ORIGINAL ARTICLE

A Study of Various Factors Associated with Peripartum Hysterectomy

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Abstract

The current study was undertaken to evaluate various factors associated with peripartum hysterectomy observed in tertiary care institute. Total 40 cases of peripartum hysterectomy were enrolled in the study Maternal characteristics such as age, parity, gestational age, previous cesarean delivery, previous uterine curettage, history of ante partum bleeding, obstetric complication, mode of delivery and intrapartum complications were recorded on a prestructured proforma. The patients (52.5%) undergone peripartum hysterectomies were in the age group of 26-30 year. 82.5% were multipara and 55.3% patients had history of LSCS in previous pregnancies. All the patients (100%) who underwent hysterectomies were anemic in the antenatal period. 11 (27.5%) patients had placenta previa with 10 (25%) of previa's being associated with previous LSCS. A total of 15 (37.5%) developed uterine rupture intrapartum, 3 (7.5%) patients had history of prolonged labor at home while 1 (2.5%) patients was referred from periphery with obstructed labor, 1 patients underwent internal podalic version for second baby of twins. Most common indication of peripartum hysterectomy in our set up was rupture uterus accounting for 15 (37.5%) of the total hysterectomies. morbidly adherent placenta was found to be the second most common cause; with 10 (25%) patients having placenta accrete. Thus, multiparity, history of previous cesarean section and rupture uterus, abnormal placentation and severe anemia were the common risk factors associated. Most common indication for peripartum hysterectomy was rupture uterus, abnormal placentation and atonic uterus.

Key Words

Peripartum Hysterectomy, Rupture Uterus, Abnormal Placentation, Atonic Uterus

Introduction

Peripartum hysterectomy is defined as hysterectomy preformed at the time of delivery or within forty-two days of delivery (1). It follows life threatening complications of vaginal or cesarean section deliveries (2). It is an unequivocal marker of severe maternal morbidity and 'near - miss' Mortality (3,4). The reported incidence of peripartum hysterectomy varies. In developing countries, reported incidence ranges from 2-6 per 1000 deliveries compared to 0.2 to 2.7 per 1000 in developed countries.64 They are seen more often in developing world due to deceased availability and lack of uptake of antenatal services especially in rural areas (5). Although the incidence is low, it represents a major operation in modern obstetrics being associated with a high rate of morbidity and mortality (6). Early studies on peripartum hysterectomy included hysterectomy done for non-emergent condition and between 1950 and late 1970's cesarean hysterectomy was most commonly used for sterilization, defective uterine scar, myomas and other gynecological disorders(7,8). By the 1970s elective cesarean hysterectomy for such procedures fell into disrepute due to the association of the procedure with excessive blood loss and urological injury. Since 1980, indications for peripartum hysterectomy have been restricted to emergent situations. Originally the indications included uterine sepsis (amnionitis) after prolonged labor, atonic uterus or uncontrollable hemorrhage from placental site, cancer of the cervix, extensive atresia of the vagina preventing discharge of lochia, cases of ruptured uterus where suturing would be unsafe, uterine fibroids and tuberculosis.(9) Thus the present study was conducted to study the various risk factors leading to peripartum hysterectomy in tertiary care institute.

Material and Methods

The present observational study was conducted over period of one year. Following inclusion and exclusion

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criteria was used to select the study patients.

Inclusion Criteria

- Patients who underwent peripartum hysterectomy either immediately or within forty-two days of vaginal or cesarean delivery
- Peripartum hysterectomy performed after 20 weeks of gestational age were taken.

Exclusion Criteria

- Cases of hysterectomy performed before 20 weeks of gestational age
- Hysterectomy performed electively for gynecological condition like large leiomyomas and carcinoma cervix were not taken in the study.

Thus total 40 cases of peripartum hysterectomy were enrolled in the study duration. A detailed history was taken of all cases. Maternal characteristics such as age, parity, gestational age, previous cesarean delivery, previous uterine curettage, history of ante partum bleeding, obstetric complication, mode of delivery and intrapartum complications were recorded on a prestructured proforma. Detailed clinical examination including general physical examination, systemic examination, per abdomen and per vaginal examination done on admission for booked cases and prior to hysterectomy for both booked and referred cases was recorded on the proforma.

