Original Research Article

Histopathological findings of hysterectomy specimens in cases of Severe Acute Maternal Morbidity

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Abstract

Background: Despite therapeutic advances and a growing perception of the safety of child birth during this century, severe acute maternal morbidity (SAMM) continue to occur in postpartum period in obstetric patients causing life threatening event. The causes of SAMM include; massive obstetrical hemorrhage due to atony, abnormal placentation due to placenta previa, invasive placentation, adherent placenta, retained placenta, uterine inversion, uterine rupture, ruptured ectopic pregnancy, severe hypertension, severe sepsis, thromboembolism and other major organ system dysfunction arising in pregnancy.**Material and Methods:** The study was conducted at Christian Medical College, Ludhiana over a period of five years from 1st January 2016 to 31st December 2020. All specimens of hysterectomy done for obstetrical indication as a part of life saving procedure to prevent maternal mortality were included. Patient data was retrieved from the medical records and histopathology requisition forms. Gross and microscopic findings were noted and data analysed.**Results:** There were 25 cases of Emergency Obstetrical Hysterectomy (EOH), most (13,52%) cases presented in 3rd decade of life. Of these, the most common finding was abnormal placentation (56%) of which 4 cases presented with rupture uterus. Following abnormal placentation was rupture uterus (28%) while least common was atonic uterus (16%).**Conclusion:** EOH is a lifesaving procedure to salvage many near miss- SAMM cases. The histopathological examination of EOH specimens is necessary so as to know its true cause as with the increasing trends of cesarean section and multiple pregnancies, so is the incidence of SAMM increasing. **Statistics:** It was a descriptive study using averages and proportions for statistical analysis.

Keywords: Severe acute maternal morbidity, obstetrics, Post-partum, non-oncological hysterectomy, histopathology.

Introduction

Despite therapeutic advances and a growing perception of the safety of child birth during this century, maternal morbidity continue to occur in postpartum period in obstetric patients[1].Severe acute maternal morbidity (SAMM) also known as "near miss" is defined as “any pregnant or recently delivered or aborted woman whose immediate survival is threatened and who survives by chance or because of the hospital care received.”[2,3].The causes of SAMM include massive obstetrical hemorrhage due to abnormal placentation due to placenta previa, invasive placentation, adherent placenta, retained placenta, placental site involution, atony, uterine inversion, uterine rupture, uterine inertia, ruptured ectopic pregnancy severe hypertension,severe sepsis,thromboembolism,hepatic and cardio-pulmonary and other major organ system dysfunction arising in pregnancy[4-6].Severe obstetric hemorrhage including antepartum and postpartum hemorrhage is a major cause of maternal morbidity with incidencemore so in developing countries requiring surgical interventions as life saving procedure in the form of emergency obstetric hysterectomy (EOH)[2,7,8].EOH is defined as surgical removal of the uterus either at the time of cesarean section or following vaginal delivery, or within the puerperium period to prevent life-threatening obstetric hemorrhage, and following the failure of all conservative measures[9,10].Commonly encountered indications that necessitate EOH include uterine atony, abnormal placentation, or uterine rupture[7,10].

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Uterine atony is one of the commonest causes of postpartum hemorrhage leading to maternal morbidity associated conditions like grandmultiparity,multiple pregnancy, preeclampsia, chorioamnionitis and prolonged labour.However abnormal placentation has increasingly overtaken this as cause with global increase in Cesarean section rate[11,12].

Placenta previa is an obstetric complication in which the placenta is inserted partially or wholly in the lower uterine segment. It is a leading cause of antepartum hemorrhage and other complications like adherent placenta, postpartum hemorrhage(PPH), shock, and peripartum hysterectomy causing significant maternal morbidity [13].Invasive placentation refers to abnormal implantation of the placenta where there is absence of the deciduas basilis[14]. Placenta accreta spectrum (PAS), includes accreta, increta, and percreta. The incidence of PAS has increased substantially from 0.8 per 1000 deliveries in the 1980s to 3 per 1000 deliveries in the past decade. In the presence of low-lying placenta (placenta previa) and three previous caesarean sections, a woman would have a 61% risk of PAS[12].Uterine rupture is a rip or a tear in the wall of the uterus, in patients with a prior low transverse cesarean delivery, cervical injuries due to episitomy tear or forceps delivery[9,15].This study aims todetermine the histopathological findings in obstetric hysterectomy specimens of patients with severe acute maternal morbidity requiring surgical intervention.

Histopathological examination of specimens is mandatory as it identifies the true cause of obstetrical hysterectomy. This helps the health care providers and policy makers in improving the existing safe motherhood services.

