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Why should mothers deliver with Pain!! Setting up of labour analgesia suite in a tertiary care teaching hospital – A South Indian experience

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Abstract

The suffering of labouring mothers has been a concern for compassionate care givers, resulting in various methods to alleviate this agony. Unfortunately, instead of sweet memories of the labour suite, motherhood is gifted with suffering and pain, especially to females from resource poor countries, affecting themselves and their precious babies.

We tried to implement epidural analgesia into standard practice of childbirth, in Kerala, which has, state of the art health care facilities and a decent doctor to patient ratio. After setting up a labour analgesia suite, epidural Ropivacaine (0.125% to 0.25%) infusion, with in demand boluses of 0.2-0.25% ropivacaine appeared safe with good analgesia and insignificant side effects. Parturient were receptive with high index (Gr: 5) of satisfaction. Majority (74.5%) had normal vaginal delivery and 94% babies delivered had Apgar 9 at 1.

It is mainly the attitude of the family and physicians, which warrants a “change” from what they consider as “normal” for generations to “active analgesia”.

Keywords: Setting up, labour analgesia suite, Epidural Ropivacaine, South India

Introduction

Worldwide, utilization of methods of analgesia during labour is considered as a reflection of quality obstetric care, because circulating epinephrine and norepinephrine levels increase by 200% to 600% during undedicated labour and this increase in catecholamines is associated with a decrease in uterine blood flow^[1, 2].

Obstetric analgesia relieves maternal pain and anxiety, maternal hypertension, improving uterine blood flow, blunts the increase in maternal cardiac output, heart rate and blood pressure, during “bearing down” efforts, converts dysfunctional uterine contractions to organized ones and have desirous foetal effects^[3]. But in many resource limited settings, awareness and availability of epidural analgesia is lacking, so much so that, effective pain relieving options for women in labour, virtually does not exist.

We tried to establish a labour analgesia suite in a tertiary care teaching hospital with the intension of inculcating the culture and concept of painless delivery among patient and caregivers. We also tried to suggest an epidural drug regime which can be copied as a template to similar settings, with the ultimate aim of “primum non nocere”.

Materials and methods

The primary aim was to generate a need and awareness in the population, colleagues and authorities, which was achieved by peer group discussions, CMEs and various awareness programs. Then a convenient room with proximity to labour room and OT was identified, staffed and equipped with essential furniture, syringe pumps, monitors, resuscitative equipment and Boyle’s apparatus was also set in.

After obtaining clearance from the institutional ethics committee and written informed consent from the parturient, fifty one parous women with singleton foetus in vertex presentation, who completed 36 weeks gestation and in labour (Both spontaneous and induced labour) with cervical dilatation of at least 3cms but less than 5cms, admitted to the labour room of Government medical college, Thrissur, during the study period of 2 years, were offered epidural labour analgesia.

Parturient with history of increased intra cranial pressure, septicaemia or untreated febrile illness, clinical features of coagulopathy, active maternal haemorrhage or eclampsia, infection at or near needle insertion site at lumbar area or any other contraindications for regional techniques were not included.

The expectant mothers who satisfied inclusion criteria were interviewed along with her immediate family members about the merits and demerits of epidural analgesia and about the medicines used in the study. The awareness and acceptance levels were noted.

After noting demographics, obstetric history and a comprehensive clinical examination, Parturients were premedicated with INJ Ranitidine 50 mg and Ondansetron 4 mg slow IV. They received 500 mL of lactated Ringer's solution through 18 G. Under full aseptic precautions, parturients in active phase of labour having labour pains were then offered epidural at the clean procedure room. All study parameters were recorded throughout the procedure till 4 hrs after child birth.

An epidural catheter was inserted using aseptic precautions under local anaesthesia at the L2-3 or L3-4 intervertebral space using a loss-of-resistance to air technique and left 4-5cms in situ. Confirmed a negative response to the test dose of 3 mL of lidocaine 1% with epinephrine 1:200,000.

