

Clinical Study on Local Application of Lidocaine in Reducing the Rate of Maternal Perineal Incision

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ABSTRACT Objective: To carry out feasibility study and determine the effect of local lidocaine in reducing the rate of maternal perineal incision. **Method:** A retrospective study of our hospital in January 2010 January 2012, with 80 cases of local application of lidocaine after perineal side cut lying in women and in the same period were randomly selected and 100 cases of conventional guild shade side cut of mother's surgery as control group. **Results:** There was no difference between the weight of the newborn and the experimental group at the time of birth. The use of local lidocaine can reduce the rate of maternal perineal incision. Besides, in experimental group it show reduce in maternal postpartum hemorrhage and incision infection, with not increase the incidence of neonatal asphyxia. **Conclusion:** The use of local lidocaine in reduce the rate of maternal perineal incision is a simple, safe and reliable method to reduce the pain during delivery.

KEYWORDS

Analgesic
Perineal incision
Lidocaine

1. Introduction

During the second stage of labor or delivery process, episiotomy is at the end process of delivery. Usually it makes a lateral shear perineum, and involve suture repair of an expansion of vaginal opening surgery. There are two ways of the operation, including the perineal incision and the lateral incision. The purpose of the perineal incision was to prevent severe laceration of the perineal III. At present, there is a gradual increase in the rate of perineal incision in domestic natural labor. A survey report from the Shanghai pointed out that the rate of the first three hospitals in the lateral cut rate of early maternal achieving 82.7–95.61% [1]. Hence, there is a lot of women try to avoid this operation by choose cesarean section as termination of pregnancy. Due to its special location, after incision of perineal, it often causes some complications, such as postpartum incision infection, pain, edema and inflammation bowel syndrome etc., besides that, the infection rate of perineal

incision was achieved 10% in overall cases [2]. Moreover, the toughness of the women's pelvic floor muscle tissue reduced, hence it increase the difficulty during sexual intercourse and the symptoms of perineal pain. Hence, to reduce the rate of perineal side incision, the research found that the effective administration of lidocaine able to reduce the maternal perineal incision rate, and the report was as follows.

2. Materials and methods

2.1. General information

From January 2010 to January 2012, 80 cases of pregnant women from our hospital were selected for transperineal application of topical lidocaine after perineal side incision method of midwifery. All enrolled were absent for maternal fetal distress, second stage of labor extended to vaginal delivery, or for primipara physical causes of disease to shorten the second stage of labor. 100 cases of pregnant women was randomly selected as the control group, which used Lamaze method for the conventional episiotomy. Two groups of maternal pelvic measurements of the normal head basin were not known, and absence of prolonged second stage of labor, fetal distress and other phenomena. The baby weights were in between 2,600–4,200 g and gestational weeks between 37–42 weeks of full-term primipara from.

2.2. The use of lidocaine

20 mL of 2% lidocaine was diluted with saline to achieve 1:1 mixture solution. Ordinary intramuscular needle was used

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in injection for the administration of lidocaine solution. 4 point method is usually applied during the administration of lidocaine, which injection directly into the genital, so that the vulva can be fully relaxed. The iodophor preparation was used in disinfection of vulva skin and the original side cut of perineum which from outside or from the inside out injection of lidocaine. At the same time, perineal deep, superficial transverse muscle, first half of the external anal sphincter and lower edge of the symphysis pubis was injected with lidocaine from top into bottom. Local anesthesia can also be applied with margin level to ball sponge body and ischiocavernous muscles at pubic symphysis. If the descending of fetal head is rapid, the administration of lidocaine can be earlier. Meanwhile, the use of lidocaine is not urgent for cases where the fetal is ready.

If mothers still sense serious vulva or due to fetal distress after local anesthesia of lidocaine, there was still need for the vaginal delivery, which close based uplink sacral perineal resection. Precaution should be taken that clinical maximum dose of lidocaine as local anesthesia was 4,000 mg.

3. Statistical methods

The measurement data were compared with Levene's test, and the variance was analyzed by single factor analysis of variance. Two groups of count data analyzed by using the 2 tests, statistical analysis with SPSS 12.0, and $p < 0.05$ shown significant differences.

4. Results

4.1. General information comparison

There was no difference in the age of the pregnant women and the average gestational weeks of the patients in the treatment group and the patients in the control group. The

Table 1. Comparison of the general data of the lidocaine group and the perineal side incision group.

Clinical data	Lidocaine group	Perineal side incision	<i>p</i> Value
Average age (Y)	27.6	27.9	0.318
Gestational weeks (W)	38.1	37.8	0.431
Maternal weight (kg)	68.8	67.5	0.559

Table 2. Comparison of body weight in the lidocaine group and the perineal side incision group.

Neonatal body weight	< 3.0 kg	3.0–3.5 kg	3.5–3.75 kg	3.5–4.0 kg	4.0–4.25 kg
Lidocaine group	4	17	35	15	9
Perineal side incision	5	22	42	21	10
<i>p</i>	> 0.05	-	-	-	-

Table 3. Comparison of the conditions of the pregnant women and the newborns of the lidocaine group and the perineal side incision.

Grouping	Mild neonatal asphyxia	Neonatal severe asphyxia	Wound infection	Postpartum hemorrhage	Prolonged second stage of labor
Lidocaine group (case)	5	1	0	2	2
Perineal side incision group (case)	6	1	8	3	2
<i>p</i>	> 0.05	> 0.05	< 0.05	> 0.05	> 0.05

two groups had no statistical significance ($p > 0.05$). Lidocaine group 80 cases of patients without episiotomy, postpartum perineal laceration were within 2 degrees, with no grade III or IV degree perineal crack injured and perineal laceration of one-stage healing.

