INTRODUCTION

Eighty-five percent of women who have a spontaneous vaginal birth will have some form of perineal trauma and up to 69% will need to have an episiotomy ***(McCandlish et al., 1998)***.

Maternal factors that may contribute to the extent of trauma sustained during childbirth are ethnicity, age, tissue type and nutritional state in the pregnancy years ***(Klein et al., 1998; Renfrew et al., 1997).***

Other risk factors include primiparity, fetal birth weight greater than 4000 g, instrumental delivery, direct occipitoposterior position and precipitate birth ***(Wood et al., 1998)***. Antenatal perineal massage may reduce the risk of perineal damage ***(Davidson et al., 2000; Hodnett et al., 2003; Stamp et al., 2001)***.

In addition, aspects of intrapartum care, such as support during labor, position for delivery, type of pushing, mode of delivery and the use or not of episiotomy, all have a direct effect on both the prevalence and degree of perineal damage sustained during childbirth ***(Gupta et al., 2000 ; Carroli et al., 2000).***

Morbidity associated with childbirth may affect women's physical, psychological and social well-being,

both in the immediate and long-term postnatal period. Pain and discomfort related to perineal suturing have been reported to interfere with women's daily activities postpartum, such as sitting, walking and lifting the baby ***(Albers et al., 1999).***

Pain related to perineal suturing and suturing is known to have a negative impact on sexual activities in the first year after childbirth ***(Glazener, 1997)***.

Obstetricians increasingly face women who wish to have a caesarean section due to fear of genital tract injuries or following previous childbirth-related pain at episiotomy site ***(Wagner, 2000)***.

Effectiveness of analgesia, type of suturing material and skill of the operator are the 3 main factors that influence the outcome of perineal repair. Surgical repair of lacerations in the genital area is performed by obstetricians according to extent of trauma. Trauma involving the vaginal mucosa, perineal skin and superficial perineal muscles are defined as first- or second-degree injuries. Lacerations involving the anal sphincter are defined as third-degree tears and of the anal mucosa as fourth-degree tears ***(Sultan and Thakar, 2002).***

Choice of method of anaesthesia, suture material for repair, suture technique and the operator's surgical

competence can influence the short and long-term morbidity related to perineal repair ***(Johanson and Kettle, 2000).***

Rapidly absorbed synthetic materials are reported to be superior to monofilament sutures and other synthetic products with slower absorption when perineal pain and wound healing are evaluated ***(Dencker et al., 2002; Kettle et al., 2006).***

Perineal infiltration with local anesthetic is the most common technique to provide anesthesia during perineal suturing. Although infiltrative anesthesia remains the mainstay for pain relief goals during minor surgical procedures, topical anesthetics in the form of sprays, gels and ointments have emerged as valuable alternatives in several medical specialties ***(Kaweski, 2008).***

The advantages of using topical anesthetics include their localized action with negligible systemic absorption, ease of administration, painless application, and absence of edema at the surgical site that distorts wound margins in laceration repair. Previous published trials on topically applied anesthetics that were used to reduce perineal pain yielded conflicting results; most of trials addressed pain during the second stage of labor ***(Sanders et al., 2006)*** or in

the early puerperium period ***(Hedayati et al., 2005)*** rather than pain during suturing.

Lidocaine-prilocaine cream (EMLA cream; AstraZenenca, Basiglio, Italy) is a mixture of 2.5% lidocaine and 2.5% prilocaine that is used widely as a topical anesthetic for pediatric, dermatological, reconstructive, and gynecologic minor procedures. Absorption from the genital mucosa is rapid, and onset time is between 5 and 10 minutes with an average duration of effective analgesia from 15-20 minutes; however, on intact skin, the cream should be applied for at least 1 hour to provide satisfactory dermal analgesia ***(Friedman et al., 2001).***

Safety and efficacy of EMLA cream have been shown consistently in a number of clinical trials across many medical specialties since 1990. EMLA cream provides analgesia by the release of lidocaine and prilocaine, which are 2 amide anaesthetics, from the cream into the dermal layers before penetrating the smooth and striated muscle and the individual axons within the nerve. Nerve conduction becomes impeded because an action potential is prevented by an inward flux of sodium ions through the nerve membranes.

