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Original Research Article

## Five-years review of obstetric hysterectomy at tertiary care center

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### ABSTRACT

**Background:** Obstetric hysterectomy (OH) is indicated as last resort operation to save the life of the mother and associated with high complication rates, so requires a highly experienced and skilled medical team, to solve any complication. Objective was to identify incidence, demographic profile, indications, risk factors, complications, maternal morbidity and mortality associated with obstetric hysterectomy.

**Methods:** Retrospective analytical study of 47 case records is done over period of last 5 years from October 1<sup>st</sup> October 2015 to 30<sup>th</sup> September 2020 at VDGIMS, a tertiary care center, Latur. Results are expressed in frequency and percentages.

**Results:** In our study, the rate of OH was 1.1/1000 deliveries. Most common (68%) age group was 21-30 yrs, majority (70%) were multipara, and booked (76%). Most common indication of OH was atonic PPH (65%), followed by traumatic PP, including rupture uterus (21%), and placenta accreta (10%). Most OH was performed on emergency basis (91%) and of subtotal type (95%). Major mode of delivery was cesarean 65% and vaginal delivery in 21% cases. Most common risk factors were placental causes (55%), previous LSCS (48%) and hypertensive disorder (31%). High maternal morbidity in form of 100% blood transfusion rate, 93% ICU admission, inotropes and ventilator support in 59% cases and prolonged hospital stay in 75% cases seen. Most common complication were hemorrhagic shock 21%, DIC (29%), renal failure (12%) and septic shock (14%) with maternal death rate of 23% was noted.

**Conclusions:** Obstetric hysterectomy is a necessary life-saving operation, but also associated with high maternal morbidity and mortality, which can be minimized with timely done procedure by experienced person.

**Keywords:** Atonic PPH, Abnormal placentation, Complications, Obstetric hysterectomy, Risk factors

### INTRODUCTION

Hysterectomy performed in an obstetric case is called Obstetric hysterectomy (OH). It is the removal of uterus at the time of caesarean section, following caesarean section, or immediately after vaginal delivery within 24 hrs or in the period of puerperium in order to save maternal life.<sup>1</sup> The 1<sup>st</sup> successful obstetric hysterectomy was performed by Eduardo Porro in 1876 in case of postpartum haemorrhage.<sup>2</sup> In developing countries most

common indications are post-partum hemorrhage and ruptured uterus when conservative measures fail to control bleeding.<sup>3</sup> In recent times, incidence of OH is rising worldwide mostly due to increased caesarean section rate because its increasing the number of scar rupture, abnormal placentation i.e. placenta praevia and morbidly adherent placenta, and overall increasing the incidence of OH in both developed and in developing countries.<sup>1,4</sup> An uncommon indication for caesarean

hysterectomy are puerperal uterine infection, large leiomyoma and cervical cancer.<sup>1</sup>

OH is referred as peripartum hysterectomy when performed after 24 weeks of gestation. Peripartum hysterectomy is broader term and combines both cesarean hysterectomy (when it is done at the time of cesarean delivery) and postpartum hysterectomy (when it is done either after vaginal delivery or cesarean delivery, skin closure after cesarean section).<sup>1</sup>

OH is associated with high risk of intra operative and post-operative complications because of largely unplanned nature of surgery which is often done on an emergency basis for intractable obstetric hemorrhage, except in cases of cesarean hysterectomy which could be done electively to some extent, as those in antenatally prediagnosed cases of morbidly adherent placenta.<sup>1</sup> Major intraoperative complications are increased blood loss and risk of urogenital tract injury.<sup>5</sup> Cesarean hysterectomy complication rate is importantly affected by whether operation is performed electively or emergently. Planned cases have lower rates of blood loss, less need of blood transfusion and fewer urinary tract injuries compared to emergency procedure.<sup>1</sup>

Obstetric hysterectomy can save many maternal lives. Fast decision and excellent surgical skills is required to save life while doing obstetric hysterectomy. Early resuscitation, on time availability of blood and blood components helps to improve hemodynamic status of patient which in turn, helps the patient to withstand the surgical procedure and anaesthesia. The decision of obstetric hysterectomy particularly in the younger age group and low parity causes a great dilemma to the surgeon. Timely decision prevents catastrophes.

## METHODS

Retrospective analytical study of case records over period of last 5 years from 1<sup>st</sup> October 2015 to 30<sup>th</sup> September 2020 at Vilasrao Deshmukh Government Institute of Medical Science, Tertiary Care Center. 47 patient' files with obstetric hysterectomy were revived and data obtained were recorded in a structured proforma. Maternal demographic characteristics, indications, type of hysterectomy, risk factors, maternal and fetal outcome and complications that occurred were looked into. Data were collected in MS excel sheet and results were expressed in frequency, percentages.

