

**CAESAREAN SECTION: TIME TREND AND RISK FACTORS****Rasmiya Oraibi Lafta\* & Husam Ali Habeeb@**

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**Abstract**

The increased incidence of caesarean section has got an important issue in the recent researches in obstetrics. The evaluation of the condition and factors that make a decision for an operation still a main challenge to both doctors and patients in evaluating benefits and risk factors both pre and post-operative to the mother and the baby. Continuous studies all over the world are still in run focusing on this problem. World Health Organization reported an incidence lower than 15% to be accepted. Almost all countries still recording higher rates, both in developed and developing countries.

This study has aimed to spotlight the problem in the main teaching obstetrics and gynecology hospital in Basrah, calculating the rate and risk factors associated with caesarean section which, similar to other countries, the rate is growing up.

A retrospective study was conducted to review the statistical data during the last ten years calculating the incidence rate of caesarean operations, reviewing the data of 700 first caesarean operations in year 2019 to assess the main causes for an operation.

It was clear that the rate of caesarean section has increased during the period from 2010 to 2019 from 24.2% to 38.5% with a study increment in both the total number of birth and the operation rate. The main reasons for operation were; repeated caesarean after a previous one in nearly 50%, while for a first caesarean, the causes were; failure to progress in 35%, infertility in 20.4%, breech presentation in 14.4%, meconium in 8.2%, cephalopelvic disproportion in 7%, and elevated blood pressure in 4%.

In conclusion, the decision for an operation is still a challenge to both doctors and patients, the included reasons for an operation are; patient background, fear of labor pain, advances in anesthesia, private sectors and family economic situations, all interacts with the obstetrical, gynecological and medical risk factors for an operation leading to an increasing rate of caesarean operations. Clear criteria are still in need with more expanded studies to reduce the rate, taking in account all the possible post-operative complications.

*Key words: Spondylodiscitis, Surgery, Caesarean, Causes, Timing, Risks, Literature review.*

**Introduction**

Cesarean section (CS), also known as C-section or caesarean delivery, is the surgery to deliver babies<sup>1</sup>. Cesarean delivery is one of the most common surgeries performed in modern obstetrics. The surgery is intended to save the lives of mother and newborn<sup>2</sup>. Cesarean sections are performed for various fetal and maternal indications; these include labor and delivery abnormalities, placental and cord abnormalities, and repeated CS deliveries. Recently, CS has been performed to satisfy women's desire; therefore, cesarean delivery on maternal request was added to the known

common CS indications<sup>3</sup>. Over several decades, a dramatic increase in the number of Caesarean sections performed across the world, especially in developed countries. The frequency of Caesarean section increased from 5% to 15%. However, the rate of births by Caesarean section still varies significantly in different countries and regions, in different hospitals, by the various factors such as social and economic health or individual factors, partly due to different perceptions of health workers and pregnant women about the benefits and risks of Caesarean section<sup>4</sup>. The increase

has been observed to be among women of all ages and race. Many theories have been proffered to explain this trend, including a decrease in vaginal births after Cesarean delivery, decreased vaginal births of breech presentation, and increased prevalence of high risk pregnancies such as advanced maternal age and some subjective indications during labor such as non-reassuring fetal status and arrest of dilation<sup>5</sup>. Although CS is a safe operation, when performed without medical need but it put mothers and their babies at risk of short and long-term health problems. Most complications of CS, however, come from the cause which leads to CS. Factors that make some women more likely to have complications include: obesity, large infant size, prolonged labor, multiple pregnancy, and premature labor. In the absence of a clear medical indication, the excess risk associated with the operation itself must be considered. Short and long-term maternal and infant problems associated with elective caesarean section are higher than those associated with vaginal birth<sup>6</sup>.

This study aimed to; determine CS rate during a decade, evaluate the first CS rate in comparison to second and over CS, and evaluate the main indications for a decision of CS.

## Patients and methods

This retrospective study was set to evaluate CS rate during a decade from the year 2010 to 2019 calculating the operation rate and the incidence rate of first CS in comparison to overall delivery rate in Al-Basrah Hospital for Maternity and Childhood. The information was collected from the statistical unit at the hospital. The main indications for a first operation, distribution of cases according to mother age and parity were calculated by review of the statistical records and the patient information registry of 700 operations during 2019.

The total cesarean section rate is calculated as the number of births delivered by cesarean section divided by the total number of live births less the not-stated values for delivery method, multiplied by 100.

## Results

Table I, shows the incidence of CS during the study period 2010-2019. The rate has increased from 24.2% in 2010 to 38.5% in 2019 with an overall increasing rate over each year, noticing the increment in the total number of births and number of operations (14180 births, 3432 CS) in 2010 in comparison to (19138 births, 7384 CS) in 2019.

