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Original Research Paper

Retrospective Study of Fetomaternal outcome in Antepartum haemorrhage in Caesarean Section in Tertiary hospital.

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ABSTRACT:

Introduction: Antepartum haemorrhage (APH) is a grave obstetrical emergency and a leading cause of maternal and perinatal morbidity and mortality. The aim of this study was to assess risk factors as well as maternal and perinatal outcome in APH patients with LSCS. **Methods**: This retrospective observational study was conducted in 200 patients who presented with APH at 28 weeks gestation and beyond and underwent LSCS in the department of Obstetrics and Gynaecology at tertiary care hospital from January 1, 2015, to December 31, 2020 **Results:** Majority of the patients (38%) were in the age group of 26-30 years. 97.5% cases were registered. 64% were multigravida presented at gestational age between 33.1-37 weeks. (81, 40.5%) with vaginal bleeding (94, 47%). The most common risk factors observed were multiparity (64%), previous LSCS (13%), hypertensive disorders (35%), trauma, malpresentation, anaemia. Postpartum haemorrhage (19.5%) was most common complication followed by disseminated intravascular coagulation (11.5%), acute renal failure (4%), puerperal sepsis (3.5%). There were overall 4 (2%) maternal deaths. 26 (13%) patients required admission in ICU. Prematurity (28.5%), asphyxia (4.5%) and jaundice (8%) were the perinatal complications observed. The incidence of stillbirth was higher in patients with abruptio placenta compared to patients with placenta previa [Chi-Square test ($p<0.05$)]. **Conclusion**: Awareness regarding risks and consequences should be made amongst patients with APH along with their family members. They should be considered as high risk and timely management should be offered in tertiary care hospital.

Keywords: Antepartum Haemorrhage, Abruptio placenta, Placenta previa.

INTRODUCTION:

According to WHO, haemorrhage is considered as one of the direct causes of maternal mortality. Vaginal bleeding at any stage of pregnancy is a matter of great concern for both patients as well as doctors. APH accounts for about 3-5% of complications in all pregnancies. [1]

The following are causes of APH [1]:

1) Placental (70%) – Placenta Previa (PP) (35%), Abruptio Placenta (AP) (35%)
2) Unexplained (25%) (excluding placental bleeding or local lesions).
3) Extra placental (5%)- local causes: cervical polyps, carcinoma cervix, varicosities, trauma.

Most common cause of APH is due to placental causes i.e., Placenta previa and Abruptio placenta. Placenta previa is defined as placenta that is implanted in lower uterine segment, either over or near the internal cervical os. Abruptio placenta is defined as sudden premature separation of normally implanted placenta either totally or partially from its site before delivery of the foetus. It is classified into Concealed, Revealed & Mixed. Incidence of placenta previa is around 0.33%-0.55% whereas of abruptio placenta is around 0.5% - 1%.[2] In India, maternal mortality is still very high and is 4.08/1000 live births. Perinatal mortality is less than 10 per 1000 total births in developed countries while it is much higher in India 60/1000 total births[3]. Maternal complications include postpartum haemorrhage, hypovolemic shock, disseminated intravascular coagulation (DIC), and sepsis[3]. It also includes higher rates of caesarean sections, as high as 83.3% for placenta previa, peripartum hysterectomies (2.1%), and postoperative anaemia (7.3%) in a study

from Sokoto, Nigeria [4] . Foetal complications are premature delivery, low birth weight, birth asphyxia, and intrauterine death[3] . Upto one-fifth of very preterm babies are born in patients having APH and the association of APH with cerebral palsy can be explained by preterm delivery[1]. In developing countries like India, women often experience adverse effects of APH due to widespread pre-existing anaemia, difficulties with transport and inadequacies of maternity services[5]. As APH stands out as a serious, life-threatening condition causing significant maternal and perinatal morbidity and mortality, it is particularly important to appraise the pattern of this condition in a developing country for better maternal health-care services. Early diagnoses, timely referrals, blood transfusion facilities along with a trained team of doctors and well-equipped ICU facility goes a long way in avoiding APH related fetomaternal complications. Hence the present study was done at our tertiary hospital to assess the risk factors and to evaluate maternal and foetal outcome in Antepartum Haemorrhage (morbidity & mortality) in patients with LSCS.

