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STUDY OF MATERNAL NEAR MISS CASES: SCENARIO AT TERTIARY HEALTH CENTER IN WESTERN MAHARASHTRA

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ABSTRACT

According to millenium development goals in 2015, the goal number five was to improve the maternal health. In any setting women who develop severe acute morbidity during pregnancy share many circumstantial factors related to their condition. A maternal near miss case is defined as a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy. This concept is relatively new in maternal care, but is increasingly becoming important in areas with low maternal mortality ratios or where the geographic area is small. Our study is conducted at tertiary health care center in Western Maharashtra, state in India. Maternal morbidity is assessed in view of maternal near miss cases. Maternal near miss incidence ratio, obstetric and non obstetric complications, investigations and maternal near miss to mortality ratio calculated.

KEYWORDS: Maternal health, maternal near miss case, maternal mortality, complications.

INTRODUCTION

A maternal near miss case is defined as a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy. Life threatening obstetric conditions refer to maternal complications severe enough to cause near miss morbidity and maternal death while critically ill obstetric patients are women who suffered life threatening obstetric conditions.[1]

On the basis of narratives of women who almost died during pregnancy and childbirth, reported on an acute stress disorder that may be associated with the occurrence of severe maternal complications named maternal near miss syndrome.[2] The implementation of integrated care that encompasses the physical, psycological, social, and spiritual aspects of women's health may help to alleviate the burden that maternal complications impose on millions of women around the worlds. Severe acute maternal morbidity is acronym for more popular term for near miss cases.[3]

The most important causes are haemorrhage, pregnancy induced hypertension, dystocia, uterine rupture. Maternal mortality is the tip of iceberg, there is a large base of severe acute maternal morbidity. World Health Organization estimated that, in year 2000,20 million women suffer acute complications in pregnancy with occurrence of 529,000 maternal deaths.[3]

Results of nearmiss assessments also provide the opportunity to evaluate among other things whether the best evidence based practices are being used in the health care facility. Data on cases with life threatening conditions being managed at health care facility can be used to foster a culture of early identification of complications and better preparedness for acute morbidities.[5]

Maternal near miss incidence ratio refers to maternal near miss cases per 1000 live births. Severe maternal morbidity as a sentinel event of maternal death.[6]

The records of over 2000 maternities from a National health service consultant unit during a six month period were analysed. Morbidity was noted in almost a quarter of the cases and life threatening episodes, termed near miss morbidity were identified. As the maternal death rate has fallen in this country maternal morbidity has come to represent a more useful indicator of obstetric care than mortality.[7]

A prospective study of maternal mortality and maternal near miss was performed over a two year period from september 2007 to august 2009 (4M Study: Study of maternal mortality and maternal morbidity in Thyolo) 46 cases of maternal mortality and 240 women with MNM

defined according to disease specific criteria were identified. The near miss criteria applied in the 4M study were:

1. Uterine rupture, defined as the occurrence of clinical symptoms (pain, fetal distress acute loss of contractions, haemorrhage) or intrauterine fetal death that led to laparotomy, at which the diagnosis was confirmed or lapaotomy for uterine rupture after vaginal birth to this definition rupture was added confirmed by autopsy or clinical symptoms with a high suspicion of rupture in case of death.
2. Eclampsia or severe preeclampsia with a maternal indication fortermination of pregnancy.
3. Major obstetric haemorrhage (including haemorrhage from complicated abortions and ectopic pregnancies),defined as a fulfilled need for transfusion of at least 2 units of 450 ml of whole blood or a haemoglobin level below 6 gm/dl measured after vaginal bleeding or an estimated blood loss of more than 1 litre.
4. Severe obstetric non obstetric peripartum infections, defined as all infections for which intravenous antibiotic or intravenous antibiotics or intravenous antimalarials were prescribed or surgical treatment was performed as well as neoplasm resulting primarily from HIV infections (e.g.Kaposis sarcoma and HIV associated lymphoma).[8]

