

Evaluation of Epidemiology and Etiology of Cesarean Hysterectomy

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ABSTRACT

Background & Objective: Cesarean hysterectomy is a major surgical risk happening in the setting of life threatening hemorrhagic events during or immediately after the cesarean section. In this study we assessed patients undergoing cesarean hysterectomy to determine their general and clinical characteristics.

Materials & Methods: In this descriptive cross-sectional study, 34 consecutive patients undergoing cesarean hysterectomy in training hospitals in Tehran, Iran, from 2016 to 2017 were enrolled. The age, BMI, gravid, parity, Apgar score, risk factors, chief complaints, drug history, and previous medical and surgical history were assessed and finally the preventability rate was determined.

Results: The chief complaint was vaginal leak (VL), abnormal uterine bleeding (AUB), labor pain, and preeclampsia in 38.2%, 29.4%, 14.7%, and 2.9% of patients respectively, and the other patients had more than one complaint. Type of surgery was total, and supra-cervical in 58.8%, 41.2% of patients respectively. Bladder injury occurred in 41.2% of patients. Two cases were preventable, one was non-preventable, and all others were mixed.

Conclusion: It may be concluded that the general characteristics among our patients undergoing cesarean hysterectomy is similar to those reported by similar studies. However further studies with larger sample size and multi-center sampling among Iranian patients are needed to develop more definite results.

Keywords: Cesarean Hysterectomy, Epidemiology, Etiology

Introduction

Cesarean hysterectomy is a major surgical risk performed in the setting of life threatening hemorrhagic events during or immediately after the cesarean sections (1). Despite advances in the surgical methods, the postpartum hemorrhage is yet the leading cause of maternal morbidity and mortality and the main cause for cesarean hysterectomy (2,3). Cesarean hysterectomy is a remarkable procedure in obstetrics settings and is generally performed when all conservative measures have failed to attain hemostasis in life threatening hemorrhagic situations (4,5). The accidental nature of the procedure and the requirement for performing it expeditiously might result in some complications (1,2). Moreover the acute blood loss would impose the patient to a suboptimal condition for undergoing emergency surgical intervention (6). The predominant indications for cesarean hysterectomy are uterine atony and placenta previa/accreta which make the procedure in some of cases unpreventable (7,8). However recognizing and assessing the high-risk

patients and appropriate prompt intervention would result in better outcome in these otherwise difficult situations. In this study we assessed patients undergoing cesarean hysterectomy to determine their general and clinical characteristics.

Materials and Methods

In this descriptive cross-sectional study, 34 consecutive patients undergoing cesarean hysterectomy in Mahdie, Imam Hossein, Shohaday-e Tajrish & Taleqani hospitals affiliated with Shahid Beheshti University in Tehran, Iran, from 2016 to 2017 were enrolled. Inclusion criteria were defined as all cases, undergone cesarean hysterectomy. The cases with incomplete data were excluded. The age, BMI, gravid, parity, Apgar score, risk factors, chief complaints, drug history, and previous medical and surgical history of all patients were assessed and finally the preventability rate was determined. This study was approved by ethics committee of Shahid Beheshti University of Medical

Sciences and informed consent was obtained from all patients before entering the study.

Data analysis was performed among 34 subjects using SPSS 24 (IBM, Armonk, NY, USA). Numerical data and categorical data were presented as mean and percent values respectively.

Results

In this study 34 cases undergoing cesarean hysterectomy were assessed with a mean age of 32.06 ± 5.67 years. The other demographic characteristics are shown in [Table 1](#).

The chief complaint among patients was vaginal leak (VL), abnormal uterine bleeding (AUB), labor pain, and preeclampsia in 38.2%, 29.4%, 14.7%, and 2.9% of patients respectively, and the other patients had more than one complaint. As shown in [Table 2](#) the placenta accreta type was the most common type of placenta previa in our patients. The results of ultrasonography

are demonstrated in [Table 3](#), which are in congruence with pathology results.

