Introduction

In general, local anesthesia is of benefit in women having a caesarean section by reduction in opioid consumption. It can be recommended, with consideration to affordability, as part of the multimodal approach to pain relief ***(Bamigboye, 2010)***.

The assessment of acute pain should include a thorough general medical history and physical examination, a specific "pain history" and an evaluation of associated disability. A complete pain history provides important diagnostic information that may help distinguish different underlying pain states such as nociceptive "somatic and visceral" or neuropathic pain ***(Hobbs. 2003).***

Sufficient control of post-caesarean section pain is imperative to relieve patients' discomfort, as well as to enhance breast-feeding performance and infant care ***(Karlstr, 2007).***

It is a major health care issue. Several factors have contributed to inadequate postoperative pain control, including a lack of understanding of pain management strategies, mistaken beliefs and expectations of patients, inconsistencies in pain assessment practices and lack of analgesic regimens that account for inter-individual differences and requirements. Untreated acute pain has the potential to produce acute neuro-humoral changes, neuronal

remodeling, and long lasting psychological and emotional distress, and may lead to prolonged chronic pain states ***(Robert, 2010)***.

Numerical rating scales have both written and verbal forms. Patients rate their pain intensity on the scale of 0 to 10 where 0 represents 'no pain' and 10 represents "worst pain imaginable", or their degree of pain relief from 0 representing "no relief" to 10 representing "complete relief" ***(Jensen, 1986).***

Large amounts of opioid analgesic drugs are often required in the management of intense postoperative pain; however this option is associated with many side effects, including evident disruption of mother /newborn bonding ***(Tauzin-fin, 2009)***.

Providing effective post-operative analgesia is a key to achieving early mobilization and the surgical rectus sheath block may provide a useful alternative to established regional anesthetic techniques***(Crosbie, 2012).***

Azin; 2007, who investigated "The Efficacy of Postoperative Wound Infusion with lidocaine for Pain Control after Caesarean Delivery" showed that it was safe and simple technique that provides effective analgesia and reduces morphine requirements after caesarean delivery.

In oral soft tissue surgery; the postoperative pain after lidocaine 2% and lidocaine 2% with adrenaline 1 : 160 000 showed a similar pattern except for the time period just after completion of surgery when lidocaine 2% with adrenaline 1 : 80 000 caused less pain*(**Jorkjend, 2001**)*.

Aim of the Work

The aim is to assess the efficacy of post-caesarean section infiltration with lidocaine and epinephrine versus lidocaine only to reduce post-incisional pain.

Chapter (1)
Caesarean Section

Caesarean delivery also known as a C-section is a surgical procedure used to deliver a baby through an incision in the mother's abdomen (laparotomy) and a second incision in the mother's uterus (hystrotomy). This definition does not include removal of the foetus from the abdominal cavity in cases of uterine rupture nor in cases of abdominal pregnancy ***(Cunningham et al., 2007).***

Caesarean deliveries may be performed because of maternal or foetal problems that arise during labour, or they may be planned before the mother goes into labour ***(Vincenzo et al., 2010).***

An emergency caesarean section is defined as one where this mode of delivery had not been anticipated and where it was preceded in labour either spontaneous or induced which was deliberately allowed to continue for a time. All other C.S was defined as elective procedure***(Lurie et al., 2003).***

The surgical techniques for performing cesarean delivery has changed from time to time, from surgeon to surgeon and these changes were involved both, of the uterine and skin incisions. Only a small number of these techniques have been evaluated in randomized controlled trials***(Tully et al., 2002).***

The progressive increase in the incidence of caesarean birth has been a notable feature of contemporary obstetric practice and caesarean delivery is now the most frequent major surgical procedure performed in obstetrics and gynaecology ***(Martin et al., 2002).***

Historical background

The exact origin of the term caesarean delivery is unclear. The popular beliefs that Julius Cesar was born in this manner with the result that the procedure became known as the several circumstances weaken this explanation. First, the mother of Julius Cesar lived for many years after his birth in 100 BC. And as late as the 17th century, the operation was almost invariably fatal. Second the operation whether done on living or dead women, it is not mentioned by any medical writer before the middle age***(Cunningham et al., 2007).***

In 1500 AC., The first successful caesarean delivery on a living woman was thought to have been performed by Jacop Nufer, who operated on his wife following several days of unsuccessful labour. While the first authenticated caesarean delivery was performed by Trautmann of Wittenberg in 1610, with the mother succumbing to post-operative infection 25 days later***(Larry et al., 2002).***

In 1900, Pfannenstiel has made his transverse skin incision in which, the skin is incised in a transverse upward concavity, typically initiated two finger-breadths above the

upper border of the symphysis pubis and extended laterally in the direction of the anterior superior iliac spines below and medial to it about 2-3 cm ***(Larry et al., 2002).***