METHODS:

After obtaining Institutional Ethical Committee approval, this retrospective observational study was conducted in the Department of Obstetrics and Gynaecology at of Lokmanya Tilak Municipal Hospital and Medical College. A list of 200 patients who had APH at 28 weeks gestation and beyond, who underwent LSCS from January 1, 2015, to December 31, 2020, who fulfilled the inclusion and exclusion criteria was obtained from labour ward & obstetrics theatre records, and the case notes from the Medical Records Department of the hospital. The names of the patients and their in-patient department numbers were carefully cross-checked to ensure there was no repetition.

Inclusion criteria:

- All pregnant women with APH undergoing LSCS ≥ 28 weeks diagnosed with placenta previa and abruptio placenta.

Exclusion criteria:

- All antenatal cases < 28 weeks gestation.
- All APH cases with vaginal delivery.
- Bleeding causes other than placenta previa and abruptio placenta

The parameters included were age, gravid status, booking status, gestational age at the time of delivery, chief complaints, comorbidities, general examination, systemic & obstetric examination, type of APH, & investigations such as obstetric ultrasound. Maternal outcome like ICU admission, mortality, requirement for blood & blood products, along with management of complications and perinatal outcome was also noted. Statistical Analysis was done with SPSS version 20. Quantitative data was presented with the help of mean and standard deviation. Qualitative data was presented with the help of frequency and percentage tables. Association among the study groups was assessed with the help of Fisher's test, Student 't' test and Chi square test. 'p' value less than 0.05 is taken significant.

RESULTS:

A hospital-based retrospective, observational study was conducted to study the maternal and foetal outcome and associated risk factors in 200 patients (100 each of abruptio placenta and placenta praevia) who underwent LSCS for APH.

Characteristics		AP N=100	PP N=100	Total (%) N=200
Age groups (years)	**18-20**	9	6	15 (7.5)
	21-25	37	29	66 (33)
	26-30	42	34	76 (38)
	>30	12	31	43 (21.5)
	Mean ± SD	25 ± 16.91	25 ± 12.83	27.22 ± 4.64
Booking Status	**Unregistered**	3	2	5 (2.5)
	Registered	97	98	195 (97.5)
Gravida	**Primigravida**	66	6	72 (36)
	Gravida 2	13	55	68 (34)
	Gravida 3	5	36	41 (20.5)

	Gravida 4	10	2	12 (6)
	≥Gravida 5	6	1	7(3.5)
Gestational age (weeks) at presentation	**28-33**	18	24	42 (21)
	33.1-37	44	37	81 (40.5)
	>37	47	30	77 (38.5)
	Mean ± SD	34.96 ± 3.25	35.47 ± 2.88	35.21 ± 3.07
Previous Mode of Delivery	**LSCS**	10	16	26 (13.0)
	Vaginal Delivery	45	57	102(51.0)
	Nulligravida	66	6	72 (36.0)

Table 1: Demographic and Obstetric characteristics of the patients

Distribution of patients according to Demographic and Obstetric characteristics of the patients:
Most of the patients with APH (38%) were in the age group of 26-30 years with mean age of 27.22 ± 4.64 years. About 97.5% patients were registered whereas 2.5% were unregistered. Amongst APH cases, 36% patients were primigravida while 64% were multigravida with 51% having previous vaginal deliveries & 13% were previous LSCS. Majority of them (81, 40.5%) had presented with APH at the gestational age between 33.1-37 weeks (Table no 1).

Risk Factors	**AP N=100**	**PP N=100**	**Total (%) N=200**
Multiparity	55	73	128(64)
Previous LSCS	10	16	26(13)
Hypertensive disorders	47	23	70(35)
Trauma	22	0	22 (11)
Malpresentation	4	11	15(7.5)
Previous D & E	19	14	33(16.5)
Anaemia	13	42	55(27.5)
No risk	6	8	14(7)

Table 2: Distribution of patients according to Risk Factors

Distribution of patients according to Risk Factors:
Multiparty was most common risk factor (64%) in this study with 73 cases in PP & 55 in AP. Other risk factors were Hypertensive disorders 35%, Previous D&E 16.5%, Anaemia 27.5%, Previous LSCS 13%, Trauma 11%, Malpresentation 7.5% & 7% had no risks (Table no 2).

