

# Prevalence of low back pain experienced after delivery with and without epidural analgesia: A non-randomised prospective direct and telephonic survey

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## ABSTRACT

**Background and Aims:** The most frequent concern of patients receiving epidural analgesia for labour pain relief is post-partum back pain. This survey was designed to assess the prevalence of post-partum backache with and without epidural analgesia among post-partum women.

**Methods:** The study was conducted at a university teaching hospital and women presenting to labour room for labour and delivery formed the target population. A total of 482 women were recruited during the study period. Response rate was 95.4% and these cases were included in our statistical analysis. Two forms were designed for data collection before and after delivery; form I was filled by one of the investigators while form II was filled by a research assistant to prevent bias which included follow-up of back pain. The primary outcome variable was backache quantified with visual analogue scale score. Out of 460 women, 230 women received epidural analgesia for labour and 230 women had not. **Results:** The prevalence of post-partum back pain in epidural analgesia versus non epidural analgesia groups was 40.9% versus 40% on day one and 32.2% versus 35.2% after 1 week. However, after one and 3<sup>rd</sup> months follow-up, backache prevalence was less in epidural analgesia group (unadjusted odds ratio [OR]: 0.63; 95% confidence interval [CI]: 0.39-0.99) and (unadjusted OR: 0.32; 95% CI: 0.15-0.69) respectively. The adjusted odd ratio was 0.59 at 1st month and 0.25 at 3<sup>rd</sup> month. There was no significant difference between the two groups in pain scores.

**Conclusion:** There was no association between the epidural analgesia and post-partum back pain

**Key words:** Low back pain, parturient, post-partum

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## INTRODUCTION

Epidural analgesia has been used for decades as one of the modalities to relieve labour pain. It has been accepted as an effective means of analgesia for women undergoing labour and its usefulness is well-recognised.<sup>[1]</sup> It is considered as the gold standard technique for pain control in obstetrics.<sup>[2]</sup> There is a wide variation in the use of labour epidural analgesia in different parts of the world. Approximately 60% patients in United States prefer epidural analgesia or combined spinal epidural analgesia during child birth.<sup>[3]</sup> In contrast, its use is only 9.5-15% in Hong Kong<sup>[4,5]</sup> which is significantly lower than that quoted for other developed countries which is 20-50%.<sup>[6,7]</sup> There are multiple factors responsible

for variable rate of utilisation of epidural analgesia by pregnant women all over the world. In our part of world, the factors include inadequate patient knowledge, cultural influences, inadequate anaesthesia services and fear of complications. During counselling most common questions asked by patients and their relatives is related to post-partum back pain or a perceived 'life-long damage' to spinal cord. Over the last 20 years the use of neuraxial technique has however dramatically increased.<sup>[8]</sup>

Literature does not support any association between epidural analgesia and post-partum back pain.<sup>[9]</sup> The reported incidence of post-partum low back pain in women not receiving epidural analgesia is 43%.<sup>[10]</sup>

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However, post-partum back pain secondary to epidural analgesia is still a concern in our patients' mind, despite many useful advances in neuraxial analgesia such as refinement in techniques and availability of newer drugs.<sup>[11,12]</sup> The current survey was designed to prospectively assess the prevalence of post-partum backache in patients undergoing labour with or without epidural analgesia and to find out any correlation between low back pain and some identified/perceived factors.

## METHODS

The study was approved by the ethics committee of our hospital. The study was designed as non-randomized prospective cohort with follow-up at first postnatal day, 1 week, 1 month and 3<sup>rd</sup> month after delivery through direct and telephonic contact. Blinding was not possible due to the nature of the study. Epidural analgesia services in labour suite are available round the clock in our institution by trained anaesthesiologists, for many years. All primigravida as well as multiparous women presenting to labour room for labour and delivery were included in the study. Consent was taken for the study once the epidural analgesia or other modalities of pain relief were decided and the visual analogue scale (VAS) of pain was explained to the patients. The women were categorized into two groups, those who received epidural analgesia were enrolled in group A and those who did not receive epidural analgesia in group B. Patients with a history of chronic backache unrelated to pregnancy and those undergoing caesarean section within these groups were excluded from the study and patients living long distance away from the city were also excluded due to logistical problems. Incomplete information in data collection form and loss of follow-up were not included in statistical analysis. Duration of study was 1 year 2 months from its initiation.

Two forms were designed for data collection. one for use before delivery and the other, after delivery. First form was filled by one of the investigators and second form was filled by a different investigator to prevent bias. Form I and II are attached in Appendix I and II respectively. As data collection in Form I included demographic, contact number, parity, education, occupation and past history regarding epidural analgesia and epidural analgesia related backache. Information regarding epidural analgesia and duration of labour was obtained from hospital chart. A log number was allotted to the patient in both forms so it could be merge for data entry and statistical analysis.

