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Original Research Article

Changing trends in epidemiology and outcome in peripartum hysterectomy over a period of ten years in a tertiary care teaching institution

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ABSTRACT

Background: Peripartum hysterectomy is a lifesaving procedure performed for severe obstetric complications such as major obstetric haemorrhage, abnormally invaded placenta, uterine rupture or sepsis. Objectives of the study was to review the epidemiology of peripartum hysterectomies performed over a period of ten years from January 2012 to December2021 and to determine the trends in peripartum hysterectomies by comparing two different time periods.
Methods: In this retrospective descriptive study, the case records of peripartum hysterectomies performed at Government Medical College, Kozhikode between January 2012 and December 2021 were analysed. Results for 2012-2014 and 2019-2021 were compared to identify the changing trends.
Results: Total number of deliveries for 10 years was 147272, of which 53975 (36.64%) women underwent caesarean section. Total number of peripartum hysterectomies was 312 with incidence of 2.12 per 1000 deliveries. Comparing the data of 2012-14 with 2019-21, incidence was 2.11 and 2.45 per 1000 deliveries respectively. Placenta previa accreta was the commonest indication for peripartum hysterectomies in both periods. Classical caesarean section followed by hysterectomy in 53 cases (61.62%) during 2019-21 whereas only 6 cases (6.06%) during 2012-14. Number of units of blood and blood products received was less during 2019-21 period, 56(65.11%) received only1-3 units whereas 48 (48.48%) received more than 3units during the period 2012-14.
Conclusions: Placenta previa accreta was the most common indication for hysterectomy during 2019-21. Classical caesarean section followed by hysterectomy in placenta previa accreta can reduce haemorrhage and need for transfusions.

Keywords: Classical caesarean section, Obstetric haemorrhage, Peripartum hysterectomy, Placenta previa accreta

INTRODUCTION

Peripartum hysterectomy is a near miss maternal event performed for severe obstetric complications such as major obstetric haemorrhage, abnormally invaded placenta, uterine rupture or sepsis. Peripartum hysterectomy includes both cesarean hysterectomies performed after cesarean delivery and postpartum hysterectomies performed after vaginal delivery. The incidence of peripartum hysterectomy varies from 0.2-1.6 per 1000 deliveries per year in developed countries with a higher incidence in developing countries.[1] Indications for peripartum hysterectomy have changed over the years. Uterine atony and uterine rupture are the most common indications in developing countries, but in developed countries, abnormal placental invasion is the most common indication. In many countries, the indication for hysterectomy due to the placenta accreta spectrum increases concomitantly with an increase in the rate of caesarean section.[2,3,5]

Haemorrhage from placenta accreta spectrum, formerly known as morbidly adherent placenta including placenta increta, accreta and percreta carries a higher risk of hysterectomy than uterine atony and uterine rupture. The increasing rate of caesarean delivery word wide has been associated with an increasing rate of placenta previa and accrete.[4]

Objectives of this study were to review the epidemiology of peripartum hysterectomies performed over a period of ten years at a tertiary care institution, and to determine the trends in peripartum hysterectomies by comparing two different time periods.

METHODS

We conducted a retrospective descriptive study for the period January 2012 to December 2021 in the Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode, Kerala. All women who underwent peripartum hysterectomies during this period were studied. Those who were referred after hysterectomy at peripheral hospitals were also included. Our centre is a tertiary care teaching institution providing care for referred complicated obstetric cases from five districts of the state.

Data collection was done from the case records from medical records library after obtaining institutional ethics committee clearance. Peripartum hysterectomy cases were identified from the parturition register and case records were taken and data collected. Maternal demographic and clinical data including age, gravida, parity, gestational age at delivery, previous caesarean sections, history of previous myomectomy and uterine curettage were taken. Medical co morbidities like hypertension and diabetes mellitus were noted. Body Mass Index (BMI) of the patient was also recorded. Clinical details of mode of delivery, indication and type of hysterectomy, type of caesarean section if followed by caesarean section, additional procedures, if any like internal iliac artery ligation, number of units of blood and blood products transfused, need for re operation, intra operative and post operative complications, inadvertent bladder opening and post operative hospital stay were recorded. Detailed past obstetric history and associated risk factors were noted which included number of previous caesarean sections, current placenta praevia and accreta.

