



An Overview of Indications of Cesarean Delivery in Primigravidae

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Abstract

In case of fetal and maternal distress in obstetrical practice the caesarean section demonstrated as a life saving procedure that is why it is the general and oldest obstetrical operation all over the world. In different countries according to different signs/indications this surgical operation done for handling complications. The signs of caesarean section influenced by request of delivery without pain with continuous electrical fetal heart rate monitoring, epidural analgesia, in cases of fetal hypoxia fetal scalp blood sampling, busy schedule of surgeons and children long term follow-up in developed countries where excellent facilities for heal care are available to pregnant female like regular checkups, antibiotics, ambulances for timely referrals, tonics and well instrumented hospitals. All over the world the rate of caesarean section is increasing day by day due to multiple factors and Egypt is no exception to it. According to World Health Organization (WHO) the rate of caesarean section varies from 5% to 15%. This rate of C-section is acceptable to WHO and is considered as justifiable which differs from country to country due to diverse socio economic conditions, literacy rate, medico legal issues as well as availabilities of health care facilities to patients and especially antenatal facilities.

Keywords: Indications, cesarean delivery, primigravidae.

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1. Introduction

Cesarean section (CS), which was avoided due to its high mortality rate over a century ago, is today the method of delivery for one in every three women in the United States. In some parts of the world, up to four out of every five women. Its long-recorded history reflects developing surgical views over the decades, addressing bleeding, infection, discomfort, sutures, and, most recently, hospitalization time and cost reductions [1]. Primary cesarean delivery defined as cesarean deliveries out of all births in women who have not had a previous cesarean delivery. The WHO's recommendation is that primary cesarean sections to be kept at less than 15% [2]. Though modern technology and facilities have made this operation remarkably safe, which is mainly due to availability of antibiotics, safe anesthesia, blood transfusion facilities and recent improvement in surgical techniques but still cesarean section is associated with increased risk of maternal morbidity and mortality as compared to vaginal delivery [3].

1.1. Indications of cesarean delivery in primigravidae

Indication of cesarean section in primigravida can be maternal or fetal.

2. Maternal factors

1- Labor dystocia and obstructed labor

Obstructed labor is defined as a failure of the fetal presenting part to descent in the birth canal due to mechanical reasons, despite having adequate uterine contractions. It is diagnosed when the duration of labor is prolonged, a laboring mother became unable to support herself, with deranged vital signs, distended bladder, Bandle's ring formed in the lower uterine segment, fetal distress or death, edematous vulva, big caput, significant molding, foul-smelling and thick meconium-stained amniotic fluid [4]. Neglected obstructed labor is a major cause of both maternal and newborn morbidity and mortality. Obstruction can only be alleviated by means of operative delivery, either cesarean section or other instrumental delivery (forceps, vacuum extraction, or symphysiotomy) [5]. Among these etiologies, obstructed labor is one of the most common causes of maternal illness and death in Saharan and sub-Saharan Africa. Worldwide, obstructed labor occurs in an estimated 5% of pregnancies and accounts for an estimated 8% of maternal deaths. The

majority of the maternal deaths occurred in the poor, illiterate, hard-to-reach women who are living in rural areas with limited or no access to skilled birth attendants [6]. Maternal and perinatal mortality and morbidity associated with obstructed labor almost totally prevented in developed countries because of improved nutritional status, wide health coverage, adequate transportation and communication system, availability of trained health personnel, optimal antenatal and intrapartum care, and other related factors [7]. Obstructed labor has different magnitudes in different developing countries ranging from 2 to 8%.

When we come to Africa some research finding showed that magnitude of obstructed labor was more than above determined [5]. Apart from maternal deaths, obstructed labor had different maternal outcomes such as uterine rupture, postpartum hemorrhage, puerperal sepsis, bladder injury, Vesico-Vaginal fistula (VVF), recto-vaginal fistula (RVF), and fetal outcomes including birth asphyxia, stillbirth, neonatal jaundice, and umbilical sepsis [8]. Labor dystocia or abnormally prolonged labor is a common complication of parturition. It is the indication for about half of unplanned cesarean deliveries in low-risk nulliparous women. Dystocia is a general term used to signify abnormal labor resulting from abnormalities primarily involving uterine contractions or maternal expulsive efforts (power); the position, size, or presentation of the fetus (passenger); the maternal pelvis or soft tissues (passage); or combinations of these factors [6]. Dystocia is the most commonly diagnosed aberration of labor, explaining in part why a large percentage of women with spontaneous labor onset receive exogenous oxytocin in an attempt to accelerate labor progress. Across different world regions, nulliparous women are augmented with oxytocin at rates of 44% to 73%. This is concerning because oxytocin administration is the intervention most associated with preventable adverse perinatal outcomes without the benefit of reducing the cesarean birth rate [9].

2- Oligohydramnios

Reduced amniotic fluid volume (AFV) for gestational age is referred to as oligohydramnios. Oligohydramnios is one of the major causes of maternal and perinatal morbidity and mortality. There was a statistically significant difference of Fetal distress (FD) in amniotic fluid index (AFI) ≤ 5 cm and normal AFI in term and postdate pregnancies was observed [10].