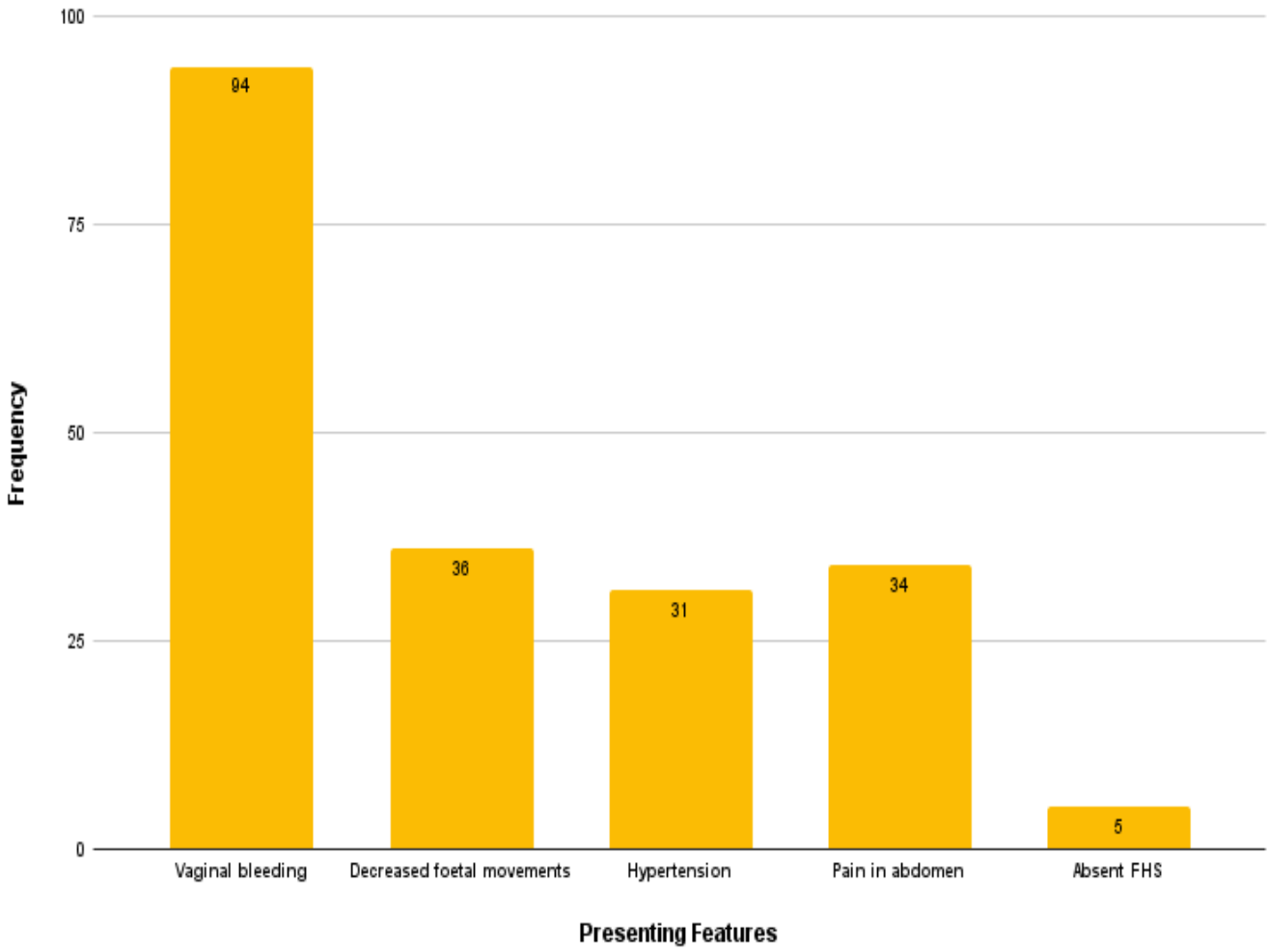

Figure no 1: Distribution of patients according to Presenting Features.

Distribution of patients according to Presenting Features:
In this study 47% patients had bleeding per vagina, followed by decreased foetal movements (18%), hypertension (15.5%), pain in abdomen (17%) & absent foetal heart sounds (2.5%) (Figure no 1).

