EVALUATION OF MATERNAL FEBRILE MORBIDITY AFTER CAESAREAN SECTION

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List of contents

Cesarean section

(History, rates , indications and complications)

Historical Review

The early history of cesarean section remains shrouded in myth and is of dubious accuracy. Even the origin of "cesarean" has apparently been distorted over time. It is commonly believed to be derived from the surgical birth of Julius Caesar, so the procedure became known as cesarean operation ***(Cunningham et al.,2005).***

At that time the procedure was performed only when the mother was dead or dying, as an attempt to save the child for a state wishing to increase its population. Roman law under Caesar decreed that all women who were so fated by childbirth must be cut open; hence, cesarean. Other possible Latin origins include the verb "caedare," meaning to cut, and the term "caesones" that was applied to infants born by postmortem operations ***(Cunningham et al.,2005).***

Initially, the Roman decree (Lex Cesare, or law of Caesar) that unborn infants should be separated from their mothers'

bodies was for purposes of religious ritual rather than attempts for survival of either the newborn or mother ***(Lurie et al., 2003).***

Many of the earliest successful CS took place in remote rural areas lacking in medical staff and facilities. These operations were performed on kitchen tables and beds, without access to hospital facilities, and this was probably an advantage until the late nineteenth century. By the century's close, Anesthetics permitted surgeons to take the time to operate with precision ,to cleanse the peritoneal cavity, to record the details of their procedures , and to learn from their experiences. Women were less susceptible to shock, which had been a leading cause of post-operative mortality and morbidity ***(Lurie et al., 2003).***

Surgical technique also was a limiting factor for the acceptability of the procedure. Initially, maternal mortality from blood loss also was high because surgeons were reluctant to close the uterine incision. Some advocated hysterectomy at the time of cesarean delivery to control bleeding and decrease infection. In 1882, ***Max Sanger***, described the value of suturing the uterine wall with silver wire (developed by 19th century gynecologist ***J. Marion Sims)*** and silk in a 2-step closure ***(Depp et al., 1996).***

Although the introduction of internal sutures decreased hemorrhagic morbidity, infectious morbidity from peritonitis remained substantial. In 1907, the extraperitoneal approach was first described by ***Frank*** and modified in 1909 by ***Latzko***. This approach appeared to decrease the risk of peritonitis, and, in 1912, ***Krönig*** described a vertical median uterine incision with delivery aided by forceps. Then, the lower segment was covered with peritoneum This led to a high maternal mortality due to haemorrhage ***(Depp et al., 1996).***

With the discovery of penicillin by ***Alexander Fleming*** in 1928 (purified in 1940), the need for an extraperitoneal procedure essentially was eliminated. Advances in anaesthesia, surgical techniques, suture materials, antibiotics and blood transfusion practices have made caesarean section a fairly safe procedure ***(Lurie et al.,2003).***

Cesarean section rates in Egypt

CS rates have been increasing worldwide, but little research exists on trends of CS for any country in the Arab world. ***Khawaja et al.,(2004)*** made a descriptive study to doucement recent levels and trends of cesarean section rates in Eygpt,and to estimate trends in cesarean section by type of hospital from

3 population based national surveys (1992,1995& 2000) of ever-married women aged 15 to 49 years.

A significant rise in CD occurred for all births reported regardless of place of delivery , from a low of 4.6 percent in 1992 to 6.7% in 1995 to a high of 10.3 percent in 2000. This represents a overall increase of 130% in the cesarean delivery rate between 1987 and 2000 . However, hospital-based cesarean deliveries rates were much higher , than the overall rates and also increased slightly from I5.3% in 1992 to 18.5 in 1995 to a high of 20.9% in 2000 survey, representing a 72% increase. However ,these trends might reflects the increase in Hospital - based delivery in Eygpt and concomitant decrease in home births ***(khawaja et al.,2004).***

Khawaja et al.,(2004) examined rates of cesarean section by year of delivery using the combined data from the 3 surveys. It revealed slight decline in cesarean section (0.4%) was observed between the 1987-1988 and 1989-1990. However, the rates increased consistently from 13.5% during 1989-1990, to16.3% in 1991-1992, to 19.9% in 1993-1994, to 20.5% in 1995-1996 , to 20,8% in 1997-1998 , and to22% in 1999-2000. Again, these trends indicated that the overall cesarean section rate has remained at around 20% since 1993-1994.

