DOI -10.21276/obgyn.2023.10.1.15 *ISSN Print – 2454-2334; ISSN Online – 2454-2342*

RESEARCH ARTICLE

A comprehensive study of obstetric hysterectomy

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ABSTRACT

Aim: This study was conducted to find out the incidence of obstetric hysterectomy and to study and analyze indications, risk factors, complications, morbidity, and mortality in both mother and fetus associated with obstetric hysterectomy. **Methods:** It is an observational prospective study conducted at Government Medical College & Hospital, Aurangabad, Maharashtra, India with cases of obstetric hysterectomy done from the conception of pregnancy till the end of puerperium over 2 years. **Result:** During the study period, there were 43768 confinements out of which 55 cases underwent obstetric hysterectomy giving an incidence of 0.13%. Incidence following vaginal delivery was 0.05% and following cesarean section was 0.30%. The most common indication was morbidly adherent placenta (50.90%), followed by uterine atony (36.36%) and rupture uterus (14.55%). 63.64% had previous cesarean deliveries as a risk factor. Maternal mortality was 9.09% cases. 63.60% of babies went home alive. **Conclusion:** Caesarean section and its sequel like morbidly adherent placentae have changed the trend and topped now as an indication of obstetrics hysterectomy.

Keywords: Morbidly adherent placenta, obstetric hysterectomy, peripartum hysterectomy.

Emergency obstetric hysterectomy is an indispensable part of the obstetrician's armamentarium. It is usually performed in the face of unrelenting and life-threatening obstetric hemorrhage. Obstetric hysterectomy (OH) can be rightly classified as a near-miss event[1]. The incidence ranges from 2-6 per 1000 deliveries in developing countries at present [2].

Obstetric hysterectomy saves the mother's life but sacrifices the obstetric carrier, hence is always a surgical dilemma. It is important to study such events since they provide insight into the standard of care provided and help to reduce maternal morbidity and mortality [3].

Most of the previous research studies on obstetric hysterectomy include only cases of hysterectomy done during the peripartum period. In this study we included all cases of obstetric hysterectomy from conception till the end of the puerperium period (42 days postpartum), so we tried to describe all aspects of obstetric hysterectomy done for different indications during the study period at a tertiary care center in Maharashtra, India.

Aims and objectives: 1) To find out the incidence of obstetric hysterectomy, 2) To study and analyze indications, risk factors, maternal and fetal morbidity, and mortality associated with obstetric hysterectomy.

Methods

A prospective observational study of 55 cases of obstetric hysterectomy, during 2 years study period (October 2017 to September 2019) at a tertiary care center was done after institutional ethical committee approval.

Inclusion criteria: All pregnant women from conception of pregnancy till the end of puerperium who underwent emergency and planned obstetric hysterectomy as a treatment and who consented to study, at our center.

Exclusion criteria: Cases of hysterectomy done for gynecological indications like fibroid uterus, carcinoma cervix, etc. were excluded.

A pre-validated case record proforma form was filled. All cases of OH were analyzed by SPSS version 20.

Received: 8th October 2021, **Peer review completed**: **28th January 2022**, **Accepted: 6th February 2022**.

Kalyankar VY, Nimbalkar RJ, Kalyankar BV, Gadappa SN. Comprehensive study of obstetric hysterectomy. The New Indian Journal of OBGYN. 2023; 10(1): 88-92.

Results

Total confinement during the study period was 43808, out of which 40 cases of puerperal sepsis which had been delivered at our hospital already were included in vaginal delivery cases, so final total confinements were calculated as 43768 by subtracting 40 cases. Thus the incidence of obstetric hysterectomy was 0.13% i.e. 1 in 796 confinements. The incidence of obstetric hysterectomy in different confinements is described in table -1.

