# INDICATIONS AND OUTCOMES OF CAESAERIAN SECTION AT MOI TEACHING & REFERRAL HOSPITAL, KENYA

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**ABSTRACT**

**Introduction:** Caesarean section (CS) is an operative procedure which is carried out under anaesthesia where by foetus; placenta & membranes are delivered through an incision. Indications of caesarean sections include; previous caesarean section, prolonged labour, foetus mal-presentation & foetal distress. Women who have a caesarean section are more likely to experience complications which include accidental surgical cuts to internal organs, haemorrhage & complications from anaesthesia. The study aimed at determining the indications and outcomes of caesarean section at Moi Teaching & Referral Hospital (MTRH).

**Methods:** The researcher adopted a retrospective study design. A total of 384 patients' medical records were reviewed during data collection. Data was collected using abstract forms. Data entry and analysis was done using Statistical Package for Social Science (SPSS) Version 21. Frequencies and percentages were used for analysis. Data was presented in form of tables and charts.

**Results:** The mean age of the study participants was 28+6.07. Among the maternal indications of caesarean section, previous CS accounted for 168 (43.8%) followed by poor progress at 58(15.1%). A higher number 168(43.8%) of foetal indication was due to foetal distress whereas the lowest was chorioamnionitis at 1(0.3%). For the maternal outcome, haemorrhage was the most common reported complication at 53(13.6%). For the neonatal outcome, 269(70%) had iatrogenic prematurity.

**Conclusion and Recommendations:** From this study, foetal distress and previous CS were the most common indications of caesarean section in both foetus and women respectively. Iatrogenic prematurity was identified as one of the foetal outcomes while haemorrhage was the commonest maternal complication. Comprehensive antenatal care and counselling for women anticipating their first child regarding the planned hospital delivery and avoidance of the primary caesarean section is recommended.

**Key Words:** Indications, outcomes, Caesarean section, Kenya

## Introduction

Caesarean section (CS) is one of the common surgical interventions to save lives of the women and/or the newborns. A caesarean section is a surgical procedure in which one or more incisions are made through abdomen and uterus of the pregnant woman to deliver one or more babies or to remove a dead foetus (WHO, 2010). The first modern caesarean section was performed by German gynaecologist Ferdinand Adolf Kehrer in 1881 (Bailit, Althabe, Sosa, 2004). The rate of caesarean section has increased dramatically worldwide over the past three decades (Torloni R. (2014)Caesarean section can save the life of the mother and newborn but is also known to have the typical complications of any major surgery: haemorrhage, infection, venous thromboembolism and complications of anaesthesia, sometimes leading to maternal death.

Advances in medical care, antimicrobial and antithrombotic prophylaxis has improved the safety of CS. During last decades, many obstetricians perceive the risks related to CS as being so low, that they are willing to perform a CS on relative medical indications, and even without medical indications. Some obstetricians emphasize the risks related to vaginal delivery (VD) - the risks of neonatal asphyxia and trauma and the risk for obstetric tears- to justify the liberal use of CS (Declercq, Skjeldestad, Sandset, 2006). According to the World Health Organization, Kenya had a C-section rate of 4% in 2013.

Caesarean sections have become increasingly common in both high income and middle and low-income countries for a variety of reasons.

When medically justified, a caesarean section can effectively prevent maternal and perinatal mortality and morbidity. However, there is no evidence showing the benefits of caesarean delivery for women or infants who do not require the procedure. As with any surgery, caesarean sections are associated with short and long term risks which can extend many years beyond the current delivery and affect the health of the woman, her child, and future pregnancies. These risks are higher in women with limited access to comprehensive obstetric care (WHO, 2014).

Maternal mortality remains high in Kenya at an estimated 362 maternal deaths per 100,000 live births (Gacheri, 2016). This is largely as a result of direct causes such as haemorrhage, hypertensive disorders, obstructed labour, sepsis and complications of abortion. Most of these deaths are preventable with prompt and adequate medical interventions (KNBS, 2014).

