



Assessment of Indications, Risk Factors, & Materno-foetal Outcomes of LSCS (Emergency & Planned) in a Tertiary Care Rural Hospital of Wardha District, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Occurrence of elective Caesarean Section (CS) is prevalent in the advanced age group, i.e. 26-30 years while higher incidence of emergency CS is seen in 20-25 years, the younger age group. Emergency caesarean delivery analogous with substantially greater maternal and foetal delivery complications in contrast to elective caesarean sections regardless of its growing acceptance as a preferable alternative to vaginal delivery. The study attempts to determine risk factors for emergency and scheduled caesarean surgeries, along with indications of LSCS and maternal-foetal outcomes.

Method: Prospective observational study will be carried out on post-natal care women who have undergone LSCS in the past 1 week in the rural tertiary care hospital, Wardha. Study participants will be approached in the OBGY Post Natal Care Ward 1 or 2 days post-delivery after assuring their comfort. A predesigned & pre-structured questionnaire containing socio-demographic profile, maternal details, and reasons for planned/emergency C-section, neonatal details etc.

Results: From the baseline study, the average number of caesarean-sections was 55-60 %.

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Proportion of elective and emergency caesarean was 41.40 % and 58.60% respectively. Emergency group is expected to show all of the complications significantly higher in terms of both maternal and fetal outcome.

Conclusion: Previous c-section, foetal distress and misrepresentation of the foetus (Breech and Transverse Lie) were recorded as a most important indicator of caesarean section along with obstructed labour. Higher incidence of emergency CS was 20-25 years, while the incidence of elective C-Section was prevalent. in the age group of 26-30 years; Modifiable risk factors for the Caesarean Section, such as early marriage with its associated inadequate pelvic growth and unnecessary avoidance of hospital delivery due to fear of CS, should be discouraged.

Keywords: Risk factors for C-section; Maternal outcomes; foetal outcomes; indications (maternal & foetal).

1. INTRODUCTION

For the survival of the human race, pregnancy and childbirth are important. Pregnant women can be delivered by vaginal delivery or the abdominal route, the so-called caesarean section. Birth of a viable fetus by incision in the abdominal wall (laparotomy) and uterine wall is known as caesarean delivery (hysterotomy). Caesarean section is the delivery of the foetus with pregnancy products in our ecosystem by an incision made after the viability age (28 weeks), on the abdomen and the uterus. The need for a caesarean section in any pregnancy may be attributed to several factors related to pregnant women, their fetuses, or a combination of both [1].

It is a major surgical operation with an acceptable degree of risk which should be performed out in the presence of appropriate and positively marked indications, although some obstetricians consider it to be a psychological procedure that is very quick, reliable, efficient and well tolerated and much superior to secondary approaches such as vacuum delivery or caesarean emergency section [2].

A caesarean operation is often carried out if a natural delivery puts the baby or mother at risk. Short-term and long-term risks associated with the risk can occur. Bleeding, urogenital organ disruption and postoperative infection are short-term maternal hazards related to caesarean. The long-term risks are: obstructed labour, twin pregnancy, high blood pressure in the mother, breech delivery, placental issues, umbilical cord problems or pelvic formation, and previous c-section. New-borns may face several complications including neonatal respiratory distress, including intermittent tachypnoea and chronic pulmonary hypertension [1].

Some caesarean section surgeries are also carried out on request. The World Health Organization (WHO) suggests that we should concentrate on medical needs and we should be able to save the lives of mothers and babies in these situations [3]. Based on time of service, there are two kinds of caesarean section. They are emergency and elective. When the operation is performed at a predetermined time during pregnancy, the preference is to uphold the values of obstetric care, anaesthesia, neonatal resuscitation and nursing facilities. The emergency is when the procedure is to be conducted due to an urgent obstetric emergency that endangers the life of both mother and newborn [4].

According to WHO, the C-section rate should be between 10-15 percent though no advancement in maternal and perinatal success has been shown by the above rate. Recently, a drastic rise in the incidence of caesarean sections has been recorded internationally, women are predisposed to the increased risk and cost of surgery [3].