Table 1: Incidence of obstetric hysterectomy in different confinement

Mode of confinement	Total cases	Total OH	Incidence rate
Vaginal delivery	28690	17	0.06%
Cesarean section	10546	32	0.30%
MTP	1271	00	00%
Abortion	1366	01	0.07%
Vesicular Mole	65	00	00%
Ectopic pregnancy	170	00	00%
Choriocarcinoma	00	00	00%
Septic abortion	36	00	00%
Puerperal sepsis	124	01	0.80%
Outside deliveries	1540	08	0.52%
Total Confinements	43808		
Corrected total	43768	55	0.13%

Table 2: Demographic profile of obstetric hysterectomy cases

Age in years	No. of cases	Percentage
20-24	15	27.28
25-29	22	40.00
30-34	09	16.36
35 and above	09	16.36
Total	55	100.00
Residence		
Urban	23	41.82
Rural	32	58.18
Total	55	100
Socioeconomic status		
Class 1	0	00
Class 2	4	7.27%
Class 3	16	29.10%
Class 4	28	50.91%
Class 5	7	12.73%
Total	55	100%
Gravida (G)		
G_2	11	20.00
G_3	16	29.09
G_4	12	21.82
G_5 and > G_5	07	12.73
Total	46	100.00
Parity		
P_0	01	01.82
P_1	16	29.09
P_2	21	38.18
P_3	08	14.55
P_4	06	10.90
P_5 and > P_5 (grand multipara)	03	5.45
Total	55	100.00

P_0 – was a G_2A_1 case (Gravida and parity may not match as few cases had abortion history)

40% of cases of obstetric hysterectomies were in the age group of 25-29 years i.e. 22 cases. 58.18% were from rural areas indicating poor screening and emergency care in rural areas. 80% were un-booked cases. 38.18% were P_2 followed by P_1 (29.09%) (table 2).

65.45% (36) cases belong to 3rd trimester whereas 18.18% (10 cases) were in 2nd trimester. The puerperium group had 16.36 % of cases (9) of obstetric hysterectomy out of which 6 cases were within 24 hours (66.67%).

The indication for obstetric hysterectomy as per table - 3 was morbidly adherent placenta in 50.90 % (28) cases. Postpartum hemorrhage (PPH) contributed 36.36 % (20 cases) (all atonic, traumatic PPH together) and ruptured uteri were seen in 14.55 % (8 cases). It was also found that there was more than one indication of obstetric hysterectomy in some cases in the present study.

A common risk factor was the history of previous cesarean section i.e. 63.64% (35 cases). The elderly gravida was 14.55% and grand multipara was 5.45%. Out of 55 cases, on the clinical condition of cases permitted, conservative surgeries were attempted to save the uterus before obstetric hysterectomy as a last resort in 24 cases. About 9.09% of cases had a combination of bilateral (B/L) uterine artery ligation with bilateral internal iliac artery ligation with modified B-Lynch compression suture, 10.91% of cases had B/L uterine artery ligation with modified B-Lynch compression suture.

Table 3: Distribution of cases according to indication for obstetric hysterectomy

Indications		No. of cases	Percentage
Postpartum hemorrhage (PPH)		20	36.36
1	Atonic		
	Vaginal delivery	09	16.36
	C.S.	07	12.73
2	Atonic + Traumatic		
	Vaginal	04	07.27
	Caesarian section	00	00
Ruptured uterus		08	14.55
Morbidly adherent placenta		28	50.90
Puerperal sepsis		01	01.82
Broad ligament hematoma		05	09.09

It was required to do 87.27% of cases of total hysterectomy. 89.09% of cases underwent emergency obstetric hysterectomy and only 10.91% had elective obstetric hysterectomy. All (100%) cases required blood transfusions. 12.73 % of cases had urinary bladder injury at its dome. 9.10% of cases had DIC, 60% had fever postoperatively and 5.45% cases had paralytic ileus postoperatively. Also, there was 1 case of vesicovaginal fistula developed in 2nd week despite prolonged urinary catheterization. The mean hospital stay was 13.44 days and SD was 9.03. In most of the cases (23) 41.82% required 2 days of ICU stay. There were 5 maternal deaths i.e. 9.09% mortality. 3 deaths were due to hemorrhagic shock and 1 due

to multiorgan failure and 1 due to ARDS. In the present study, 63.64 % of babies went home alive and 32.72 % were IUFD whereas 3.64% (birth weight < 1.3kg) had neonatal death due to prematurity.