### Inclusion criteria

All the cases of OH done at VDGIMS, Latur, irrespective of gestational age (including all trimesters) and indications.

### Exclusion criteria

Women who were admitted following an OH done from elsewhere, were not included in the study.

## RESULTS

There were total 41248 deliveries during the study period of 5 years. There were 47 cases of Obstetric hysterectomy (OH) during this period. The rate of OH was 1.1 /1000 deliveries.

**Table 1: Demographic characteristics of women. (N=47).**

Characteristics	Frequency (N)	%
<b>Age</b>		
<20 years	6	12.7
21-30 years	32	68
31-35 years	6	12.7
>35 years	3	6.3
<b>Residence</b>		
Rural	25	53.1
Urban	22	46.8
<b>Booking status</b>		
Booked	36	76.5%
Booked in	4	8.5
Booked out (referred)	32	68
Unbooked	11	23.4
<b>Parity</b>		
Primipara	14	29.7
Multipara	26	55.3
Grandmultipara	7	14.8
Total multipara (b+c)	33	70.2
<b>Gestational age</b>		
<24 wks	6	12.7
1 <sup>st</sup> trimester	1	2.1
2 <sup>nd</sup> trimester	5	10.6
>24 weeks	41	87.2
24-36.6 weeks (preterm)	19	40.4
>37 weeks (term)	22	46.8
<b>Scar status</b>		
Previous lscs (scarred)	23	48.93
< 24 weeks	4	8.5
>24 weeks	19	40.4
Unscarred	24	51.06
<24 weeks	2	4.2
>24 weeks	22	46.8
<b>Mode of delivery</b>		
<24 weeks		
1 <sup>st</sup> trimester-MVA	1	2.1
2 <sup>nd</sup> trimester		
Spontaneous abortion	4	8.5
Hysterotomy	1	2.1
<b>&gt;24 weeks</b>		
Previous lscs (scarred)	19	
Repeat LSCS	17	89.5
VBAC	2	10.5
Unscarred	22	
LSCS	14	63
Vaginal delivery	8	36.3
Total LSCS (17+14)	31	65
Total vaginal delivery (8+2)	10	21

Table 1 shows demographic characteristics of OH cases. Most common, 68% age group is 21-30 years, teenager group (<20 years) also includes 6 cases, (12.7%), and elderly (>35 years) noted in 3 cases (6.3%). Residence wise distribution showed 53% cases and 46% cases were from rural and urban areas respectively. Booking status showed most (76%) cases were booked, out of which 68% were booked out (referred) cases and only 23% cases were unbooked. Parity wise distribution of cases includes 29% primipara, multipara 55% (26 cases) and 7 cases (14%) of grandmultipara. Out of 47 cases of OH, 6 cases (12.7%) were <24 weeks of gestational age which includes one case (2.1%) of 1<sup>st</sup> trimester and 5 cases (10%) of 2<sup>nd</sup> trimester. Most cases (87%) are of >24 weeks of gestation, out of which term cases (46%) are more common than preterm (40%) cases. Mode of delivery pattern showed most cases (65%) were delivered by cesarean section, while vaginal delivery cases were 21% only.

In 2<sup>nd</sup> trimester cases mode of delivery was spontaneous abortion in 4(8.5%) cases and hysterotomy in 1 case (2.1%). One case of 1<sup>st</sup> trimester was case incomplete abortion done by MVA. Onset of labour in most cases (76%) was spontaneous and induced in only 19% cases.

Table 2 shows type pattern of OH cases. According to situation, most cases (91%) were done on emergency basis while planned OH happened in only (8.5%) cases, those were the cases of placenta accreta diagnosed

antenatally. According to timing, most cases (57%) are of cesarean OH and only 10(21%) cases were of postpartum OH followed after vaginal delivery, 4 cases (8%) after cesarean section. There were 6 cases (12%) of postabortal OH, out of which 4(8%) cases were done after spontaneous abortion due to PPH, 1 case of after hysterotomy and 1 case of 1<sup>st</sup> trimester OH followed after MVA.

