needle with the help of a sterile marker. This distance is marked as the epidural space distance. Test dose of 3ml 2% lignocaine with adrenaline (1:200000) was given after confirming the correct placement of the epidural catheter. Heart rate, respiratory rate, non invasive blood pressure was monitored and recorded. The nature, type and volume of drug was decided based on the need of the surgical procedure. Then the distance between the skin to epidural space was measured by measuring the distance from the marking made on the epidural needle to the tip of the needle.

A note was made whether epidural analgesia was satisfactory or unsatisfactory as desired for surgical analgesia or pain relief.

The depth of lumbar epidural space varies with intervertebral space. A maximum depth occurs in the third interspaces between the L3-L4 spines. This is due to fact that lumbar lordosis being greatest at the L3 interspace. At L1-L2 the depth is 3 to 4 cm. Below L3, the depth decreases This study was prospective non randomised observational study that was done on 50 patients who were planned for elective surgery under the epidural anaesthesia.

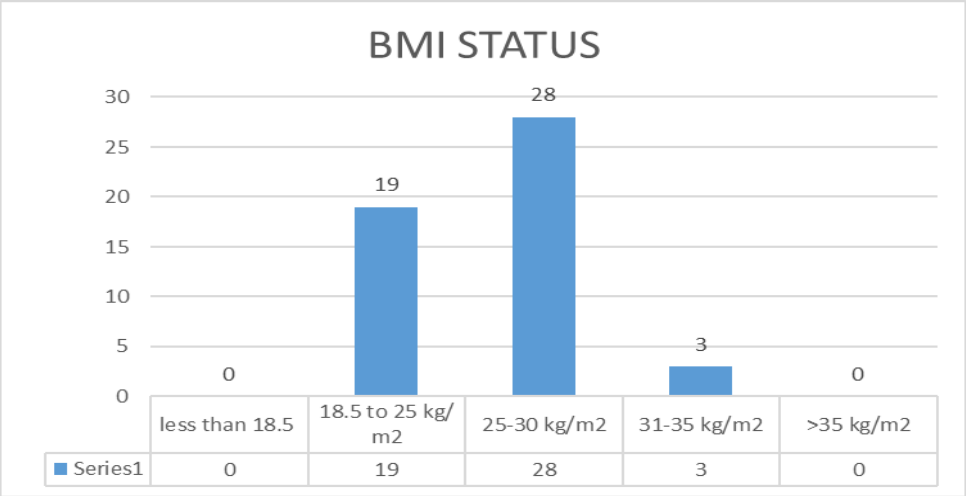
**RESULTS AND OBSERVATIONS**

in the present study the age group of the cases was between 18 years and 57 years, the mean age was 33.06 years sd+10.31 years the most common age group was between 31 years and 40 years with 42% 21 cases

We had 16 cases 32.00% females and 34 cases 68.00% males.

We had 44 cases (88%) with ASA status 2, 2 cases (4 %) with ASA status 1 and 2 cases (4%) with ASA status 3.

**BMI STATUS**




**Graph 1: BMI Status.**

We had between 18.5 to 25kg/ m2 19 cases 38.00%, 25-30kg/m2 28 cases, 56.00%, between 31-35 kg/m23 cases 6.00%.

**Table 1: Pre Spinal Hemodynamics.**

| PARAMETER | HEART RATE | RESPIRATRY RATE | SBP | DBP | SPO2 |
|---|---|---|---|---|---|
| Mean | 76.24 | 16.12 | 126 | 86 | 98.6 |
| Std. Error of Mean | 1.8042 | 0.43579 | 23.8 | 16 | 1.8042 |
| Median | 76 | 16 | 120 | 80 | 97.5 |
| Std. Deviation | 12.75765 | 3.08148 | 12.8 | 18.9 | 1.65 |
| Variance | 162.758 | 9.496 | 17.9 | 22.9 | 1.58 |
| Minimum | 54 | 11 | 98 | 58 | 92 |
| Maximum | 99 | 22 | 134 | 94 | 100 |
| Percentiles 50 | 76 | 16 | 109 | 69 | 94.9 |
| Percentiles 75 | 92.7 | 21 | 124 | 84 | 97.7 |

**Depth of Epidural Space**

**Table 2: Depth of Epidural Space.**

| Parameter | Parameter | Statistics | Depth of epidural space | Frequency | Percent |
|---|---|---|---|---|---|
| Mean | Mean | 4.182 | 3-3.5cm | 7 | 14.00% |
| Std. Error of Mean | Std. Error of Mean | 0.06919 | 3.6-4 cm | 6 | 12.00% |
| Median | Median | 4.2154 | 4-4.5cm | 24 | 48.00% |
| Std. Deviation | Std. Deviation | 0.48928 | 4.6-5 cm | 11 | 22.00% |
| Variance | Variance | 0.239 | 5-5.5 | 2 | 4.00% |
| Minimum | Minimum | 3.07 | 5.6-6 cm | 0 | 0.00% |
| Maximum | Maximum | 5.37 | Total | 50 | 100.00% |
| Percentiles | Percentiles 50 | 4.2154 | | | |
| | Percentiles 90 | 4.7569 | | | |