During the 1987-1988 period, the rates in public and private hospitals were basically the same at, respectively, 14.0 percent and 13.6 percent. Beginning in 1989, a divergence in the rates between private and public hospitals became evident, with cesarean rates in private hospitals being slightly higher than those in public hospitals .Despite this difference, the rates increased consistently for both public (a slight decline in 1989-1990 and 1997- 1998 periods) and private hospitals over the years, especially from the late 1980s until the first half of the 1990s. For public hospitals, cesarean section rates increased from 12.2 percent in 1989-1990 to a high of 20.8 % in 1999-2000, the corresponding rates for private hospitals were 16.0 percent and 23.2 % ***(khawaja et al.,2004).***

Indications for Cesarean Delivery

(A) Maternal indications:-

Relatively few indications for a cesarean delivery solely benefit the mother.

Women with an abdominal cerclage in place:- Those mothers with an incompetent cervix in whom vaginal cervical cerclages have failed but who wish to have more children should have a cesarean delivery ***(Cunningham et al., 1993).***

Obstructive lesions in the lower genital tract:- CD would be performed in the setting of obstructive lesions in the lower genital tract, including malignancies and large vulvovaginal condyloma ***(Cunningham et al., 1993).***

A known medical condition including:- diabetes mellitus, heart disease ,lung disease & high blood pressure (severe preclampsia) ***(Cunningham et al., 1993).***

Women with prior vaginal colporrhaphy:- and major anal involvement from inflammatory bowel disease These patients would be candidates for an outright cesarean delivery ***(Cunningham et al., 1993).***

Previous cesarean section or myomectomy : A previous C-section with a vertical scar on the uterus (womb) may pose a danger of uterine rupture with a labor. This type of incision is considered to heal more weakly. The other type of incision, a transverse (horizontal)) incision, heals with greater strength and could make you a candidate for a VBAC delivery with a subsequent pregnancy ***(Cunningham et al., 1993)***.

Maternal Request Maternal choice C-section where in an expectant couple choose to have an electively scheduled C-section instead of the normal labor and vaginal delivery.

Reasons may include a previously unpleasant vaginal delivery experience, a previous severe vaginal tear that took forever to heal, or even personal whim ***(Depp et al., 1996).***

(B) Fetal indications:-

Malpresentation: A fetus in a nonvertex presentation is at increased risk for trauma, cord prolapse, and head entrapment. Malpresentation includes preterm breech presentations and nonfrank breech term fetuses & shoulder presentation ***(Cunningham et al., 1993).***

Multiple pregnancy: Furthermore, in twin gestations, a second twin in a nonvertex presentation is a relative indication for an outright cesarean delivery, as are higher order multiples (triplets or greater) ***(Cunningham et al., 1993).***

Congenital anomalies:- A cesarean delivery is recommended for several congenital anomalies; these include fetal neural tube defects, some cases of hydrocephalus, and some skeletal dysplasias & fetal abdominal wall defect (ie, gastroschisis and omphalocele) remains controversial ***(Cunningham et al., 1993).***

Fetal distress:- In nonreassuring fetal heart rate in the setting of a non remediable and nonreassuring pattern remote

from delivery, a cesarean delivery is recommended to prevent a mixed metabolic or metabolic acidemia that could potentially cause significant morbidity and mortality ***(Cunningham et al., 1993).***

Preterm delivery:- Delivery of (L.B.W <2500g) and (VLBW<1500g) infants is as a less traumatic a delivery as possible . Much debate has occurred over the delivery of a nonvertex preterm baby with management based on estimated fetal weight ***(Karen et al., 1992).***

Post term pregnancy :- beyond 42 weeks ,that the rates of non- progressive labor stage I and Π ,meconium –stained amniotic fluid ,macrsomia & cesarean deliveries were significantly higher with increasing gestational age ***(Treger et al., 2002).***