The decision for hysterectomies was taken as a last resort when medical methods and other surgical procedures failed to correct intractable haemorrhage following vaginal or abdominal delivery. Medical methods employed included oxytocin, methyl ergometrine, prostaglandins (PGF2α, PGE1) and uterine massage and bimanual uterine compression. Minor surgical procedures included intra uterine suction with cannula and TVUAC (Transvaginal uterine artery clamp). Major surgical procedures were uterine artery ligation, internal iliac artery ligation and modified B-Lynch sutures. All cases of placenta previa accreta spectrum diagnosed by ultrasound were further evaluated by MRI scan and the extent of invasion assessed. Previous caesarean section with morbidly adherent placenta was managed with elective classical caesarean section followed by hysterectomy.

A total of 313 cases of peripartum hysterectomies were done during the period. Of these 105 cases during first period (2012-14) and 86 cases during second period (2019-21) were separately analysed so that we could compared the results of both periods. Statistical analyses were done using SPSS version 17.0. Normal distribution of categorical variable was assessed by chi-square analysis. A p-value of <0.05 was considered to indicate statistical significance.

RESULTS

During the 10 year study period, total number of deliveries was 147,272, of which 53975 (36.64%) underwent caesarean sections. Peripartum hysterectomies were performed in 312 women with an incidence of 2.12 per 1000 deliveries. During 2012-2014, 105 women underwent peripartum hysterectomies with an incidence of 2.24 per 1000 deliveries and 86 women had hysterectomies during the period 2019-2021 with slightly higher incidence of 2.45 per 1000 deliveries.

The maternal demographic and delivery characteristics of women underwent peripartum hysterectomies during the periods 2012-2014 and 2019-2021 are given in Table 1.

Table 1: Maternal demographic and delivery characteristics.

Characteristics	2012-14 (no.105) (%)	2019-21 (no.86) (%)	P value
Age (years)			
18 – 25	16 (15.23)	10 (11.63)	0.469
26 – 35	84 (79.98)	71 (82.56)	0.653
>35	5 (4.46)	5 (5.81)	0.745
Gravida			
Primi	4 (3.80)	0	0.128
G2 & G3	98 (93.33)	66 (76.74)	0.001*
G4 & above	3 (2.85)	20 (23.25)	<0.0001*
Parity			

Continued.

Characteristics	2012-14 (no.105) (%)	2019-21 (no.86) (%)	P value
P1	4 (3.80)	0	0.128
P2 -P3	90 (85.71)	81 (94.18)	0.057
>P3	11 (10.47)	5 (5.81)	0.247
Gestational age (weeks)			
24 – 28	1 (0.95)	2 (2.36)	0.589
29 -33	5 (4.76)	13 (15.12)	0.015*
34 -37	26 (24.76)	26 (30.23)	0.398
>37	73 (69.52)	45 (52.32)	0.015*
Previous caesarean			
Previous 1CS	36 (34.28)	25 (29.07)	0.442
Previous 2CS	28 (26.66)	44 (51.16)	<0.001*
Previous 3CS	5 (4.76)	0	0.065
Other previous surgeries			
Myomectomy	nil	0	
Uterine curettage	4 (3.80)	7 (8.14)	0.201
Mode of delivery			
LSCS	71 (67.62)	18 (20.93)	<0.0001*
Classical CS	4 (3.8)	53 (61.63)	<0.0001*
Vaginal delivery	19 (18.09)	11 (12.79)	0.316
Rupture uterus	11 (10.47)	4 (4.65)	0.137
Indications for hysterectomy			
Placenta praevia and PPH	9 (9.50)	3 (3.49)	0.15
Placenta previa accreta	60 (57.14)	70 (81.39)	<0.001*
Uterine atony	20 (19.04)	9 (10.46)	0.10
Traumatic PPH	4 (3.80)	0	0.128
Rupture uterus	11 (10.47)	4 (4.65)	0.137
Fibroid uterus	1 (0.95)	0	1.0

Table 2: Intraoperative complications.