Labour analgesia was initiated with a bolus dose of 8-12 ml of Ropivacaine 0.2% (using aliquots of 4-5mL) at an interval of 10 and 20 min as per requirement of labouring mothers with the end point being "significant" pain relief of contractions (i.e. More than 80% of initial pain). After the

initial loading dose, analgesia was maintained using a continuous infusion of ropivacaine 0.125%. Infusions were started at within a range of 4 to 12mL/h (average of 8mL/h) and adjusted as required.

Patients who had breakthrough pain received boluses of 3 to 4 mL of Ropivacaine 0.25% (depending on patient's characteristics for height of block level), after assessment by the treating anaesthesiologist. Parturients were nursed in semi-lateral position with continuous monitoring of mother and foetus by residents or trained nurses in LR. Inj Tramadol was used as routine if parturient demanded additional analgesia.

Progress of labour was charted on partogram. Vaginal examinations was performed for obstetric indications. Numerical rating scale (NRS) was used to assess the pain. The highest dermatome level of sensory block, maternal blood pressure and heart rate and foetal heart rate were recorded. Inadvertent motor block was assessed using a modified Bromage score. Episodes of hypotension(SBP <80% of baseline / <100 mm Hg, was managed by rapid infusion of lactated Ringer's solution 5 mL/kg and IV boluses of ephedrine 3-6 mg, as required.

Foetal effects were assessed using Apgar score at 1 min and 5 min interval. Any untoward foetal effects like non-reassuring Cardiotocography (CTG), foetal hypertonia, NICU admissions were also noted.

Maternal satisfaction at the end of the procedure was assessed using a "Patient satisfaction score" which was indigenously designed for use in the community studied.

Table 1: Patient satisfaction score

"Patient satisfaction score"	Description
0	Unhappy & useless
1	OK, but had episodes of unbearable pain
2	Satisfactory and had moderate pain
3	Generally Happy, but had episodes of Mild pain
4	Excellent analgesia
5	One of best experiences in life and highly suggestible

Result and discussion

The beginning

To initiate a facility of providing labour analgesia, at any centre staff and space will be a major limiting factor. However, we could set up a room with good ventilation and lighting with optimal furniture, dedicated for labour analgesia, close to labour room and operation theatre. The room was equipped with emergency drugs, procedure trolley, sterile drapes, Epidural kit, infusion pumps, essential drugs and resuscitation equipment's. At the beginning, primary investigators were to put the extra effort to arrange parturient and labour analgesia, initiate and monitor throughout, sooner, there were more volunteers and enthusiastic students adding up to the team. Once this become a practice, authors believe that there won't be any shortage of resources and workforce in any centre trying to improve maternal and child care.

Ropivacaine has been associated with reduced incidence of operative vaginal delivery and less motor block when compared with bupivacaine [4]. It has also been shown that Ropivacaine appear equipotent to Bupivacaine [5]. Ropivacaine was used as the local anaesthetic of choice for our study due to its better cardiac safety in comparison to bupivacaine. A lower dose epidural regimen ranging with

0.125 % to 25% was selected in accordance with the COMET observations to reduce the side effects [6]. We presume that, this low concentrations can improve the margin of safety in resource limited settings. Opioid adjuvants were also omitted deliberately for the same. However we confess that the analgesia thus offered were not absolute, for which finer adjustments with adjuvants can be considered, as per the availability and setting.

Regarding timing of epidural drug administration, there has been studies stating that, neuraxial analgesia does not interfere with the progress or outcome of labour and can offer it whenever patient demanded, without waiting for active phase of labour [7]. On the contrary, some observed a higher rate of LSCS when epidural was initiated early. Initially, The American College of Gynaecologists, based on Thorp *et al.* observation suggested late charging of epidural catheter [8]. Later the ACOG and the American Society of Anesthesiologists (ASA) opined, that "there is no need to wait arbitrarily till the cervical dilation has reached 4-5 cm; i.e. "Maternal request is a sufficient indication for pain relief in labour" [9]. But In our study, we waited for active phase to charge epidural catheter for avoiding false inclusions in to a pilot project. Our suggestion will be to institute epidural catheter, early-in labour as it is easy for both the patient and

anaesthesiologist to position, and to charge the catheter with ropivacaine when the PV finding suggests 4cms of dilatation or mother had unbearable pain.

