

Original Article

Influence of Epidural Analgesia on Frequency of Instrumental Delivery and Duration of Labor

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ABSTRACT

Objective: To observe the rate of instrumental delivery in parturients having Epidural Analgesia in labour and its effects on duration of labour.

Methods: This comparative cross sectional study was conducted in Shifa Foundation Community Health Center and Shifa International hospital after approval from Ethical Committee and Institutional Review Board. Out of 156 parturient included, 78 patients had Epidural Analgesia for labour and 78 did not. Epidural was administered with cervical dilatation less than 5 cm or when the contractions became regular. All women in labour were at term and preterm deliveries were excluded. Duration of second stage of labour was recorded and mode of delivery was noted.

Results: In 78 patients undergoing epidural analgesia, mean duration of second stage of labour was 22 minutes. Thirty nine percent patients had spontaneous vaginal delivery (N=31), 28% were delivered by vacuum (N=32), 10% had forceps delivery (N=7) and remaining 23% patients had C-section (N=18). In 78 patients who did not have Epidural analgesia, mean duration of second stage of labour was 11.34 minutes. Fifty two percent

patients had spontaneous vaginal delivery (N=41), 5.1% delivered by vacuum (N=4), 6.4% had forceps delivery (N=5) and 35.9% patients had C-section (N=28).

Conclusion: Our study revealed that epidural analgesia is associated with an increased risk of instrumental vaginal delivery and prolonged second stage of labour. (Rawal Med J 2009;34:86-88).

Key Words: Parturient, epidural analgesia, second stage of labour, instrumental vaginal delivery.

INTRODUCTION

Labour pain is the worst pain in the nature and various methods have been used to alleviate the pain including oral, intra-muscular, intra venous and inhalation analgesias each one having its own limitations.^{1,2} Currently over half of parturient woman in the United States and about 5th in England and Wales receive epidural analgesia.^{3,4} Epidural analgesia provides safe and effective pain control during labour, but its use has become the subject of controversy in recent years due to a perceived adverse effect on labour progression.⁵ It has been shown to increase the use of oxytocin augmentation during labour.⁶ It is unclear whether epidural block prolongs the first stage of labour or not.⁷ However, maintenance of profound epidural analgesia beyond complete cervical dilatation increased duration of second stage of labour and increased the possibility of instrumental vaginal delivery.⁸ The increase in operative deliveries is related to an increased incidence of malposition, which is probably due to effects of epidural on the muscles of the pelvic floor.⁹ It has been argued that instrumental delivery rate can be reduced by the acceptance of longer second stage.¹⁰ Controversy remains as to whether epidural analgesia predisposes the parturient to a greater risk of cesarean delivery on

account of dystocia.¹¹ The aim of this study was to see the effect of epidural on the course of labour and to observe the rate of instrumental delivery in our set of population.

MATERIAL AND METHODS

The study was conducted at Obstetrics and Gynecology Department of Shifa International Hospital and Shifa Foundation Community Health Centre, Islamabad. All patients admitted in labour room from January 2007 to July 2007 who were primi and multi gravidas at term and were in active labour were included. Those who required elective LSCS were excluded. Epidural was administered at cervical dilatation of less than five-cm and with regular contractions. Outcome of labour in the form of instrumental delivery and duration of second stage of labour were recorded.

RESULTS

Age of the patient ranged between 18-38 years. Out of 156 parturient, 78 had no Epidural analgesia and 78 received it. There were more Spontaneous Vertex Deliveries (SVD) and more C-sections in patients without epidural (Table-1). Mean duration of second stage of labor was 11.34 ± 10.35 minutes (range 4-60) and it was 22 minutes (range 5-80) in those who received epidural.

Table 1. Outcome of labour in parturients with and without epidural analgesia.

TYPE OF DELIVERY	Patients with epidural (N = 78)		Patients without epidural (N = 78)	
	NUMBER OF CASES (N)	PERCENTAGE	NUMBER OF CASES	PERCENTAGE
1. SVD	31	39	41	52.6
2. VACUUM	22	28	4	5.1
3. FORCEPS	7	10	5	6.4
4. Emergency LSCS	18	23	28	35.9

SVD: Spontaneous Vertex Delivery, LSCS: Lower segment cesarean section.

Mean duration of second stage of labour was 11.34 ± 10.35 minutes (range 4-60) in patients who did not received Epidural and it was 22 minutes (range 5-80) who received it. Fetal Distress and poor progress of labour were commonest reasons for C-Section (Table-2)

Table 2. Indications for intervention.

INDICATION	VACUUM	FORCEPS	LSCS	TOTAL
1. Fetal Distress	6	1	6	13
2. Poor Maternal Efforts	10	4	-	14
3. Maternal exhaustion	2	-	-	2
4. Fetal malposition	3	2	2	7
5. Prolonged 2 nd Stage-cause	1	-	-	1
6. Non Progress of Labour	-	-	10	10

DISCUSSION

Our study does not support an association between epidural analgesia and an increased risk of cesarean delivery for dystocia, as shown in the previous studies.¹² However; it does support an association with an increased risk of instrumental vaginal delivery, which was 39.5% in patients with Epidural analgesia as compared to 11.5 % in patients without Epidural. Incidence of instrumental intervention varies from 1.5% to 26 % of cases.¹³ It can cause maternal dissatisfaction, maternal and fetal trauma and can have a substantial impact on workload and safety. Bias may have been present owing to a lower threshold for performing instrumental vaginal delivery in the presence of epidural analgesia. Differences in protocols for management of labour could have contributed to the differences in rates of instrumental vaginal delivery.

