

Obstetric admissions to intensive care unit: clinical trends and outcomes at tertiary care teaching hospital

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Abstract

Introduction- Serious and even fatal complications can occur in obstetric patients though they are little younger and healthier. According to World health organization (WHO), "There is a story behind every maternal death or life-threatening complication. Understanding the lessons to be learnt can help to avoid such outcomes."

Purpose- To study Obstetric admissions to intensive care unit, their clinical trends and outcomes at tertiary care teaching hospital.

Method- This is a retrospective study of 400 patients irrespective of age, parity and gestational status of patients having high risk factors admitted to Obstetric ICU. Maternal and fetal outcomes were studied in detail from indoor case sheets.

Result- The study of 400 patients shows that majority of patients in present study (80%) are between 20-30 years of age, the peak reproductive age group. The commonest cause of admission to OICU is hypertensive disorders of pregnancy (49.5%). Average duration of stay at OICU in present study is 3 to 6 days. Ventilatory support is given to 24%. Patients of preeclampsia managed conservatively are 38%. Very few patients of placenta previa and abruption placenta delivered vaginally (5%). Out of all the patients 21% delivered by emergency caesarean section. Laparotomy (0.5%) was done in few cases of ruptured ectopic pregnancy. Obstetric hysterectomy was done in 4 cases of abruptio placenta in which haemostasis was not achieved by other methods. Babies delivered to mothers at obstetric ICU have good Apgar score and because of timely intervention in mother admitted to OICU foetus does not suffer from distress and not admitted to Neonatal ICU.

Conclusion- Probably this implies that complication can be either due to persistence of pre-existing high-risk factor of antepartum period or development of other risk factor during the process of parturition or postpartum. Early Management of all the complications decreases the morbidity and mortality in mothers.

Keyword- Obstetric ICU, hypertensive disorders, obstetric hemorrhage, ectopic pregnancy, critically ill.

Date of Submission: 29-04-2021

Date of Acceptance: 13-05-2021

I. Introduction

Serious and even fatal complications can occur in obstetric patients though they are little younger and healthier [1]. It is because of many reasons like pregnancy itself, aggravation of pre-existing conditions by pregnancy or complications of procedures the patients undergo during pregnancy [1]. Patients admitted to OICU are usually critically ill requiring intensive care and require crucial management. Rather than admitting patients to General ICU specialized Obstetric ICUs decreases the cost. It saves the costly beds for serious patients who require continuous intensive monitoring that requires specialized skills [1]. Majority time obstetrician doesn't acquire the skill because of lack of time and exposure. In majority of the obstetrics department the problem is lack of dedicated staff and the space [1]. According to World health organization (WHO) "There is a story behind every maternal death or life-threatening complication. Understanding the lessons to be learnt can help to avoid such outcomes" [2]. This gives us the opportunity to learn about the high-risk obstetric patients. The aim is to study Obstetric admissions to intensive care unit, their clinical trends and outcome at tertiary care teaching hospital.

II. Aims And Objectives

- To study the Indications of patients admitted to OICU.
- To study the maternal demographic variables in patients admitted to OICU.
- To study various types of treatments given to patients admitted to OICU.
- To study the average hospital- stay of patients admitted to OICU.
- To study maternal and fetal outcomes of patients admitted to OICU.

III. Materials And Methods

Study type: observational study

Sample size: 400

Sample population: mothers admitted to OICU tertiary care teaching hospital irrespective of age, parity and gestational status.

Inclusion criteria:

- Patients who give consent to participate in study.
- All patients irrespective of age, parity and booking status having high risk factors admitted to OICU.
- The antepartum, Postpartum, post abortal patients or those having ectopic pregnancy admitted to OICU.

Exclusion criteria:

- Patient with conditions unrelated to pregnancy.
- Refusal of patients to be enrolled in study.

IV. Methodology

This is an observational study of 400 patients irrespective of age, parity and gestational status of having high risk factors admitted to OICU. Our OICU is a 5 bedded unit with 24 hours laboratory and blood bank services. Round the clock availability of obstetrician, anaesthetist and medical managing facility is there at OICU. The demographic details like Age, parity, booking status, timing of admission at OICU were studied in detail from indoor case sheets [3]. All the antepartum, postpartum, post abortal and ectopic pregnancies admitted to OICU were included in the study [3]. Maternal outcome includes medical management at OICU, surgical intervention if required, OICU stay, maternal morbidity and mortality [3]. Foetal outcome includes Gestational age, Apgar score, baby weight at birth, NICU admission of baby or not. Our all the patients admitted to obstetrics and gynaecology department are JSSK beneficiary. So the obstetric care of the patients admitted to OICU is free of cost.