Material and Methods

The present study was conducted in Department of Pathology, Christian Medical College, Ludhiana over a period of five years from 1st January 2016 till 31st December, 2020. All the non- oncological hysterectomy specimens removed either at the time of cesarean section or following vaginal delivery, or within the puerperium period, done for controlling haemorrhage, following the failure of all conservative measures were included. While all specimens of non-oncological hysterectomy done for reasons other than obstetrical indications, and Oncological hysterectomy specimens were excluded. The specimens were received and fixed in 10% formalin. Gross examination was done and specimens were thoroughly sectioned and representative blocks were obtained as per routine. Depending on the size of specimen and requirement, multiple sections were taken. At least two sections each from cervix, uterine wall including adjacent myometrium, adherent placenta, ovaries and fallopian tubes were taken. Gross and microscopic findings of the previous specimens were retrieved from the pathology records and data noted. Patient data was retrieved from the medical records and histopathology requisition forms as per the protocol. The tissues were processed through graded alcohol in Leica automatic tissue processor, paraffin embedded, sectioned and routinely stained with Haematoxylin and Eosin (H&E)[16].The histopathological findings were noted as per the protocol.

Statistics: It was a descriptive study using averages and proportions for statistical analysis.

Results

This study included a total 25 EOH cases done during in very trying circumstances of life threatening complications. All of the patients were young women in reproductive age group, Maximum numbers of patients were in their 3rd decade (19, 76%) followed by 4th decade (5, 20%) and one was in 5th decade (1, 4%) as shown in table 1.

Table 1:Age at presentation

Age at presentation	No. of cases	%
3rd Decade	19	76
4th decade	5	20
5th decade	1	4

The youngest patient was 22 years old while the oldest was 42 years old,mean age 29.8 years.All (100%) patients underwent abdominal hysterectomy.Subtotal abdominal hysterectomy with preservation of the bilateral adnexa was undertaken in 12 (48% cases) and total hysterectomy was done in 13 cases 52%. Twenty three cases had history of previous Caesarean section while two cases had previous normal vaginal delivery as shown in Table 2.

Table 2: Showing percentage of cases with EOH following vaginal delivery or cesarean delivery

	No. of cases 25	%
Following Caesarean deliveries	23	92
Following Vaginal deliveries	2	8

Histopathological examination revealed abnormal placentation was the most common cause(14,56%) of EOH falling into SAMM category,of these,there were 4 cases who presented with rupture uterus. Following abnormal placentation,uterine rupture was the second most common cause (7,28%) of SAMM requiring EOH. Atonic uterus was the least common of all (4,16%) as shown in Table 3, Fig 1.

Table 3: Histopathological findings in EOH specimens

Histopathological findings of EOH	No. of cases (25)	%
Abnormal placentation*	14	56
Rupture	7	28
Atony	4	16

*includes 4 cases which had abnormal presentation and rupture uterus.

Fig 1: Specimen of uterus showing rupture in the lower uterine segment.

Fig 1: Specimen of uterus showing rupture with adherent placenta.

Fig 1: Gross picture of uterus showing rupture

Discussion

Severe acute maternal morbidity (SAMM) cases are caused from life threatening obstetrical complications for which women undergo EOH. In this study, there were 25 cases of EOH. All patients were young in reproductive age group. Maximum number (19, 76%) of patients were in 3rd decade followed by 4th decade (5, 20%) and one patient was in 5th decade (1, 4%) which was in concordance with other authors[9,4,3].In this study all (100%) the patients were multiparous, which itself is an independent risk factor for PPH. Satia MN et al 2016[10] reported 92% multiparous cases with EOH.

Table 4: Incidence of EOH present study compared with other studies following previous cesarean section, vaginal delivery and abortion

	Present study %	Satia MN et al[10]%	Chawla J et al[9]%	Gupta et al[17] %
Caesarean section	92%	68%	71.4	82.3
Normal vaginal delivery	8%	24	28.5	17.6

An important finding was regarding the presence of a previous history of LSCS, in 23 cases (92%). This was also consistent with the observation of abnormal placentation (56%), being a common cause of EOH in the study. Abnormal placentation is increasingly being reported as the commonest indication for EOH, surpassing the previous leading cause of uterine atony. The trend of increasing caesarean section deliveries, contributes to the increased risk of abnormal placentation. It is known from multiple studies, that caesarean section is associated with an increased risk of EOH[17-19]. The most common histopathological finding in EOH specimens was abnormal placentation followed by rupture uterus while least common was atonic uterus which was concordance with other studies as shown in table 5.

