

Evaluation of Epidemiology and Etiology of Cesarean Hysterectomy

Behnaz Nouri ^{1*}, Paricheher Pooransari ², Fateme Ghorbani³

1. Assistant Professor, The Preventative Gynecology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Assistant Professor, Department of Obstetrics and Gynecology, Shohaday-e Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. MD, Department of Obstetrics and Gynecology, Shohaday-e Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Article Info

doi:10.30699/jogcr.4.4.

Received: 2020/04/06;

Accepted: 2020/05/02;

Published Online: 19 May 2020;

Use your device to scan and read the article online



Corresponding Information:

Behnaz Nouri, Assistant Professor, The Preventative Gynecology Research Center, ShahidBeheshti University of Medical Sciences, Tehran, Iran.

Email: b.nouri1376@gmail.com

Tel:+989123718714



Copyright © 2019, This is an original open-access article distributed under the terms of the Creative Commons Attribution-noncommercial 4.0 International License which permits copy and redistribution of the material just in noncommercial usages with proper citation.

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	

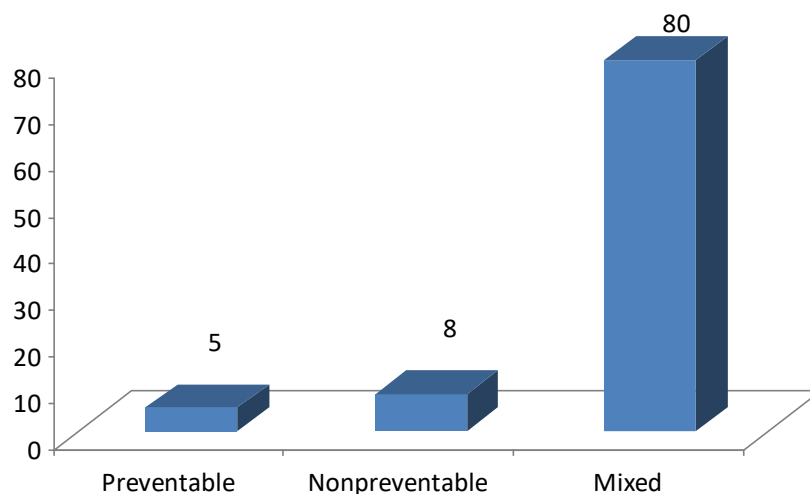


Figure 1. Distribution of preventability of hysterectomy among patients entering the study

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.

Acknowledgments

The authors thank all those who helped them writing this article.

Conflict of Interest

Authors declared no conflict of interests.

References

1. Clark SL, Yeh SY, Phelan JP, Bruce S, Paul RH. Emergency hysterectomy for obstetric hemorrhage. *Obstet Gynecol.* 1984 Sep;64(3):376-80.
2. Briery CM, Rose CH, Hudson WT, Lutgendorf MA, Magann EF, Chauhan SP, et al. Planned vs emergent cesarean hysterectomy. *Am J Obstet Gynecol.* 2007;197(2):154.e1-5. [DOI:10.1016/j.ajog.2007.03.026] [PMID]
3. Gonsoulin W, Kennedy RT, Guidry KH. Elective versus emergency cesarean hysterectomy cases in a residency program setting: a review of 129 cases from 1984 to 1988. *Am J Obstet Gynecol.* 1991;165(1):91-4. [DOI:10.1016/0002-9378(91)90231-F]
4. Matsubara S, Kuwata T, Usui R, Watanabe T, Izumi A, Ohkuchi A, et al. Important surgical measures and techniques at cesarean hysterectomy for placenta previa accreta. *Acta Obstet Gynecol Scand.* 2013;92(4):372-7. [DOI:10.1111/aogs.12074] [PMID]
5. Haynes DM, Martin BJ Jr. Cesarean hysterectomy: a twenty-five-year review. *Am J Obstet Gynecol.* 1979;134(4):393-8. [DOI:10.1016/S0002-9378(16)33081-2]
6. Barclay DL, Hawks BL, Frueh DM, Power JD, Struble RH. Elective cesarean hysterectomy: a 5 year