V. Results And Discussion

During the study period course and outcome of patients admitted to OICU have been studied. All the data well analysed and tabulated as follows.

1) Demographic variable of patients in present series

		Present study N=400	Ashakiran T rathod N=765
Age(years)	>20	012(3%)	085(11.11%)
	20-30	320(80%)	603(78.82%)
	>30	068(17%)	077(10.06%)
Parity	Primi	076(19%)	294(38.43%)
	P2-P4	304(76%)	452(59.08%)
	>P5	020(5%)	019(2.46%)
Booking status	Booked	168(42%)	
	Unbooked	232(58%)	
Timing of admission to OICU	antenatal	254(63.5%)	068(8.88%)
	postnatal	094(23.5%)	619(80.91%)
	Abortion	016(4%)	036(4.70%)
	Ectopic	028(7%)	041(5.35%)
	Molar pregnancy	008(2%)	001(0.13%)

Majority of patients in present study (80%) are between 20-30 years of age same as in Ashakiran T Rathod study (78.82%) [3], As this is a peak reproductive age group. Un-booked cases are more in present study

(58%) and in Natalie Yw leung study (88%) [2]. This is probably because of lack of awareness, illiteracy, social taboos and inaccessibility of health care facilities in developing country. Majority of Patients rush to hospital in emergency when critical condition develops. Majority of patients in all cited studies whereas of postnatal period. Probably this implies that complication can be either due to persistence of pre-existing high-risk factor of antepartum period or development of other risk factor during the process of parturition or postpartum.

2)Reasons for admission

<u>Indication of admission</u>		<u>Present Study N=400</u>	<u>Jonathan Cohen N=33</u>	<u>Natalie Yw Leung N=33</u>
<u>Obstetric hemorrhage</u>	<u>Placenta previa (Antepartum)</u>	054(13.5%)	002(6.06%) antepartum	1(3.03%) antepartum
	<u>Abruptio placenta (Antepartum)</u>	036(9%)		
	<u>Postpartum</u>	002(0.5%)	004(12.12%)	19(57.57%)
	<u>Intrapartum/ intraoperative</u>	008(2%)	005(15.15%)	
<u>Hypertensive disorders</u>	<u>Pre-eclampsia</u>	154(38.5%)	011(33.33%) Hypertensive disorders	03(9.09%)
	<u>Eclampsia</u>	040(10%)		02(6.06%)
	<u>HELLP syndrome</u>	004(1%)	004(12.12%)	02(6.06%)
<u>Anemia</u>		064(16%)		
<u>Abortion</u>		016(4%)		01(3.03%)
<u>Ectopic pregnancy</u>				02(6.06%)
<u>Amniotic fluid embolism</u>		002(0.5%)		
<u>Peripartum cardiomyopathy</u>		002(0.5%)		01(3.03%)
<u>Sepsis</u>		004(1%)	003(9.09%)	02(6.06%)
<u>Anesthesia related complication</u>		006(1.5%)	004(12.12%)	

The commonest cause of admission to OICU is hypertensive disorders of pregnancy (49.5%). In Jonathan Cohen, Natalie study, Mabie siba study it is 45.45% [1] 14% [2],46% [4] respectively. The most common cause of OICU admission is obstetric haemorrhage in Jonathan Cohen study (33.33%) [1] and Natalie study (40%) [2]. Practices of proper intrapartum monitoring and active management of 3rd stage of labour at our institute decreases the cases of obstetric haemorrhage (25%). Anaemia is still the cause of admission to OICU (16%) irrespective of Anaemia prevention and control program. In Ashakiran study Anaemia is the cause of admission in 14.37% [3]. Sepsis is a major preventable cause of maternal mortality and morbidity worldwide [7].