We instructed the participants, the concept of delayed pushing as passive descent with delayed and monitored pushing during birth increase spontaneous vaginal births, decrease instrument-assisted deliveries and shorten the pushing time [10]. The Pushing Early or Pushing Late with Epidural (PEOPLE) study also supported delayed pushing for a better outcome [11].

We tried to reduce the dose of continuous ropivacaine by 3-4 ml less of the infusion rate of that particular patient, and gave aliquots of 3 to 4 ml, with patient in sitting position and by withdrawing the catheter 1-2 cm from the initial 4-5 cm. We observed that this improve the analgesia to the sacral dermatomes, patient comfort and help in reduction of total dose of ropivacaine. These are in contrary to Thorvaldsen’s observation [12].

Adjuvant analgesia if needed was achieved by Tramadol, which has no clinically significant respiratory depression at usual doses of 1–2 mg/kg body weight. The onset of action is within 10 min of intramuscular administration and the duration lasts for approximately 2–3 h [13].

Age and gravida

Age of the parturients who were involved in labour analgesia ranges between 18 to 30 with mean age is 22.84 and standard deviation 2.838. This mean age (considering the SD) help us to reduce the confounding with respect to an expected change in attitude and perception of pain. There were primi and multigravidas in the group, but majority (63%) of them were primi gravida while there were representations from G2 & G3. Parity was not included in the selection criteria to have a better generalisation about the results and perception about labour analgesia among primi gravida and those with previous experiences of labour pains as in multigravida. This diversity can be the reason for a wider range of Induction (charging of epidural catheter) to delivery interval (ID interval).

Total time ranges between 60 min to 540 min with mean time 244.20 min and standard deviation 109.57. The non-stringent attitude towards offering analgesia could also been a contributing factor. We were deliberate in doing so, as the primary aim of our study was to implement an initiate and practice labour analgesia in a setup where it was virtually non-existent.

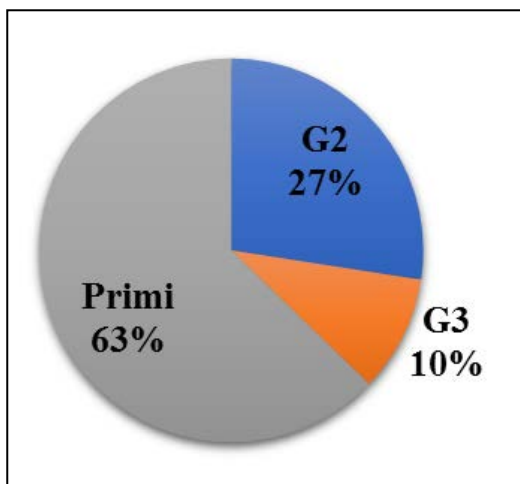


Fig 1: Gravida

Type of Delivery

Among parturients who availed labour analgesia, majority had vaginal delivery, i.e. 74%. In 10 % we had to use outlet forceps for delivering baby, due to the failure of secondary powers. A few cases of this happened in the initial stages of our study when we tried to achieve “absolute analgesia”, by escalating the concentration and amount of ropivacaine from the targeted “significant” pain relief, which need to be attempted after a reasonable practice and possibly with an opioid adjuvant. We avoided opioids as the primary aim was to device a basic protocol which is acceptable to even to centres with restricted facilities. It has to be also considered that, this proportion can also be a mere coincidence of instrumental delivery and caesarean sections, as in any study population due to intrinsic obstetric indications. It has been proven beyond doubt in many studies that, epidural analgesia does not increase the incidence of caesarean sections [14].