**Table 2: Type of OH (N=47).**

Type	Frequency(N)	Percentage
<b>According to situation</b>		
Planned	4	8.5
Emergency	43	91.4
<b>According to timing</b>		
Postpartum	14	29.7
After vaginal delivery	10	21.2
Post cesarean	4	8.5
Cesarean	27	57.4
Postabortal	6	12.7
After spontaneous abortion	4	8.5
With hysterotomy	1	2.1
After MVA	1	2.1
<b>According to type of surgery</b>		
Subtotal OH	45	95
Total OH	2	4.2

**Table 3: Indication of OH (n=47).**

Indication	<24 wks (n=6)		>24 wks (n=41)			Total (n=47)	%
	1 <sup>st</sup> trimester	2 <sup>nd</sup> trimester	Cesarean	Postpartum			
				After vaginal delivery	Post cesarean		
<b>Atonic PPH</b>	0	1	19	7	4	31	65.9
<b>Trumatic PPH (rupture uterus/ uterine wall hematoma)</b>	1	3	4	2		10	21.2
<b>Morbidaly adherent placenta</b>	0	1	4		0	5	10.6
<b>Puerperal sepsis</b>	0	0	0	1		1	2.1
<b>Other causes</b>	0	0	0		0	0	0
<b>Total</b>	1	5	27	10	4	47	100%

Table 3 shows indication of OH cases. In our study, most common indication is atonic PPH (65%), followed by traumatic PPH (21%), morbidly adherent placenta contributed to 5% each and only 1case (2.1%) attributed to puerperal sepsis.

Table 4 shows risk factors associated OH. In our study most common(48%) risk factor found was placental causes 55% (abruption 25%, placenta previa 19%, placenta accreta 10%) followed by previous Lscs (48%), hypertensive disorder (31%), and obstructed labour in

10% and twin pregnancy in 8.5% cases. There was history of (h/o) injury due to instrumentation in 2 cases (i.e. in 1<sup>st</sup> trimester case and one of the cases of 2<sup>nd</sup> trimester) and h/o instrumental delivery in one case (2.1%) of IUD.

Table 5 shows analysis of clinical profile of OH cases. Preoperative Hb value was <7gm% in 46% cases suggestive of severe blood loss and >7gm% in 53% cases. On admission, 27% were clinically in shock status while 72% patients were clinically not in shock. Blood

transfusion requirement was 100% and >4 units transfusion (massive transfusion) was required in 53% cases. ICU admission was required in almost 93% cases. Postoperative ventilator and inotropes support required in 59% and 55% cases respectively. Hospital stay was prolonged >7 days in 75% cases.

**Table 4: Risk factors associated with OH.**

Risk factor	Frequency	%
Previous Lscs	23	48
Placental causes	26	55.3
Abruption	12	25.5
Placenta previa	9	19.1
Pacenta acreta	5	10.6
Hypertensive disorder	15	31.9
Obstructed labour	5	10.6
Twin pregnancy	4	8.5
H/O instrumentation	2	4.2
Instumental delivery	1	2.1

**Table 5: Clinical parameters of women.**

Clinical parameters	Frequency (N)	%
<b>Preoperative Hb (gm%)</b>		
<7	22	46
>7	25	53
<b>Clinical status on admission</b>		
In shock	13	27.6
Not in shock	34	72
<b>BT requirement</b>		
Yes	47	100
<4 units	17	36
>4 units	25	53
No	0	0
<b>ICU admission</b>		
Yes	44	93
No	3	6.3
<b>Ventilator requirement</b>		
Yes	28	59
No	19	40
<b>Inotropes requirement</b>		
Yes	26	55
No	21	44
<b>Hospital stay(N=36)*</b>		
Upto 7 days	9	25
>7 days	27	75
<b>Maternal outcome</b>		
Life saved	36	76.5
Mortality	11	23.4

\*exclude cases of maternal death

Table 6 shows distribution of maternal complications among OH cases. Only 2 cases (4.2%) of bladder injury recorded. Intraoperative hypovolumic shock was noted in 21% cases due to hemorrhage during surgery. Postoperative complications recorded as DIC (29%), renal failure (12%), wound gape (17%) and septic shock (14.8%). Postoperative pelvic collection and relaprotomy is not recorded in any case.

Table 7 shows clinical analysis of maternal death in OH cases. It is found that out of 11 cases of maternal death, 45% were primipara and 54% were multipara. Gestational agewise distribution shows 1 case (9%) and 2 cases (18%) of 1<sup>st</sup> and 2<sup>nd</sup> trimester respectively, Most cases (72%) were of 3<sup>rd</sup> trimester. Most (45%) cases of postpartum OH and 27% cases of cesarean and postabortal OH, each. Most common indication was atonic PPH(45%) followed by traumatic PPH in 36% cases (which includes postinstrumentation cases of 1<sup>st</sup> trimester and one case of 2<sup>nd</sup> trimester and 2 case of 3<sup>rd</sup> trimester with forcep delivery and rupture uterus VBAC), placenta acreta (includes a case 2<sup>nd</sup> trimester) and sepsis (includes case of FTND) each. Admission to death interval was <24 hours in 7 (63%) cases, (out of which 5 cases where in shock status clinically on arrival) and >24 hours in 36% cases. Cause of death found to be DIC in all cases as an end stage of haemorrhagic shock. DIC was complicated with renal failure in 54% cases and with septic shock in 45% cases.