Intraoperative complications			
Intraoperative complications	**N (%)**	**N (%)**	**P value**
Coagulopathy	10 (9.52%)	nil	0.002*
Opening of urinary bladder	7 (6.66%)	15 (17.44%)	0.02*
Febrile morbidity	7 (6.66%)	3 (3.49%)	0.516
Wound sepsis	2 (1.9%)	3 (3.49%)	0.659
Re exploration	1 (0.95%)	nil	1.0
Maternal death	2 (1.9%)	nil	0.502
Number of units of blood products given			
1-3 units	50 (47.62%)	40 (46.51%)	0.885
3 and above	55 (52.38%)	46 (53.49%)	
Number of days of hospital stay			
Up to 7 days	45 (42.85%)	54 (62.79%)	0.006*
More than 7 days	60 (57.15%)	32 (37.21%)	

On comparing demographic parameters, there is no significant difference in the age groups. Majority belongs to 26-35 years (79.98% vs. 82.56% in 2012-14 and 2019-2021 period). Regarding gravidity, there was an increasing number in gravida four and above which was 23.25% during 2019-21 period whereas it was 2.85% during 2012-14 period.

Regarding gestational age at delivery, there was significant increase in preterm deliveries from 4.76% to 15.12% which was mainly because of placenta previa accreta cases. Also there was increase in previous two caesarean

section cases from 26.66% to 51.16%. Placenta previa accreta was the indication for hysterectomy in 81.39% of cases during 2019-21 periods whereas it was done for 57.14% during 2012-14 periods. There was a reduction in the number of uterine atony and rupture uterus cases. Classical caesarean section was done for majority of cases of placenta accreta spectrum so that we could reduce the blood loss and thereby reduce the number of transfusions.

Intra operative complications

No cases of coagulopathy occurred during 2019-21 whereas it was 9.52% during 2012-14. Inadvertent opening of bladder increased from 6.66% to17.44% (2012-14 vs. 2019-21) which is mainly because of increase in placenta accreta spectrum.

DISCUSSION

The prevalence of peripartum hysterectomy (PH) varies widely in countries and institutions. The prevalence is 0.2-1.6 per 1000 deliveries in developed countries, but higher rate was reported from developing countries ranging from 0.2-5 per 1000 deliveries. It is 1 per 1000 in United States, 2.6 in Denmark and 10.7 in Italy.[1,2] In the present study, the prevalence is 2.6 per 1000 deliveries. On comparing the two time periods, there are not many differences in the prevalence.

Abnormal placentation was the most common indication for PH in our study. Also there was significant increase in placenta accreta spectrum (PAS) which was 57.14% during 2012-14 and increased to 81.39% during 2019-21. Study by Temizkan O et al also showed that PAS was the commonest indication for PH of 60.5% during 2000-2013.[3] When they analysed between two time periods, there is no significant difference in spite of the rise in CS rate. Osden S et al reported 10% of PH for PAS during 1990-2003 in their study from same institution.[4] Athanasios F et al in their study reported 34.8% of PH done for PAS, the need for peripartum hysterectomy is increased with the increase in caesarean rate.[2,5] The overall rate of caesarean sections in the present study was 36.64% during 10year period with an increase in rate to 41.48% during 2019-21. Our institution is a referral centre with most of the high risk patients being referred from more than four districts. This results in a high caesarean section rate which in turn results in increased risk of PH due to repeat section and PAS. Most of the studies showed that, as CS rate increases, there is proportionate increase in PH also. Parazzini et al and Bateman et al reported that PH incidence had increased by time, but Flood et al reported a decreased PH incidence due to their lower caesarean section rate and higher vaginal birth after caesarean.[6-8]

