

Frequency of Maternal Morbidity with three or more Cesarean Sections – A Cross-Sectional study

SAHIRA AGHA¹, NAVEERA AGHA², KALAVANTI³, DURIYA REHMANI⁴, FALAK DAHAR⁵, SHAISTA BASHIR ANWAR⁶

¹Gynae Consultant/ Senior Registrar, Medicare Cardiac and General Hospital, Karachi

²Gynae Consultant, Lady Dufferin Hospital, Karachi

³Senior Registrar Gynaecology, Kharadar General hospital, Karachi

⁴Fellow Gynaecology, Patel hospital, Karachi

⁵Fellow Gynaecology, Aga Khan University Hospital, Karachi

⁶Senior Registrar Gynaecology Creek General hospital, Karachi

Correspondence to: Dr Sahira Agha, Email address: s_21078bmu@hotmail.com, Cell: +923353731801

ABSTRACT

Objectives: To examine maternal morbidity in terms of hemorrhage, intraperitoneal adhesions and placenta previa after three or more Cesarean sections.

Study Design: Cross-sectional study

Place and Duration: This study was conducted at Obstetrics and Gynaecology, Lady Dufferin Hospital, Karachi for duration of six months from 15th September, 2019 to 15th March, 2020.

Methods: After taking informed consent, women with a history of three or more cesarean sections with age between 25 to 40 years and gestational age between 28 to 40 weeks were included in the study. The data was collected on a questionnaire and the patients were assessed for significant hemorrhage, intraperitoneal adhesions and placenta previa and subgroup comparisons made according to Maternal Age, Gestational Age and history of previous C-section. Analysis was done on SPSS version 18

Results: In our study population, mean age was 32 ± 4.5 years, mean parity 4.1 ± 1 and mean gestational age 35.7 ± 3.4 weeks. The observed frequency of maternal morbidity in women with three or more cesarean sections was significant hemorrhage of more than >1000 ml in 13.1%, intraperitoneal adhesions 23.4% and placenta previa 9%.

Conclusions: It is concluded from this study that the Frequency of maternal morbidity was hemorrhage >1000 ml 13.1%, intraperitoneal adhesions 23.4% and placenta previa 9%.

Keywords: Maternal morbidity, multiple C-sections, placenta previa, intraperitoneal adhesions, hemorrhage

INTRODUCTION

C-section or simply C-section is the world's most popular obstetric procedure. It is suggested that both mother and child have difficulties in the usual course of childbirth, for example a woman with long labour, prior C-section, mother and foetal heart pain or foetal breech presentation (1). In other words, in difficult situations it is a helpful, sometimes lifestyles intervention for both mother and infant. The C-Section rates have gradually risen over the last two decades and 1 in 5 C-Sections in the developing countries have been delivered (2).

In patients undergoing it, C-section has also been shown to increase morbidity. The literature indicates that there is a rise in the risk of Placenta Accreta, cytotomy, bowel injury, ureteric injury, paralytical Ileus and postoperative mechanical ventilation, intensive care, blood transFusion and hysterectomy (3). In contrast with those who have one or two (4) and multiple sections of CES predispose to increased intraperitoneal adhesion risks of up to 12-73%, substantial 8-10 percent, and placenta previous 2-7%, the frequency of complications was significantly increased in women who had three or more CESARs (5)

In our research, we analysed three trends of motherhood following multiple C-sections: 1) major haemorrhages, 2) intraperitoneal adhesives, and 3) precedents in placenta and we compared the parameters listed above with the history of the patient's number, pregnancy, and age. In order to build evidence based knowledge in general citizens and obstetricians as well

gynaecologists we plan to add local data from our country in this study and the magnitude of disease following a multiple cesarean section (three or more).