**Table I: Incidence rate of CS in 2010-2019.**

Year	Total Births	CS	Percentage
2010	14180	3432	24.2
2011	17038	4190	24.5
2012	19272	5006	25.9
2013	20594	5712	27.7
2014	20516	5748	28.5
2015	20312	6565	30.5
2016	21660	7061	32.5
2017	21547	7972	36.9
2018	20505	7611	37.1
2019	19138	7384	38.5

Table II, shows the incidence of first CS during the years 2017, 2018 and 2019 in which the rate was nearly the same (47.8%, 46.4% and 50.2%) respectively.

**Table II: The percentage of first CS to total CS.**

Year	Total CS	First CS	Percentage
2017	7374	3526	47.8
2018	7611	3531	46.4
2019	7972	4002	50.2

Table III, shows the incidence of first CS according to maternal age in which the highest rate was in the 18-29 age group (61%), followed by 30-39 group (26%).

**Table III: Incidence of first CS according to age of mother in year 2019.**

Age	Number of CS	Percentage
Less than 18	53	7.5
18- 29	427	61
30-39	183	26
More than 40	37	5.2
total	700	100

Table IV, describes the distribution of first CS according to parity of the mother in which the highest rate was in the prime mothers (485 cases), (69.2%) and decreasing with increasing parity of the mother.

**Table IV: Number of first CS according to parity in year 2019.**

Party	Number of CS	Percentage
prime	485	69.2
1-4	140	20
More than 5	75	10.7
Total	700	100

Table V, describes the main causes of first CS, failure to progress was the main cause (35%), infertility (20.4%), breech presentation (14.4%), meconium (8.2%), CPD (7%), high blood pressure (4%) followed by other causes.

**Table V: Number of first CS according to the cause.**

Cause of CS	Number of cases	Percentage
Failure to progress	246	35
Infertility	143	20.4
Breech presentation	101	14.4
Meconium	58	8.2
CPD	49	7
HT	28	4
IUGR	20	2.8
DM	15	2.1
APH	11	1.5
Cord prolapse	8	1.1
Mal presentation	7	1
Hydrocephaly	6	0.9
Triplet	5	0.7
Midwife interference	3	0.4
Total	700	100

## Discussion

Caesarean section is a major obstetric operation that remained a matter of controversy for several years and gained popularity in recent decades with a dramatic rise in the rate of CS deliveries all over the world<sup>7</sup>. In this study an increasing rate of CS was noticed during a period from 2010 to 2019 in which the rate has increased from 24.2% reaching to 38.5%, the CS increment rate was noticed as a global issues<sup>8,9</sup>. It was reported to be 35%-40% in Iran<sup>10</sup>, about 32.8% in USA<sup>11</sup>, 34.7% in Kuwait<sup>12</sup>, 19.1% in Saudi Arabia<sup>13</sup>, 52% in Egypt<sup>14</sup>. Higher rates were reported in Dominican Republic (56.4%) and Brazil (55.6%)<sup>15</sup>. A low rate was reported in Jordan (8-11%)<sup>16</sup>. The main causes for the first CS in this study were; failure to progress in 35%, fetal stress in 20.4%, breech presentation in 14.4%, meconium in 8.2%, CPD in 7%, high blood pressure and its complications in 4%. The observed increase in cesarean birth has been attributed to a number of factors including; advanced maternal age particularly with the first birth, multiple pregnancies, breech presentation, suspected low infant birth weight, repeated cesarean section after a previous

cesarean section, cephalopelvic disproportion, asphyxia and preeclampsia<sup>17-19</sup>. In this study a repeated cesarean after previous one was the main cause for a high rate of cesarean deliveries, it was reported to be the cause of more than 50% of operations in the years 2017, 2018 and 2019. Many factors could influence the problem<sup>20</sup>. A high rate of normal vaginal delivery after a CS was reported to be around 73% in USA<sup>21</sup>. A trial of normal delivery after a previous cesarean need to be assessed in a more detailed study. The frequency of absolute and relative indications occupies an important place, with indications of absolute and relative defects toward extended inductions. More and new indications may occur, which in a significant sense have a basis in diseases that are treated and supervised by various specialties outside gynecology<sup>9</sup>. Recommendation; The indications for CS should be cleared in a strict protocols, the trial of normal vaginal delivery after a first cesarean should be assessed, public background knowledge about risks of an operation is in need, and good antenatal care will help to decide the mode of delivery.