Uterine atony was the second most common indication for PH in the present study which was 19.04% during 2012-14, decreased 10.46% in the later period. There was significant reduction in uterine atony requiring hysterectomy. As we are routinely practising active management of third stage of labour (AMTSL) in all cases both vaginal as well as caesarean deliveries, severe atonic postpartum haemorrhage is less common. Also with the use of suction cannula and transvaginal uterine artery clamp application, even if there is atonic PPH we could control bleeding. Temizkan O et al also found that uterine atony as the second most common indication for PH, but no difference in rate over 14 year period when analysed separately earlier and later 7 year periods. Osden et al in their study showed that, 62.7% of PH done for uterine atony. Athanasios. F et al found that 35.3% of PH done for uterine atony. Yildrim G Y et al reported, from their seventeen year experience, 51.60% cases of uterine atony as the indication for PH in the earlier period which changed to 83.50% of placenta accreta spectrum in the later period.[5]

Uterine rupture is a complication of prolonged obstructed labour and also following giving way of previous scar. In the present study third most common indication was uterine rupture which was 10.47% during 2012-14 and that reduced to 4.65% during 2019-21. Temizkan O et al also showed uterine rupture as the third most frequent indication, but no difference in the two seven year periods (7.7% vs. 5.5%). Similar results were found in studies by Kwee et al and Flood et al, which showed a decreasing incidence of uterine rupture as an indication for PH.[9,8] Singh et al reported uterine rupture as the commonest indication for hysterectomy of 59.04 %.[10]

Most of the cases in the present study, we did total hysterectomy as 81.39% cases were placenta accreta. This is consistent with the reports of other studies.[8,9] As in cases of placenta previa accreta, there is high risk of lower segment bleeding from cervical branch of uterine artery; total hysterectomy is preferable to subtotal hysterectomy. When there is active bleeding from lower uterine segment or cervix, total hysterectomy should be considered. However the skill and experience of surgeon should determine the method of choice.

Complications

In the present study, occurrence of inadvertent opening of urinary bladder increased from 6.66% to 17.44% (2012-14 VS 2019-21) as majority of cases were done for placenta accreta spectrum. The incidence of bladder injury reported in other studies ranges from 4-15% (11, 12, and 13) with higher rate of bladder injury following total hysterectomy and placenta accreta.[14]

Coagulopathy was not present in any of the cases during 2019-21 whereas 9.5% had during 2012-14 in the present study. Over the period, we opted for planned surgery by doing classical caesarean section followed by hysterectomy without disturbing placenta, so that we could reduce the blood loss significantly and thereby reduce the number of units of transfusions. Osman T et al reported 12.3% coagulopathy in their study.

We had one case of re exploration during 2012-14 but none during 2019-21. On exploration, there was bleeding from one of the stumps, which was managed by reinforcing the stumps and internal iliac artery ligation. Reported rate of re exploration varied from 4% to 25%.[12,14] Wright et al and Gungorduk et al reported a higher rate of re exploration after subtotal hysterectomies but Osden et al reported a higher rate after total hysterectomies.[14,11,13]

Because we resorted to do hysterectomy either as a planned procedure or as emergency, we could prevent maternal death to a great extent. There was no case of mortality in our study during 2019-21 period but one death during 2012-14, where the patient was brought in a state of irreversible shock due to uterine atony and could not be salvaged. Yildrim et al reported 5 maternal deaths during their 17years study period.[5]

Main limitation of the study is its retrospective nature.

CONCLUSION

There is an increasing trend in the occurrence of placenta accreta which is the most common indication for hysterectomy during 2019-21 period. Classical caesarean section followed by hysterectomy in placenta previa accreta can reduce haemorrhage and need for transfusions.

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