Suspected big baby (macrosomia):- The theory goes that performing a cesarean for all babies suspected to be big will avoid shoulder dystocia ***(Depp et al., 1996).***

Bad obstetric history:- as recurrent intrauterine fetal death in last weeks of pregnancy or repeated intranatal fetal death ***(Karen et al., 1992).***

Perimortem CS done within 10 minutes of maternal death to save a living baby ***(Karen et al., 1992).***

Intrauterine growth retardation:- IUGR (the baby is significantly smaller than expected ***(Depp et al., 1996).***

Umbilical cord prolapse:- When the umbilical cord drops down into the birth canal. It could get pinched between the baby's head and the mother's pelvis ***(Depp et al., 1996).***

Genital herpes infections:- Mothers with an active vaginal herpes infection (especially with primary outbreak) are candidates for cesarean delivery. Neonatal infection with herpes can lead to significant morbidity and mortality, especially with a primary outbreak ***(Cunningham et al., 1993).***

Human immunodeficiency virus infections:- Women with a low CD4 count and high viral titers should be offered cesarean delivery at 38 weeks (or earlier if they go into labor). In women who are being treated with antiretrovirals, cesarean delivery (prior to labor or without prolonged rupture of membranes) appears to further lower the risk for neonatal transmission ***(Luzuriaga et al., 1994).***

(C) Maternal and fetal indications:-

Indications for cesarean delivery that benefit both the mother and the fetus include abnormal placentation, abnormal labor due to cephalopelvic disproportion, and those situations in which labor is contraindicated ***(Cunningham et al., 1993).***

Abnormal placentation:- In the presence of a placenta previa or placental abruption; in these conditions attempting vaginal delivery places both the mother and the fetus at risk for hemorrhagic complications ***(Cunningham et al., 1993).***

Abnormal labor due to cephalopelvic disproportion : which can be suspected on the basis of possible macrosomia or an arrest of labor despite augmentation. Continuing to attempt a vaginal delivery in this setting increases the risk of hemorrhagic and metabolic consequences from a uterine rupture, increases the chance of infectious complications to both mother and fetus from prolonged rupture of membranes, and increases the risk of maternal trauma and fetal trauma ***(Cunningham et al., 1993).***

Complications of Cesarean Section

Compared to a vaginal delivery, maternal mortality and especially morbidity is increased with cesarean delivery. The overall maternal mortality rate is 6-22 deaths per 100,000 live births, with approximately one third to one half of maternal deaths after cesarean delivery being directly attributable to the operative procedure itself. Part of this increase in mortality is that associated with a surgical procedure and, in part, related to the conditions that may have led to needing to perform a cesarean delivery ***(Cunningham et al., 1993).***

Major sources of morbidity and mortality can be related to sequelae of infection, thromboembolic disease, anesthetic complications, and surgical injury ***(Cunningham et al., 1993).***

(A) Intraoperative complications:

Uterine lacerations: especially of the lower uterine segment, are more common with a transverse uterine incision. These lacerations can extend laterally or inferiorly ***(Depp, 1996).***

Bladder injury: This is an infrequent complication. It is more common with transverse abdominal incisions and in repeat cesarean deliveries. The bladder most commonly is

injured when entering the peritoneal cavity or when separating the bladder from the lower uterine segment ***(O'sullivan et al., 1992).***

Ureteral injury: Injury to the ureter occurs in up to 0.1% of all cesarean deliveries and up to 0.5% of cesarean hysterectomies. It is most likely to occur when repairing extensive lacerations of the uterus. Ureteral injury, most commonly occlusion or transection ***(Mickal et al., 1996).***

Bowel injury: occur in less than 0.1% of all cesarean deliveries. The most common risk factor for bowel injury at the time of cesarean delivery is adhesions from prior cesarean deliveries or prior bowel surgery ***(Depp, 1996).***

Uterine atony: occur in a patient with a multiple gestation, polyhydramnios, or a failed attempt at a vaginal delivery in which the patient was on Pitocin augmentation for a prolonged period is uterine atony ***(Depp , 1996).***