Results

It was observed that majority of the patients (52.5%) undergone peripartum hysterectomies were in the age group of 26-30 year. The youngest patient was 20 years of age while the oldest patient was 40 years old and means age was 27.9 years. Maximum numbers of patients i.e. 82.5% were multipara with parity > 2. Mean parity was 2.67. In 62.5% cases peripartum hysterectomies were performed at term. It was seen that maximum numbers of patients (62.5%) were referred from periphery. It was observed that 55.3% patients had history of LSCS in previous pregnancies while 44.7% patients were delivered vaginally in previous pregnancies with no history of LSCS. There was history of vaginal birth after cesarean section (VBAC) in 20% of patients. Suction and Evacuation for abortions in previous pregnancy was done in 30% patients.

It was observed that all patients were anemic in the antepartum period with Hb <11 g/dl. Placenta previa was present in 27.5% undergoing hysterectomy. 82.5% patients were multifarious; 15% were grandmultipara. And 55.3% patients had history of LSCS and 30% had SandE. Two patients had history of Hydrocephalus and two of Polyhydramnious. One patient had history of abruption and one had twins in present pregnancy.

Table 1. Distribution of Patients According Various Factors Associated with Peripartum Hysterectomy

Variable		No. of patients	Percentage
Age (in years)	<20	1	2.5%
	21-25	9	22.5%
	26-30	21	52.5%
	31-35	7	17.5%
	>36	2	5%
Parity	0	2	5%
	1	5	12.5%
	2	13	32.5%
	>3	20	50%
Gest age	21-30	1	2.5%
	31-34	9	22.5%
	35-36	5	12.5%
	≥37	25	62.5%
Referral status	Referred	25	62.5%
	Booked	15	37.5%
Intervention in previous pregnancy	LSCS	21	55.3%
	Only vaginal delivery	17	44.7%
	VBAC	8	20%
	Suction and evacuation	12	30%

Table 2. Distribution of Patients According to Antepartum and Intrapartum Risk Factors

	Variable	No. of patients	%
Antepartum risk factors	Anemia	40	100%
	Multiparity (>P2)	33	82.5%
	LSCS	21	55.3%
	S&E	12	30%
	Placenta Previa	11	27.5%
	Hydrocephalus	2	5%
	Polyhydramnios	2	5%
	Abruption	1	2.5%
	Twins	1	2.5%
Intrapartum complication	Rupture Uterus	15	37.5%
	Prolonged Labor	3	7.5%
	Obstructed Labor	1	2.5%
	Retained Placenta	1	2.5%
	IPV Extraction	1	2.5%

Intrapartum complication was observed in 21 (52.5%) patients. Uterine rupture occurred in 15 (37.5%) patients. Three patients (7.5%) had history of prolonged labor at home. One patient came in obstructed labor. One patient underwent internal podalic version for 2nd baby of twin. One patient had history of retained placenta.

It was seen that 45% patients underwent LSCS prior to hysterectomy. Eleven patients (27.5%) had laparotomy for rupture uterus followed by hysterectomy. Eleven patients were delivered vaginally.

Most common indication for hysterectomy was rupture uterus accounting for 37.5% of all hysterectomies performed. In 11 (27.5%) patients, hysterectomy was performed for abnormal placentation. Out of this, 10 patients had placenta accrete and 1 had placenta percreta. Ten (25%) patients had atonic uterus. In 2 patients, hysterectomy was done for uterine artery lacerantion.

