

## AN AUDIT OF INCIDENCE RATE INDICATIONS AND COMPLICATIONS RATE OF CESAREAN HYSTERECTOMIES IN A TERTIRARY CARE HOSPITAL

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### Abstract

**Background and Objective:** Caesarean hysterectomy is usually done as a life-saving procedure for post-partum hemorrhage but is associated with considerable mortality and morbidity. Thus, this study was conducted to analyze all caesarean hysterectomies in terms of rate of incidence, indications and morbidity performed in gynecology unit during one year period at one of the largest specialized healthcare care public hospitals in Lahore.

**Methods:** A retrospective observational study was conducted in the department of gynecology and obstetrics Unit I, Sir Ganga Ram hospital, Lahore from June 2019 till June 2020 including all women who underwent caesarean hysterectomy. Data was abstracted from the medical record and was entered and analyzed in SPSS version 21.0. The outcome was presented as frequency and percentages for incidence, indications and complications related to caesarean hysterectomy.

**Results:** During the study period total deliveries were 5804 with 2979 remove were delivered through caesarean section out of which 64 women underwent caesarean hysterectomy, resulting in an incidence of 2.1%. Placenta accreta was found to be the most common indication for caesarean hysterectomy. There were 2 (3.12%) maternal deaths among these females who underwent caesarean hysterectomy.

**Conclusion:** The rate of caesarean hysterectomy was considerably high which is a leading factor requiring adequate attention to help reduce maternal and fetal mortality not only from caesarean hysterectomies but also from other preventable complications.

**Keywords:** Audit, Caesarean hysterectomy, Indications, Fetomaternal Complications.

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Caesarean hysterectomy also known by some as peripartum hysterectomy or obstetric hysterectomy is a procedure done to save maternal life in uncontrollable hemorrhage and few elective indications. It can be planned but more often it is an emergency

operation. It has caused substantial morbidity and mortality worldwide.<sup>5</sup> The incidence in literature for emergency hysterectomy is 0.01 to 0.05 %.<sup>1,13</sup> Previously most of them were done to prevent sepsis, atony and post-partum blood loss but currently most of them are carried out in emergency to control hemorrhage.<sup>9,15</sup> Caesarean hysterectomy once considered to be a rare procedure is on rise because of increase in the rate of caesarean delivery which has resulted in increases incidence of abnormal placentation (placenta accreta spectrum).<sup>2,14</sup>

Placenta accreta spectrum originally known as morbidly adherent placenta refers to the degree of pathological adherence of placenta, including placenta

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incretta, placenta accreta and placenta percreta. The most preferred hypothesis regarding the etiology of placenta accreta spectrum is that a defect of endometrial-myometrial interface leads to the failure of normal decidualization in the area of uterine scar, which allows abnormally deep placental anchoring villi and trophoblastic infiltration<sup>1</sup>. Maternal morbidity and mortality can occur because of severe and sometimes life-threatening hemorrhage, which often requires blood transfusion and is more likely to end up in hysterectomy at the time of delivery or during the post-partum period. There are multiple risk factors for abnormal placentation. The most common factor being the previous caesarean section and the rise in the incidence of placenta accreta spectrum is directly proportional to the number of prior caesarean sections.

Studies of caesarean hysterectomy are mostly reviews collected over a period of years. The surgical indications and techniques have improved over time. These studies can have limited impact to modern techniques.<sup>5,6,7,8</sup> The purpose of this study was to estimate the frequency of caesarean hysterectomy, its indications, and associated complications over a period of 1 year in our hospital to get an overview about the trends and to highlight avoidable factors and suggest means to develop health care services to improve maternal and fetal well-being.

## METHODS

It was a retrospective observational study over a period of 1 year starting from July 1<sup>st</sup> 2019 till 30<sup>th</sup> June, 2020 conducted in gynecology and obstetrics unit 1, Sir Ganga ram hospital, Lahore. Data for 64 cases of caesarean hysterectomy was collected from the medical record of labor ward. The information extracted from the case notes include age, parity, gestational age, risk factors, indications, feto-maternal complications (need of blood transfusions, visceral injury, need of re laparotomy, wound dehiscence, mortality). The data was entered and analyzed in SPSS version 21.0 and presented as frequency and percentages. Rates were calculated for incidence of hysterectomy, indications and complications.

## RESULTS

Out of a total number of 5804 deliveries during the study period, 2979 women underwent caesarean deliveries with 64 patients having caesarean hysterectomies. The overall caesarean section rate was 51.3% and caesarean hysterectomy rate turned out to be 2.1% with ratio of 1:46 caesarean hysterectomy in patients undergoing caesarean section.