Type of surgery was total, and supra-cervical in 58.8% and 41.2% of patients respectively. As shown in [Table 4](#) the previous medical and surgical history was positive in 73.5% of patients. Also as demonstrated in [Table 5](#) the drug history was positive in 85.3% of patients.

Bladder injury occurred in 41.2% of our patients. Among infants, 51.5% were male and 48.5% were female. Also in 23 of cases the position was cephalic and in the others it was breech position. All 34 cases had risk factors including one case with 1 risk factor, two cases with 2 risk factors, one with 3 risk factors, five with four risk factors, and 25 cases with five to seven risk factors. As shown in [Figure 1](#) two cases were preventable, one was non-preventable, and all others were mixed.

Table 1. Demographic characteristics of patients entering the study

Variable	Minimum	Maximum	Mean	Std. Deviation
Age	21	41	32.06	5.673
Gravid	1	7	3.47	1.762
Abortion	0	3	0.71	0.938
Gestational Age	16	42	34.33	5.797
Repeat C/S	0	4	2.50	0.992
BMI	26.80	32.80	29.4731	1.80788
Infant Apgar score	3	9	8.38	1.497
Pack Cell	0	11	3.76	2.511
Fresh Frozen Plasma	0	11	2.71	2.468

Table 2. Distribution of pathology results among patients entering the study

	Frequency	Percent	Valid Percent	Cumulative Percent
Negative	5	14.7	14.7	14.7
Previa	9	26.5	26.5	41.2
Accreta	10	29.4	29.4	70.6
Increta	4	11.8	11.8	82.4
Precreta	1	2.9	2.9	85.3
> 1 type	5	14.7	14.7	100
Total	34	100.0	100.0	

Table 3. Distribution of ultrasonography results among patients entering the study

	Frequency	Percent	Valid Percent	Cumulative Percent
Negative	10	29.4	29.4	29.4
Previa	6	17.6	17.6	47.1
Accreta	5	14.7	14.7	61.8
Increta	1	2.9	2.9	64.7

	Frequency	Percent	Valid Percent	Cumulative Percent
Precreta	1	2.9	2.9	67.6
> 1 type	1	2.9	2.9	70.6
Total	10	29.4	29.4	100

Table 4. Distribution of previous medical and surgical historical events among patients entering the study

	Frequency	Percent	Valid Percent	Cumulative Percent
Negative	9	26.5	26.5	26.5
Hypothyroidism	1	2.9	2.9	29.4
Surgery	5	14.7	14.7	44.1
VB	2	5.9	5.9	50.0
GDM	1	2.9	2.9	52.9
D & C	1	2.9	2.9	55.9
UTI	2	5.9	5.9	61.8
IVF	1	2.9	2.9	64.7
Minor Thalassemia	1	2.9	2.9	67.6
> 1 Disease	11	32.4	32.4	100
Total	34	100.0	100.0	

Table 5. Drug history among patients entering the study

	Frequency	Percent	Valid Percent	Cumulative Percent
Negative	5	14.7	14.7	14.7
Folic Acid	8	23.5	23.5	38.2
Antibiotic	1	2.9	2.9	41.2
Multiple	20	58.8	58.8	100
Total	34	100.0	100.0	

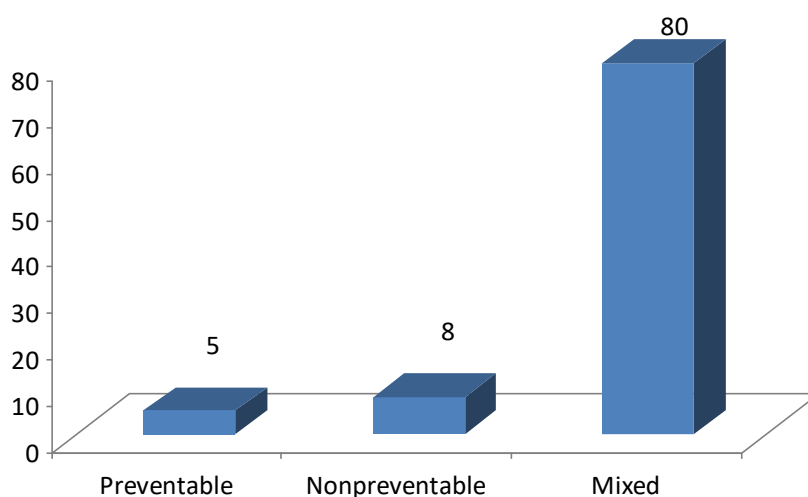


Figure 1. Distribution of preventability of hysterectomy among patients entering the study

