

## Frequency of Instrumental Vaginal Delivery in Patients with and without Receiving Epidural Analgesia

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### Abstract

**Aims and Objectives:** Frequency of instrumental vaginal delivery in women receiving epidural analgesia and those who are not receiving.

**Study Design:** It was a cohort study.

**Duration:** 6<sup>th</sup> month.

**Results:** Majority of the patients were found between 20 – 25 years of age in both A & B groups, in Group – A 46.11% (n = 83) and in Group – B 52.22% (n = 94), mean and standard deviation was calculated  $26.21 \pm 3.56$  in Group – A and  $27.34 \pm 3.78$  in Group – B, comparison of instrumental vaginal delivery reveals 10.55% (n = 19) in Group – A were with instrumental delivery while in Group – B only 2.78% (n = 5) cases were found delivered with instruments.

**Conclusion:** Epidural analgesia is considered to be an effective method of pain relief during labor but due to the higher risk of increased duration of 2<sup>nd</sup> stage of

labour it increases the possibility of instrumental delivery.

**Key Words:** Labour pain, epidural analgesia, relief of pain, risk of instrumental delivery.

### Introduction

Labour pain is a unique visceral pain associated with a wonderful and meaningful life event – the birth of a baby. Although frequently positive and empowering for the parturient, women's experiences of childbirth and labour pain vary greatly.<sup>1,2</sup> Curiously, 'maternal satisfaction' is not directly related to the degree of analgesia administered in childbirth.<sup>3</sup> Thus, labour pain is distinct from most other forms of pain.

Nociception<sup>4</sup> is the neural traffic which is subsequently interpreted as pain by the conscious brain. Nociception associated with first stage labour pain travels in spinal segments T<sub>10</sub>, T<sub>11</sub>, T<sub>12</sub> and L<sub>1</sub>; while second stage labour nociception is conveyed in sacral segments S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub>.

While clinicians do not directly experience a parturient's pain, experienced staff can usually discern patterns of 'normal' and 'abnormal' labour pain. Ideally the parturient has been actively engaged, empowered and 'en-knowledged' antenatally, and is confidently facing parturition and the birthing experience. Medicine is 'reductionist', representing the 'experience of pain' as a complex of neurophysiological signals and processes within a complicated pain system exhibiting plasticity and 'wind up'. It must be remem-

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bered that a person's pain is ultimately a private experience, which is communicated and expressed in behaviours which are culturally shaped<sup>5</sup> by an individual's bio-psycho-social attributes and their cultural-educational context.

Pain should be regarded both as a patient symptom and a clinical sign, the fifth vital sign after heart rate, respiratory rate, blood pressure and O<sub>2</sub> saturation. To use pain as a sign, the clinician must elicit a pain history<sup>6</sup> in association with the partogram and other intrapartum data. During parturition the character of labour pain changes, the parturient's physiological, cognitive and emotional reserves are challenged, and in some, the pain becomes overwhelming.

Epidural analgesia along-with an experienced anaesthetist, a dedicated obstetrician and trained midwife can convert the painful labour into a less stressful event. Although it prolongs the second stage of labour and increases the rate of instrumental deliveries yet its advantages of pain free labour, better psychological outcome and no significant complication outweigh these drawbacks.<sup>7</sup>

Epidural analgesia reduces the uterine activity and eliminates the desire to push down by blocking the nerves supplying pelvic floor. Both of these effects delay the rotation of head and increase the need for oxytocin administration and instrumental delivery.<sup>8</sup> The majority of women who received epidural analgesia in labour considered that the benefits of epidural analgesia outweighed each of potential complication.<sup>9</sup> It provides excellent pain relief but at same time, it increases the chances of instrumental delivery which itself leads to complication like perineal tears and infection.

This study was based to compare the frequency of instrumental vaginal delivery in women receiving epidural analgesia and those who are not receiving so that doctors and patients become more aware while using epidural analgesia.

## **Material and Methods**

This study was conducted in Obstetrics and Gynaecology Department of Fatima Memorial Hospital, Lahore 360 women reporting to labour ward fulfilling the inclusion criteria were selected for study. Informed consent was taken after explaining the risks and benefits of epidural analgesia. Approval of Ethical committee was taken. A detailed history including demographics like name, age and address was recorded.

Epidural analgesia was given by anaesthetist to

Group – A. Epidural catheter was passed and he gave 0.25% of bupivacaine diluted with sterile water into epidural catheter after preload with hartman’s soln. Strict monitoring of vitals was done, top up doses were given subsequently. Progress of labour was assessed by partogram and in 2<sup>nd</sup> stage by assessing the descent of head, caput and moulding of fetal skull bones. Instrumental vaginal delivery was recorded.

In Group-B, no analgesia given. Spontaneous progress of labour was assessed by partogram. Instrumental vaginal delivery was recorded. Data was collected on specific Proforma was produced as Annexure – A. Effect modifier as parity was addressed through stratification.

We used SPSS to analyze the data. The qualitative variable including parity and instrumental vaginal delivery was presented as frequency, proportion and percentages. Quantitative variable including age was presented as mean and standard deviation. Relative risk was calculated to see any association between the use of epidural analgesia and instrumental vaginal delivery. R.R. > 2 was considered significant.

**Results**

In this research, majority of the patients were found between 20 – 25 years of age in both A and B groups, in Group – A 46.11% (n = 83) and in Group – B 52.22% (n = 94), the subjects with 26 – 30 years of age in Group – A were 35% (n = 63) and in Group – B 31.11% (n = 56) while 31 – 35 years of age was found in 18.89% in Group – A and 16.67% (n = 30) in Group – B. Mean and standard deviation was calculated, it was found 26.21 ± 3.56 in Group – A and 27.34 ± 3.78 in Group – B (Table 1).