Form II was handed over to research assistant and follow up for backache was started from first post natal day by direct contact and through telephonic communication at 1 week, 1 month and 3 months. It was already decided that those patients who experienced mild backache will be advised to take simple measures of back care at home and for moderate to severe backache they will be referred to our pain clinic.

The results were analysed for the rate of occurrence of low back pain and pain lasting longer than 1 month. Pain lasting longer than 1 month was selected because it is indicative of persistent and possibly disabling pain. Therefore, on the basis of an  $\alpha$  error of 5% and 80% power to detect a 15% difference with increased risk of post-partum back pain in women who had received epidural analgesia, about 230 women in each group were required. Data were analysed using the Statistical Package for the Social Sciences (SPSS for Windows, 17.0, SPSS, Chicago, IL). Frequency and percentages were estimated for categorical variables and analysed by Chi-square test. Normality of quantitative data was checked by Kolmogorov-Simonov test. Mean and standard deviation were computed for quantitative variables and analysed by independent sample *t*-test or Mann-Whitney U-test. The frequency of postpartum low back pain in epidural analgesia and non-epidural analgesia groups on day 1, day 7, end of 1<sup>st</sup> and 3<sup>rd</sup> month was estimated. Unadjusted odd ratio was calculated for the risk of postpartum low back pain and multivariate logistic regression analysis was used to provide adjusted odd ratio estimates for the association between epidural analgesia and low back pain.

## RESULTS

A total of 482 women met inclusion criteria and consented to participate in this study. Out of the total, 240 females were enrolled in epidural analgesia group and 242 females were in non-epidural analgesia group. Follow-up was obtained from 460 women with the response rate of 95.4% and these cases were included in our statistical analysis. Those who could not be followed had either moved to newer addresses or their contact number was incorrect (10 cases from epidural analgesia and 12 from non-epidural analgesia group). The demographic data and obstetric characteristic of both groups are shown in Tables 1 and 2.

There were no significant difference between groups with respect to age, weight, height and body mass index. Literacy rates and the number of working women

were significantly high in epidural analgesia group as compare to non-epidural analgesia group ( $P < 0.01$ ). Nearly 58% of the women were primiparous and rest was multiparous. Significant difference was observed between groups on parity ( $P < 0.01$ ). Majority of women were not on any medications in antenatal period in both groups. Mean duration of labour was significantly high in epidural analgesia than non-epidural analgesia groups ( $P < 0.01$ ).

Frequency of backache in previous pregnancy was significantly high in non-epidural analgesia than epidural analgesia group (13% vs. 5.7%;  $P = 0.006$ ). Nearly 14.3% of patients of epidural analgesia group received epidural analgesia in previous pregnancy as well while it was only 6% in non-epidural analgesia group. The concerns of epidural analgesia ‘related’ low back pain was nearly similar in both groups. No difference found in back pain in current pregnancy.

In epidural analgesia group, 96.1% of patients received epidural analgesia while rest of 3.9% patients received combined spinal epidural analgesia. Sixteen gauge needle was commonly used and there were 29 epidurals (12.4%) that required more than one attempt at placement. Satisfaction with epidural analgesia was excellent in 46.5% cases, good in 45.2% and fair in 8.3% cases.

The prevalence of post-partum back pain was similar (40%) in both groups on day 1 after delivery. Table 3 shows the adjusted and unadjusted odd ratio over time. Post-partum backache was non-significant on day 1 and after 1 week. However, at 1 and 3<sup>rd</sup> month follow-up, backache was observed less frequently in epidural analgesia group than non-epidural analgesia group (cured odds ratio [OR]: 0.63; 95% confidence interval [CI]: 0.39-0.99) and (cured OR: 0.32; 95% CI: 0.15-0.69) respectively and the odd ratio of low back pain adjusted for age, weight, occupation, parity, antenatal medicine, history of backache in previous and current pregnancy delivery and concern of back pain was 0.59 (OR: 0.59; 95% CI: 0.36-0.99) at 1<sup>st</sup> month and 0.25 (OR: 0.25; 95% CI: 0.11-0.58) at 3<sup>rd</sup> months.

Figure 1 shows the comparison of mean pain scores (VAS) for the two groups. There was no significant statistical difference in pain score between groups at 1<sup>st</sup> post natal day, 1<sup>st</sup> week, end of 1<sup>st</sup> and 3<sup>rd</sup> months.