MATERIALS AND METHODS

This cross-sectional/observational study was conducted at Obstetrics and Gynaecology department of Lady Dufferin Hospital, Karachi for duration of six months from 15th September, 2019 to 15th March, 2020. A total 145 women with a history of three or more cesarean sections, maternal age between 24 to 40 years and gestational age between 28 to 40 weeks were included in this study. Detailed demographics including age, body mass index, parity, and gestational age were recorded after taking informed written consent. All patients with history of less than three cesarean sections, or were un-booked pregnancies or were unfit for general anesthesia were excluded from the study.

All the patients were assessed for intraperitoneal adhesions, significant hemorrhage and placenta previa during or after the operative procedure. All these three parameter were further compared by making sub-groups; History of C-sections 3 to 4 vs C-sections more than 4. All efforts were made to ensure that complete data is obtained from all candidates in the study. Data was collected in the questionnaire made for the study by the Primary investigator.

The data collected was entered and analyzed with SPSS (version 18.0) for windows. Qualitative variables; intraperitoneal adhesions, significant hemorrhage (defined as bleeding of more than 1000 ml, assessed with drain, clot

and soaked towels) and placenta previa were presented as frequency and percentage. Quantitative variables like age, parity and gestational age were presented as means with standard deviations and 95 percent confidence intervals. Stratification was undertaken on history of cesarean section. Chi square test was applied to see the difference p value < 0.05.

RESULTS

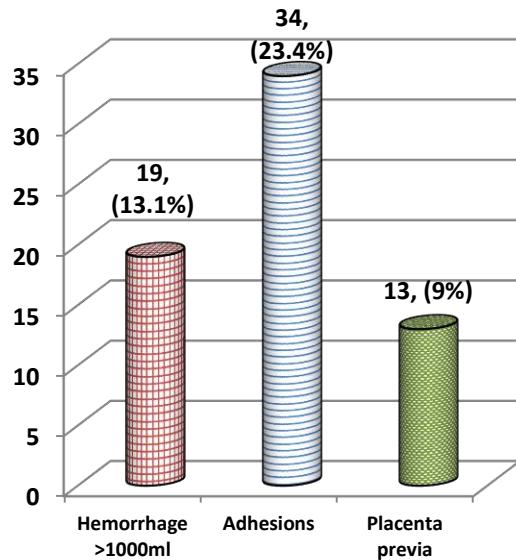
The mean age of was 32 ± 4.5 years. Mean parity was 4.1 ± 1 and mean gestational age of 35.7 ± 3.4 weeks. Mean BMI was 24.26 ± 2.14 kg/m². 96 (66.21%) patients had history of C-section 3 to 4 while 49 (33.79%) had more than 4 cesarean section. (Table 1)

Table 1: Baseline Details of All the Patients

Variables	Frequency No.	%
Mean age (years)	32 ± 4.5	-
Mean Gestational Age (weeks)	35.7 ± 3.4	-
Mean Parity	4.1 ± 1	-
Mean BMI (kg/m ²)	24.26 ± 2.14	-
Number of C-section		
3 to 4	96	66.21
>4	49	33.79

According to the maternal morbidity, hemorrhage of more than 1000 ml occurred in 19 (13.1%) patients, intra-peritoneal adhesions in found in 34 (23.4%) patients and placenta previa in 13 (9%) of patients in our study population. (Figure 1)

Figure 1: Frequency of Maternal Morbidity



When we stratified maternal morbidity with history of cesarean section we found significant association of maternal morbidity with more than 4 cesarean sections. Patients with history of 3 to 4 C-sections, 10 (10.4%) had hemorrhage compared to 40 (81.6%) in patients with more than 4 C-sections ($p\text{-value} < 0.001$). Patients with history of 3 to 4 C-sections, 6 (6.25%) patients had developed intraperitoneal adhesions compared to 28 (57.14%) in

patients with more than 4 C-sections, a significant difference was observed with p - value of 0.01 was observed. Patients with history of 4 C-sections, 5 (10.2%) patients had placenta previa compared to 4 (4.17%) in patients with more than 3 to 4 ($P=0.53$). (Table 2)