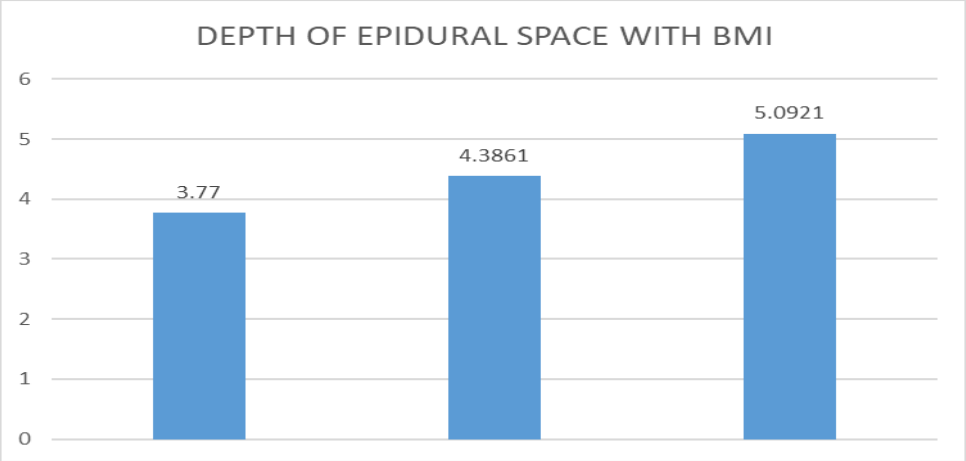
**GRAPH 2: DEPTH OF EPIDURAL SPACE**

24 cases 48.00% had a BMI of 4-4.5cm.

**Depth of Epidural Space with Bmi**

**Table 3: Depth of Epidural Space With Bmi.**

| N | 20 | 27 | 3 |
|---|---|---|---|
| **Statistics** | **Normal** | **Over weight** | **Obese** |
| Mean | 3.77 | 4.3861 | 5.0921 |
| Std. Error of Mean | 0.08647 | 0.04923 | 0.1745 |
| Median | 3.6612 | 4.3342 | 5.1414 |
| Std. Deviation | 0.3867 | 0.25583 | 0.30224 |
| Variance | 0.15 | 0.065 | 0.091 |
| Minimum | 3.07 | 3.83 | 4.77 |
| Maximum | 4.29 | 4.87 | 5.37 |
| Percentiles 50 | 3.6612 | 4.3342 | 5.1414 |
| Percentiles 90 | 4.2178 | 4.6974 | 5.2 |
| P VALUE | ANOVA <0.001 | | |




**Grph 2: Depth of Epidural Space With Bmi.**

**DISCUSSION**

The method of loss of resistance can be detected either by use of a syringe that is filled with either air or saline. The actual loss of resistance is dependent on the depth from the skin till the epidural space and this is dependent on the thickness of the layers encountered from the skin to the epidural space. This thickness itself is dependent on the body structure type of the individual. The patient's body structure can be accessed by using a body mass index.[12-15]

Though there are various studies that have evaluated the correlation between the body mass index and the distance between the skin and epidural space there is data lacking in in the region of South Karnataka.

The success of epidural analgesia, epidural anaesthesia, labour analgesia and all other techniques require that the epidural space be entered depends on the exact identification of the epidural space entirely

The study is done in a place where there are adequate numbers of surgeries that are done under epidural anaesthesia. In this region we also have patients who are both underweight, overweight and severely obese undergo surgery as this is a multi speciality centre which does all types of surgeries including bariatric surgery. Keeping this in mind we did a study to assess the correlation between Body Mass Index and depth of epidural space.

The study was conducted within an aim to provide an approximate idea about the depth at which epidural space which would help for successful epidural space identification in patients with different body mass indices.

This study will also help the anaesthetists to have an approximate idea about the distance from the skin to epidural space based on the body mass index which can be calculated during the pre-anaesthetic check up and hence for a successful epidural administration. This study can also help in avoiding multiple pricks to the patient and hence reduce the pain due to multiple puncture by the epidural Tuohy's needle.

MB Adegboye et al[17] in their study stated that SLESD was 4.60±0.83 (3cm-8cm). The SLESD)

Clinkscales et al[19] in their study stated that SLESD was 5.3cm. LESD and BMI was statistically significant with a p vale <0.001, and the relationship was linear and given by the equation depth cm= a + b × (BMI) Depth (mm) = a + b (BMI). Where a = 17.7966 and b = 0.9777.

Ilori et al[18] in their study stated that SLESD was 5.29±0.06 cm
Cha et al[16] in their study stated that SLESD was 4.6±0.69 cm.[16]

Shiroyama K et al[21] in their study stated that most cases the depth was 3-4cm at the L1-2 interspace and the value can be predicted by the formula: SE distance (cm) = 0.05 body weight (kg) + 0.36.

Amit Kumar Chauhan et al[20] stated that by needle use the depth was was 4.04 ± 0.52 cm (range 2.7–5.7 cm)

In the present study there was linear positive correlation between the depth of epidural space and BMI as the BMI increased the depth pf the epidural space also increased (r=0.89) which was statistically significant with a p vale <0.001.

In the present study The epidural space depth is equal to 3.34 + 0.05.× (BMI)]

## CONCLUSION

There was linear positive correlation between the depth of epidural space and BMI as the BMI increased the depth of the epidural space also increased (r=0.89) which was statistically significant with a p vale <0.001. The epidural space depth is equal to 3.33 + 0.05.× (BMI)]

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