During the follow-up, we asked mothers about different treatment modalities in their use. Oral analgesics were

**Table 1: Demographic characteristics of women**

Characteristics	Epidural n=230 (%)	No epidural n=230 (%)	P value
Age (years)	27.36±4.25	27.25±4.93	
Weight (Kg)	71.46±10.73	69.94±11.18	
Height (cm)	158.86±5.98	158.91±6.92	
BMI (kg/m <sup>2</sup> )	28.36±4.35	27.75±4.53	
Education			
Illiterate	27 (11.7)	31 (13.5)	<0.01
Metric and below metric	08 (3.5)	30 (13)	
Intermediate	31 (13.5)	36 (15.7)	
Graduate and post graduate	104 (45.2)	99 (43)	
Master	60 (26.1)	34 (14.8)	
Occupation			
House wife	160 (69.6)	196 (85.2)	<0.01
Working women	70 (30.4)	34 (14.8)	

BMI – Body mass index

**Table 2: Obstetric characteristics of women**

Characteristics	Epidural n=230 (%)	No epidural n=230 (%)	P value
Duration of labour (hour)	6.39±2.18	5.27±2.77	<0.01
Parity			
Primiparous	157 (68.3)	110 (47.8)	<0.01
Multiparous	73 (31.7)	120 (52.2)	
Antenatal medication used			
Only calcium	46 (20)	62 (27)	0.025
Calcium+vitamins	26 (11.3)	38 (16.5)	
Not used	158 (68.7)	130 (56.5)	
Backache in previous pregnancy	13 (5.7)	30 (13)	0.006
Previous epidural	33 (14.3)	14 (6.1)	0.003
Concern of back pain	79 (34.3)	80 (34.8)	0.92
Back pain in current pregnancy	18 (7.8)	11 (4.8)	0.18

**Table 3: Postpartum backache in epidural and non-epidural groups over time**

Time after delivery	n=230 (%)		OR (95%CI)	
	Epidural	Non epidural	Unadjusted	Adjusted
1 <sup>st</sup> days	94 (40.9)	92 (40)	1.03 (0.71 to 1.51)	1.13 (0.75 to 1.68)
1 <sup>st</sup> week	74 (32.2)	81 (35.2)	0.87 (0.59 to 1.28)	0.86 (0.56 to 1.31)
1 <sup>st</sup> month	37 (16.1)	54 (23.5)	0.63 (0.39 to 0.99)	0.59 (0.36 to 0.99)
3 <sup>rd</sup> months	9 (3.9)	26 (11.3)	0.32 (0.15 to 0.69)	0.25 (0.11 to 0.58)

OR – Odd ratio; CI – Confidence interval. Adjusted for age, weight, occupation, parity, Antenatal Medicine, history of back ache in previous and current pregnancy delivery, concern of back pain

found to be the highest (50% vs. 54%) among patients with the complaint of low back pain on 1<sup>st</sup> postnatal day, among epidural analgesia and non-epidural analgesia group. Intravenous analgesia was only given to 20% patients in epidural analgesia group with the complaint of low back pain on 1<sup>st</sup> postnatal day. There was a reducing trend of oral analgesics use from

38% to 8% and then 6.5% on consecutive follow-up in non-epidural analgesia group. Massage with local anaesthetic creams was the option used by 0.4-1.7% in non-epidural analgesia group and 0.4-7.0% in epidural group. Only one patient required physiotherapy in non-epidural analgesia group.

## DISCUSSION

The current survey showed that there is no difference in the prevalence of low back pain on day 1 and day 7 after delivery among epidural analgesia and non-epidural analgesia group. We didn't find any difference between the two groups with respect to back pain scores and use of analgesics. Women in epidural analgesia group showed high literacy rate. Working women chose epidural analgesia more as compared to non-epidural analgesia group which shows more awareness of labour epidural analgesia among working and literate women.

Mean duration of labour was significantly higher in epidural analgesia than non-epidural analgesia group ( $P < 0.01$ ) which is already reported to be increased by 1 h by Eltzschig *et al.*<sup>[13,14]</sup> The choice of epidural analgesia depends on multiple factors and a very important factor that came out of this survey was frequency of backache in previous pregnancy. Although, it is significantly high in non-epidural analgesia than epidural analgesia group (13% vs. 5.7%;  $P = 0.006$ ), back pain in the last pregnancy was the main reason for refusing epidural in current labour. Wong and To reported that patients with back pain in antenatal period were less likely to request epidural analgesia for labour pain relief while patients having back pain in postnatal period were less likely to regard

epidural analgesia as most effective method of pain relief.<sup>[15]</sup> It shows that concern of low back pain in our population is same as in other parts of the world. Interestingly the response to concerns of epidural related low back pain was nearly similar in epidural analgesia and non-epidural group.

There was no association between number of attempts for epidural catheter insertion and low back pain.