In various studies, emergency caesarean sections revealed substantially more foetal complications than elective caesarean sections. Inadequate maternal treatment and unreliable referral system are responsible for the massive incidence of the discovered emergency caesarean section. The prevalence of emergency LSCS can be eliminated by early recognition of signs and referral of mothers, likely to undergo C-section, thus lowering foetal complications. Not only in frequency, but also in foeto-maternal complications, the predominance of emergency caesarean may be an indication of deficient antenatal care and poor referral services. Wilful efforts should be made to raise public awareness of good health-seeking behaviour, equip hospitals, recruit and train competent employees to meet the growing

population of antenatal women in order to reduce the occurrence and risks of Caesarean Section [1].

In women who have given 3 or 4 ANC visits, regular antenatal visits during pregnancy can assist in recognition of these concerns and thus reduce higher C-section rates. Significant determinants of caesarean section are recognised as Women's age, education and parity across several studies [4].

Over the past 10 years, the overall rate of C-section deliveries elevated from 8.5 percent to 17.2 percent in India from the NFHS-3 to the NFHS-4. Total births delivered by Caesarean section in urban areas are 30.6 percent and 21.5 percent in rural areas, according to NFHS-5 (2019-20) in Maharashtra. There are 40.9 percent of births in a private health facility in urban areas and 37.3 percent in rural areas in 2019-20. And based on the same results, birth by c-section in a public health facility in urban areas is 23.2 percent and in rural areas it is 15.1 percent in 2019-2020. Total births delivered by Caesarean section in the Wardha district are 24.1 percent (2019-20) according to NFHS-4 it was 25.9 percent in NFHS-4 (2015-16). Of the caesarean parts, 39.3 percent of the caesarean sections were administered in private health facilities and 19.0 percent were conducted in public health facilities (NFHS-5, 2019-20) [5].

This study intends to find the risk factors for the emergency & planned caesarean surgeries, indications of LSCS & materno-foetal outcomes in the tertiary care hospital.

2. RATIONALE

The choice to execute a C-section is focused largely on the consideration of what is best for the mother and child's lives. The decision to carry out a c-section can be taken depending on the indications.

Therefore, the indications for the caesarean section are extremely important and those are:-

- 1) Absolute indication
- 2) Relative indication
- 3) A separate indication: Elective caesarean section, done without any medical indication at the request of the patient.

1) Absolute indications

- Complete disproportion

- Chorioamnionitis (amniotic infection syndrome)
- Maternal pelvic deformity
- Eclampsia and HELLP syndrome
- Foetal asphyxia or foetal acidosis
- Prolapse of the umbilical cord
- Anomalous placental placement
- Abnormal lie or foetal position anomaly
- Uterine rupture [6]

2) Relative indications

- Pathological cardiotocography (CTG)
- Failure to advance labour
- Previous C-section [6]

3. OBJECTIVES

The objectives are: -

1. To find out the incidence of C-section deliveries in rural tertiary care hospital.
2. To access the clinical profile of women undergoing Caesarean Section & indication of Caesarean Section.
3. To find out the neonatal, foetal & maternal outcomes.

4. METHODOLOGY

Study design: - This will be a Prospective study.

Study settings: - Obstetrics and Gynaecology Post Natal Care (OBGY) (PNC) ward of Rural Tertiary Care Hospital Wardha, MGIMS.

Study duration: - 9 months

Sample size: - 385

Sample size (n) is calculated using the formula:

$$n = z^2 * p * (1 - p) / e^2$$
$$n \approx 385$$

The size of the sample is equal to 385.

4.1 Selection Criteria for Subjects under Study

Study participant: Women who have delivered in the tertiary care hospital, shifted to the Post Natal Care ward will be interviewed 1-2 days post-delivery after assuring their comfort.

Inclusion criteria: All women admitted to the Obstetrics & Gynaecology Department for delivery via OPD or emergency would be included in the analysis. All of the caesarean sections that will be conducted during the study period at the hospital.

Exclusion criteria: There will be no exclusion criteria.

Data collection tool: The postnatal case will be approached 1 or 2 days after her delivery. Data will be collected in a pre-structured format with special emphasis on demographic information such as age, parity, antenatal high-risk factors, indication and timing of C-section, intra-operative & after delivery complication. A self-administered, moderately structured questionnaire will be configured and pre-tested for data collection. The data collection tool will be translated into vernacular language. Neonatal data involves APGAR score of the baby, birth weight, neonatal intensive care unit (NICU) admission & neonatal morbidity/mortality, which will be acquired by the principal investigator on inquiry.