During the last years (2002 – 2006), there have been several studies comparing severe maternal morbidity in different modes of delivery, and comparing the risks related to elective CS with attempted VD (Liu, Liston, Heaman 2007; Villar, Valladares, Wojdyla, 2007; Kuklina, Meikle, Jamieson, 2009; van Dillen, Zwart, Schuttle, 2010; Farchi, Polo, Franco, Di Lallo 2010).

Deneux and Tharaux in (2006) observed the factors increasing the risk of CS and complications related to a delivery such as obesity and advanced maternal age, which has been associated with increased risk for CS and CS related complications. There have been several reports from high-income countries on increased severe maternal morbidity and even mortality related to CS between 2007-2008 (Kuklina et al., 2009). The causes related to CS related complications are unclear, but increased CSs, increased Body Mass Index and an increased proportion of women giving birth in advanced age are among the identified causes.

According to World Health Report, (2015), 3.2 million additional CS were needed in 54 countries and that 6.2 million unnecessary CS was performed in 69 countries (ref). The authors estimate that 18.5 million CSs are performed every year in the world (Gibbons, 2010). There is no sufficient body of data that exist in MTRH about indications and outcome of caesarean section.

## Methods

The study was conducted at Riley Mother and Baby Hospital (RMBH).Riley and Mother Baby Hospital is the Maternity wing of Moi Teaching and Referral Hospital (MTRH), Eldoret, in the County of Uasin-Gishu, Kenya. MTRH is the second largest hospital in Kenya after Kenyatta National Hospital.

A systematic random sampling technique was used to recruit the eligible patient's files into the study. Using the Fisher's formula and annual statistics of caesarean section from MTRH records that revealed a figure approximate 1920, within a 95% confidence interval and 50% prevalence, 384 patients' files were retrieved.

Data was collected using data collection form which were completed and validated. Data cleaning was done manually to identify incomplete, incorrect and inaccuracies. Thereafter collected data was coded and entered into the computer.

Data entry and analysis was done using Statistical Package for Social Science (SPSS) Version 21. The data entered was checked for completeness to ensure their consistency. Frequency, cross tabulation, measure of central tendency and measure of spread was used to describe the variables of the study. The final result was presented in text, charts, tables and narrative form. Confidentiality was maintained while collecting data. The names of the women in the study were not be revealed at any stage of the research. Unique identifiers were used. The study was carried out after getting Ethical Clearance from the Research Committee, Moi University, Director Moi Teaching and Referral Hospital and the Institutional Research and Ethical Committee (IREC). There was no consent since no patient was involved but data was retrieved from the patient's files. The study was limited to MTRH and the results were not generalized in other settings.

## Findings

Findings show that 1920 cases of CS were reported in 2014 out of a total of 10226 deliveries making it 19%. The mean age of the study participants in years was $28 \pm 6.07$. The minimum age was 15 years while the

maximum age was 46. The number of women who underwent caesarean section were expecting their first child were 152(39%) while the least 12 (3%) were expecting the fifth child. Majority 325(86%) of the women were married. A total of 155 (40.4%) clients had attained tertiary level of education while 50(1.5%) had no education.

Most 196(51%) of the clients who underwent caesarean section were housewives while a low number 37(9.6%) were students. Majority of the women were from Uasin-Gishu County at 96(25%) whereas a low number 5(2.6%) were from Narok County. In terms of travel time to clinic majority 206 (54%) of the women recorded more than one hour from home to the health facility while 10 (2%) had not indicated their travel time. This is depicted in the table 1:-

***Table 1: Socio-demographics***

| **Variable** | Freq (%) |
|---|---|
| **Age** | |
| Mean Age | 28 |
| Standard | 6.066 |
| **Parity** | |
| Zero | 152(39.9%) |
| One | 101(26.5%) |
| Two | 80(21%) |
| Three | 23(6%) |
| Four | 12(3.1%) |
| Five | 13(3.4%) |
| **Total** | 384 (100%) |
| **Marital status** | |
| Married | 325(86.4%) |
| Single | 117(30.5%) |
| Widowed | 57(14.8%) |
| Divorced | 1(0.3%) |
| Not indicated | 8(2.1%) |
| **Total** | 384 (100%) |

| **Variable** | Freq (%) |
|---|---|
| **Occupation** | |
| House wife | 196(51%) |
| Unknown | 88(23%) |
| Employed | 63(16.4%) |
| Student | 37(9.6%) |
| **Total** | 384 (100%) |
| **Highest educational level** | |
| Tertiary | 155(40.4%) |
| Secondary | 117(30.5%) |
| Primary | 57(14.8%) |
| None | 5(1.3%) |
| Not indicated | 50(13%) |
| **Total** | 384 (100%) |