Discussion

It was observed that majority of the patients in the present study were in the age group of 26-30 years. Mean age was 29.9 year with a range of 20-40 years. The above results were consistent with Agarwal *et al* (10) and Ehtisham *et al* (11) where the mean age in their study was 27.61 years and 31 years respectively. However, compared to a study in New York by Kastner *et al* (12) and Khanum *et al* (13) where mean maternal age was 32.3 years and 35 years respectively. The lower mean age in our study is probably due to the practice of early marriage and frequent child bearing without proper birth spacing. A high association of multiparity was also seen in present study with peripartum hysterectomies. Maximum number of patients (82.5%) were multiparous (P2). High parity is associated with an increased risk of uterine atony not responsive to medical treatment and rupture uterus. Similar findings were also reported by Imudia *et al* (14) and Zelop *et al* (15) It was seen that 62.5% patients undergoing obstetrical hysterectomy in the present study were term with a mean gestational age of 35.37 weeks, which was comparable to study done by Agarwal *et al* (10) where mean gestational age noted was 34.98 weeks. Majority of the patients (62.5%) were unbooked and were referred late from the periphery in unstable conditions to our tertiary institution. Remaining 37.5% patients were booked cases of our institution, in majority of whom view of their high risk obstetrical history.

Table 3. Distribution of Patients According to Present Mode of Delivery

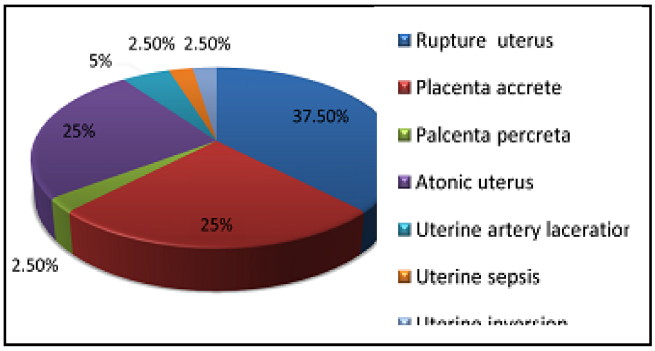
Mode of delivery	No. of patients	Percentage
LSCS	18	45%
Vaginal	11	27.5%
Laprotomy	11	27.5%

Table 4. Distribution of Patients According to Indication for Hysterectomy

Indication	No. of patients	Percentage
Rupture uterus	15	37.5%
Placenta accrete	10	25%
Palcenta percreta	1	2.5%
Atonic uterus	10	25%
Uterine artery laceration	2	5%
Uterine sepsis	1	2.5%
Uterine inversion	1	2.5%

17.5% of these patients were previous LSCS with placenta previa/accrete. However, most of these patients were clinically stable both pre and post hysterectomy. The incidence of peripartum hysterectomy occurring with a history of previous cesarean section has increased significantly over the last few decades. In the present study, 55.3% patients has a history of previous cesarean section at least once in their obstetrical career while out of this 20% patients had vaginal birth after cesarean section. These findings were consistent with findings in recent literature, with history of prevous cesarean section ranging from 18.8 to 60.5%.(16) Similarly, Agarwal *et al* (10) indentified 44.44% patients in their study who had history of either one or two previous cesarean sections. Knight M *et al* (16) also stated that prior cesarean delivery leads to a greater than seven times increase in the odds of having a peripartum hysterectomy to control hemorrhage. The risk associated with cesarean section extends beyond the initial cesarean delivery into the subsequent deliveries. A prior cesarean delivery results in uterine scarring resulting in increased risk of abnormal