Confidentiality will be maintained for the data collected throughout the study.

Data collection: In the Post Natal Care ward of Department of Obstetrics and Gynaecology of Wardha Rural Tertiary Care Hospital 1 or 2 days after delivery, the study participant will be approached after ensuring her comfort. She will be briefed about the objective of the study & the pre-designed, pre-structured questionnaire will be administered after acquiring written informed consent.

Study variables: The key dependent variables are: - vaginal deliveries and caesarean sections. The potential determinants of caesarean section are:

Maternal age
Parity
Maternal education
Gestational weeks
Government programmes
Maternal and foetal outcomes.

Data analysis: Data analysis will be done using SPSS software & appropriate tests will be applied. Tables and graphs will be prepared, and the Chi-square test, p-value, and t-test are being used to draw inferences.

Implication: Caesarean section incidence can be minimized by combined efforts at all levels and by facilitating hospital vaginal delivery, provided ample foetal monitoring and operational facilities are available for all primigravida, grand-multiparous pregnant women and those who had previous caesarean section.

5. EXPECTED RESULTS

From the baseline study, the average number of caesarean-section was 55-60 %. The proportion of elective and emergency caesarean was 41.40 % and 58.60% respectively. Emergency C-section females are expected to show all of the complications significantly higher in terms of both maternal and fetal outcome.

6. DISCUSSION

The Caesarean section rate has risen not only in India, but also globally. In the past five years, the leading manifestations of primary C-section, which is foetal pain, Cephalopelvic disproportion and non-progress of labour, remain the same. Previous C-section is the overall leading determinant for the Caesarean Section and thus that the primary C-section would help to decrease the c-section rate. In a study by Darnal N (2020) the rate of c-section in the hospital was 30.7% while Proportion of emergency caesarean section was 1324 (74.4%) and elective c-section was 456 (25.6%). Emergency C-section was observed to be more seen in younger age group and in primigravida while elective C-sections were more seen in advanced age group and in multigravida females [7].

A Mylonas I (2015) study observed improvements in mother and child risk profiles along with a rise in the number of elective c-sections performed was seen as a significant cause of increase in caesarean rates [8].

Foetal distress was the leading determinant for primary C-section. It is desirable to minimise the rise in cases of elective primary C-section. By offering legal protection for doctors, the raise in the elective section for previous C-section will be minimised so that more cases from previous sections could be assessed for labour for vaginal delivery. In a study by Benzouina S et al. [9] foetal distress (30.49%) was the most frequent indication of emergency caesarean section, while the commonest indication in elective c-section was previous caesarean delivery (47.18%).

In a stark contrast to common belief, the study conducted in Bangladesh by Karim F et al. [10] showed that 15% women had C-section who had at least four ANC visits, depicting that prevalence of C-section was in more with the high number of ANC visits. A number of related studies have been reported around pregnancy, delivery and feto-maternal outcomes [11-13]. Nair et al. [14] reported on induction of labour with oral misoprostol and its maternal and perinatal outcome. Patel et al. [15] reported about effect of care around labor and delivery practices on early neonatal mortality in the Global Network's Maternal and Newborn Health Registry. Few of the related relevant studies were reviewed [16-22].

7. CONCLUSION

Previous c-section, foetal distress and misrepresentation of the foetus (Breech and Transverse Lie) were recorded as a most important indicator of caesarean section along with obstructed labour. Higher incidence of emergency CS was 20-25 years, while the incidence of elective C-Section was prevalent in the age group of 26-30 years; Modifiable risk factors for the Caesarean Section, such as early marriage with its associated inadequate pelvic growth and unnecessary avoidance of hospital delivery due to fear of CS, should be discouraged.

ETHICAL APPROVAL

Institutional Ethics Committee approval has been obtained from the ethical committee of DMIMS Deemed to be University.

CONSENT

Study participants will be explained in the detail about the study. Written informed consent will be considered and confidentiality of data will be maintained.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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