Discussion

Incidence of the present study was 0.13% i.e. 1.3 per 1000 deliveries which are similar to that in many other studies as shown by Rekha et al [4], C Ganitha et al [5]. There were also studies with much higher incidence rates comparatively [Sahasarabhojane et al (0.35%) [6], Kant Anita et al (0.26%) [7], Gupta et al (0.26%) [8]].

Our institute has a high number of confinements altogether. So, though the obstetric hysterectomy case number is high, still incidence rate is proportionally less. In our study, the incidence of obstetric hysterectomy following vaginal delivery was 0.06%, and that of cesarean hysterectomy was 0.30% i.e. approximately five times. A very high trend of obstetric hysterectomy following cesarean delivery seen in this study is comparable to Raghunath et al [9], Rekha et al [4], Praneshwari Devi et al [10] studies.

The incidence of obstetric hysterectomy is increasing in the present era not because of the improperly managed third stage of labor or obstructed labor but because of the increasing incidence of cesarean sections and curettages are done. Chances of repeat cesarean sections thus increase. This ultimately increases the incidence of placenta praevia and accrete thereby increasing obstetric hysterectomy.

In the present study, the majority were in the age groups of 25-29 years giving an incidence of 40%. The mean age was found 27.91 which is comparable to Bhat S et al [11], Najam et al [12], and Sahasrabhojane et al [6] studies.

In the present study 55 cases i.e. 38.19 % were para - 2 followed by 29.09% were para – 1. Our study has maximum OH in para - 2 which is comparable with Wani S et al [13], and Bhumika GK et al [14] studies. However, Praneshwari Devi et al [10], Najam et al [12], had maximum cases in para-4 and above i.e. 42.30% and 41.6% respectively. Obstetric hysterectomies were increased in 2nd para because 15 out of 21 cases with previous cesarean section had morbidly adherent placenta in our study.

In the present study of 55 cases, 65.45 % were in the 3rd trimester till delivery of the baby followed by 18.20 % in the 2nd trimester and 16.36% were in puerperium (till 42 days). In the study done by Wani S et al [13], 7.84 % were in 2nd trimester and 85.29% were in 3rd trimester till the delivery of the baby. In the study conducted by Taru Gupta et al [15]6.7% were in 2nd trimester and 93.2 % were in 3rd trimester. The study of Sudha R et al [3] had 5% cases in 2nd trimester and 90% in 3rd trimester and 5% in the puerperium period.

In the present study of 55 cases, indications in 50.92 % of cases were morbidly adhered placentae followed by PPH in 36.36% and ruptured uterus in 14.55%. Among 50.92% (28 cases in 55 OH) cases of morbidly adherent placenta, 17 (60.71%) cases had a history of (h/o) previous cesarean section with placenta previa, 4 (14.29%) cases had h/o previous cesarean section with placenta previa with h/o obstetric curettage, 3(10.71%) cases had only h/o previous cesarean section and 2 (7.14%) cases with a previous cesarean section with h/o obstetric curettage. 1 (3.57%) case of morbidly adherent placenta had only h/o of obstetric curettage as a risk factor and 1(3.57%) had placenta previa with h/o obstetric curettage. This shows that the rising trend of cesarean sections and endometrial injury by obstetric curettage leads to abnormal placentation and thus morbidly adherent placentae. This is consistent with the studies of Taru Gupta et al[15], Praneshwari Devi et al [10], Sobia Mazhar et al [16], Wani Ramadevi et al [17], which also had morbidly adherent placenta as the most common indication for obstetric hysterectomy.