Indication of LSCS	AP N=100	PP N=100	Total(%) N=200
Foetal distress	47	38	85(42.5)
Previous LSCS	10	16	26(13)
Pre-eclampsia, Eclampsia	26	12	38(19)
Haemorrhage	34	23	57(28.5)
Malpresentations	4	6	10 (5)

Table 3: Distribution of patients according to indication of LSCS

Distribution of patients according to Indication of LSCS:
The most common indication of LSCS in this study was Foetal distress (85, 42.5%), seen more in AP (47), followed by Haemorrhage (57, 28.5%), Pre-eclampsia-Eclampsia (38, 19%), Previous LSCS (26, 13%) & Malpresentations (10, 5%) (Table no. 3).

Blood and Products Transfusion	AP N=100	PP N=100	Total (%) N=200	p Value
Blood Transfusion	52	67	119(59.5)	>0.05
Fresh Frozen Plasma	29	27	56(28)	
Platelet	6	9	15(7.5)	
Cryoprecipitate	1	2	3(1.5)	
Intra-op Blood Loss (ml)	1183.32 ± 219.24	1254.42 ± 302.04		>0.05

Table 4: Distribution of patients according to blood and blood products transfusion and intraoperative blood loss.

Distribution of patients according to Requirement of Blood and Products Transfusion:
From the total of 200 patients, blood and blood products were required for 193 patients.119 (59.5%) patients required blood transfusion while 56 (28%) and 15 (7.5%) patients required fresh frozen plasma and platelets transfusion respectively & 3 (1.5%) patients required cryoprecipitate transfusion. (Table no 4)

Maternal complications	AP N=100	PP N=100	Total (%) N=200	P value
PPH	21	18	39(19.5)	>0.05
DIC	13	10	23(11.5)	
Acute renal failure	6	2	8(4)	
Puerperal Sepsis	3	4	7(3.5)	
Maternal mortality	2	2	4(2)	
ICU admission	12	14	26(13)	

Table 5: Distribution according to maternal complications.

Distribution of patients according to maternal complications
From total of 200 patients, 107 (53.5%) had maternal complications. The most common maternal complication was postpartum haemorrhage (PPH) (39, 19.5%) followed by Disseminated intravascular coagulation (DIC) (23, 11.5%), Acute renal failure (ARF) (8, 4%) and Puerperal Sepsis (7, 3.5%). There were 13% (26) ICU admissions & 4 (2%) maternal deaths in our study. (Table no 5)

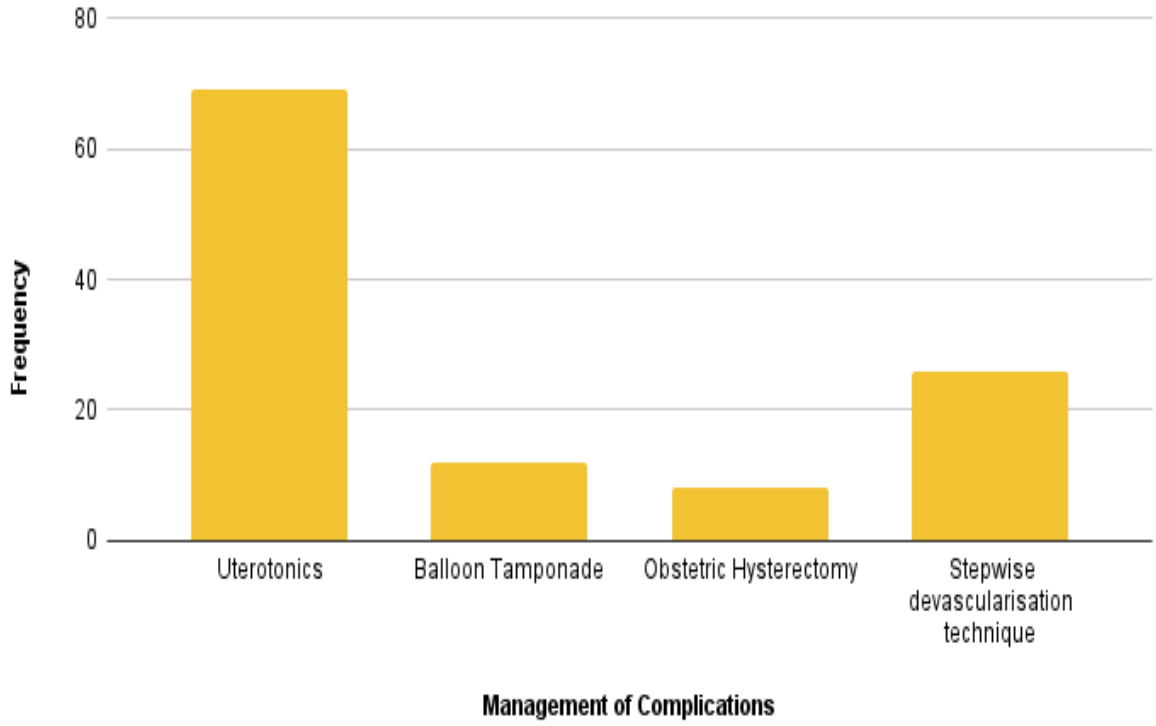

Fig 2 – Distribution according to management of complications.