Epidural analgesia may increase the risk of instrumental delivery by several mechanisms. Reduction of serum oxytocin levels can result in a weakening of uterine activity.¹⁴ This

may be due in part to intravenous fluid infusions being given before epidural analgesia, reducing oxytocin secretion.¹⁵ The increased use of oxytocin after starting epidural analgesia may indicate attempts to speed up labour. Maternal efforts at expulsion can also be impaired, causing fetal malposition during descent. Previously, the association of neonatal morbidity with longer labour (second stage longer than two hours) had justified in expediting delivery thus leading to increased rates of instrumental delivery.¹⁶ Delaying maternal pushing until the fetal head is visible or until one hour after reaching full cervical dilatation may reduce the incidence of instrumental delivery and its associated morbidity.¹⁷ Other techniques that are commonly used are upright position in labour¹⁸ and allowing epidural anesthesia/analgesia to wear off before expulsive efforts are commenced.

In our study, we also found that epidural significantly affects duration of second stage of labour, as seen in other studies.¹⁰ This may be due to lower threshold for performing instrumental vaginal delivery in the presence of epidural analgesia. Patients satisfaction is also a contributory factor at our private set-up as patients did not appreciate longer second stage. Epidural is generally safe and is the most effective method to relieve the pain of labour. The common complications are not usually serious or permanent and life threatening complications are very rare.¹⁹ In conclusion, our study revealed that epidural analgesia is associated with an increased risk of instrumental vaginal delivery and prolonged second stage of labour. Patients should be counseled to expect slightly longer labour and be subjected to instrumental delivery.

REFERENCES

1. Faucher MA, Brucker MC. Intrapartum pain, pharmacological management. *J Obstet Gynecol Neonatal Nurs* 2000;29:169-80.
2. Loughnan BA, Carli F, Romney M, Dore CJ, Gordon H. Randomized controlled comparison of epidural bupivacaine versus pethidine for analgesia in labour. *Br J Anaesth* 2000;84:715-9.
3. Roberts CL, Algert CS, Douglas I, Tracy SK, Peat B. Trends in labour and birth interventions among low-risk women in New South Wales. *Aust NZ J Obstet Gynaecol* 2002;42:176-81.
4. Rooks J. P. Epidural analgesia as used during childbirth in the United States. *The Japanese J Midwives* 2000;54:9-14.
5. Caton D, Frolich MA, Euliano TY. Anesthesia for childbirth: controversy and change. *Am J Obstet Gynecol* 2002;186(Suppl 5):S25-30.
6. Campbenn S, leesc. Labour. In; *Obstetrics by ten teachers*. 17th Ed. New Delhi; ajanta off set and packaging Ltd.; 2001. 101-39
7. Alexander JM, Sharma SK, McIntire DD, Leveno KJ. Epidural analgesia lengthens the Friedman active phase of labor. *Obstet Gynecol* July 2002; 100:46-50.
8. Dickinson JE, Paech MJ, McDonald SJ, Evans SF. The impact of intrapartum analgesia on labour and delivery outcomes in nulliparous women. *Aust NZ J Obstet Gynaecol* 2002;42:59-66.
9. Naz F, Saeed M. Epidural analgesia and labour mechenisms. *Mother Child* 1998; 36:132-5.

10. Leighton BL, Halpern SH. The effects of epidural analgesia on labour, maternal, and neonatal outcomes: a systematic review. *Am J Obstet Gynecol* 2002; 186(Suppl 5):S69-77
11. Clark A, Carr D, Loyd G, Cook V, Spinnato J. The influence of epidural analgesia on cesarean delivery rates a randomized, prospective clinical trial. *Am J Obstet Gynecol* 1998;179:1527-33.
12. Sharma SK, Alexander JM, Messick G, Bloom SL, McIntire DD, Wiley J, et al. Cesarean delivery: a randomized trial of epidural analgesia versus intravenous meperidine analgesia during labor in nulliparous women. *Anesthesiology* 2002; 96:546-51.
13. Levy DM. Obstetric Anaesthesia and Analgesia. In: Luesley DM, Baker PN *Obstetrics and Gynaecology*. 1st ed.
14. Newton ER, Schroeder BC, Knape KG, Bennett BL. Epidural analgesia and uterine function. *Obstet Gynecol* 1995;85:749-55.
15. Cheek TG, Samuels P, Miller F, Tobin M, Gutsche BB. Normal saline i.v. fluid load decreases uterine activity in active labour. *Br J Anaesth* 1996;77:632-5.
16. Zhang J, Klebanoff MA, DerSimonian R. Epidural analgesia in association with duration of labour and mode of delivery: a quantitative review. *Am J Obstet Gynecol* 1999;180:970-7.
17. Fraser ED, Marcoux S, Krauss I, Douglas J, Goulet C, Boulvain M. Multi-center, randomized, controlled trial of delayed pushing for nulliparous women in the second stage of labor with continuous epidural analgesia. The PEOPLE

(Pushing Early OR Pushing Late with Epidural) Study Group. Am J Obstet Gynecol 2000;182:1165-72

18. Gupta JK, Nikodem VC. Position for women during second stage of labour (Cochrane Review). In: The Cochrane Library, Issue 2. Oxford: Update software, 2002.
19. Lawrence C, Datta S. Anesthesia for high-risk parturients. In: High Risk Pregnancy. 2nd ed. Harcourt: Harcourt publisher; 1999:1151-86.