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### Analytic Study of Indications and Complications Associated with Cesarean Section in Omar AL-Mukhtar Hospital

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#### Abstract

Cesarean section (C-section) is a surgical procedure designed to ensure the safety of the mother and the child when vaginal delivery is not possible. There is a progressive increase in cesarean deliveries across the world. C-section is associated with increased morbidity and mortality in pregnant mothers and infants, particularly in developing countries. The aim of the current study was designed to determine the rate and identify the indications and find out complications associated with C-sections in Omar AL-Mukhtar hospital. The descriptive retrospective study was carried out with data retrieved from statistics files from January 2018 to December 2018. A total of 754 births during the study period, out of the 226 were delivered by C-section. The overall C-section rate was 29.9%. The maximum number of C-sections was in the age group of 31-40 years (42%) followed by 41.2% of women in the age group of 21-30 years. The most common indication was elective repeated C-section (17%) followed by previous one C-section with other causes (10.6%), fetal distress (9.29%). The complications in our study were about 47 cases and were less accounted for (20.79%), like, postpartum and intraoperative hemorrhage, and anesthetic complications, which represented 5.75%, and 10.62% respectively. In conclusion: The cesarean delivery rate in this study was higher than the WHO recommendation, and elective repeat cesarean delivery was a major common indicator.

**Keywords:** C-section; Indication; Complication of C- section

#### Introduction

Cesarean delivery is defined as the birth of a fetus through incisions in the abdominal wall (laparotomy) and the uterine wall (hysterotomy). This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of the uterus or in the case of an abdominal pregnancy (1). In some cases, and



most often because of emergent complications such as intractable hemorrhage, abdominal hysterectomy is indicated following delivery. When performed at the time of cesarean delivery, the operation is termed cesarean hysterectomy. If done within a short time after vaginal delivery, it is termed postpartum hysterectomy (1).

C-section is one of the most widely performed surgical procedures in obstetrics worldwide. It has mainly evolved as a lifesaving procedure for mother and fetus during difficult delivery (2). Another study reported that the C-section is a surgical procedure designed to ensure the safety of the mother and the child when vaginal delivery is not possible or that doctors consider that the danger to the mother and the baby would be greater with vaginal delivery. C-section is associated with increased morbidity and mortality in pregnant mothers and infants, particularly in developing countries (3). There is a progressive increase in cesarean deliveries across the world; in developed as well as developing countries. This increase in the C-section rate has become a major public health issue because it is a burden on the health system and imposes a strain on families (4). Moreover, it has been observed that cesarean deliveries are associated with an increased risk of maternal and perinatal morbidity as compared to vaginal deliveries even in low-risk cases (5). The rapid increase in cesarean birth rates from 1996 to 2011 without clear evidence of concomitant decreases in maternal or neonatal morbidity or mortality raises significant concern that cesarean delivery is overused (6).

The rate of cesarean sections has increased in the last few decades. According to WHO, there is no justification for any region to have C-section rates higher than 10-15% (7). Another study reported that the WHO and the Pan American Health Organization suggested that the best C-section rate for a country should range from 5% to 15% (8). However, the prevalence of C-sections has been increasing in both developed and developing countries (2). It has happened for various indications and some complications associated with C-sections. The current study's objectives will be to determine the rate of C-section and the most common complication associated with C-section at Omar AL-Mukhtar Hospital. As a consequence, this study provides insight into the extent of the C-section indications, and complications associated with it. Moreover, it serves as a baseline for future studies of C-sections in this hospital.

## Methodology

The descriptive retrospective was performed, the data retrieved from statistics files from January 2018 until December 2018 to investigate the rate or prevalence, indications, and complications of C-sections which this study was carried out at Omar AL-Mukhtar hospital. The study sample was obtained and collected from the statistic department for all cases were delivered by C-section for a period of one year (2018). A total of 754 births during the study period, out of which 226 were delivered by C-section data collection started after the ethical approval had been received from the Dean of the Higher Institute of Medical Professions El -Beida-Libya and Director General of the hospital. Data was collected by the researcher from patient files at the Omar AL-Mukhtar hospital by used questionnaires were prepare by supervisors and researchers. Data analysis was performed using Microsoft excel including frequency and percentage for all variables. Grouping information analysis was performed using the Tukey pairwise comparisons method at 95% confidence by Minitab version 17.