Distribution of patients according to management of complications:
69 patients had complications managed by uterotonics, followed by balloon tamponade (12), obstetric hysterectomy (8), stepwise devascularisation technique (26). (Figure no. 2)

Characteristics		AP N=100	PP N=100	Total (%) N=200	P value
Baby weight (kg)	**≤2**	47	29	76 (38)	
	2.01-2.5	29	25	54 (27)	
	2.51-3	11	37	48 (24)	
	3.01-3.5	11	6	17 (8.5)	
	>3.5	2	3	5 (2.5)	
	Mean± SD=2.19 ± 0.66	2.06 ± 0.69	2.33 ± 0.21		<0.05
NICU admission	**Yes**	36	32	68(34)	>0.05
	No	64	68	132(66)	
Perinatal Outcome	**Live Birth**	73	92	165(82.5)	
	Still Birth	24	6	30(15)	<0.05
	Neonatal Death	3	2	5(2.5)	
Neonatal complications	**Prematurity**	31	26	57(28.5)	>0.05
	Jaundice	7	9	16(8)	
	Birth Asphyxia	6	3	9(4.5)	
APGAR Score at 1min	**Mean±SD**	5.92±3.94	7.82±2.45	6.96 ±3.35	<0.05
APGAR Score at 5min	**Mean±SD**	7.25±4.48	9.44±2.29	8.45±3.63	

Table 6: Distribution according to perinatal outcome.

Distribution according to perinatal outcome:
There were 165 (82.5%) live births, 30 (15%) stillbirths and 5 (2.5%) neonatal deaths.68 (34%) neonates required NICU admission in our study. 57 (28.5%) neonates were premature. The birth weight of 76 (38%) neonates was ≤2 kg, while it was in the range of 2.01-2.5 kg and 2.51-3 kg for 54 (27%) and 48 (24%) neonates respectively. 17 (8.5%) and 5 (2.5%) neonates weighed in the range of 3.01-3.5 kgs and >3.5 kgs respectively. The mean birth weight was 2.19 ± 0.66 kg. (Table no. 6)

DISCUSSION:

A hospital-based retrospective observational study was conducted with 200 patients (100 each of abruptio placenta and placenta praevia) to study risk factors & fetomaternal outcome in APH in patients with LSCS.

Age and gravid status of patients:
In the present study, majority of patients presenting with APH (38%) belonged to the age group of 26-30 years, followed by 33% in 21-25 years, 21.5% in >30 years, mean age of the patients was 27.22 ± 4.64 years. This is similar to the studies of Farayi S et al[6], Jharaik H et al[7] which was 29yrs and 26.7± 4.5 years respectively. Tyagi P et al[8] and Adekanle DA et al[9] found 61% and 40% cases of APH between 26-30 years of age respectively. However, in Takai IU et al[10] retrospective study the mean age was 32.8 ± 5.5 years with a range of 20–44 years. In this study, 97.5% patients were registered in our tertiary hospital which was similar to the study by Jharaik H et al[7] where the antenatal registration rate of 82 %. Our booking rate was significantly higher and was inconsistent with most of the studies due to free facilities provided by the state government gives an easy access for antenatal checkup even in far stretched areas. In the present study, APH was more in multigravida 128 (64%) with 34% being gravida 2, & 72 (36%) patients were primigravida. AP was more common in primigravida (66) while in placenta previa more multigravida patients (94) were noted. This is comparable to the studies of Jharaik H et al[7] and Rajoriya M et al[11]. Jharaik H et al[7] prospective study evaluating the consequences of antepartum haemorrhage found 71.43% patients were multigravida and 28.57% primigravida. It was also observed that AP was more in primigravida (72) while PP was more in multiparous patients (55). Rajoriya M et al[11] study found 69% of cases of APH were multigravida, 48% of whom were gravida 3 and gravida 4.