Table 5: Histopathological findings in EOH specimens present study compared with other studies

Histopathological findings of EOH	Present study %	Rupali et al[19] 2019 %	Shahid R et al[3] 2020 %
Abnormal placentation	56	33.4	57
Rupture	28	25	8
Atony	16	16.6	5.2

Conclusion

Histopathological examination of all EOH specimens and final histopathological diagnosis is mandatory to know the true cause of EOH. With the rising rates of caesarean section and multiple pregnancies the incidence of EOH is increasing so it is mandatory to know the histological cause. Hence outcome depends on timely decision, good clinical acumen, surgical expertise and true histopathological cause.

References

1. Jahan S, Begum K, Shaheen N, Khandokar M. Near-Miss/ Severe acute maternal morbidity (SAMM): A new concept in maternal care. J Bangladesh CollPhys Surg. 2006; 24:29-33.
2. Yelikar KA, Deshpande SS, Deshmukh SF. Severe Acute Maternal Morbidity in a Tertiary Care Centre with Basic Intermediate Respiratory Care Units Setup. Int J Sci Stud. 2015;3:36-40.
3. Shahid R, Abbas H, Mumtaz S, Muhammad FB, Ahmed N, Memon S et al.Emergency Obstetric Hysterectomy, the Histopathological Perspective: A Cross-Sectional Study From a Tertiary Care Hospital. Cureus. 2020; 12:1-15.
4. Sinha M, Goel JK, Sah S, Goel R, Chaurasia R. Severe acute maternal morbidity: study of epidemiology and risk factors. Int J Reprod Contracept Obstet Gynecol. 2016;5:2141-5.
5. Say L, Pattinson RC,Gulmezoglu AM. WHO systematic review of maternal morbidity and mortality: the prevalence of severe acute maternal morbidity (near miss). Reprod Health. 2004;1:1-5.
6. Marcellin L , Delorme P, Bonnet MP, Grange G, Kayem G, Tsatsaris V et al. Placenta percreta is associated with more frequent severe maternal morbidity than placenta accreta. Am J Obstet Gynecol. 2018;219:193.e1-9.
7. Zhang Y,Yan J, Han Q, Yang T, CaiL, Fu Y et al. Emergency obstetric hysterectomy for life-threatening postpartum hemorrhage. A 12-year review.Medicine. 2017;96:45-7.
8. Rani PR, Begum J. Recent Advances in the Management of Major Postpartum Haemorrhage - A Review. J Clin Diagn Res. 2017; 11:1-5.
9. Chawla J,Col 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;30:181–6.
10. Satia MN, More V. Obstetric hysterectomy: an emergency lifesaving procedure. Int J Reprod Contracept Obstet Gynecol. 2016; 5:2338-42.
11. Khan SM, Saeed M, Mustafa G, Durrani HD. Uterine atony; association of low serum vitamin D. Professional Med J. 2014; 21:1117-21.
12. Bartels HC, Postle JD, Downey P and Brennan DJ. Placenta Accreta Spectrum: A Review of Pathology, Molecular Biology, and Biomarkers Hindawi. 2018, 1-11.
13. Kavitha B, Hota BM. Clinical study of placenta previa in scarred and unscarred uterus. J NTR Univ Health Sci. 2018;7:13-8.
14. Gersell DJ, Kraus FT. Diseases of Placenta. In :Kurman JK, Ellenson LH and Ronnett BM (eds). Blaustein's Pathology of Female Genital Tract. 6thed. New York: Springer, 2011, 1000-73p.
15. Bruney TLM. Trends in Surgical Management of Uterine Rupture.Medical Research Archive. 2019;7:1-8.
16. Layton C, Bancroft JD. The Hematoxylins and eosin. In: Suvarna KS, Layton C, Bancroft JD (eds). Bancroft's theory and practice of histological techniques. 8th ed. China: Elsevier; 2018, 126-36p.
17. Gupta M, Marwah S, Das B. Critical Appraisal of Obstetric Hysterectomy from a North Indian Tertiary Care Health Facility over a Fifteen Year Period. Gynecol. 2019; 4:1-7.
18. Machado LSM.Emergency peripartum hysterectomy: Incidence,indications, risk factors and outcome. N Am J Med Sci. 2011; 3:358–61.
19. Awale RB, Isaacs R, Mandrelle K, Singh S. Histopathological examination of emergency obstetric hysterectomy specimens. Int J Reprod Contracept Obstet Gynecol. 2019;8:3889-92

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