## Results

There were a total of 754 births during the study period, of which 226 delivered by C-section. The overall C-section rate was 29.9%. The delivery rate by primary cesarean section was found 54%, while repeat section represented 46%. 40.3% of C-sections were performed as an emergency procedure. While elective C-section represents the highest rate and was 59.7%. In terms of Ages, the maximum number of C-sections was in the age group of 31-40 years (42%) followed by 41.2% of women in the age group of 21-30 years (Table 1).

<b>Mode of delivery</b>	<b>No (%)</b>
Vaginal delivery	528 (70.1)
Abdominal delivery	226 (29.9)
<b>Primary/Repeat</b>	
Primary C-section	112 (54)
Repeat C-section	104 (46)
<b>Type of C-section</b>	
Emergency C-section	91 (40.3)
Elective C-section	135 (59.7)
<b>Age (years)</b>	
16-20	15 (6.6)
21-30	93 (41.2)
31-40	95 (42)
41-50	23 (10.2)

The most common indication was elective repeated C-section (17%) with significant deference with a less common indication that failed induction. While previous one C-section with other causes was (10.6%), fetal distress (9.29%), malpresentation and malposition, elderly primigravida were 7.98% and 7.1% respectively. Approximately 6.63 of cases were due to pelvic inflammatory disease (PID). Moreover, precious baby, severe oligohydramnios, Antepartum hemorrhage (APH) and placenta previa, prematurity were indicators of C-section between range 5.3 -5.75%. This study was found another indicator that contributed to an increase of the C-section as cephalopelvic disproportion, scar tenderness, meconium, and failed induction which represented 4.4, 3.98, 3, and 2.65% respectively (Table 2).

Table 3 was illustrated the complication associated with C-sections. The complications in a current study about 47 cases and less accounted was (20.79%), like wound infection, postpartum and intraoperative hemorrhage, and anesthetic complications, which represented 2.21, 5.75, 2.21, and 10.62% respectively with significant difference between them.



**Table 2:** Indications of C-section.

Parameters	No. of cases (%)	Mean	P- Value
Elective repeated C-section (>2C-section)	38 (17)	0.1681 <sup>A</sup>	0.000
Previous one C-section with other causes	24 (10.6)	0.1062 <sup>A B</sup>	
Fetal distress	21 (9.29)	0.0929 <sup>A B C</sup>	
Mal presentation and mal position	18 (7.96)	0.0796 <sup>B C</sup>	
Elderly primigravida	16 (7.1)	0.0708 <sup>B C</sup>	
PID disorder	15 (6.63)	0.0708 <sup>B C</sup>	
Precious baby	13 (5.75)	0.0575 <sup>B C</sup>	
Severe ologohydramnios	13 (5.75)	0.0575 <sup>B C</sup>	
APH	12 (5.3)	0.0531 <sup>B C</sup>	
Placenta previa	12 (5.3)	0.0531 <sup>B C</sup>	
Prematurity	12 (5.3)	0.0531 <sup>B C</sup>	
Cephalopelvic disproportion (CPD)	10 (4.4)	0.0442 <sup>B C</sup>	
Scar tenderness	9 (3.89)	0.0398 <sup>B C</sup>	
Meconium	7 (3)	0.0310 <sup>B C</sup>	
Failed induction	6 (2.65)	0.0265 <sup>C</sup>	

Means that do not share a letter are significantly different. Different letters mean significant differences

**Table 3:** Complication of C-section.

Complications	No. of cases (%)	Mean	P- Value
Wound infection-minor	5 (2.21)	0.02212 <sup>B</sup>	0.000
PPH	13 (5.75)	0.0575 <sup>A B</sup>	
Intra operative hemorrhage	5 (2.21)	0.02212 <sup>B</sup>	
Anaesthetic complications (Spinal headache and hypotension)	24 (10.62)	0.1062 <sup>A</sup>	

Means that do not share a letter are significantly different. Different letters mean significant differences