Discussion

In our study, the average maternal age and gestational age were $32.0 \pm 5.67(21-41)$ years and 34.33 ± 5.79 weeks, and these finding similar to Vahdani *et al.* (17).

In this study 34 patients who underwent cesarean hysterectomy were assessed and it was observed that all except one case were preventable or mixed. The risk factors in our study present in all patients with different degrees included smoking, addiction, placenta previa, placenta percreta, placenta accreta, placenta increta, postpartum hemorrhage, multiparity, cervical tears, and history of previous cesarean section. The results would be different according to emergency versus elective status and planned versus emergent cases (2,3,16). In the study by Kong *et al.* (9), maternal and neonatal outcomes in the scheduled CS are better than in emergency, mean EBL was 2.4 L, and 16 babies were admitted to NICU. The difference of mean EBL and cases of fetal admitted to intensive care unit in 2 groups was significantly different ($P < .05$).

The study by Kong *et al.*, (9) in China demonstrated that the incidence rate of patients with placenta accreta, who had history of artificial abortion, cesarean section (CS), and placenta previa (PP) was 94%, 70%, and 72% respectively. Similarly in our study the majority of cases had placental disorders leading to mixed status during assessment for preventability.

A systematic review and meta-analysis of ultrasound studies involving 3707 pregnancies at risk of PAS disorders found that the overall performance of ultrasound is excellent, with a sensitivity of 90.72% (95% CI 87.2–93.6), specificity of 96.94% (95% CI 96.3–97.5), and diagnostic odds ratio (DOR) of 98.59 (95% CI 48.8–199.0). Ultrasound has a high accuracy for prenatal diagnosis of disorders of invasive placentation in high-risk women. The use of color Doppler improves the test performance (19-21,24). The results of these studies were similar to our study, and demonstrated that the placenta accreta type was the most common type of placenta previa and the results of ultrasonography, which are in congruence with pathology results.

Another study by Tapisiz *et al.*, (10) in Turkey showed that 7% of their patients underwent subtotal and the remaining underwent total hysterectomy. In our study the rate of total hysterectomy was 60%. According to Tapisiz *et al.*, (10) study, indications for total hysterectomy were uterine atony, placenta accreta, and uterine rupture similar to our findings. Similar to our results Shellhaas *et al.*, (11) and Zang *et al.* (14) reported that among 186 patients undergoing cesarean hysterectomy, the leading indications for hysterectomy were placenta accreta and uterine atony.

Of the hysterectomy cases with a diagnosis of placenta accreta, 18% underwent a primary cesarean delivery, and 82% had a prior procedure in their history

showing the important role of previous surgery in these patients.

A study by Chawla *et al.*, (12) showed that among their patients the most common squeals were febrile morbidity and disseminated intravascular coagulation and maternal mortality rate was 18% whereas perinatal mortality was 38%, but none of the mothers and infants died in our study. Regarding the morbidity, in our study, 40% developed bladder injury, similar to other study (13-15). Akkar .V and *et al.* (16,18,22,23) demonstrated that, having attended antenatal care was protective (OR 0.12, 95% CI 0.06–0.25). The majority of cases in our study were preventable or mixed and this demonstrates the importance of health programming among at risk patients.

Conclusion

It may be concluded that the general characteristics among our patients undergoing cesarean hysterectomy is similar to those reported by similar studies. However further studies with larger sample size and multi-center sampling among Iranian patients are needed to develop more definite results.

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Conflict of Interest

Authors declared no conflict of interests.

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