Two hundred and fifty two (252) (66.3%) of the clients had never undergone the CS, this was followed by 85(22.4%) clients who had undergone one previous CS, 39 (10.3%) had undergone two previous CS, whereas a lower number 8 (1.1%) had undergone three previous CS.

The main maternal indication for CS was previous CS reported by 168(43.8%) of all the women who underwent caesarean section.

The most common foetal indication was foetal distress at 168(43.8%) followed by mal-

presentation at 86(22.4%). This is depicted in figure 1below:-

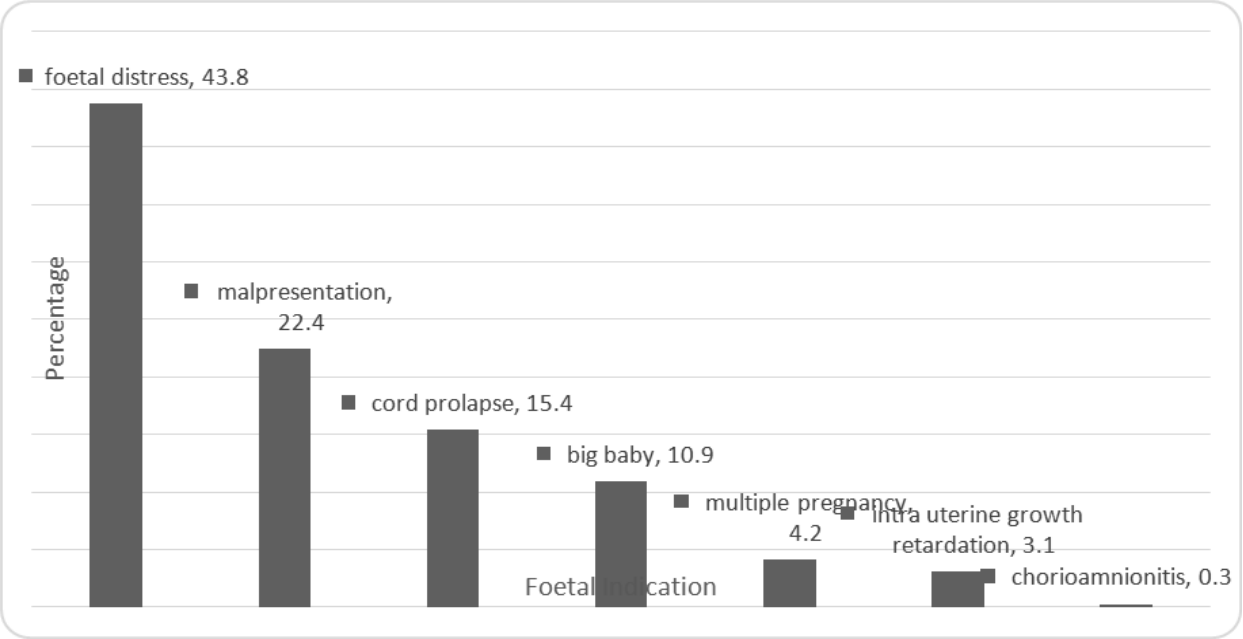


***Figure 1: Foetal indications***

Obstetric factors are elements that influence the chances of a woman undergoing caesarean section. These were grouped based on literature. From the files the highest number 127(33.1%) of women who underwent caesarean section resulting from previous CS in Singleton, Cephalic,>37 weeks while the lowest 1(1%) was all multiparous breeches including previous CS. This is shown in figure 2 below.