Fig 1. Distribution According to Indication for Hysterectomy



being associated with previous LSCS. Although definitive diagnosis of placenta accreata can only be made during surgery, antenatal colour Doppler study has a high sensitivity and positive predictive value in its diagnosis. Therefore, use of ultrasound scanning can help identify patients at risk for complications. A significant observation in our study, as already stated, was association of multiparity and prior LSCS with peripartum hysterectomy. A total of 37.5% developed uterine rupture intrapartum; and 15% of these had cesarean section scar rupture. Most of the patients (35%) were multiparous and 5% had hydrocephalus. 7.5% patients had history of prolonged labor at home while 2.5% patients were referred from periphery with obstructed labor. One patient underwent internal podalic version for second baby of twins following which she developed rupture uterus with lateral extension causing traumatic laceration of uterine artery. One patient had history of retained placenta following home delivery which was removed manually. It was observed that 45% placentation, including placenta previa and placenta accrete in subsequent pregnancies. It also increases the risk for future abdominal deliveries and uterine rupture. Out study provides evidence needed to comprehensively counsel women about the risk of primary cesarean delivery and to counsel against cesarean delivery without a specified medical indication. 30% patients had history of prior suction and evacuation in our study. Zahn & Yeomans (17) also listed history of curettage as a risk factor associated with placenta accrete. Ananth *et al* (18) found a strong association between a history of abortion and the subsequent development of placenta previa. All the patients (100%) who underwent hysterectomies were anemic in the antenatal period; thus even moderate amount of intrapartum/postpartum hemorrhage predisposes to hemodynamic instability and warrants the need for liberal fresh blood transfusion in these patients to prevent further deterioration of the hemodynamic parameters and to achieve hemostasis by replenishing the coagulation factors. It was seen that 27.5% patients has placenta previa with 25% of previa's patients were delivered by LSCS, 27.5% vaginally and 27.5% underwent laparotomy for rupture uterus. Most common indication of peripartum hysterectomy in the present study was rupture uterus accounting for 37.5% of the total hysterectomies. Out of these, 27.5% were referred from peripheral rural areas. 15% had scar rupture, 35% were multiparous while 22.5% being mulipara with non-scar rupture. 5% cases of uterine rupture were associated with hydrocephalus. One patient had a traumatic rupture were following road traffic accident. Two cases of uterine rupture were associated with broad ligament hematomas. Occurrence of uterine rupture was significantly associated with grand multiparity, scarred uterus, lack of antenatal care, unsupervised labor at home, injudicious use of oxytocin, and low socioeconomic status of the women. All these factors are largely preventable. Morbidly adherent placenta was the second most common cause; with 25% patients having placenta accrete and 1 (2.5%) having placenta percreta. 9 out of 10 (22.5%) cases of placenta accrete were associated with previous LSCS while remaining 1 case occurred in a grandultipara (P7) with history of all vaginal deliveries. Patient with placenta percreta had previous 3 LSCS and history of VBAC and in 1 S&E patient placenta was seen encroaching the bladder and upper vagina. Abnormal placentation has been shown in literature to be associated with a previous uterine scar and subsequent bleeding complications, hysterectomy and longer maternal hospital stays. These life threatening abnormal placental complications require aggressive blood transfusion therapy and decision of invasive treatment must be considered quickly if all

previous measures have failed. Due to high morbidity associated with placenta accrete, the Royal College of Obstetricians and Gynecologists recommend a care bundle when operating on such cases. This care bundle includes the involvement of a consultant obstetrician directly supervising delivery, consultant anesthetists directly supervising aesthesia at delivery, availability of blood and blood products, multidisciplinary involvement in pre-operative planning, discussion, a consent that includes the possibility of unplanned interventions (hysterectomy or leaving the placenta in place) and availability of ICU facilities. Third most common indication was uterine atony which accounted for 25% of all hysterectomies. Overall there has been a decline in the incidence of emergency peripartum hysterectomy for uterine atony which is probably explained by the active management of third stage of labor and newly developed conservative pharmacological and surgical treatment strategies. Atonicity of the uterus not responding to primary medical management with uterotonic agents will require hysterectomy as a last resort. In our study, 7.5% cases of uterine atony were associated with previous cesarean section, 15% patients were multiparous with all previous vaginal deliveries and 1 patient was primigravida with abruptio placentae. 2 patients had Polyhydramnious, 1 had history of prolonged labor and 1 patient had retained placenta followed by its manual removal. Uterine artery laceration was seen in 5% patients, in 1 patient it occurred following extension of uterine incision during LSCS while in other patient uterine artery got lacerated during internal podalic version of second baby of a twin. Our finding were consistent with Marwaha *et al* (19) who observed rupture uterus as being the most common indication for hysterectomy in their study. Najam *et al* (20) also found rupture uterus as the most common cause in their study. However, Knight *et al* (16) reported the major causes of hemorrhage requiring peripartum hysterectomy in their study being uterine atony and morbidly adherent placenta. Agarwal *et al* (10) found placenta accrete as the major cause the hysterectomy followed by uterine atony and rupture uterus.

Conclusion

Thus, we conclude that multiparity, history of previous cesarean section and rupture uterus, abnormal placentation and severe anemia were the common risk factors associated. Most common indication for peripartum hysterectomy was rupture uterus, abnormal placentation and atonic uterus.

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