Table 2: Stratification of Maternal Morbidity by History of Cesarean Sections

Variables	History of Cesarean Section		P-value
	3 to 4 (n=96)	More than 4 (n=49)	
Intrapерitoneal Adhesion (n=34)	6 (6.25%)	28 (57.14%)	0.01
Hemorrhage	10 (10.4%)	40 (81.6%)	<0.0001
Placenta Previa	4 (4.17%)	5 (10.2%)	0.53

DISCUSSION

In its 2015 statement on caesarean section rates, the World Health Organization reported that the C-section rate for delivering a baby has risen in the last 2 decades (7). This shift in practice is not only correlated with several factors, but also with patient factors. Zwergel and others stated that in the developing world, the professionalization of women and the advent of family planning have resulted in the increasing number of older women opting in the c-section for babe-giving which has resulted in the receiving of multiple c-sections (8) (9)

In this research, more than 1,000 ml of haemorrhages in 19 (13.1%) patients, intra-peritoneal adhesions found among 34 (23.4%) patients and placenta previa in 13 (9%) patients of our study population, have been observed based on maternal morbidity.

With the rising number of C-sections following, the morbidity of patients is increasing. Compared to women with one or two caesarean supplies, Qublan et al. showed substantial improvements in operating time, uterine scar dehiscence, uterine rupture, placenta previa and adhesions (10). More and more C-sections have demonstrated a higher level of morbidity in which severe haemorrhage (10.4% vs 81.6%) and intraperitoneal adhesion (6.25% vs 57.14%) both occurred in the more than four-section history of the patients than in those with three or less. Gasim T and others also noted similar findings (11) in their study of adhesion morbidity, blood transfusions, placenta prioria and uterine romping in women who obtained 4 and above caesarean sections, carried out in Khobar, Saudi Arabia. Similar conclusions were also found(11).

Blood bleeding is an important cause of morbidity and can contribute to mortality in C-section patients. In patients with a history of previous C-section, S Abbas et al. (12) have explicitly observed blood transfusion needs which were found to be 9.2% overall while parity of 4 was correlated with a 4.62 Odds ratio for blood transfusion rather than history of previous C-section. In patients with history over 4 caesarean sections, our data also showed a very high incidence of significant bleeding with total 13.1 percent of patients developing significant bleeding.

Adhesions remained well known, and multiple caesarean sections were often difficult. In its more than 30,000-cohort cohort, Silver RM et al.(3) reported that C-section causes non only acute problems such as increased intra-operative bleeding and increased operating time, but

also chronic pain, fatigue and movement restriction. The high incidence of adhesions (16.1 percent) in a study of women with 4th C-section delivery increased to 17.3 percent in 6th processes by Kaplanoglu et al. in their Turkish study (13). This is a close conclusion to ours in the order of 6.25% and 57.14%. Multiple procedures are likely to lead not only to adhesions, but also to weak abdominal and uterine walls, leading to complicated procedures, bleeding and adhesion.

A very detailed meta-analysis performed by Ananth and colleagues found that even the first C-section is a risk factor correlated with placenta previa (14). In women with increasing maternal age, high parity and in those with previous c-section history, this rare but threatening risk condition occurs more, making it a frequently encountered condition affecting both mother and baby in a specialist gynaecology and obstetrics environment, increased to 60 percent in subsequent pregnancy after the first pregnancy ended in a C-section, an observation f (15). In our data, we found it uncommon with no significant impact of maternal or gestational age and c-section history in the past.

In the light of our own research, a crude roadmap to improve morbidity parameters in the studied population, i.e. females with multiple Cesarean deliveries, can be proposed after comprehensive analysis of local and international data. In all women with a history of previous caesarean section, we recommend a vaginal delivery study to restrict the surgical procedure and hence its complications (13). We would also suggest that a thorough counselling session with the patient, the spouse and immediate family by the obstetrics and gynecology teams should be conducted to offer contraception and family planning in all women having had two previous cesarean sections with an emphasis to make them understand the complications and give them a concept of completion of family.