Gestational age at presentation:
In our study 81 (40.5%) patients presented with APH at gestational age between 33.1-37 weeks while 77 (38.5%) and 42 (21%) patients presented at >37 weeks & 28-33 weeks respectively. Takai IU et al[10] and Jharaik H et al[7] noted similar observations in their studies. Takai IU et al[10] retrospective study observed mean gestational age at presentation was 35.3 ± 2.0 weeks with 68.8% of the patients presented between gestational ages of 33 and 36 weeks. Jharaik H et al[7] prospective study found that 60% of the APH delivered between 34-37 weeks of gestation whereas 39.8% cases delivered at gestation >37 weeks.

Associated Risk factors:
Multiparty 128(64%) was the most common risk factor in this study followed by hypertensive disorders 70(35%), previous D&E 33(16.5%), anaemia 55(27.5%), previous LSCS 26(13%), trauma 22(11%), malpresentations 15(7.5%). This is in accordance with the studies of Jharaik H et al[7] and Rajoriya M et al[11].

Prior Mode of Delivery:
In the present study, 102 (51%) patients with APH had previous vaginal delivery while 26 (13%) patients were previous LSCS. In the studies by Takai IU et al[10] retrospective study and Jharaik H et al[7] prospective study the previous LSCS rate was 53.5% and 12% respectively.

Presenting Features:
In this study, 94 (47%) patients with APH presented with vaginal bleeding, followed by decrease foetal movements (18%), hypertension (15.5%), pain in abdominal pain (17%) and absent foetal heart sounds on admission (2.5%). Foetal distress was noted in 85(42.5%) patients. Jharaik H et al[7] prospective study showed 77% of APH cases had mild bleeding at presentation out of which 58% were placenta previa, severe bleeding was observed in 7% cases and 67% of which were due to abruptio placenta.

Indications of LSCS:
The most common indication of LSCS in APH cases in our study was foetal distress (42.5%) which was noted more in AP (47), followed by haemorrhage (28.5%), pre-eclampsia–eclampsia syndrome (19%), previous LSCS (13%), malpresentations (5%). This may be due to foetal compromise caused by uteroplacental insufficiency and premature birth, as most patients in our study were between 33-37 weeks & hypertension was second common risk factor.[12]

Distribution of patients according to Requirement of Blood and Products Transfusion:
It was observed in our study that 119 (59.5%) patients with APH required blood transfusion while 56 (28%) and 15 (7.5%) patients required fresh frozen plasma and platelets transfusion respectively, 3 (1.5%) patients required cryoprecipitate transfusion. Combination of blood and blood products were used as per patients' general condition and blood report. Similar observations were noted in the studies of Takai IU et

al[10], Jharaik H et al[7] and Rajoriya M et al[11] where transfusion rate 66.0%, 58.6 % and 86% % respectively. Nathwani ND et al[13] observed that blood transfusion requirement was 70.90% of total APH patients. The intra-op blood loss & blood and blood products transfusion in both the group of our study is statistically not significant.

Distribution of patients according to complications and management:

The most common maternal complication in our study was PPH (19.5%) followed by DIC (11.5%), ARF (4%) and puerperal sepsis (3.5%). Maternal mortality was found in 4 (2%) patients, 2 in each group. This was mainly due to severe haemorrhage, hypovolemic shock in cases of PP while in AP it was more due to coagulation failure & acute renal shutdown. Jharaik H et al[7] prospective study observed various complications like PPH (41%), anaemia (32.3%), shock (6%) and DIC (0.75%). Takai IU et al[10] retrospective study reported three maternal deaths. Farayi S et al[6] prospective cross-sectional study showed maternal complications as postpartum haemorrhage 50 (40%), need for transfusion 41 (32.8%) and caesarean hysterectomy 4 (3.2%). Maternal deaths, 5 (4%) were all due to placental abruption. The management of APH in the present study was by uterotonics (69), balloon tamponade (12), stepwise devascularisation technique (26). Combinations of the above methods was used to control haemorrhage both intraoperatively & postoperatively, emergency caesarean hysterectomy was done in 8 cases due to deteriorating condition of the mother. This is similar to the studies of Farayi S et al[6], Jharaik H et al[7] ,Nathwani ND et al[13], Kulkarni AR et al[15]. It was observed in our study that Abruptio Placenta and Placenta Previa patients were comparable in age, booking status, parity, GA at delivery, blood and products transfusion, maternal complications, and ICU admission as per Chi- Square test ($p>0.05$). Takai IU et al[10] and Jharaik H et al[7] noted similar observations in their studies.