Out of the 64 cases analyzed, 61 women were aged 35 years and below while the remaining 3 occurred in patients above 35 years. The distribution of parity in our sample showed 31.2% (20) were in Para 3 group, primigravida were 7.8% (05), multipara (Para 2 to 4) was 85% (55) and the grand multipara had 6.2% (04). In gestational age presentation, 35.9% (24) women presented at term and 55.71% (40) at preterm (between 28 and 36 weeks). During analysis following risk factors were identified. 92.0% (59) cases were associated with scarred uterus with the major contribution coming from previous caesarean scar, there was no case due to previous myomectomy scar or previous placenta previa. (Table no: 1). The most common indication for caesarean hysterectomy in descending order were placenta accreta spectrum followed by uterine rupture and atony. Total abdominal hysterectomy was performed in most of the cases. The mean operative time was  $2.23 \pm .54$  hours and maternal length of stay in the hospital on average was  $5.47 \pm 1.71$  days. Most of women received general anesthesia from the outset.

Acute blood loss requiring blood transfusion was the most common complication. Almost all patients required whole blood transfusion. FFPs were required by 42.9% (48) patients. Iatrogenic bladder injury occurred in 8 cases. There were 7.4% (02) maternal deaths among the 64 women. One mortality was due to underlying cardiac condition of aortic stenosis. (Graph no:1) The other was attributed to amniotic fluid embolism. Both were previous caesarean deliveries and primary indication for hysterectomy in each case was placenta accreta. The fetal birth weights showed that 40.6% (26) were of normal birth weight ( $>2.5$  kg) and 59.3% (38) babies were of low birth weight ( $<2.5$  kg). (Table no: 2)

## DISCUSSION

Cesarean hysterectomy is a procedure that involves removal of the uterus at the time of cesarean delivery. It is a challenging surgery owing to the anatomic and physiological changes of pregnancy, including a massive increase in blood flow to the uterus at term. The sur-

gery's dramatic nature evolves from the fact that it is frequently performed in emergency unplanned situations when a mother's life is in danger and therefore disrupts future fertility.

**Table 1: Demographic and clinical characteristics of patients**

| Variables n= 64        | Frequency | Percentage |
|------------------------|-----------|------------|
| <b>Age</b>             |           |            |
| 21-30                  | 54        | 29.6       |
| 31 - 40                | 10        | 54.6       |
| <b>Parity</b>          |           |            |
| < 2                    | 22        | 34.4       |
| > 2                    | 42        | 65.6       |
| <b>Gestational age</b> |           |            |
| < 37 weeks             | 36        | 56.25      |
| >Or equal 37 weeks     | 28        | 43.75      |

**Table 2: Risk factors among patients**

| Variables n= 64                               | Fre-<br>quency | Percentage<br>(%) |
|-----------------------------------------------|----------------|-------------------|
| <b>RISK FACTORS</b>                           |                |                   |
| Previous caesarean scar                       | 59             | 92.2              |
| Previous endometrial curettage                | 05             | 7.8               |
| Previous myomectomy scar                      | 0              | 0                 |
| <b>INDICATIONS FOR CAESAREAN HYSTERECTOMY</b> |                |                   |
| Placenta accrete spectrum                     | 59             | 92.2              |
| Uterine rupture/Vaginal tear                  | 2              | 3.2               |
| Atony                                         | 2              | 3.2               |
| Couvellier uterus                             | 1              | 1.4               |
| <b>NATURE OF CAESAREAN HYSTERECTOMY</b>       |                |                   |
| Emergency                                     | 55             | 85.9              |
| Elective                                      | 9              | 14.1              |
| <b>FETAL OUTCOME</b>                          |                |                   |
| Normal birth weight >2.5kg                    | 26             | 40.6              |
| Low birth weight <2.5kg                       | 38             | 59.4              |
| <b>MATERNAL COMPLICATIONS</b>                 |                |                   |
| Transfusion of blood products                 |                |                   |
| Whole Blood                                   | 63             | 56.3              |
| FFPs                                          | 48             | 42.9              |
| Platelets                                     | 1              | 1.8               |
| Postoperative ileus                           | 3              | 6.25              |
| Bladder injury                                | 8              | 12.5              |
| Wound dehiscence                              | 3              | 4.68              |
| Post operative fever                          | 11             | 17.1              |
| Mortality                                     | 2              | 3.1               |