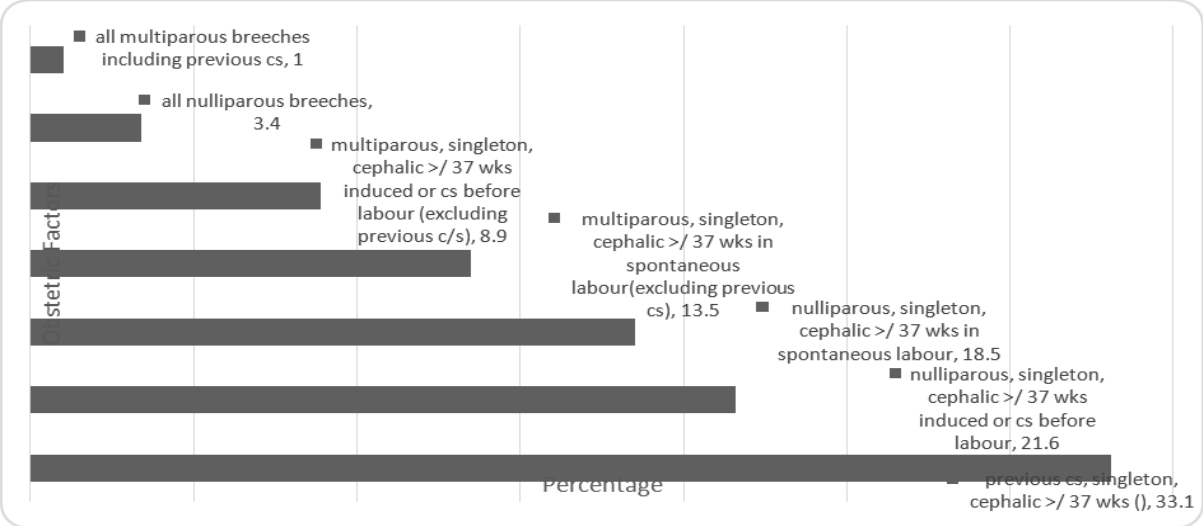


***Figure 2: Obstetric factors***

Foetal placental unit refers to the interaction between the mother and conceptus to develop hormonal balance. These are the factors which based on literature influences a woman to undergo caesarean section. From our study majority of the women 230(60%) had PROM as shown in figure 3 below.

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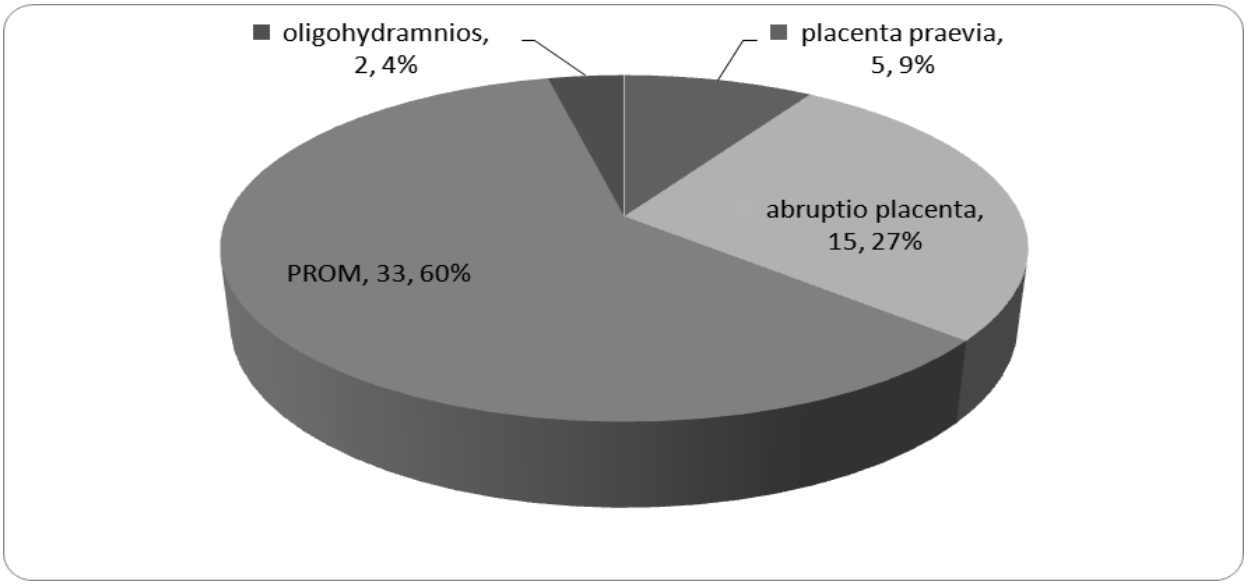


***Figure 3: Foetal placental unit***

Majority 319 (83.3%) of the women did not experience immediate maternal complication, however haemorrhage was the most common reported complication at 53(13.6%).