3)Treatment given in OICU

		<u>Number of patients in present study</u>	<u>Natalie Yw Leung</u>	<u>Ashakiran T Rathod N=765</u>
<u>Therapy given at GICU</u>				
	<u>Ventilatory support</u>	096(24%)	029(58%)	318(40.50%)
	<u>Arterial insertion</u>	016(4%)	033(66%)	
	<u>Inotropic support</u>	012(3%)	008(16%)	350(45.75%)
	<u>Central venous catheter</u>	024(6%)	026(52%)	
	<u>Blood transfusion</u>	096(24%)		393(51.37%)
	<u>Radiological intervention</u>	080(40%)		
	<u>Mgso4 injectable</u>	162(40.5%)	004(8%)	
	<u>Renal dialysis</u>	006(1.5%)	001(2%)	024(03.13)
	<u>Referred to Medicine</u>	002(8%)		

Apart from routine ICU management, ventilatory support is given to 24% of patients in present study whereas in Natalie and Ashakiran studies ventilatory support is given to 58% [2] and 40.50% [3] respectively. These are patients of severe obstetric haemorrhage and eclampsia. Patients of eclampsia and preeclampsia were given mgso4(40.5%) for either treatment or prophylaxis. In Natalie Leung study it was 8% [2] and anaemia have received Blood transfusion (24%).6 of them have received more than 4 units of blood transfusion. They are of placental abruption and postpartum haemorrhage. In Ashakiran T Rathod study blood transfusion was given to 51.37% [3] Few patients of eclampsia admitted at OICU were confused and complain loss of memory. MRI brain was done to localise ischemic brain injury. Some of the patients having DIC and HELLP syndrome were selected for renal dialysis (1.5%). 8% of patients transferred to General ICU were of peripartum dilated cardiomyopathy.

4) Stay at OICU

<u>Duration of OICU stay (Days)</u>	<u>Number of patients in present study N=400</u>	<u>Ashakiran T Rathod N=765</u>
<u>≤3</u>	048 (12%)	418(54.64%)
<u>3-6</u>	308(77%)	237(30.98%)
<u>≥6</u>	044(11%)	110(14.37%)

Average duration of stay at present study is 3 to 6 days whereas in Ashakiran and Gilbert study it was less than 3 days [3] and 4 days [5] respectively. Continuous monitoring for convulsion and Blood pressure control is the reason for longer duration of OICU stay for patients of Pre-eclampsia and Eclampsia.

5) Obstetric management of patients in present series

	<u>Number of patients in present study</u>	<u>Natalie Yw Leung</u>
<u>Conservative</u>	284(71%)	
<u>Normal vaginal delivery</u>	020(5%)	007(20%)
<u>Elective cesarian section</u>	006(1.5%)	005(15%)
<u>Emergency cesarian section</u>	084(21%)	020(58%)
<u>Laparotomy</u>	002(0.5%)	
<u>Cesarian section +Obstetric hysterectomy</u>	004(1%)	

Patients of preeclampsia managed conservatively were 71%. Less number of patients of placenta previa and abruption placenta were delivered vaginally (5%). In Natalie Yw leung study 20% were delivered vaginally [2]. Out of total number of patients, 21% delivered by emergency caesarean section and that was the commonest surgical procedure performed [9]. Those were patients of major placenta previa, massive placental abruption and eclampsia. Laparotomy (0.5%) was done in few cases of ruptured ectopic pregnancy. In 4 cases of abruption placenta failure to achieve haemostasis leads to Obstetrics hysterectomy.

6) Foetal outcome

		<u>Number of babies in present study</u>
<u>Apgar score</u>	<u>0-3</u>	<u>11</u>
	<u>4-6</u>	<u>14</u>
	<u>7-10</u>	<u>86</u>
<u>Birth weight</u>	<u><1.5</u>	<u>14</u>
	<u>1.5-2.5</u>	<u>33</u>
	<u>>2.5</u>	<u>64</u>
<u>NICU admission</u>	<u>Yes</u>	<u>16</u>
	<u>No</u>	<u>95</u>

Babies delivered to mothers at obstetric ICU have good Apgar score and because of timely interventions in mother admitted to OICU foetus does not suffer from distress and not admitted to Neonatal ICU.

VI. Conclusion

Hypertensive disorders are the leading cause of OICU admission accounting for maternal mortality and morbidity. The goal is to prevent and manage recurrent convulsions and subsequent posterior reversible encephalopathy (PRES) and reversible cerebral vasoconstriction syndrome (RCVS). Blood pressure control, and injectable mgso4 given for prevention and treatment of eclampsia, are the main line of management. MgSO4 is inexpensive and available in resource poor countries too. The major determinants of the outcome of ICU care is the clinical state of critically ill obstetric patients [7]. Timely intervention and round the clock monitoring and therapeutic facility at OICU decreases maternal mortality and morbidity. Adequate birth spacing and use of contraception prevents many cases of maternal mortality and morbidity. Periconceptional and antenatal care also plays a major role. Long term management of hypertensive disorders and ventilatory support leads to increase in duration of stay at OICU to >6 days and accounts for maternal morbidity and were significantly more in the survivors [8].

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