Pulling Down the Curtain on Un-necessary Cesarean Section: Shatby Maternity University Hospital Experience in Alexandria with Systematic Literature Review

Abstract

Introduction: Cesarean section (CS) was introduced in clinical practice as a life saving procedure both for the mother and the baby. The rising rate of Caesarean sections has been a concern for over two decades. Bearing in mind that in 1985 the World Health Organization (WHO) stated: “There is no justification for any region to have CS rates higher than 10-15%”. Data indicate that the maternal mortality rate associated with caesarean delivery is 3-7 times greater than that associated with vaginal delivery. The overall mortality rate from cesarean delivery alone is 6 per 100,000 procedures. There are many potential intraoperative and postoperative complications associated with cesarean delivery for the mother and the fetus. If the cesarean delivery rate continues to remain high, institutions must be prepared to manage the potential complication of severe hemorrhage associated with higher rates of placenta accreta. Current research on pelvic floor injury from vaginal delivery does not offer sufficient evidence to mandate a change in standard clinical management of labor and birth towards CS. Numerous factors as medical and nonmedical ones affect rates of CS, which may provide ways to decrease the cesarean delivery rate. So the aim of our work is to provide best practice to the management of pregnancy, labour and delivery towards CS. Numerous factors as medical and nonmedical ones affect rates of CS, which may provide ways to decrease the cesarean delivery rate. Numerous factors as medical and nonmedical ones affect rates of CS, which may provide ways to decrease the cesarean delivery rate.

Methods and Analysis: The 2008 EDHS obtained information on the frequency of caesarean sections in Egypt showed that more than one-quarter of deliveries in the five-year period before the 2008 EDHS survey were by caesarean section. The EDHS survey in 2014 revealed that 52% of deliveries in Egypt were by CS. Our hospital data showed that Vaginal delivery in the first six months of year 2014 occurred in 45.3% of women with 63% in multipara and 37% in primigravida versus CS delivery in 54.7% of women with 33% in primigravida and 67% in patients with previous CS. Nearly 50 % of primigravida delivered by CS in El-shatby Maternity Hospital. Less than 2% underwent VBAC. Statistics in El-Shatby maternity university hospital, a tertiary care center in Alexandria (250 beds) showed that cesarean section represented 60.7% (5376 of 8946) of all deliveries in 2012, 58.4% (5799 of 9929) in 2013 and 53.5% (5475 of 11779) of all deliveries in 2014.

Conclusions: The indications for CS have been clinical factors for years, such as previous CS, dystocia, fetal distress, breech presentation, and mal presentation. Recent temporal trends in maternal characteristics that might help explain rising CS rates include increasing maternal age and higher rates of hypertention, diabetes, obesity, and multiple gestations. However, many other factors have contributed to the increasing rate of CS in recent years, including improved surgical techniques, providers and patient’s perception of the safety of the procedure, patient demand, physician non acceptance of guidelines, money earning and pressures on caregivers to practice “defensive medicine.” The strategies should include the following: The Robson 10-group Caesarean section classification system is a simple, standard tool to identify groups making the most significant contribution to the overall rate of CS, so we can work upon it. Review nurses responsibilities and student nurse training with incorporation in doula or midwifery programs. Reduction in the total cesarean delivery rate would require a reduction in the primary cesarean delivery rate and recurrent CS with implementations of the guidelines of normal labour and vaginal birth after CS (VBAC).

Keywords: Cesarean section, Labor, vaginal birth, Robson criteria
Introduction

Bearing in mind that in 1985 the World Health Organization (WHO) stated: “There is no justification for any region to have CS rates higher than 10-15%,” the recommended minimum necessary CS rate at population level to avoid death and severe morbidity in the mother lays between 1-5%, according to WHO and others. Regarding neonatal outcomes, studies evaluating the association of CS rates with neonatal death have shown outcome improvements up to a CS rate of 10%. Thus the minimum threshold for a population level CS rate could be considered to lay between 5-10% [1-6].