Table 8 shows fetal outcome shows 84% live birth and 15% stillbirth. There were 20% NICU admission for respiratory distress and prematurity. Neonatal death was recorded in 3 cases (6%).

**Table 6: Maternal complication.**

Complication	Frequency (N)	%
<b>Intraoperative</b>		
Bladder injury	2	4.2
Intraoperative hypovolumic shock*	10	21.2
<b>Postoperative</b>		
DIC	14	29.7
Renal failiure	6	12.7
Wound gape	8	17
Septic shock	7	14.8
Post operative pelvic collection	0	0
Relaprotomy	0	0
Mortality	11	23.4

\*those patients who were clinically stable on admission, but landed in hypovolumic shock intraoperatively due to haemorrhage

**Table 7: Clinical analysis of maternal death in OH cases (n=11).**

Characteristics	Frequency (N)	%
<b>Parity</b>		
Primipara	5	45.4
Multipara	6	54.5
<b>Gestational age</b>		
1 <sup>st</sup> trimester	1	9
2 <sup>nd</sup> trimester	2	18.1
3 <sup>rd</sup> trimester	8	72
<b>Previous scar</b>		
Present	4	36.3
Absent	7	63.6
<b>Type of OH</b>		
Postpartum	5	45.4
After vaginal delivery	3	27
Post cesarean	2	18.1
Cesarean	3	27
Postabortal	3	27
<b>Indication of OH</b>		
Atonic PPH	5	45.4
Trumatic PPH (include rupture uterus)	4	36.3
Placenta accreta	1	9
Sepsis	1	9
Other	0	0
<b>Risk factors</b>		
preeclampsia	3	27
Abruption	3	27
Twins	3	27
Placenta previa	1	9
h/o instrumentation	2	18.1
Instrumental delivery	1	9
On admission in shock status	5	45.4
<b>Admission to death Interval</b>		
<24 hours	7	63.6
>24 hours	4	36.3
<b>Cause of death</b>		
DIC with renal failure	6	54.5
DIC with septic shock	5	45.4

**Table 8: Fetal outcome (n=45 including 4 twin cases).**

Outcome	Frequency(n)	%
IUD	7	15.5
Live	38	84.4
NICU admission	9	20
Neonatal death	3	6.6

## DISCUSSION

As shown in Table 9, rate of OH in our study is similar to other studies, done indifferent parts of India. The incidence in previous studies ranged from 0.2 per 1000 births in the developed countries to 5.6 per 1000 births in the low and middle-income countries.<sup>10</sup> Most common

age group in our study is 21-30 years which is similar with other studies. Younger age of our patients is possibly because our hospital caters to low socioeconomic urban and rural population where education level is lower and age at marriage among women is lower our study, we found that most of the patients were booked, similar to other studies which indicate booking status does not much alter the rate of OH, because even though patients getting ANC care throughout, but unexpected complications arising during labour like PPH may need OH. So important recommendation are delivery by skilled birth attendants, active management of third stage of labour, delivery of patients with risk factors at tertiary health care facility with 24 hours availability of specialist and blood bank facilities.

Most common indication in our study was atonic PPH 55% similar to other studies (as studies from developing countries like India) except Agarwal S et al. But there has been a recently changing trend worldwide especially in developed countries, where morbidly adherent placenta has taken over uterine atony as the major cause for EPH., attributed to better management of postpartum hemorrhage with uterotonic agents and also due to increase in cesarean deliveries. But this change is yet to reflect in our population as uterine atony still continues to be leading cause for EPH in our study followed by uterine rupture and placenta accreta. Most of the patients in our study were referred patients (68%) where vaginal delivery had been tried and some were referred after a possible diagnosis of rupture uterus. There has been ample attempt in training birth attendants in early detection of high risk cases, effective use of partogram and effective management of postpartum hemorrhage with uterotonic agents. But the present study shows that there is need for early referral, and improving access to better obstetric care.

Majority parity is multipara seen in all studies which is one of the important risk factor for OH along with previous lscs. This in turn, is risk factor placental causes like placenta previa, placenta accreta and abruption. Also hypertensive disorder as risk factor was found in 31%

cases which increases chances of abruption, uterine atony and coagulopathy, in turn increases risk of PPH.