The most surprising finding was the similar rates of prevalence of post-partum low back pain (40%) in both groups on day 1 after delivery. Butler and Fuller also found equal prevalence of back pain (30.5%) in both groups initially but new, long-term back pain occurred in 7.5% and 6.9% of patients at 3 months in epidural analgesia and non-epidural analgesia group.<sup>[16]</sup> At 3 months follow-up, we found an incidence of 3.9% versus 11.3% backache in epidural and non-epidural analgesia group. MacArthur *et al.* found a 19% versus 11% incidence of low back pain in patients receiving epidural analgesia versus non epidural in which the prevalence in epidural was nearly 5 times higher than that shown in our results but exactly same prevalence in non-epidural group.<sup>[17]</sup> As this study was reported two decades back we cannot comment on expertise and equipment used at that time. Russell *et al.* in their study have reported nearly same incidence of back pain three years later (18% vs. 12%) at a follow-up of 1 year.<sup>[9]</sup> Butler and Fuller reported 7.5% back pain lasting for more than 2 weeks following epidural analgesia for labour which is 2 times higher than back pain reported in our study.<sup>[16]</sup>

Moschini *et al.* compared complications among three groups and found no significant difference in localized and diffuse back pain after epidural analgesia, spinal epidural analgesia and no analgesia.<sup>[18]</sup>

Response of treatment modalities by patients in the present study showed that most of the patients used oral analgesics and only one patient needed pain physician consultation and underwent physiotherapy for her pain relief.

## CONCLUSION

On the basis of our results, we conclude that there is no association found between epidural analgesia and low back pain. An increased prevalence of persistent low back pain was seen in patients delivered without using epidural analgesia, those with history of backache in previous pregnancy and primiparous mothers. On the

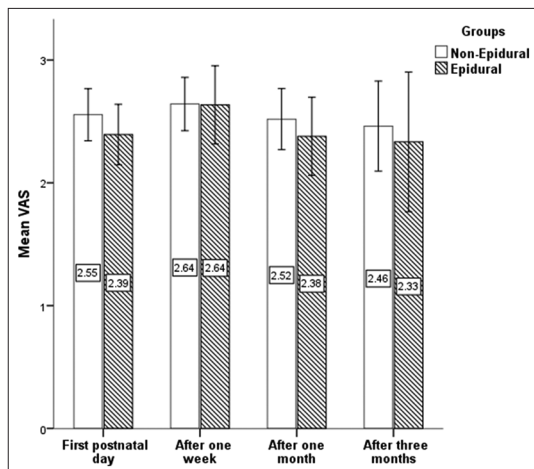


Figure 1: Comparison of mean pain score between groups

basis of our survey, we can counsel our patients that there is no increased risk for post-partum low back pain with the use of epidural analgesia for labour pain. We feel that there is an intense need to identify the actual causes of backache and their remedies in young females and hence queries could be better answered at the time of counselling.

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## APPENDIX I

Post-partum backache in obstetric patient

Log number: \_\_\_\_\_

Name: \_\_\_\_\_

Medical record number: \_\_\_\_\_

Phone number: \_\_\_\_\_

Age: \_\_\_\_\_

Weight\*: \_\_\_\_\_

Height: \_\_\_\_\_

Education: \_\_\_\_\_

Occupation\*: \_\_\_\_\_

Parity\*: \_\_\_\_\_

Medication in anti-natal period\*:

History of backache in previous pregnancy\*: Yes  No

Severity of backache: \_\_\_\_\_

Treatment taken: Yes  No

Previous epidural: Yes  No

Backache at that time: Yes  No

Labour epidural received: Yes  No

EPI CSE

Number of attempts\*: \_\_\_\_\_

Duration of labour\*: \_\_\_\_\_ h \_\_\_\_\_ min \_\_\_\_\_

Needle\*: 16G  18G

Effectiveness of epidural analgesia\*: Fair \_\_\_\_\_ Good \_\_\_\_\_ Excellent \_\_\_\_\_  
 Concern of backache shown by patient\*: Yes/No  
 \*Risk factors used for correlation

**APPENDIX II**

Postnatal follow-up for post-partum backache

Log number: \_\_\_\_\_

Name: \_\_\_\_\_

Medical record number: \_\_\_\_\_

Phone number: \_\_\_\_\_

**On 1st day At 1 week At 1 month At 3 month**

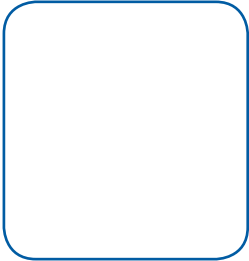
Backache

Treatment

Coding for treatment given

- 0: No, 1: Oral analgesics
- 2: I/V analgesics, 3: Combination of therapies
- 4: Physiotherapy, 5: Massage with local anaesthetics

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