CONCLUSION

Maternal morbidity increases with subsequent C-sections, especially after 3 or more procedures. Intraperitoneal adhesions is the most common maternal morbidity with a history of 3 or more cesarean sections with age less than 30 years and gestational age less than 37 weeks carries the highest risk. A trial of vaginal delivery and family planning should be pursued to minimize complications in future pregnancies.

REFERENCES

1. Indications for and Risks of Elective Cesarean Section [Internet]. [cited 2020 Sep 7]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4555060/>
2. European Perinatal Health Report 2010 - Euro-Peristat [Internet]. [cited 2020 Sep 7]. Available from: <https://www.europeristat.com/reports/european-perinatal-health-report-2010.html>
3. Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA, et al. Maternal Morbidity Associated With Multiple Repeat Cesarean Deliveries. *Obstetrics & Gynecology*. 2006 Jun;107(6):1226–1232.
4. Multiple cesarean section. The impact on maternal and fetal outcome - PubMed [Internet]. [cited 2020 Aug 31]. Available from: <https://pubmed.ncbi.nlm.nih.gov/16501678/>
5. Naz F, Bagum A. Analysis of maternal complications in cesarean section. *Annals KEMU* [Internet]. 2005 [cited 2020 Aug 31];11(3). Available from: <https://annalskemu.org/journal/index.php/annals/article/view/1010>
6. Framing maternal morbidity: WHO scoping exercise | BMC Pregnancy and Childbirth | Full Text [Internet]. [cited 2020 Sep 9]. Available from: <https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/1471-2393-13-213>
7. WHO Statement on caesarean section rates. *Reproductive Health Matters*. 2015 Jan 1;23(45):149–50.
8. Zwergel C, Kaisenberg CS von. Maternal and Fetal Risks in Higher Multiple Cesarean Deliveries. *Recent Advances in Cesarean Delivery* [Internet]. 2019 Jul 12 [cited 2020 Sep 17]; Available from: <https://www.intechopen.com/books/recent-advances-in-cesarean-delivery/maternal-and-fetal-risks-in-higher-multiple-cesarean-deliveries>
9. Mumtaz S, Bahk J, Khang Y-H. Rising trends and inequalities in cesarean section rates in Pakistan: Evidence from Pakistan Demographic and Health Surveys, 1990-2013. *PLoS One* [Internet]. 2017 Oct 17 [cited 2020 Sep 17];12(10). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5645133/>
10. Hs Q, Y T. Multiple cesarean section. The impact on maternal and fetal outcome. *Saudi Med J*. 2006 Feb 1;27(2):210–4.
11. T G, Fe AJ, Ms R, J R. Multiple repeat cesarean sections: operative difficulties, maternal complications and outcome [Internet]. Vol. 58, *The Journal of reproductive medicine. J Reprod Med*; 2013 [cited 2020 Sep 17]. Available from: <https://pubmed.ncbi.nlm.nih.gov/23947081/>
12. Abbas S, Mughal S, Hussain SNF, Hossain N. Blood transfusion and high-order cesarean delivery; Report from a developing country. *Pak J Med Sci*. 2019;35(6):1520–5.
13. Kaplanoglu M, Bulbul M, Kaplanoglu D, Bakacak SM. Effect of Multiple Repeat Cesarean Sections on Maternal Morbidity: Data from Southeast Turkey. *Med Sci Monit*. 2015 May 20;21:1447–53.
14. Ananth CV, Smulian JC, Vintzileos AM. The association of placenta previa with history of cesarean delivery and abortion: A metaanalysis. *American Journal of Obstetrics & Gynecology*. 1997 Nov 1;177(5):1071–8.
15. Gurol-Urganci I, Cromwell DA, Edozien LC, Smith GC, Onwere C, Mahmood TA, et al. Risk of placenta previa in second birth after first birth cesarean section: a population-based study and meta-analysis. *BMC Pregnancy Childbirth*. 2011 Nov 21;11:95.