Our second most common indication was PPH (28.09%) and the third was ruptured uterus (14.55%). Most studies before 2010 [Gupta et al (2001), Mukherjee et al (2002), Kanwar et al (2003), Archana et al (2009)] showed that a ruptured uterus was the most common indication in those days. In our study, out of 8 cases of the ruptured uterus, 3 had scars given way to previous cesarean section, 3 were grand multigravida and 2 cases had obstructed labor. This shows that there has been changing trend of indication of OH with time. This change could be attributed to better management of PPH, with the use of good uterotonic agents and special surgical procedures such as stepwise devascularization and the Christopher Balogun-Lynch technique which contributes to lowering the incidence of atonic PPH as an indication of obstetric hysterectomy. The shifting trend in the indications for obstetric hysterectomy reveals the increasing role of cesarean delivery as a predisposing factor. There were also multiple indications in some cases of obstetric hysterectomy.

Before proceeding with the last resort of obstetric hysterectomy in the present study,18.18% of cases underwent ligation of the anterior division of the internal iliac artery followed by B/L uterine artery ligation with B-Lynch in 10.91%. In a study done by Bhumika GK et al [14] 30.4% underwent B/L uterine artery ligation and 13%

underwent Internal iliac artery ligation and in Sahasrabhojane et al[6] study, 16.5% underwent internal iliac artery ligation and 3.33% underwent uterine artery ligation and B-lynch procedure. In the present study, internal iliac artery ligation was done in 29.09% of cases, either alone or in combination with other surgeries.

In the present study, 100% of cases were transfused with blood and blood products, compared with the study by Preeti Lewis et al [18]. Intraoperative complication commonly seen was hemorrhagic shock (38.20%) followed by urinary bladder injury (12.70%). This finding is comparable with a study by Bhoomika et al [19], and Sudha Rani et al [3], where also hemorrhagic shock (26.66%, and 11.11% respectively) was seen as the most common followed by urinary bladder injury (11.11%, 6.67% respectively). In the present study, fever was the most common postoperative complication seen in 60% of cases; followed by wound infection (20%), this is comparable with studies by Kant A et al [7], Rajashree et al [20], Saima W et al [13] (fever in 39.2%, 25.7%, 15.68% respectively and wound infection in 24.3%, 8.5%, 10.78% respectively). Paralytic ileus was more (9.17%) in Bushra Khan et al [21] studies, chest infection was more (8.82%) in Saima W et al [13] study and vesicovaginal fistula (VVF) was seen more in Kant A et al (4.8%), DIC was seen in 14.67% in Bushra Khan et al [21] studies. None of our study cases required re-laparotomy.

It is not operating but the condition for which obstetric hysterectomy is performed that is responsible for morbidity and mortality. Morbidity related to the type of hysterectomy was not significant.

The present study had 9.09 % maternal mortality and major causes of death were hemorrhagic shock, ARDS, and multiorgan failure which are comparable with maternal mortality reported by Kant A et al [7], Wani S et al [13], Sahasrabhojane et al [6] studies. All death cases were un-booked and referred cases. The rate of survival may be attributed to prompt and timely decision and intervention, meticulous technique, good anesthesia, liberal blood transfusion, and good intensive care support despite the poor conditions necessitating hysterectomy in our study.

Conclusion

This is a unique study that covers comprehensively the entire spectrum of obstetric hysterectomies right from conception till the end of puerperium. Cesarean section and its sequel like morbidly adherent placentae have changed the trend in indications of obstetrics hysterectomy. It may be reduced if cesarean sections are reduced by careful selection of patients for cesarean delivery. Though attempted we could not get cases of obstetric hysterectomy done for MTP complications, choriocarcinoma, and septic abortions. The total number of cases was only 55, so a study with more cases may be recommended for more conclusions. Obstetrician needs to revisit obstetrics to develop the forgetting art and skill of Normal delivery.Prompt surgical intervention, quick resuscitation, management, the expertise of the surgeon, timely decision, and meticulous care may minimize morbidity and mortality.

Conflict of interest: None. **Disclaimer:** Nil.

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