A trial was conducted at a referring academic institute on September 2007 after the approval of the institutional review board. Thirty one women were assigned to receive the applicatiom of EMLA cream. Primary outcome was pain during suturing episiotomy. Women had low pain scores (1.7+or- 2.4) and only 3 out of 31 needed additional anaesthesia. 83.8% of women expressed satisfaction with anaesthesia method ***(Franchi et al., 2009).***

Aim of the Work

The purpose of this study is to assess the effectiveness of the topically applied lidocaine-prilocaine cream (EMLA cream) in the reduction of pain during perineal suturing of an episiotomy as well as short term postpartum pain.

Chapter (1)

EPISIOTOMY AND NON EPISIOTOMY

Episiotomy

An episiotomy is a perineal incision made during childbirth by a doctor or midwife to help completing the second stage of labor, ostensibly to improve fetal and maternal outcomes **(ACOG, 2006).**

In a strict sense, episiotomy is the incision of the external genitalia, while perineotomy is the incision of the perineum, but in common use both is of equal meaning ***(Cunningham et al, 2010).***

Episiotomy is done as prophylaxis against soft-tissue-trauma. Vaginal tears can occur during childbirth, most often at the vaginal opening as the baby's head passed through, especially if the baby descends quickly. Tears can involve the perineal skin or extend to the muscles and the anal sphincter and anus. The midwife or obstetrician may decide to make a surgical cut to the perineum with scissors or scalpel (episiotomy) to make the baby's birth easier and prevent severe tears that can be difficult to repair. The cut is repaired with stitches (sutures). Some childbirth facilities have a policy of routine episiotomy ***(Carroli et al., 2009).***

Although still a common obstetrical procedure, the use of episiotomy has decreased remarkably over the last twenty five years ***(Cunningham et al, 2010).***

The procedure should be applied selectively for appropriate indications, some of which include fetal indications such as shoulder dystocia and breech delivery forceps or vacuum extractor deliveries occipito-posterior positions; and in instances where it is obvious that failure to perform an episiotomy will result in perineal rupture. The final rule is that there is no substitute for surgical judgment and common sense. ***(Eason and Feldman., 2000).***

History of episiotomy

The precise origin of episiotomy is unknown. Descriptions appeared in European texts by 1740's ***(Viswanathan et al, 2005).***

Episiotomy was first described by Ould. The origin of episiotomy is difficult to be determined, but one of the first to describe it was Sir Fielding Ould. In 1742, in his "Treatise of Midwifery" in three parts, he recommended the procedure for those cases in which the external vaginal opening is so tight that labor is dangerously prolonged ***(Ould, 1742).***

In 1852, the first report of the procedure in the United States was in a journal entitled "The Stethoscope and Virginia Medical Gazette". Taliaferro cut a small mediolateral episiotomy to facilitate delivery in young eclamptic women. For these women, episiotomy was used to facilitate an unusually difficult labor ***(Taliaferro, 1852).***

In the eighteenth century, episiotomy was introduced as an obstetric procedure where a surgical incision is to be made into the perineum to widen the vaginal opening for delivery ***(Johanson, 1999).***

By 1938, Diethelm asserted that the indications for episiotomy were well established and needed no defense ***(Diethelm, 1938).*** This opinion supported the increased trend of the use of episiotomy. The desire to maximize maternal comfort and safety, to improve infant outcomes, and to facilitate the delivery process all came together at a time when technological intervention and hospital-based delivery were prevalent ***(Thacker and Banta, 1979).***

In 1979, episiotomy was performed in 62.5% of vaginal deliveries in the United States, and in nulliparous women, the episiotomy rate rised to 80%. Since that time, the routine use of episiotomy has been increasingly questioned ***(Thacker and Banta, 1979).***

Although rates of episiotomy in parts of the world have decreased in recent years, it is still one of the most commonly performed procedures in obstetrics ***(Bansal, 1996).***

Historically, this procedure has been indicated in circumstances such as abnormal labor progression, non-reassuring fetal heart rate pattern, vacuum or forceps-assisted vaginal delivery, and shoulder dystocia ***(Delee, 1920).***

Surgical technique

A number of different techniques are used to undertake episiotomy ***(Verspyck et al., 2006).*** The incision, performed with a scalpel or surgical scissors, can be made in a mediolateral position or along the midline of the perineum. Right mediolateral episiotomies are most often performed in the UK because they result in a shorter wound ***(Bodner-Adler et al 2001).*** The midline of the perineum is less vascular. Thus an incision made in this area should result in less bleeding, bruising, inflammation and oedema and should, therefore, be less painful. However, perineal tears are more likely to occur after midline episiotomy ***(Buppasiri et al., 2005).***

When to do the episiotomy?