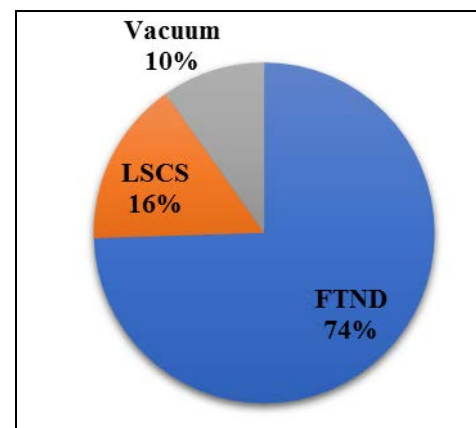


Fig 2: Type of delivery

Foetal effects

Majority (94%) of babies delivered after labour analgesia, had Apgar 9 at 1. Three babies delivered via assisted methods had Apgar 9 at 5. This 6% can be a general incidence in accordance with normal deliveries [15]. There were no cases of birth asphyxia.

Table 2: Foetal outcome

Apgar score	Frequency	Percentage
9 at 1	48	94.0
9 at 5	3	6.0
Total	51	100.0

Other observations

After setting up the labour analgesia suite, to mobilize the first few cases need to be careful. Careful selection of cases and vigilance is important. It has to be noted that these cases are very important for the units sustenance. A satisfied mother and healthy baby gives the unit the much needed goodwill, reputation and popularity.

We could recognise that, epidural provided excellent pain relief, alleviate fear and anxiety. As the pain is reduced, she can concentrate on pushing down the baby and reduce exhaustion. The surges in blood pressure and heart rate can be controlled. Once the contractions become more functional and organised, the second stage get reduced. She can participate in the joyous moment of arrival of a new member in the family. Initiate early feeding and bonding. The post-delivery pain or perioperative pain that occurred in

any case of caesarean section is also taken care of. What we have noted is the simple feeling that someone is there to empathize and annul their sufferings, psychologically boosts the expectant mothers.

Among the drawbacks experienced, the biggest huddle was the inertia to alter an existent system. We have noticed that the parturients care givers are very sensitive with regard to the procedural effects on the baby. We need to be really guarded while explaining the consent. Fever and Chills were the most common side effect noted. This could be due to the vasodilatation by epidural, oxytocin used or the fluid administered in the proceedings of labour room. The rise in temp is seldom above 1 degree centigrade and doesn't need further evaluation [15]. Hydration and simple antipyretics will suffice. Few episodes of fall in blood pressure and hypotension that occurred, responded well with boluses of RL solution and short acting vasopressors. Few instances of nausea and bradycardia were also there which seldom required any medications.

Patient satisfaction

It was observed that all participants were happy with regard with the fact that we were trying to alleviate their suffering by some means, which is evident from the feedback that no one reflected to our attempts in the score 0 or 1. Significant majority [80.4%] recollected it as one of the best experiences in their life, which was satisfying experience for the team involved. It has to be noted that we tried to derive a wider perceptive for the feedback by including participants with different parity, experience, and educational and social background.

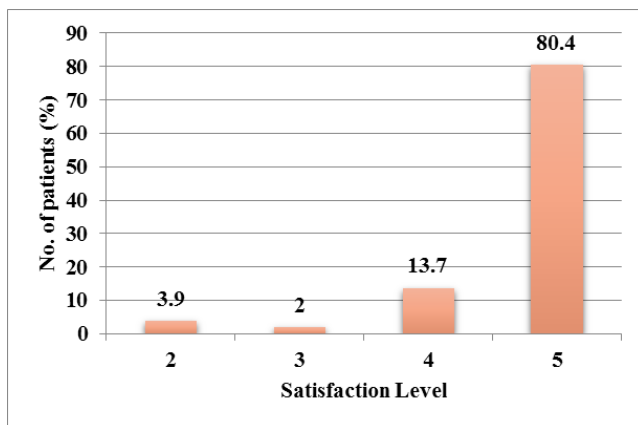


Fig 3: Patient satisfaction score

Spearman's rank correlation was done for finding out the relation between the total time (ID interval) and patient satisfaction. It was found to be 0.350 with p value 0.013 which is less than 0.05. This indicates that there exists significant positive correlation between satisfaction level and total time. We conclude that more the time spent beside the patient, more the bond developed and so do the better satisfaction scores reflected.