Perinatal outcome:

In the present study, there were 165 (82.5%) live births, 30 (15%) stillbirths and 5 (2.5%) neonatal deaths, 2.5% patients had absent FHS on admission. This was similar to study by Jharaik H et al[7] which reported that out of the 139 deliveries, 123(88.4%) were live neonates, 12 (8.6%) expired in NICU,12(8.6%) were intrauterine deaths and only 4 (2.8%) were stillbirths. Farayi S et al[6] prospective cross-sectional study observed preterm births accounted for 44.8% of deliveries and 53.6% of the live births were admitted to neonatal units. Stillbirths occurred in 3 (6.8%) of placenta previa and 35 (71.4%) of placental abruption and 3 (9.4%) were due to other causes. 68 (34%) neonates required NICU admission in this study which was because most of the emergency preterm caesarean sections were due to foetal distress and whereas this rate was higher in the study by Jharaik H et al[7] and Farayi S et al[6], Nathwani ND[15]. Jharaik H et al[7] prospective study found 75% of NICU admissions were due to foetal distress out of which 48% cases were of placenta previa and 36% abruptio placenta. Farayi S et al[6] prospective cross-sectional study found 53.6% of the live births were admitted to neonatal unit . In Nathwani ND et al[13] study 22.72% fetus required NICU admission.

In our study, the birth weight of 76 (38%) neonates was ≤2 kgs while it was in the range of 2.01-2.5 kgs and 2.51-3 kgs for 54 (27%) and 48 (24%) neonates respectively. 17 (8.5%) and 5 (2.5%) neonates weighed in the range of 3.01-3.5 kgs and >3.5 kgs respectively. The mean birth weight of neonates was 2.19 ± 0.66 kgs. Jharaik H et al[7] prospective study found that majority of neonates weighed between 2.1-2.5 Kgs. Our study is also comparable with Singhal SR et al[13] retrospective study where most neonates (41.13%) birth weight was ≤2kg. In the present study, 57 (28.5%) neonates were premature, 16 (8%) had jaundice while 9 (4.5%) birth asphyxia. Prematurity & birth asphyxia complications was more in AP group. This is similar to the studies of Takai IU et al[10] and Jharaik H et al[7]. Takai IU et al[10] retrospective study found 136 out of 150 were either asphyxiated or stillborn in the abruptio placentae group. In Jharaik H et al[7] prospective study showed 25.8% neonates had preterm deliveries, out of which 72% were placenta previa. 12.2% cases were associated with asphyxia out of which 59% were placenta previa. In this study, the mean APGAR Score at 1 minute and 5 minutes and birth weight were significantly lower in patients with AP as compared to PP group. The incidence of stillbirth was significantly higher in patients with abruptio placenta (24) compared to placenta previa (6) as per Chi Square test ($p<0.05$). This may be due to factors like hypertensive disorders and prematurity which was observed more in AP than in PP. Similar observations were noted in the studies of Jharaik H et al[7], Takai IU et al[10] .

CONCLUSION:

Antepartum haemorrhage is a leading cause of maternal morbidity and mortality. Placenta previa and Abruptio placenta are the commonest type of APH. Multiparity, hypertension and anaemia being the major risk factors & PPH is most common complication. Majority of neonates were premature, had jaundice & birth asphyxia. Prematurity & stillbirth was more in AP group. Patients with APH must be considered as high-risk. Care should therefore concentrate on its prevention, early detection, and prompt management. Women with APH should get timely management by trained team of medical workers & doctors. They should be encouraged for early ANC registration and

should be delivered in tertiary hospitals with well-equipped neonatal care facilities. Awareness of antenatal care during pregnancy, importance of institutional deliveries and adoption of contraceptive methods (temporary as well as permanent) are the key factors to prevent APH and associated complications.

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Conflict of Interest:
We have no conflict of interest to declare.

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DIC – Disseminated intravascular coagulation.
HTN – Hypertension.
PPH - Postpartum haemorrhage.
LSCS- Lower segment caesarean section.
D&E- Dilatation and evacuation.