The rising rate of Caesarean sections has been a concern for over two decades. Between 2004 and 2008, the World Health Organization conducted the Global Survey on Maternal and Perinatal Health, and this showed that 25.7% of all deliveries worldwide were by CS. Approximately 185 million cesarean sections are performed yearly worldwide. About 40% of the countries have CS rates <10%, about 10% have CS rates between 10 and 15%, and approximately 50% have CS rates >15%. The cost of global ‘excess’ CS in 2008 was estimated to amount to approximately US$ 2.32 billion, while the cost of the global ‘needed’ CS in 2008 was estimated to amount to approximately US$ 432 million. In countries with ‘needed’ CS, the average cost of a C-section was estimated to be approximately US$ 135; whereas in countries with excess CS, the average cost of the procedure was estimated at approximately US$ 373. The lowest cost per (‘needed’) procedure was found to be in Nepal (US$ 97), whereas the highest cost per (‘excess’) procedure was found to be in Iceland (US$ 2,18,040). ‘Excess’ CS could thus potentially finance the ‘needed’ ones. ‘Excess’ CS can therefore have important negative implications for health equity both within and across countries [4-6].

The indications for CS have been clinical factors, such as previous CS, dystocia, fetal distress, breech presentation, and mal presentation [7,8]. Recent maternal characteristics might help explain rising CS rates include increasing maternal age and higher rates of hypertension, diabetes, obesity, and multiple gestations [9]. However, many other factors have contributed to the increasing rate of CS including improved surgical providers and patients’ perception of the safety of the procedure, patient demand, physician non-acceptance of guidelines money earning and pressures on caregivers to practise “defensive medicine.”

EFM : No Standard definitions, Additive effect of mild changes, Overreaction of variable deceleration in the second stage of labor and No high quality recording of uterine activity (25%) [10-12]. The four most common medical indications for caesarean delivery according to the international literature account for approximately 80 percent of these deliveries: [13] 1. Failure to progress during labor (30 percent), Previous hysteroscopy (usually related to caesarean delivery, but also related to myomectomy or other uterine surgery) (30 percent), none reassuring fetal status (10 percent) and Fetal mal presentation (11 percent).

Egyptian Data

The 2005 EDHS obtained information on the frequency of caesarean sections shows that one-fifth of deliveries in the five-year period before the 2005 EDHS survey were by caesarean section. Women delivering in a private health facility were more likely than women delivering in a government facility to have a caesarean delivery. The likelihood of a caesarean delivery increased with the age of the mother and decreased with the child’s birth order. Caesarean deliveries were twice as common in urban areas as in rural areas. Around one-third of births in urban Lower Egypt and the Urban Governorates were caesarean deliveries. The likelihood of a caesarean delivery increased with both the mother’s educational status and with the wealth status and was greater among women working for cash than among other women. The 2008 EDHS obtained information on the frequency of caesarean sections shows that more than one-quarter of deliveries in the five-year period before the 2008 EDHS survey were by caesarean section. Women delivering in a private health facility were more likely than women delivering in a government facility to have a caesarean delivery. The likelihood of a caesarean delivery increased with the age of the mother and decreased with the child’s birth order. Thirty-seven percent of urban births were caesarean deliveries compared to 22 percent of rural births. Considering place of residence, urban Lower Egypt had the highest proportion of caesarean deliveries (43 percent) followed by the Urban Governorates (39 percent). The likelihood of a Caesarean delivery increased with both the mother’s educational status and was greater among women working for cash than among other women. The rate of Caesarean deliveries peaked at 45 percent among women in the highest wealth compared to 14 percent among women in the lowest wealth. CS in this year consumes not less than 250 million pound a year. The DHS survey in 2014 revealed that 52% of deliveries in Egypt were by CS from survey in the previous six years before 2014 [14].

Statistics in El-Shatby maternity university hospital, a tertiary care center in Alexandria (250 beds) showed that cesarean section represented 60.7% (5376 of 8846) of all deliveries in 2012, 58.4% (5799 of 9929) in 2013 and 53.5% (5475 of 11779) of all deliveries in 2014. Most common causes in primigravida in our hospital: Dystocia, PET, Drained liquor and Breech.

Discussion

A study was conducted in Egypt that evaluated some variables representing the determinants for cesarean delivery namely the age at first birth, parity, near birth problems, previous termination of pregnancy, previous fetal death, residence and utilization of antenatal care. They found out that increased maternal age, more utilization of antenatal care (due to early detection of high risk pregnancies), urban rather than rural areas, history of fetal death, previous termination of pregnancy, nulliparity and women with more than three live births, near birth complications (as prolonged labour and eclampsia) are more commonly associated with cesarean delivery [15]. An important cause of cesarean section increased rate is fear; fear of the unknown, fear of labour pains, fear of the episiotomy, fear of complications, fear of impairment of sexual function or fear of loss of the baby e.g. old age at first pregnancy, continuous fetal monitoring or many years of infertility. Fear of childbirth is still an important factor that increases the rate of cesarean section. A longitudinal cohort study was conducted gathering 6,422 pregnant women from different countries including Belgium, Iceland, Denmark, Estonia, Norway, and Sweden. Severe fear of childbirth increased the incidence of elective cesarean section among both primiparous (OR, 1.66 [95% CI 1.05-2.61]) and multiparous women (OR 1.87 [95% CI 1.30-2.69]) [16]. Fear is indeed a cause of CS on request,
However, the reason for persistence fear not only include past bad experience during delivery of the women herself or relative, but also poor counselling from care providers. To tighten the raised issue of fear, as mentioned for both care provider and women fear, medical legal concerns, ethical issue-autonomy, and poorly set audits should be highlighted as contributors of unnecessary CS. Poor timing and care providers skills of counselling also contributed to women unjustified fear hence opting for CS.