Conclusion

Initiating and practicing a comparatively newer procedure, which involves the support of department heads, unit chiefs, colleagues, nurses, technicians and attenders were a new experience to us. Although the trial imparted an additional burden of inducing and monitoring every patient for an additional 6-8 hrs during the busy duty days, we often forget

our hardships, once we see the smiling faces of mothers who were relieved of pain, which was a nightmare for all of them and which most of them thought was inevitable. We believe that the general protocol devised will act as a blue print for many, shall be further modified and refined as per the individual settings and needs, towards the noble concept of absolute analgesia.

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Conflict of interest: Nil

Reference

- Lederman RP, McCann DS, Work B Jr, Huber MJ. Endogenous plasma epinephrine and norepinephrine in last trimester pregnancy and labour *Am J Obstet Gynecol.* 1977; 129(1):5-8.
- Shnider SM, Abboud T, Artal R, Henriksen EH, Stefani SJ, Levinson G. Maternal catecholamines decrease during labour after lumbar epidural analgesia *Am J Obstet Gynecol.* 1983; 147:13-15.
- Braveman Fr. "Obstetrical Anesthesia", chapter 43 in *Clinical Anesthesia Barasch GP Ed 6th Philadelphia: Lippincot Williams & Wilkins, 2009, 1144-47*
- Asik I, Goktug A, Gulay I *et al.* Comparison of Bupivacaine 0.2% and ropivacaine 0.2% combined with fentanyl for epidural analgesia during labour *Eur J Anaesth.* 2002; 19(4):263-70.
- Lee BB, WD Ngan Kee, FF NG *et al.* Epidural infusions of ropivacaine and bupivacaine for labour analgesia: a randomized, double-blind study of obstetric outcome *Anesth Analg.* 2004; 98(4):1145-52.
- Comparative Obstetric Mobile Epidural Trial (COMET) Study Group UK. Effect of low-dose mobile versus traditional epidural techniques on mode of delivery: A randomised controlled trial *Lancet.* 2001; 358:19-23.
- Helpern SH, Abdallah FW. Effect of labor analgesia on labor outcome. *Curr Opin Anaesthesiology.* 2010; 23(3):317-22.
- Thorp JA, Hu DH, Albin RM, McNitt J, Meyer BA, Cohen GR *et al.* A randomized, controlled, prospective trial *Am J Obstet Gynecol.* 1993; 169:851-8.
- American College of Obstetricians and Gynaecologists Committee on Obstetric Practice. ACOG committee opinion No 339: Analgesia and caesarean delivery rates *Obstet Gynecol.* 2006; 107:1487-88
- Brancato RM, Church S, Stone PW. A meta-analysis of passive descent versus immediate pushing in nulliparous women with epidural analgesia in the second stage of Labor, *J Obstet Gynecol Neonatal Nurs.* 2008; 37:4-12.
- Petrou S, Coyle D, Fraser WD. Cost-effectiveness of a delayed pushing policy for patients with epidural anesthesia. The PEOPLE (Pushing Early or Pushing Late with Epidural) Study Group *Am J Obstet Gynecol.* 2000; 182:1158-64.
- Torvaldsen S, Roberts CL, Bell JC, Raynes-Greenow CH. Discontinuation of epidural analgesia late in labour for reducing the adverse delivery outcomes associated

- with epidural analgesia. Cochrane Database Syst Rev. 2004; 4:CD004457.
13. S Gupta, GS A Kumar, H Singhal. Acute pain-labour analgesia, Indian janaesth. 2006; 50(5):363-69
 14. Leighton BL, Halpern SH. The effect of epidural analgesia on labor, maternal and neonatal outcomes: A systematic review Am J Obstet Gynecol. 2002; 186:S69-77.
 15. Leighton BL, Halpern SH. The effects of epidural analgesia on labor, maternal, and neonatal outcomes: a systematic review Am J Obstet Gynecol [PubMed]. 2002; 186:S69-77.