- comparison with cesarean section. *Am J Obstet Gynecol.* 1976 Apr 15;124(8):900-11. [DOI:10.1016/S0002-9378(16)33394-4]
7. Lee IH, Son JH, Shin YC, Byun JH, Yoon HJ, Jee YS. Anesthetic review of emergency peripartum hysterectomy following vaginal and cesarean delivery: a retrospective study. *Korean J Anesthesiol.* 2012 Jul;63(1):43. [DOI:10.4097/kjae.2012.63.1.43] [PMID] [PMCID]
 8. Soderstrom RM, Stipp CG. Cesarean hysterectomy: a safe procedure. *West J Surg Obstet Gynecol.* 1962;70:150
 9. Kong X, Kong Y, Yan J, Hu JJ, Wang FF, Zhang L. On opportunity for emergency cesarean hysterectomy and pregnancy outcomes of patients with placenta accreta. *Medicine.* 2017 Sep;96(39). [DOI:10.1097/MD.0000000000007930] [PMID] [PMCID]
 10. Tapisiz OL, Altinbas SK, Yirci B, et al. Emergency peripartum hysterectomy in a tertiary hospital in Ankara, Turkey: a 5-year review. *Arch Gynecol Obstet.* 2012 Nov 1;286(5):1131-4. [DOI:10.1007/s00404-012-2434-z] [PMID]
 11. Shellhaas CS, Gilbert S, Landon MB, et al. The frequency and complication rates of hysterectomy accompanying cesarean delivery. *Obstet Gynecol.* 2009 Aug;114(2 Pt 1):224. [DOI:10.1097/AOG.0b013e3181ad9442] [PMID] [PMCID]
 12. Chawla J, Arora D, Paul M, Ajmani SN. Emergency Obstetric Hysterectomy: A Retrospective Study from a Teaching Hospital in North India over Eight Years. *Oman Med J.* 2015 May;30(3):181. [DOI:10.5001/omj.2015.39] [PMID] [PMCID]
 13. Stivanello E, Knight M, Dallolio L, Frammartino B, Rizzo N, Fantini MP. Peripartum hysterectomy and cesarean delivery: a population-based study. *Acta Obstet Gynecol Scand.* 2010 Mar 1;89(3):321-7. [DOI:10.3109/00016340903508627] [PMID]
 14. Zhang Y, Yan J, Han Q, Yang T, Cai L, Fu Y, Cai X, Guo M. Emergency obstetric hysterectomy for life-threatening postpartum hemorrhage: A 12-year review. *Medicine.* 2017 Nov;96(45). [DOI:10.1097/MD.00000000000008443] [PMID] [PMCID]
 15. Orbach A, Levy A, Wiznitzer A, Mazor M, Holcberg G, Sheiner E. Peripartum cesarean hysterectomy: critical analysis of risk factors and trends over the years. *J Matern Fetal Neonatal Med.* 2011 Mar [DOI:10.3109/14767058.2010.501128] [PMID]
 16. Van den Akker T, Bobbel C, Dekkers OM, Bloemenkamp KW. Prevalence, Indications, Risk Indicators, and Outcomes of Emergency Peripartum Hysterectomy World Wide :A systematic Review and Meta-analysis. *Obstetrics and Gynecology* 2016;128(6):1281-94. [DOI:10.1097/AOG.0000000000001736] [PMID]
 17. Ghotbzadeh Vahdani F, Hantoushzadeh S, Deldar Pakestani M, Ghamari A, Hajatpour M, Panahi Z. Cesarean Hysterectomy Due to Abnormal Placentation: Mortality and Morbidity in a Tertiary Center. *Jogcr.* 2019;4(2):51-56. [DOI:10.30699/jogcr.4.2.51]
 18. Garmi G, Salim R. Etiology, Diagnosis, and Management of Placenta Accreta. *Obstetric and Gynecology International*, 2012, Article ID 873929,7 [DOI:10.1155/2012/873929] [PMID] [PMCID]
 19. D Antonio F, Iacovella C, Bhide A. Prenatal identification of invasive placentation using ultrasound: Systemic review and meta-analysis. *Ultrasound Obstet Gynecol* 2013 Nov;42(5):509-17. [DOI:10.1002/uog.13194] [PMID]
 20. Jauniaux E, Bhide A. Prenatal ultrasound diagnosis and outcome of placenta accrete after cesarean delivery: A systematic review and meta-analysis. *Am J Obstet Gynecol.* 2017 Jul;217(1):27-36 [DOI:10.1016/j.ajog.2017.02.050] [PMID]
 21. Jauniaux E, Bhide A, Kennedy A, Woodward P, Hubinont C, Collins S. FIGO consensus guidelines on placenta accrete spectrum disorders: prenatal diagnosis and screening. *Int J Gynecol Obstet* 2018; 140: 274-280 [DOI:10.1002/ijgo.12408] [PMID]
 22. Liu B, Deng S, Lin M, Chen Y, Cai J, Yang J, Zhang J, Cui J, Shen L, Xie H, Wang Z. Prediction of cesarean hysterectomy in placenta previa complicated with prior cesarean: a retrospective study. *BMC Pregnancy and Childbirth.* 2020 Dec 1;20(1):81. [DOI:10.1186/s12884-020-2790-9] [PMID] [PMCID]
 23. Klewitz J, Struebing C, Rohn K, Goergens A, Martinsson G, Orgies F, Probst J, Hollinshead F, Bollwein H, Sieme H. Effects of age, parity, and pregnancy abnormalities on foal birth weight and uterine blood flow in the mare. *Theriogenology.* 2015 Mar 1;83(4):721-9. [DOI:10.1016/j.theriogenology.2014.11.007] [PMID]
 24. Varghese B, Singh N, George RA, Gilvaz S. Magnetic resonance imaging of placenta accreta. *Ind J of Radiol Imag.* 2013 Oct;23(4):379. [DOI:10.4103/0971-3026.125592] [PMID] [PMCID]

How to Cite This Article:

Nouri B, pooransari P, Ghorbani F. Evaluation of Epidemiology and Etiology of Cesarean Hysterectomy. *J Obstet Gynecol Cancer Res.* 2019; 4 (4) :146-150

Download citation:

[BibTeX](#) | [RIS](#) | [EndNote](#) | [Medlars](#) | [ProCite](#) | [Reference Manager](#) | [RefWorks](#)