The most common foetal complication was iatrogenic prematurity which accounted for 269 (70%) of the foetal outcome whereas the lowest 19(5%) was birth trauma.

The results depicts that 380(99%) of the reviewed women files were alive at discharge whereas 4(1%) died. All the women who died presented with poor progress of labour as the indication of CS. Three (3) out of four (4) women who died had no immediate complication after CS while one (1) experienced haemorrhage as an immediate maternal outcome.

The results showed that 53(14%) of women who had haemorrhage as a complication presented with previous scar 37 (69.8%) as the indication for caesarean section.

The findings also revealed that 47(46.5%) infants who had iatrogenic prematurity had foetal distress 179(46.5%) as the indication of caesarean section while 26(6.9%) had cord prolapse as the indication of caesarean section. This is indicated in figure 4.

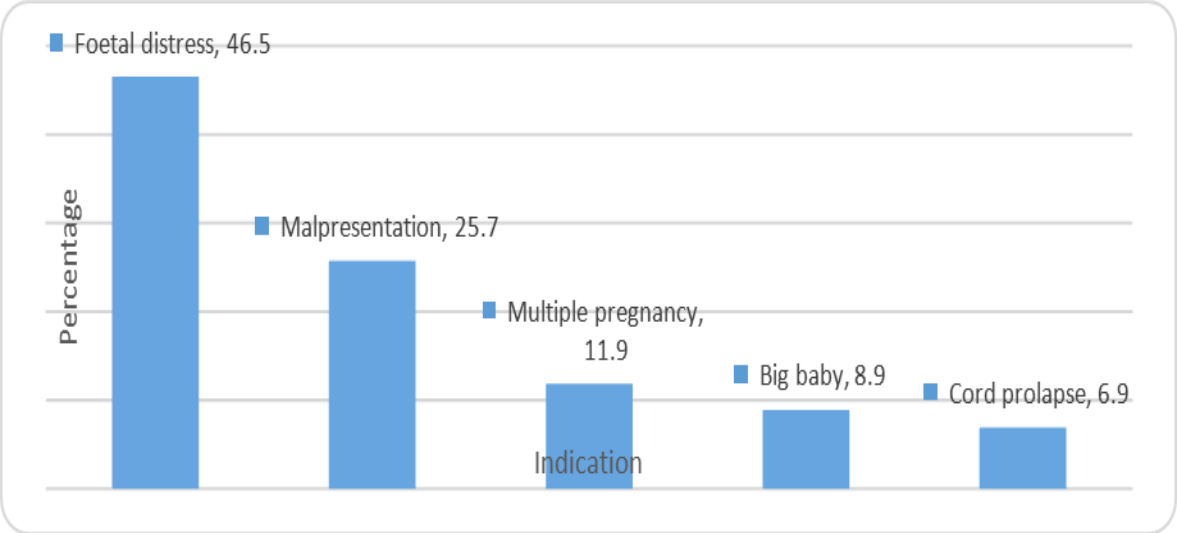


***Figure 4: Indications of common foetal outcome***

**Discussion**

Caesarean section can save the life of the mother and newborn but is also known to have the typical complications of any major surgery: haemorrhage, infection, venous thromboembolism and complications of anaesthesia, and sometimes leading to maternal death.

In the United States, Menacker and Hamilton, (2010) studied trends in caesarean section rates in the United States reported that the Caesarean section rate rose to 32.3% in 2008, from 20.7% in 1996.

In 2009 the caesarean section rate was 34 % in the United States (Boruff, 2012). However, in the study results, 19% of all women underwent caesarean section in MTRH. This rate was below Kenyatta National Hospital where 23.7% of patients were delivered by caesarean section according to a study done by Chege, (2007). Considering Gibbons et al. (2010) recommendations, the results (19%) are high hence overuse of CS.