Data indicate that the maternal mortality rate associated with cesarean delivery is 3-7 times greater than that associated with vaginal delivery [17]. The overall mortality rate from cesarean delivery alone is 6 per 100,000 procedures [18]. Many authors have studied potential intraoperative and postoperative complications associated with cesarean delivery [19-21]. Intraoperatively, uterine hemorrhage may develop from atony, extension of the incision, uterine rupture, the presence of leiomyomata, or placenta accreta [22]. Urinary tract injury, which may include cystotomy or ureteral injury. Vaginal or broad ligament extension of the lower-segment uterine incision increases the risk of ureteral involvement. Injuries to the gastrointestinal tract are rare and are estimated to occur in 1 in 1,300 cesarean deliveries [23]. The history of previous infection or surgery, which may cause intraperitoneal adhesions, increases the risk of enterotomy. The leading causes of maternal mortality associated with cesarean delivery are deep vein thrombosis and pulmonary embolism. Infection is the most common postoperative sequela of cesarean delivery. The observed incidence of endomyometritis varies greatly, with estimates ranging from 10% to 50%, compared with 1-3% of vaginal deliveries [24]. Factors that contribute to this infection rate include the length of labor and rupture of membranes, the number of vaginal examinations, the use of internal monitors, and the patient's socioeconomic status [25].

In addition, the presence of chorioamnionitis and the duration of the surgical procedure may influence the rate of endomyometritis [26]. Maternal factors of obesity and diabetes mellitus also may increase the risk of infection [27]. Other; less frequent postoperative complications include wound and urinary tract infections, ileus, and atelectasis.

The frequency of placenta previa in women who previously delivered vaginally is estimated at 0.3% [28,29]. A recent meta-analysis demonstrated that women with at least one prior cesarean delivery were 2.6 times more likely to develop placenta previa in a subsequent pregnancy [30]. Placenta accreta occurs frequently in patients 7 with placenta previa and previous uterine scars. Patients without uterine scars face only a 4.5% risk of accrete [31,32] versus an estimated risk from 24% (30) to 38% (31) in patients with placenta previa and uterine scars. If the cesarean delivery rate continues to remain high, institutions must be prepared to manage the potential complication of severe hemorrhage associated with higher rates of placenta accreta [33].

The mortality rate of infants delivered by cesarean birth in 1997 was 10.1 per 1,000 deliveries [34]. This rate may be partly accounted for by risk factors that lead to the cesarean birth. Iatrogenic prematurity may be prevented by adhering to accurate pregnancy dating parameters. In addition to respiratory distress syndrome, elective surgical delivery without labor may contribute to transient tachypnea of the newborn, a condition that often requires intensive care treatment [35]. Lastly, approximately 0.4% of infants delivered by cesarean birth experience accidental lacerations.

A retrospective study was conducted over a period of 10 years to assess the changes in postpartum hemorrhage (1998-2007) and to identify the risk factors. The results showed that the risk of severe postpartum hemorrhage, diagnosed as blood loss of >1000 cc, after cesarean section was twice the risk after vaginal delivery (5.9%; 95% CI 5.3-6.6 vs. 2.8%; 95% CI 2.6-2.9). Risk factors were identified in order as twin pregnancy, retained placenta and induction of labour for vaginal delivery and twin pregnancy followed by general anesthesia for cesarean delivery; that is to say obstetric intervention increases the risk of postpartum hemorrhage [15].