## References

1. Ana P. Betrán, Jianfeng Ye, Anne-Beth Moller, Jun Zhang, A. Metin Gülmezoglu, and Maria R. Torloni. The Increasing Trend in Caesarean Section Rates: Global, Regional and National Estimates: 1990-2014. *PLoS One*. 2016; 11(2): e0148343.
2. Rami Al Rifai. Rising cesarean deliveries among apparently low-risk mothers at university teaching hospitals in Jordan: analysis of population survey data, 2002–2012. *Global Health: Science and Practice* May 2014, 2(2):195-209.
3. Hanan M Al-Kadri,<sup>1</sup> Sultana A Al-Anazi,<sup>1</sup> and Hani M Tamim<sup>2</sup>. Increased cesarean section rate in Central Saudi Arabia: a change in practice or different maternal characteristics. *Int J Womens Health*. 2015; 7: 685–692.
4. Brikene Elshani, Armond Daci, Sanije Gashi and Shefqet Lulaj. The Incidence of Caesarean Section in the University clinical center of Kosovo. *Acta Inform Med*. 2012 Dec; 20(4): 244–248.
5. Shunji Suzuki and Mariyo Nakata. Factors Associated with the Recent Increasing Cesarean Delivery Rate at a Japanese Perinatal Center. *ISRN Obstetrics Gynecology*. 2013; 2013: 863282.
6. Batiha AM<sup>1</sup>, Al-Daradkah SA, Khader YS, Basha A, Sabet F, Athamneh TZ, Gharaibeh FNA and Sheyya. Cesarean Section: Incidence, Causes, Associated Factors and Outcomes: A National Prospective Study from Jordan. *iMedPub journals*. 2017. Vol9(3).no.3:55.
7. Ahmad Nazir ; Mehboob, Razia. A study of caesarean birth in a teaching hospital. *Pak. J. Med. Res*. 2002; 41 (3): 118-22.
8. Xing Lin Feng, Ling Xu, Yan Guo and Carine Ronsmans. Factors influencing rising caesarean section rates in China between 1988 and 2008. *Bull World Health Organ*. 2012 Jan 1; 90(1): 30–39A.
9. Nenad Miseljcic, Ejub Basic, and Sanja Miseljcic. Causes of an Increased Rate of Caesarean Section. *Mater Sociomed*. 2018 Dec; 30(4): 287–289.
10. Bahareh Yazdizadeh, Saharnaz Nedjat, Kazem Mohammad, Arash Rashidian, Nasrin Changizi, and Reza Majdzadeh. Cesarean section rate in Iran, multidimensional approaches for behavioral change of providers: a qualitative study. *BMC Health Serv Res*. 2011; 11: 159.
11. Hamilton BE, Martin JA, Ventura SJ, Births: Preliminary Data for 2011 National Vital Statistics Reports. Hyattsville, National Center for Health Statistics. 2012;vol 61(No 5).
12. Michael F.E. Diejomaoh,<sup>a,b</sup> Waleed Al-Jassar, Zainab Bello, Kavitha Karunakaran and Asiya Mohammeda. The Relevance of the Second Cesarean Delivery in the Reduction of Institutional Cesarean Delivery Rates. *Med Princ Pract*. 2019 Mar; 27(6): 555–561.
13. Muneera Abdulaziz AlSheeha. Epidemiology of Cesarean Delivery in Qassim, Saudi Arabia. *Open Access Maced J Med Sci*. 2018 May 20; 6(5): 891–895.
14. Shatha Elnakib, Nahla Abdel-Tawab, Doaa Orbay and Nevine Hassanein. Medical and non-medical reasons for cesarean section delivery in Egypt: a hospital-based retrospective study. *BMC Pregnancy and Childbirth*(Vol. 19, Issue 1)
15. Betrán AP, Ye J, Moller A-B, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: global, regional and National Estimates: 1990-2014. *PLoS One*. 2016;11(2):e0148343.
16. Ibrahim M Hindawi, Zakarya B Meri. The Jordanian Cesarean Section Rate. *Saudi med j*. 2004 Nov;25(11):1631-5.
17. Mohammed A Al Rowaily, Fahad A Alsalem & Mostafa A Abolfotouh . Cesarean section in a high-parity community in Saudi Arabia: clinical indications and obstetric outcomes. *BMC Pregnancy and Childbirth* volume 14, Article number: 92 (2014).
18. Mohammad Abou El-Ardat, Sebija Izetbegovic, Amin Djulabic, Aldina Hozic. Incidence of Cesarean Section at the Department of Gynecology and Obstetrics of Hospital in Travnik During 2012. *Mater Sociomed*. 2014 Feb;26(1):53-4.
19. El-Tomi N.F. Omu A.E. Makhseed M. Trends and Determinants of Cesarean Section in Kuwait Maternity Hospital . *Med Princ Pract* 1994–95;4:127–134.
20. Hsiu-Ting Tsai, Chia-Hsun Wu . Vaginal birth after cesarean section—The world trend and local experience in Taiwan. *Taiwanese Journal of Obstetrics and Gynecology*. Volume 56, Issue 1, February 2017, Pages 41-45 .
21. Rana Kiwan and Nourah Al Qahtani. Outcome of Vaginal Birth after Cesarean Section: A Retrospective Comparative Analysis of Spontaneous Versus Induced Labor in Women with One Previous Cesarean Section. *Ann Afr Med*. 2018 Jul-Sep; 17(3): 145–150.