According to a study done by Lauer, (2010), one of the identified factors for increasing caesarean section in high-income countries rates was a caesarean section in primigravida (Lauer, 2010). This study concurred with the study results were 152 (39%) clients who underwent caesarean section expected their first born child followed by 28% who expected the second born child and 20% expected their third born child. Although other studies indicated that age was a factor especially more than 35, the results revealed a mean age of 28 years while the modal age was 30 years.

A study by Farlex, 2013, presented prolonged labour as one of the key indicators of caesarean section. Prolonged labour occurs when the duration of the labour exceeds 24 hours from the onset of true labour. However, the results of this study indicated that previous CS was the main indication for CS which

accounted for 119(30%) and prolonged labour was recorded in 58(15%) of the indications.

The previous caesarean section further increases the risk of complications. The most common complication is the risk of placenta accreta. Although the previous caesarean section is not a condition that qualifies for repeat CS, it is normal practice to do it again (Farlex, 2013). The study also revealed that 53(14%) of women who had haemorrhage as a complication had the previous scar as the indication for caesarean section.

The prevalence of caesarean section on maternal request is estimated to be between 1-18 percent worldwide (National Institutes of Health state-of-the-science conference statement, 2006). In this study 1(0.3%) of women underwent caesarean section due to maternal request.

From a study by Farlex, (2013) and Hofmeyr, (2012) foetal distress and mal-presentation of the foetus were the major contributors among foetal factors. These results concurred with the findings where 45% of the patients' files reviewed had recorded foetal distress and second were mal-presentation at 25%. As regard to mal-presentation, there is a need for further studies since there is no evidence of the specific presentations such as; breech, transverse and compound presentation to understand the difference.

According to a study done by Smail et al., 2010 puerperal complications consist of infections, haemorrhage, transfusions, ileus, reoperations, urinary retention, pain, headache related to unintended dural puncture, deep venous thrombosis and thromboembolic events. These findings concurred with my findings where 20% of the outcome had haemorrhage as a complication while 4% had thromboembolic events as a complication.

A study by Aisien & Oronsaye, (2004) on the incidence of ruptured uterus among women with one previous caesarean section was slightly higher than other studies which show the incidence to be between 0.2% and 1.5%. A study by Andrea, (2012) indicated there were 7 cases of uterine rupture among 358 women who had one previous caesarean section, giving the incidence of 2%. However, in this study, there was no any incidence of ruptured uterus recorded.

According to Dessole et al, (2004), a caesarean is usually performed for the benefit of the foetus, but there are also foetal risks associated with caesarean birth. These risks include prematurity and birth trauma. Birth trauma occurs in 0.4-3 % of caesareans, and usually, confers mild lacerations related to emergency delivery. Babies delivered by caesarean are at risk of trauma, most commonly due to surgical cuts, particularly during emergency deliveries. As cited by Hedwige (2016), a foetus which is in a non-vertex presentation is at increased risk for trauma, cord prolapse, and head entrapment. Mal-presentation which includes preterm breech presentations and non-frank breach term foetuses this goes in line with the findings of this study which has recorded that 70% of foetal complications were due to Iatrogenic prematurity and 5% of infants had trauma.

## Conclusion and Recommendations

Caesarean section leads to poor maternal and foetal outcomes, therefore this study recommends that CS should only be performed when it is clearly advantageous, that's when it only saving a life. It is concluded that foetal distress and previous CS were the most common indications of caesarean section in both foetus and women respectively. Iatrogenic prematurity was identified as one of the foetal outcomes while haemorrhage was the commonest maternal complication.

This study recommends comprehensive antenatal care and counselling for women anticipating their first child regarding the planned hospital delivery and avoidance of the primary caesarean section. The primary caesarean section usually determines the future obstetric course of any woman and therefore should be avoided wherever possible. Proper monitoring of labour using partograph and early interventions by midwives should be taken in case of abnormalities in order to prevent poor progress which constitutes 15.1% of the indication of CS. More research should be done on selective research by young mothers in Kenya.

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