A dehiscent scar following cesarean section may be symptomatic in the form of postmenstrual spotting, dysparunia and/or secondary infertility. When suspected, diagnosis can be made by prompt history taking, transvaginal ultrasonography and diagnostic hysteroscopy. On ultrasonography, the scar appears as a hypoechogenic fluid V- or U-shaped accumulation at the site of uterine scar. A retrospective study assessed 13 non-pregnant women with suggestive symptoms; 12 out of the 13 patients were diagnosed as having a dehiscen scar by transvaginal ultrasonography while all were diagnosed by hysteroscopy. Reconstructive surgery was performed and this caused relief of bleeding disorders in all patients and 3 out of 5 patients with secondary infertility got pregnant [16].

Studies show that women whose babies are born by cesarean surgery are just as successful at breastfeeding as mothers who deliver vaginally as long as their commitment to breastfeeding remains high. It may, however, take a bit longer for mothers and babies to begin breastfeeding after cesarean surgery, and mothers’ milk tends to come in a bit later following a surgical birth. This may be a direct result of the surgery, or it may be because mothers who have cesareans have fewer opportunities for early and frequent breastfeeding. Neonatal growth can be affected by the mode of delivery. A cohort study was conducted in Shiraz including 92 exclusively breastfed neonates who were followed longitudinally from July 10 to August 10, 2007 and data were collected at three occasions during the first month after delivery; 3 to 7 days, 10 to 21 days and 24 to 31 days postpartum. 35 mothers were delivered by cesarean section (38%). Results showed that neonatal weight gain was affected by the mode of delivery, the receipt of advice regarding breastfeeding and the gestational age at delivery. Neonatal weight gain was lower in babies delivered by cesarean section than those delivered vaginally till 25 days postpartum then it becomes higher among cesarean section babies. Since babies delivered by cesarean section can catch-up their normal growth at the end of the first month after delivery therefore mothers with cesarean section can exclusively breastfeed successfully [36].

Birth trauma which may not be just physical, but also impact psychologically as well can occur. The following list shows some of the more common psychological effects that can result from cesarean sections: Mind/body splits, Bonding deficiencies, Invasion issues, Tactile defensiveness, Difficulties with pacing and tempo, Bonding disturbances, Control issues, Directional confusion and Difficulty starting and/or completing things. C-section is a trauma because of its abrupt and sudden.
interruption of the biologically programmed vaginal birth process. Shock, bonding deficiencies and invasion/control complex are the major symptoms of the trauma [37]. A cohort study was conducted in England including 13,141 children to assess if there was any impact of the mode of delivery especially cesarean section and induction of labour on the psychological behavior of children at the age of 7 mainly autism and ADHD (attention-deficit-hyperactivity disorder). Results showed that there was no association between the mode of delivery and autism or ADHD [58].

A study recruited 1,011 women in a retrospective cohort study to assess the effect of the mode of delivery on the risk of pelvic floor disorders. 5-10 years after the first delivery, each birth was classified as cesarean with labour, section during active labour, cesarean after full cervical dilatation, spontaneous vaginal delivery or operative vaginal birth. Then anal incontinence, stress incontinence, overactive bladder and pelvic organ prolapsed were assessed and the results showed that spontaneous labour was associated with higher risk of stress incontinence (odds ratio [OR] 2.9, 95% confidence interval [CI] 1.5-5.5) and prolapsed (OR 5.6, 95% CI 2.2-14.7) when compared with cesarean section while operative delivery had significantly increased risk for all pelvic floor disorders [32,33,38-44].

Normally, the sexual function is inversely affected by the progress of pregnancy becoming the worst at the end of pregnancy including loss of desire, dysparunia and decreased orgasm. These improve gradually through the first 6 months after delivery. Factors influencing this include: Social background, Age, Parity, Lactation, Depression, Sexual inactivity in early pregnancy and Fear of postpartum body image [45]. A prospective study included 16 women who delivered vaginally without episiotomy, 14 who delivered vaginally with an episiotomy, 16 who delivered instrumentally, 19 who delivered by emergent CS and 17 who delivered by elective CS. The female sexual function index questionnaire (FSFI) was used at 6, 12 and 24 weeks after delivery to assess their sexual behavior which was helped by determining the timing of resumption of coitus. The results showed that the mode of delivery didn’t affect the resumption of sexual function especially that elective cesarean section doesn’t guard against sexual dysfunction postpartum [46].

Maternity units applying best practice to the management of pregnancy, labour and delivery will achieve a Caesarean section rate consistently below 20% and will have aspirations to reduce that rate to 15% according to the WHO. With specific targets of 12% in primigravida and 60% in females with previous CS according to ACOG with evaluation of the following: Admissions to neonatal units, Adverse incidents, Hospital stay duration and Cost savings.