## Discussion

There is apprehension about high rates of cesarean deliveries in developed and developing countries around the world (9). This study was conducted to determine the rate and indications of C-section and it was the first study done in Omar AL-Mukhtar hospital/Libya. The result in the present study showed that the rate of cesarean section was 29.9%. However, according to WHO, there is no reason for a region to have a C-



section rate of more than 10-15% (7). Another study found that the WHO and the Pan American Health Organization suggested that the best rate of division in a country would be between 5 and 15% (8). This estimate is higher than the overall rate in Arabic countries, based on national-level household surveys, that was found that Libyan estimate was also in the range of the global C-section rate in Arab countries, which ranged from 26.2% in Egypt has the highest rate and 5.3% in Mauritania and Yemen having the lowest rate at 5-6%. Libya and Morocco had a C-section rate between 7-9% (10). Moreover, the rate of C-section was slightly higher than the rate of C-section at Al-Whada Hospital/ Derna at a range of 23.5% (11). It is lower than the rate in Argentina (35.1%) but similar to the result in Brazil 29.3% (12). The prevalence of C-sections in this study may be high because of low literacy, lack of knowledge and lack of primary health care, and limited knowledge and training of health professionals. However, when our estimate is compared with different estimates from the developed countries, it turns out to be lower than some of the published estimates. For example, in the study done in Italy, the rate was 36%,(13) and in the USA 32% (14).

The current study reported that primary C-sections accounted 54% higher than repeat C-sections which represented 46%. This result is consistent with the findings of other researchers. A similar result conducted in India found the primary cesarean delivery rate accounted for most of the increase from 11.83 in 2001 to 16.98 in 2006 to 21.00 % in 2011 (15). Based on the present study the majority of mothers who had C-sections were in the age group 26-30 and 31-35. These findings are almost identical to the result of the study was conducted at Al-Whada Hospital/ Derna, which found, almost all cases of C-sections were between 20-30 and 30-40 years old (11). In comparison to another study was performed in Bhubaneswar hospital in India found the highest age group delivered by C-section among women 20-25 years old (16). Finding from the current study was extremely different on another study was conducted in Ethiopia, which established that the majority cases that delivered by C-section were among old age group (17).

Elective repeated C-section was the most common indication for C-section. This is similar to other studies done in Egypt, Nigeria, and Southeast Asia (2, 18, 19). Another most frequent indication in this study was fetal distress which has always been one of the most important medical indications for C-sections (18, 20). This finding also consistent with the results of other investigators conducted in Nigeria and developed countries as well (21, 22). Other most frequent indications in this study were malpresentation and malposition. This finding coincides with studies conducted among 9241 gravidas who delivered at Qassim Region, Kingdom of Saudi Arabia (23). A previous study performed in Brazil reported that the majority at birth by C-section mother that had C-section was primigravida (24). There were various indications that contributed to an increased c-section rate as elderly primigravida 7.1%, PID disorder 6.63%, Precious pregnancy, and severe oligohydramnios both represented 5.75%, APH, placenta previa, and prematurity all in the same grade and accounted for 5.3%. Cephalopelvic disproportion, Scar tenderness, meconium, and failed induction were represented 4.4, 3.98, 3, and 2.65% respectively. These findings consistent with the study was conducted in a tertiary care teaching hospital in eastern India (16). This finding of the rest of the most common indication for C-section consistent with other results in Al-Whada Hospital/ Derna (11).

As known the cesarean deliveries were related to increased risk of maternal and perinatal morbidity and mortality compared to normal vaginal deliveries even in low-risk cases (25). In the current study, no case mortality registered, but the morbidity rate was established as 20.79%. Anesthetic complication as spinal headache (10.62%) was the most common complication followed by atonic PPH (5.75%) and the next complication intrapartum hemorrhage. However, another study found that surgical wound infection was the major complication followed by atonic PPH (16).



## Conclusion

The rate of cesarean deliveries in this study was higher and elective repeat cesarean delivery was a major common indicator. Moreover, C-section is a surgical procedure that can lead to multiple complications and can carry adverse outcomes in the mother and child. The rate has increased worldwide for a variety of reasons and indications. Therefore, It is possible to keep the rate at a minimum by reducing the number of primary C-sections, by offering educational programs to women about the adverse outcomes of unnecessary C-sections throughout visits of maternal child care and antenatal care, and providing appropriate counseling to patients by properly monitoring maternal and fetal parameters.

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