In our study, we also specifically noted 6 cases of postabortal OH. Out of which 4 (66%) were previous lscs. The indication was uterine rupture in 4 cases, (instrumentation in 2 cases) and, atonic PPH in 1 cases and placenta accreta in 1 case. This indicates that OH is, also requires in early pregnancy for scar rupture and placental complication due to increased incidence of previous lscs.

Intraoperative bladder injury incidence was less in our studies compared to other studies as in most of our cases subtotal OH was done rather than total which minimizes chances of bladder injury and reduces surgery timing, which is beneficial, anesthesia point of view.

In our study, most common mode of delivery was cesarean 65%, similar to other studies.<sup>7-10</sup> This because half of the cases were previous LSCS cases, which bounds to repeat cesarean delivery (89%, in our study) as mode of delivery. Also primary cesarean section rate is rising worldwide (in our study 63%). This suggestive of cesarean delivery itself may increases the risk of OH. So, policies need to be made to decrease primary cesarean section rate at institutional and local levels.

**Table 9: Comparison of results with other studies.**

Characteristics	Our study, 2020 (VDGIMS, Latur)	Bhat et al, 2016 <sup>7</sup>	Deepak AV et al, 2017 <sup>8</sup>	Agarwal S et al, 2013 <sup>9</sup>	Hublidar et al, 2016 <sup>10</sup>
<b>Incidence/rate</b>	0.11% (1.1 per 1000)	0.38%	0.29%	0.4 per 1000	0.7 per 1000
<b>Most common age group (years)</b>	21-30 (68%)	26-30 (46%)	20-35 (87%)	26-30 (44%)	27.6+-3.7
<b>Major Parity</b>	Multipara (68%)	Multipara 73%	Multipara 88%	Multipara 83%	Multipara 90%
<b>Booking stats</b>	Booked 76%	Unbooked 60%	Booked	Booked 50%	
<b>Most common indication</b>	Atonic PPH 55%, Rupture 23%, accreta 10%	PPH 40%,	Atonic PPH 50%	Placent accreta 38%, PPH 36%	Atonic PPH 38%, rupture 23%, accreta 19%
<b>Most common risk factor</b>	Previous lscs 48%,placental causes(55%),hypertensive disorder 31%	Previous lscs 40%	Previous lscs 60%,placental causes 37%	Previous lscs 44%	Previous lscs 47%
<b>Most common complication</b>	DIC 29%, renal failure 12%, bladder injury 4.2%	Febrile morbidity 26%, septic shock 13%	Febrile morbidity 32%, DIC 12.5%, bladder injury 15%	Febrile morbidity 19%,bladder injury 11%, DIC 11%	Renal failure 4.8%, septicemia 9.5%, bladder injury 14.2%
<b>Maternal death rate</b>	23%	6.7%	5%	19.4%	4.8%
<b>Type of OH</b>	Subtotal 95%	Total 66%	Total 60%	Subtotal 50%	Subtotal 61%
<b>Major Mode of delivery</b>	Cesarean 65%	cesarean	Cesarean 85%	Cesarean 50%	Cesarean 66%

OH is lifesaving operation (76% mothers were saved in our study), but at the same time it is associated with high rate of postoperative morbidity, complications and mortality. It is also reflected in our study in form of 100% blood transfusion required (in 53% massive transfusion), ICU requirement in 93% cases, ventilator and inotropes support requirement in more than half of the patients. Prolonged hospital stay >7 days needed in 75% patients. This is because many patients are in hypovolumic shock on admission and also go in shock intraoperatively due to massive blood loss. High mortality rate of 23% is noted in our study as OH is associated with high rate complication (in our study DIC 29%, Septic shock 14%, renal failure 12%.) which is also associated with 27% came with shock status clinically on admission. To prevent complications and in turn, mortality, needs on time decision of OH, experienced surgeon, and liberal blood transfusion are very important which check on landing patient in DIC, end stage of shock, further complications are avoided.

## CONCLUSION

Measures to reduce incidence of OH and prevent this catastrophic event are proper antenatal care with assessment of risk factors for OH and early referral, worldwide attempt should be done to reduce cesarean section rate, more efforts for implementation of family planning and welfare in developing country to prevent obstetric haemorrhage. Moreover, timely decision, liberal blood transfusion and speedy surgery by an experienced surgeon are important in the management of this life saving procedure to avoid complications. Post graduate training should include the learning of this procedure and at the same time policies to reduce its incidence.

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