Table 2 shows status of parity, where in Group – A 49.44% (n = 89) and in Group – B 53.33% (n = 96) were found with gravida 2, patients with gravida 3 were found 35.56% (n = 64) in Group – A and 28.33% (n = 51) in Group – B, while 15% (n = 27) in Group – A and 18.34% (n = 33) in Group – B were found with gravida 4. The comparison of gestational age (in weeks) in both groups show 68.33% (n = 123) in Group – A while 62.78% (n = 113) in Group – B, 31.67% (n = 57) were found between 40 – 41 weeks of gestation in Group – A and 37.22% (n = 67) in Group – B. Table 3. Regarding comparison of variable of interest of this study i.e. comparison of instrumental vaginal delivery was described in Table 4 of this study, where it was found that 10.55% (n = 19) in Group – A were found

**Table 1:** Age Distribution of the Subjects.

Age in Years	Group – A (n=30)		Group – B (n=30)	
	No. of Cases	%	No. of Cases	%
20 – 25	83	46.11	94	52.22
26 – 30	63	35	56	31.11
31 – 35	34	18.89	30	16.67
Mean ± S.D	26.21± 3.56		27.34± 3.78	
Total	180	100	180	100

**Table 2:** Distribution of Parity of the Subjects.

Parity (Gravida)	Group – A (n = 30)		Group – B (n = 30)	
	Cases	%	Cases	%
2	89	49.44	96	53.33
3	64	35.56	51	28.33
4	27	15	33	18.34
Total	180	100	180	100

**Table 3:** Gestational Age of the Subjects.

Gestational Age (in Weeks)	Group-A (n=30)		Group-B (n=30)	
	No. of Cases	%	No. of Cases	%
37 – 39	123	68.33	113	62.78
40 – 41	57	31.67	67	37.22
Total	180	100	180	100

**Table 4:** Instrumental Vaginal Delivery of the Subjects.

Instrumental Vaginal Delivery	Group – A (n = 180)		Group – B (n = 180)	
	No. of Cases	% age	No. of Cases	% age
Yes	26	14.44	7	3.89
No	154	85.56	169	76.11
Total	180	100	180	100

with instrumental delivery while in Group – B only 2.78% (n = 5) cases were found delivered with instruments rest of 89.45% (n = 161) in Group – A and 97.22% (n = 175) in Group – B were found delivered with normal vaginal delivery.

## Discussion

“Labour pain” is the major concern during labour and its management is essential to good medical practice. However, it requires careful considering of type of method used, drug with its proper dose and selection patient being treated. There is various method of pain management including pharmacological and non pharmacological. Among them systemic opioids are the most widely used because of its easy availability and low price. However epidural analgesia is the most effective method of pain relief.

In my study, age of the patients and gestational age of the patients are having no significant differences, mean age in patients epidural analgesia was  $26.21 \pm 3.56$  years and  $27.34 \pm 3.78$  years in A and B groups, while majority of the patients were found with 37-39 weeks of gestation.

Our findings are closely in agreement with a study conducted at Department of Obstetrics and Gynaecology, Pt JN Medical College, Raipur,<sup>10</sup> in this study mean age of the patients was  $23.15 \pm 3.94$  years and  $22.94 \pm 3.37$  years and mean gestational age was found 39 weeks commonly, this study was carried out to compare parenteral opioids (Tramadol) with pentazocine for pain relief in labour.

Our results show increased number of patients delivered with instruments and this is due to the prolongation in 2<sup>nd</sup> stage of labour.

These findings can also compared with a study conducted by Jain S, Arya VK in India,<sup>11</sup> they also found that Epidural Analgesia causes a significant prolongation of 2<sup>nd</sup> stage of labour, they found that 27% of the patients with epidural analgesia were delivered with maximum time duration in 2<sup>nd</sup> stage of labour while 11.4% with parenteral opioids. This study also shows that epidural analgesia is at greater risk of operative deliveries as compared to the parenteral opioids. Though our study is not compared with parenteral opioids but on the other hand the effect of epidural analgesia may be compared with the results of this study. The number of spontaneous deliveries can be increased by delaying pushing in second stage<sup>12</sup> and fetal descend must be respected as long as fetal heart is

unremarkable, in order to increase the number of spontaneous deliveries.<sup>13</sup>

The delay in 2<sup>nd</sup> stage of labour may be due to failure of reflex pushing in 2<sup>nd</sup> stage with epidural while our control group was not found with increased duration in 2<sup>nd</sup> stage. Subjective pushing is always preferred over directed pushing.

A study conducted by Kukul K, Demirok H<sup>14</sup> also showed that epidural analgesia extends the time of labor and increased oxygen and oxytocin requirement but did not increase the risk for interventional delivery and cesarean. Therefore early detection of dystocia and high dose augmentation should be considered for women receiving epidural analgesia to avoid the operative deliveries.

We did not compare the pain relief during labour, however, epidural analgesia is found to be a good pain reliever for labour pains.<sup>15</sup> Though results of this study show that epidural analgesia is at higher risk of increased duration in 2<sup>nd</sup> stage of labour but does not increases chances of cesarean section and gives maximum pain relief and patients’ satisfaction as well.

Finally in order to come to clear conclusions about the effect of epidural analgesia on operative deliveries, epidural analgesia has increased risk of operative deliveries but gives maximum pain relief and patients’ satisfaction.

## Conclusion

Epidural analgesia is considered to be an effective method of pain relief during labor, and it does not increase the chances of cesarean section deliveries but due to the higher risk of increased duration of 2<sup>nd</sup> stage of labour it increases the possibility of instrumental delivery.

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