3- Maternal diseases specially preeclampsia and maternal diabetes

Preeclampsia and eclampsia are a syndrome considered unique to pregnant women; its causes, pathophysiology, prediction, management, and prevention present considerable challenges. Preeclampsia is characterized by high blood pressure and damage to organs, particularly the liver and kidneys. Preeclampsia typically develops after the 20th week of pregnancy and can affect both the mother and the developing fetus [11]. Clinically, preeclampsia is presented by high blood pressure, proteinuria, edema especially in the hands, face, and legs, vision changes, and abdominal pain. It can affect the fetus through reducing blood flow to the placenta, affecting fetal growth or even intrauterine fetal death [11]. Maternal diabetes during pregnancy, whether it's preexisting (pregestational diabetes mellitus - PGDM) or develops during pregnancy (gestational

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diabetes mellitus - GDM), can significantly impact both the mother and the developing baby. PGDM increases the risk of congenital malformations in the baby, specially affecting the heart, nervous system, musculoskeletal system, and limbs. High blood sugar levels in the mother can lead to excessive fetal growth (macrosomia), resulting in a larger-than-average baby. Also, there is increased risk of stillbirth and perinatal death [12].

4- Maternal infertility

Women who undergo infertility treatments have a statistically significantly higher risk of having a cesarean section compared to those who conceive spontaneously. The significant increase in operative deliveries cannot be explained by medical indications but rather was attributable to an increase in elective operations, which reflects the undue concern of patients and caregivers and influence an overall conservative attitude [13].

5- Placenta previa

Placenta previa occurs when the placenta partially or completely covers the opening of the cervix. In most cases, vaginal delivery is not safe due to the risk of severe bleeding. Therefore, a cesarean section is typically performed to safely deliver the baby [14].

6- Maternal request

• Fetal factors

1- Fetal distress

This is one of the most common reasons for performing a cesarean section. Fetal distress indicates that the baby is not tolerating labor well, often due to reduced oxygen supply. Abnormal fetal heart rate patterns detected through cardiotocography (CTG) may prompt the need for an urgent cesarean delivery [15]. Clinically fetal distress may be suspected by decreased fetal movement reported by mother, meconium in amniotic fluid, a non-reassuring pattern on electronic fetal monitoring and biochemical signs such as fetal metabolic acidosis or elevated fetal blood lactate level. The pathogenesis of fetal distress is multifactorial and can be due to processes such as utero placental deficiency, fetal sepsis and cord compression [16]. The Royal College of Obstetricians and Gynecologists (RCOG) and National Institute for Clinical Excellence (NICE) state that "where the indication to deliver is an immediate threat to the life of the mother or fetus, delivery should occur within 30 minutes of decision". They further state "that for emergency deliveries, where there is no immediate threat to maternal or fetal health, delivery should occur within 75 minutes". The reason for this classification is because the period of in-utero fetal hypoxia considered as an important factor for development of permanent fetal hypoxic-ischemic brain damage [17].

2- Malpresentation, malposition and cephalopelvic disproportion

The vertex is a diamond-shaped area on the fetal skull bounded by the anterior and posterior fontanelles and laterally by the parietal eminences. Vertex presentation is found in 95% of labors at term and is associated with flexion of the fetal head [18]. Breech, brow, face and shoulder presentations constitute the remaining 5% and are collectively known as malpresentations. Their etiology is usually unknown, but associations include macrosomia,

multiparity, polyhydramnios, multiple pregnancy, placenta previa, preterm labor, and anomalies of the uterus or pelvis (congenital or acquired, e.g. lower segment fibroids) and more rarely the fetus [19]. The denominator is a laterally sited bony eminence on the presenting part ('occiput' for vertex presentation, 'mentum' for face, 'acromium' for shoulder and 'sacrum' for breech). The position of the presenting part is defined by the relationship of the denominator to the maternal bony pelvis [20]. The vertex enters the pelvis in the occipito-transverse (OT) position and during descent rotates to an occipito-anterior (OA) position in 90% of cases. This position is associated with a well-flexed head, allowing the smallest anteroposterior (suboccipito-bregmatic) & lateral (biparietal) diameters to pass through the pelvis (both 9.5cm) [18]. Malposition occurs when the occiput remains in a transverse or posterior position as labor progresses. Persistent malposition results in deflexion with a larger anteroposterior diameter presenting (occipito-frontal 11.5cm). It is associated with increasing degrees of anterior or posterior asynclitism, with one of the parietal bones preceding the sagittal suture (in posterior asynclitism, the posterior parietal bone leads [21].

3- Intrauterine growth restriction (IUGR)

Intrauterine growth restriction refers to a condition in which a developing fetus does not reach its expected growth potential due to various factors (as placental Insufficiency, maternal smoking, preeclampsia, malnutrition). In cases of severe IUGR, where the fetus is at risk due to compromised growth or placental function, a cesarean section may be recommended. Fetal distress during labor may also prompt an emergency C-section [22].

4- Fetal macrosomia

Fetal macrosomia refers to a condition where a baby is significantly larger than average for its gestational age. Typically, a birth weight of 4,000 grams or more is considered macrosomia. When fetal macrosomia is suspected, a cesarean section may be recommended to prevent complications during vaginal delivery. Attempting vaginal delivery with a macrosomic baby increases the risk of birth injuries. Shoulder dystocia can lead to brachial plexus injuries or fractures [13].

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