In 1912, Kronig recommended a trans-peritoneal approach with a vertical midline incision in the lower uterine segment. He and others notice that maternal mortality rate less than 4% while other obstetricians advocated using a transverse uterine incision trans-peritoneally ***(Larry et al., 2002).***

Incidence of caesarean section

The World Health Organization (WHO) recommends that the rate of caesarean sections should not exceed 15% in any country. However, in recent years the rate has risen to a record level of 46% in china and to levels of 25% and above in many Asian countries, Latin America and the USA ***(WHO, C. Section rates around Globe, 2010).***

Increases in the primary caesareans with no specified indication were faster in the overall population and appear to be the result of changes in obstetric practice rather than changes in the medical risk profile or increases in maternal request***(MacDorman et al., 2008).***

The caesarean delivery rate has also increased throughout the world, but rates in certain parts of the world are still substantially lower than in America. The caesarean

delivery rate is approximately 21.1%for the most developed regions of the globe, 14.3% for the less developed regions, and 2% for the least developed regions***(Betran et al., 2007).***

Caesarean section rates in Egypt

Regarding Egypt, a significant rise in caesarean deliveries has been occurred for all births from a low of 4.6% in 1992 to 10.3% in 2000. However, hospital- based caesarean deliveries were much higher in 1988 13.9%, increasing to 22.0% in1999 - 2000. Although the caesarean section rate was slightly higher in private hospitals, the rate also increased consistently in public hospitals. This high increase in caesarean section rates may be due to caesarean sections that are not medically indicated, and suggest that physician practice patterns, financial incentives or other profitability factors, and patient preferences should be explored ***(Khawaja et al., 2004).***

Indications of Caesarean Sections

Caesarean section is recommended when vaginal delivery might pose a risk to the mother or baby. A caesarean delivery is performed for maternal indications or foetal indications, or both. The leading indications for caesarean delivery are previous caesarean delivery, breech presentation, dystocia, and fetal distress. These indications are responsible for 85% of all caesarean deliveries ***(Cunningham et al., 2000).***

I. Maternal Indications:

1 - Maternal diseases:

Maternal diabetes in pregnancy associated with increased rates of caesarean section ***(Boulvain et al., 2000).***

Similarly, in pre-eclampsia there is a higher risk of caesarean section with some authors describing caesarean section rates over 80% in gestation below 30 weeks with sever pre-elampsia ***(Magann et al., 2000).***

Other maternal diseases, such as idiopathic thrombo-cytopenic purpura I.T.P. and obstetric cholestasis, are also associated with increased rates of caesarean section to avoid foetal morbidity and mortality ***(Fisk et al., 1998).***

2 - Ante partum hemorrhage:

In the presence of major placental abruption i.e abruption is large but less than 50% and fetal distress more than 90%, even when the fetus is alive at presentation and the uterus is rigid, the outlook for the foetus is poor and immediate delivery by caesarean birth is usually recommended ***(Chamberlain et al., 2001).***

3 - Cephalo-pelvic disproportion:

C.S should be done in women with contracted pelvis due to old fracture or congenital deformity or large sized foetal head ***(Cunningham et al., 2009).***

4 - Labour dystocia:

Labour dystocia is the most frequent indication for primary caesarean delivery in the United States. An analysis of labour dystocia as a contributing factor to the caesarean rate is difficult ***(Gottelib et al., 2007).***

5 - Obstructive lesion in lower genital tract:

Obstructive lesions in the lower genital tract, including malignancies, large vulvovaginal condylomas, obstructive vaginal septa, and leiomyomas of the lower uterine segment they may interfere with engagement of the foetal head ***(ACOG., 2013).***

6 - Reconstructive vaginal surgery:

Women with prior vaginal colporraphy, repair of vesico-vaginal fistula and major anal involvement from inflammatory bowel disease are candidates for an elective cesarean section ***(Cunningham et al., 2003).***

7 - Up on maternal request:

Caesarean delivery on maternal request refers to caesarean delivery performed because the mother requests this method of delivery in the absence of conventional medical or obstetrical indications for avoiding vaginal birth. The right to be actively involved in treatment decisions including method of delivery is now widely accepted by physicians and patients ***(Coleman et al., 2010).***

II. Foetal Indications:

1 - Foetal macrosomia

Foetal macrosomia (from any cause) carries an increased foetal and maternal morbidity and mortality**.** Caesarean birth is recommended for babies with an estimated foetal weight > 5 kgs. Detected by ultrasonography, particularly in nulliparous women ***(Boulvain et al., 2000).***