4.2. Lidocaine group and the perineal side incision group of neonatal birth weight

There was no significant difference in the body weight distribution between the lidocaine group and the perineal side incision group ($p > 0.05$).

4.3. Lidocaine group and the perineal side incision group of maternal postpartum comparison

In the newborn infants with mild asphyxia, 5 cases were treated with lidocaine and 6 cases with perineal side incision group, where 1 cases were treated with lidocaine group and perineal side incision. In postpartum hemorrhage and lidocaine group had 2 cases, and perineal side incision group had 3 cases; on the second stage of extension, both groups each have 2 cases. There was no significant difference in mild and severe asphyxia rate between both groups ($p > 0.05$). There was absence of incision infection in the lidocaine group which significant difference between the groups ($p < 0.05$). There was no significant difference in the incidence of postpartum hemorrhage between lidocaine group and perineal side incision group ($p > 0.05$). There was no significant difference in the second stage of labor time of both group ($p > 0.05$).

5. Discussion

Perineal side cut will permanently destroy the vaginal mucous membrane, perineal body skin, subcutaneous tissue and even the muscle structure of the anus. The incidence of post-operative pain and the incidence of postpartum sexual life was significantly higher in the patients with perineal incision. 1996 international organizations put forward on "Aimu intrapartum ten delivery action" that delivery is a normal physiological process, routine interventions should not be used in. One precaution should be taken that lateral cut rate must be limited within 10–20%. While the perineal

incision of the maternal pain is very obvious, and pain is disadvantage and is the patient's right to avoid it [3]. Therefore, controlling the rate of lateral cut had increasing important.

Lidocaine is mainly used for infiltration anesthesia, epidural anesthesia, surface anesthesia (including the use of the use of mucosal anesthesia during the operation of the chest or abdomen. It belongs to the local anesthetic drugs, which can be absorbed by the blood in the way of intravenous administration. It has the effect of inhibiting and exciting central nervous system. After administration the drugs will absorb rapidly into the patient's blood circulation system, and finally distribute into all the muscle tissue. The therapeutic effect can achieve after 5 min and 200 mg of lidocaine injection which was the therapeutic concentration, had 90 min of sustainable effect. The adverse effect included dizziness, nausea, unconsciousness and other symptoms. Excessive doses may produce severe cardiac dysfunction and other side effect. In addition, patients may experience allergic reactions, hence once the develop of edema and rash, should immediately discontinue the drug. However, the administration of lidocaine prohibited when there is a patient in the presence of myocardial damage, liver dysfunction, low blood volume, kidney dysfunction or shock. Reduce the dosage of lidocaine for the patients that suffering from heart and liver disease. Due to the properties of lidocaine which can be both analgesic, and muscle relaxer, so, during the natural delivery, injection of lidocaine into the inner part of the vulva, induce vulva muscle relaxation, and reduce the degree of perineal laceration. After local anesthesia, rubbing with sterile gauze gently, so that the drug dispersed into the muscular layer. After gave birth to the head of the fetus, the index finger and middle finger can be used with sterile gloves to determine whether the vulva was in nervous stage. After the crowning of the vulva can still be placed in two fingers, the vulva usually won't break up too serious. The patient can feel vulva nervous under local anesthesia, and feeling of relaxation immediately after using lidocaine. The correct use of intra-operative guidance maternal abdominal pressure, the successful completion of vaginal delivery of fetus [4].

The clinical application of lidocaine perineal anesthesia method, decrease the rate of natural childbirth primipara perineal resection nearly up to 25%. At the same time, lidocaine is particularly suitable for vulva muscles that are active, thicker tissue layer, poor elasticity, with lateral episiotomy operative indications of primipara [5]. Neonatal weight of lidocaine group and control group had no statistical significance difference in between. It except for fetal distress or the second stage of labor extended for vaginal delivery, or for primipara's physical causes of disease required shorten the second stage of labor of maternal, aver-

age weight of newborn can be used topical lidocaine application, also do not need to episiotomy. It is significantly shown that the maternal wound infection rate of lidocaine group had decreased, beside that it able to reduce the maternal pain and shorten the length of hospital stay [5].

In the present study, the patients with mild asphyxia, severe neonatal asphyxia, wound infection and postpartum hemorrhage, were generally superior to that of the patients in the group of patients with mild asphyxia. But there are also some contraindications of lidocaine, if the injection of the drug before delivery, within a few minutes, the concentrations of drug in fetuses can reach half of mother drug concentration. It has been reported that before delivery lidocaine induce slow heartbeat in fetal and even lead to methemoglobinemia. Therefore, before delivery of drug injection, the comparison of the advantages and disadvantages should take in as the consideration.

In addition, although the perineal skin muscle has a certain elastic, but it cannot expand unlimited. So the extension of fetal head should switch to the supporting anus method. Then left hand to support fetal scalp and forehead, and assist the fetal head extension. When the contractions become stronger, enjoin maternal breathing using mouth. Until intermittent contractions occur then use abdominal pressure to slowly release of childbirth fetal head and with local use of lidocaine it will avoid perineum laceration. Therefore, lidocaine local anesthesia is simple, widely applicable methods that help in reduce maternal pain.

Conflicts of interest

These authors have no conflicts of interest to declare.

Authors' contributions

These authors contributed equally to this work.

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