ACOG and Cochrane collaboration 2010 recommendations for reduction: The most important focus is to reduce primary CS and recurrent CS. 1.Before Labor: Social support for at-risk women, Turning breech fetuses, Planned out of hospital birth, Delay admission until active labor has started, Planned VBAC and Avoid unnecessary induction of labor. 2. During Labor: Continuous support in labor, Intermittent auscultation for fetal heart rate monitoring, Pain management alternatives, Amnioinfusion for suspected cord compression, Giving labor more time, Use higher dose oxytocin protocol for labor augmentation if fetomaternal condition suits, Second opinion for making the decision about Cesarean delivery, Improve diagnosis and treatment of labor dystocia, Standardize diagnosis and treatment of fetal heart rate abnormalities and Encourage operative vaginal delivery when appropriate. 3. Systems Level Interventions: Audit and feedback, Guideline implementation and create will for change [47].

Maternal request: Discuss the overall benefits and risks of CS and vaginal birth, Facilitate a discussion with other members of the obstetric team if necessary, to ensure the woman has accurate information, For women requesting a CS, if after discussion and offer of support, a vaginal birth is still not acceptable, offer a planned CS. An obstetrician can decline a woman’s request for a CS and refer the woman to an obstetrician who will carry out the CS, Not recommended before 39 weeks, Not recommended in women desiring several children because of fear of increasing risk for placenta accrete. (ACOG 2013) and Not recommended because of unavailability of effective pain management (ACOG 2013) [48].

To address concerns over rising rates of CS and to provide a mechanism for audit and feedback, a 10-group classification system to examine CS within groups of women with particular obstetric characteristics was proposed by Robson in 2001 to decrease the rising CS in Canada. The Robson classification system groups women in the obstetric population according to plurality, fetal presentation, parity, obstetric history (i.e. previous CS), course of labour and delivery, and gestational age, providing clinically relevant categories for analyzing and reporting rates of CS. The Robson 10-group Caesarean section classification system is a simple, standard tool to identify groups making the most significant contribution to the overall rate of CS. These classification findings will allow us to determine which target groups to investigate further to help us learn more about the underlying reasons for the differences in CS rates over time and between units, both nationally and internationally. (SGC, grade B recommendation) [49].

Conclusions

The obstetric community should educate clinicians and patients that cesarean delivery based on nonclinical factors is not associated with improved maternal or neonatal outcomes. Strategies to reduce the cesarean delivery rate should focused primarily on efforts to alter physician practice. Education through handouts dispersed in the hospital, hospital website, medical journals and lectures as regards indications and risks of CS. Reform of medical liability laws and legal procedures to decrease defensive medicine. In order to reduce non-medically indicated caesarean sections, the reasons for use of the operation should be audited and monitored and, where necessary, appropriate health education and behavior-change strategies should be developed and implemented. The Robson 10-group Caesarean section classification system is a simple, standard tool to identify groups making the most significant contribution to CS. Implementation of international guidelines and evidence-based medicine until reconstruct ours. We should use comparative outside data on cesarean delivery rates to evaluate our cesarean delivery rates. Hospitals or practitioner groups with high cesarean delivery rates can consider establishing separate 24-hour, in-house obstetric coverage by physicians who are solely responsible for the management of the intrapartum patient. Review nurses
responsibilities and student nurse training with incorporation in doula or midwifery programs. Obstetric practitioners should not perform cesarean delivery for the sole indication of maternal age with review of our practice. The practice of VBAC may play a role in reducing the repeat cesarean delivery rate. Reduction in the total cesarean delivery rate would require a reduction in the primary cesarean delivery rate. When feasible, obstetric practitioners should delay the administration of epidural anesthesia in nulliparous women until the cervical dilatation reaches at least 4-5 cm. Practitioners should recommend using other forms of analgesia instead of an epidural prior to cervical dilatation of 4-5 cm. External cephalic version of the term fetus with breech presentation may significantly reduce the rate of cesarean deliveries for breech presentation if there are no contraindications. There is no evidence to support cesarean delivery of the preterm fetus on the basis of gestational age alone. Review CS with preterm babies. Vaginal delivery of appropriately selected twin pregnancies may be considered. Hospitals with a high cesarean delivery rate should consider introducing training during and after residency in the appropriate use of forceps and the vacuum (KIWI vacuum).

References


15. YASSIN K., Saida G. Levels and Determinants of Cesarean Deliveries in Egypt: Pathways to Rationalization. The Internet Journal of World Health and Societal Politics. 2012(7(2).