If the episiotomy is performed unnecessarily early bleeding from the episiotomy may be considerable during the interval between incision and delivery. If it is performed too late; lacerations will not be prevented. It is common practice to perform episiotomy when the head is visible during a contraction to a diameter of three to four centimeters ***(House et al., 1986; Cunningham et al, 2010).***

The important variables of episiotomy use include the timing of the incision, the type of incision, and techniques for repair ***(Cunningham et al., 2010).***

Types of episiotomy incisions

In a strict sense, episiotomy is incision of the pudenda. The incision may be made in the midline, creating a median or midline episiotomy, or it may begin in the midline but be directed laterally and downward away from the rectum, termed a mediolateral episiotomy; or start as median one then curve to take a J-shaped episiotomy ***(Cunningham et al., 2010).***

Modified midline episiotomy

(Hockey stick or J-shape): When a midline episiotomy or a perineal tear, threatens to become a third degree

perineal laceration, a deliberate and timely incision can be made at the base of the opened perineum to one or both sides the ("Hockey stick" extension), at an angle of twenty to thirty degrees to direct the extension away from the anal canal. In modified midline episiotomy the structures incised are similar to those incised by a mediolateral episiotomy ***(Nichols, 2000).***

Lateral episiotomy

Hie incision begins one or more centimeters distant from the center of the fourchette and is not a favored incision. The levator ani muscle is weakened, bleeding is more profuse, suturing is more difficult and the woman experiences subsequent discomfort ***(House et al, 1986).***

Midline episiotomy

Two fingers are placed in the vagina between the fetal head and the perineum and, using straight scissors, the incision is made from the fourchette through the perineal body up to but not including the external anal sphincter ***(Baskett et al, 2007).***

Mediolateral episiotomy

The incision is made starting at the midline of the posterior fourchette and aimed towards the ischial tuberosity to avoid the anal sphincter. The incision is

usually about four centimeters long. In addition to the skin and subcutaneous tissues the bulbocavemosus, transverse perineal, and puborectalis muscles were cut. Whether the incision is to right or left depends on operator preference ***(Baskett et al., 2007).***

Advantages and disadvantages of Midline versus mediolateral episiotomy

It is reasonable to use a mediolateral episiotomy when a third-or forth degree extension is likely, but to employ the midline incision otherwise. Anthony and colleagues, 1994 found more than a four fold decrease in severe perineal lacerations when mediolateral episiotomy was employed compared with midline incision ***(Cunningham et al., 2010).***

Perineal tears

The assessment and classification of genital tract injury is an important aspect of the routine care women receive as soon as the baby is born ***(Steen and Cooper 1997).*** The purpose is to identify trauma requiring intervention, stop bleeding, take measures to promote healing and restore function to the traumatized tissues. The National Institute for Health and Clinical Excellence (NICE) (2006) recommends that every postpartum woman should be asked about perineal pain at each professional

contact. In the period immediately after childbirth women are most likely to receive care from a midwife or a health visitor. However, the length of time required for healing can vary according to the extent of trauma, while perception of pain is highly individual ***(McCandlish 2001).*** Thus women may continue to experience pain and discomfort beyond the early postpartum period ***(Hartmann et al, 2005).***

Many women also experience labial tears, grazes or vulval varicosities which are painful ***(Steen 2007).***

Perineal wounds sustained during childbirth can cause pain and distress ***(Verspyck et al., 2006).***

The intensity of the pain varies from mild to severe ***(Steen 2007)*** and appears to be related to the extent of injury ***(Kenyon and Ford 2004),***

Lacerations of the vagina and perineum are classified as first, second, third or fourth degree. First-degree lacerations involve the fourchette, perineal skin and vaginal mucous membrane but not the underlying fascia and muscle. Second-degree lacerations involve in addition to skin and mucous membrane, the fascia and muscles of the perineal body but not the anal sphincter ***(Cunningham et al., 2010).***

Most spontaneously occurring perineal tears are classified as second degree tears ***(Steen 2007).*** The incidence of third and fourth degree tears is estimated to be 0.6-9.0% ***(Davis et al 2003).*** Although numbers are small, these cases are clinically significant because of the distress they cause ***(Steen 2007).***

Classification of spontaneous tears

First degree

Injury to the skin only

Second degree

Injury to the perineum, involving perineal muscles but not involving the anal sphincter

Third degree

Injury to the perineum involving the anal sphincter complex:

- Less than 50% of external anal sphincter torn.
- More than 50% of the external anal sphincter torn.
- Internal anal sphincter torn.