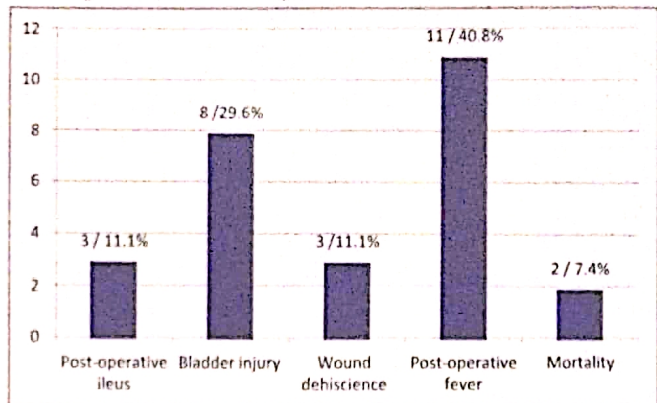


**Figure 1: Complication of Caesarean Section**

Liu B, Deng S, Lin M, et al. Prediction of cesarean hysterectomy in placenta previa complicated with prior cesarean: a retrospective study. BMC Pregnancy Childbirth. 2020 Feb 7. 20 (1):81.

This study has shown incidence of caesarean hysterectomy of 2.1% over the period of 1 year, which is quite high as compared to other counties. It is quite alarming number for a tertiary care hospital serving a major load of the city. The most common indication being placenta accreta spectrum and that is due to increase in the rate of caesarean sections.<sup>3</sup>

In a study by Shellhas et al 186 caesarean hysterectomies (0.5%) were carried out from a total of 39,244 women who underwent cesarean delivery. The leading indications for caesarean hysterectomy were placenta accreta (38%) followed by uterine atony (34%). In these cases, 18% had a primary cesarean delivery and 82% had a prior procedure ( $P<.001$ ). Out of the total hysterectomy cases with atony, 59% were complicated primary cesarean delivery, whereas 41% were a prior cesarean ( $P<.001$ ). Major maternal complications included transfusion of red blood cells (84%) and other blood products (34%), fever (11%), re-exploration (4%), ureteral injury (3%), and mortality (1.6%). Caesarean hysterectomy performed on account of accreta required more ureteral stents than atony cases (14% compared with 3%,  $P=.03$ ).

Similar results were present in this study where

64 cesarean hysterectomies (2.1%) were performed from a cohort of 2,979 women who underwent cesarean delivery. The leading indications for hysterectomy were placenta accreta (92%) followed by uterine atony and rupture uterus (3.2%). Out of these hysterectomies 59% had a previous cesarean section, and 5% had a previous uterine intervention. Maternal complications included transfusion of whole blood cells (63%) and other blood products (48%), fever (11%), bladder injury (12.5%), and death (3.1%).<sup>4</sup>

In our study we found out that increase in caesarean hysterectomy rate is also associated with significant maternal morbidity and mortality. Since most of the cases are a result of prior caesarean section, therefore every attempt should be made to reduce the caesarean section rate by performing this procedure only for valid indications.

In a study done by Mbakwa et al found an incidence rate of 3.75 per 1000 deliveries, the most common indication for caesarean hysterectomy was massive postpartum hemorrhage and uterine rupture (33.33% each), while abnormal placentation (50%) was commonly indicated for peripartum hysterectomy. Anemia (both groups) ( $p = 0.013$ ) and post-partum infection (peripartum hysterectomy group only, 33.33%) ( $p = 0.03$ ) were the most statistically significant complications respectively. Non availability of blood transfusion prior to surgery ( $p = 0.013$ ) and prolonged surgery lasting 2 or more hours ( $p = 0.04$ ), were significantly associated with a poor clinical outcome.<sup>6</sup>

The limitation of this study was that it was a single-centered study therefore multicenter studies are required so that results can be generalized at a provincial or national level. Further multicenter studies are required to find out the root cause of this increase in caesarean section rate. The government and its allied health departments have to play their role in providing better health care services and improved antenatal care to help reduce this alarming situation. Issues need to be addressed nationwide include awareness of the people about birth spacing, family planning and imparting knowledge regarding complications associated with cesarean delivery. In addition, local guidelines should be formulated for valid indications of caesarean section

after reviewing local data.

## CONCLUSION

The rate of caesarean hysterectomy turned out to be 2.1% for the period of 1 year. Increased caesarean rate is in fact a leading factor which requires adequate attention to help reduce maternal and fetal abnormality not only from caesarean hysterectomies but also from other preventable complications. There is further need of multicenter research to see the reasons for increase in caesarean section rate in our hospitals.

**Conflict of Interest**

*None*

**Funding Source**

*None*

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