2 - Abnormal lie, presentation or position

I . Malpresentation

It is now clear for all obstetricians that a planned C.S. is the best management for a breech presentation at term. This is supported strongly by the guidelines of the RCOG & ACOG. The intrapartum caesarean delivery rate after successful version is two times that of pregnancies where there is spontaneous cephalic presentation ***(Chan et al., 2004).***

Vaginal delivery has poor progression for browpresentation when persists, unless the foetus is small compared to the birth canal ***(Cunningham et al., 2000).***

In late pregnancy, if spontaneous version does not occur, external version of the longitudinal lie may be attempted with or without stabilizing induction. If abnormal lie persists despite these measures, strong consideration should be given to elective caesarean section ***(Chua et al., 1999).***

II. Malposition

Some relative mal positions may be managed by assisted vaginal delivery if full dilatation has been achieved, but many women will require caesarean section to achieve delivery. Women presenting in the second stage of labor with a mento-anterior face presentation and occipito-lateral or occipito-posterior position may be suitable for assisted vaginal delivery as a trial in the operating theatre. However, caesarean section may be preferable to a difficult instrumental delivery ***(Chua et al., 1999).***

III.Cord Prolapse:

Generally prompt caesarean section is urged. However, some 20 - 30% of cases of cord prolapse present when the cervix is fully dilated and the head is at or below the ischial spines,immediate delivery is possible ***(Chua et al., 1999).***

3 - Multi-foetal pregnancy

The optimum mode of delivery of twins remains controversial. Much will depend on the condition of the pregnancy, the presence of additional fetal or maternal complication, gestational age at delivery and the ultimate presentation of both twins at the time of delivery. The incidence of multiple pregnancy is rising due to high

maternal age and the impact of assisted conception ***(Cruikshark, 2007).***

4 - Preterm infant and very low birth weight [VLBW]

Caesarean section provided better enhances for a safe survival in VLBW and better prognosis for neurodevelopment outcome ***(Vakrilova et al., 2002).***

5 - Foetal distress

ACOG has recommended that any facility providing obstetric care have the capability of performing a caesarean delivery within 30 minutes of the decision. Despite this recommendation, a decision to delivery time of more than 30 minutes is not necessarily associated with a negative neonatal outcome ***(MacKenzie et al., 2002).***

6- Infections:

A- Human papilloma virus:

Globally HPV is the most common viral STDs, The low risk of laryngeal papillomatosis and reports of its occurrence in children born by caesarean section, as well as the known risks of caesarean section have promoted the recommendation that the presence of genital warts not be the sole reason for delivery by caesarean section. Additionally, no controlled studies have suggested that caesarean section prevents this condition. The one clinical indication for caesarean section that involves HPV is the presence of

extensive vaginal and/or introital warts blocking the birth canal ***(ASCCP, 2008).***

B - Hepatitis B virus:

Whether cesarean delivery can prevent maternal-infant transmission of HBV has not been established in well-conducted controlled trials .Thus, cesarean delivery should not be routinely recommended for carrier mothers ***(Yang, 2008).***

C - Hepatitis C virus:

Theoretically, the mode of delivery may be important because exposure to HCV-infected blood as the infant passes through the birth canal could lead to HCV transmission. However, exposure to maternal blood can also occur with cesarean delivery. Currently, pregnant women infected with HCV are **not** advised to have cesarean delivery, unless indicated for other reasons***(McIntyre, 2006).***

D - Herpes simplex virus

Any patient who has a suspected active genital HSV infection, or has first-episode HSV infection and active genital lesions, or prodromal symptoms (such as vulvar pain or burning at delivery) of HSV infection should undergo caesarean section (CS). But caesarean delivery is not recommended for women with a history of HSV infection but no active genital disease during labour ***(ACOG, 2007).***

E- HIV:

The safest way for women with HIV to deliver a baby (ie, by vaginal or cesarean delivery), depends upon her HIV viral load during pregnancy. In general, a vaginal delivery is preferred for the safety of both mother and infant if the risk of transmission of HIV is low (when the HIV viral load is low). For women with high levels of virus in their blood or who are very concerned about infant exposure to infected blood or vaginal fluids, a cesarean section is recommended ***(Brenna, 2015).***

7 - Congenital anomalies

Several congenital anomalies are controversial indications for cesarean delivery; these include fetal neural tube defects to avoid sac rupture, particularly defects that are larger than 5-6 cm in diameter. One study noted no difference in long-term motor or neurologic outcomes.Some authors noted no relationship between mode of delivery and infant outcomes, while others have advocated caesarean delivery of all infants with a neural tube defect.Caesarean delivery is indicated in certain cases of hydrocephalus with an enlarged biparietal diameter ***(Preis et al., 2001).***

III. Repeated Caesarean Section:

One of the most common indications for caesarean section is previous caesarean section. When the most