The new WHO classification of cause of maternal death has a simple structure to facilitate tabulation: group, disease category and individual underlying causes. The group includes three categories direct maternal deaths, indirect maternal deaths and unanticipated complications of management. This addition makes it possible to track trends in iatrogenic disease as, for example, related to caesarean sections. The working group also reached consensus on how to define maternal near miss.[9]

A woman who nearly died but survied a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy. Signs of organ dysfunction that follow life threatening conditions are used to identify maternal near miss so that the same classification of underlying causes is used for both maternal deaths and near misses.[10]

MATERIALS AND METHODS

The first step in implementing the near miss approach is to systematically identify women with severe complications of pregnancy. In order to simplify data collection and data handling, only the essential information needed to produce meaningful results is collected for women with severe pregnancy related complications.

This is prospective and observational study conducted at tertiary care center of medical college. A total no. of 104 cases was included in this study from January 2017 to August 2018.

Inclusion Criteria

Severe maternal complications
Severe postpartum haemorrhage Severe preeclampsia

Eclampsia

Sepsis or severe systemic infection Ruptured uterus
Severe complications of abortion
Critical interventions or intensive care unit use: Admission to intensive care unit
Interventional radiology Laparotomy (includes hysterectomy) Use of blood products
Life threatening conditions (near miss criteria): Cardiovascular dysfunction:

Shock

Cardiac arrest (absence of pulse/heart beat and loss of consciusness), Use of continuous vasoactive drugs
Cardiopulmonary resuscitation
Severe hypoperfusion (lactate >5 mmol/l or >45mg/dl)
Severe acidosis
Severe bradypnea (respiratory rate >20/min)

Neurological dysfunction

Prolonged unconsciusness (lasting >12 hrs)/ coma (metabolic coma) Stroke
Uncontrollable fits/status epilepticus Total paralysis

Uterine dysfunction

Uterine haemorrhage or infection leading to hysterectomy

Respiratory dysfunction: Acute cyanosis, Gasping, Severe tachypnea (respiratory rate >40/min) Severe bradypnea (respiratory rate <6/min) Intubation and Ventilation not related to anaesthesia, Severe hypoxemia (O2 saturation <90% for >60 min or paO2/FiO2 <200)

Renal dysfunction

Oliguria non responsive to fluids or diuretics, Dialysis for acute renal failure, Severe acute azotemia (creatinine >300 micromol/ml)

Coagulation/ haematlogical dysfnction

Failure to form clots

Massive transfusion of blood and blood products >5 units Severe acute thrombocytopenia (< 50000 platelets/ml)

Hepatic dysfunction

Jaundice in presence of preeclampsia, Severe acute hyperbilirubinemia (sr bilirubin >100micromol/lt or >6mg/dl)

Exclusion Criteria

All maternal near miss cases turning out into maternal mortality cases.

All the investigations of the patients participating in this study design were made free under janani suraksha yojana scheme.

Detail h/o of every critical patient was taken after thorough clinical examination. Relevant investigations (e.g.CT scan/MRI/hemogram) were done and patient was treated in I.C.U.

DISCUSSION

Maternal near miss case is an important component of obstetric care. Near miss is a serious adverse event that leads to morbidity in patient but from which she survives. Interestingly, near miss arises as an indicator of quality of obstetric care. Because surviving a near miss occurs mainly because of the care provided.[11]

This is a prospective observational study conducted at Tertiary care center of medical college from 1st January 2017 to 31st August 2018.During this period a total 104 cases were studied. Clinical diagnosis and management of patients were assessed, analysed and studied.

Maternal near miss incidence ratio

During study period in our institute 10323 were live births. Out of which 104 patients were maternal near miss cases. So that maternal near miss incidence ratio in our institute is 10.07/1000 live births.

Maternal near miss to mortality ratio

During this study period 104 patients were maternal near miss cases and 24 were maternal deaths. Hence maternal near miss to mortality ratio was 4.2:1

Age

In this study majority of the patients are in age of group 21 to 25 years 45.2% and 11.5% were in age group more than 30 years.

Parity

In this study,52.9% maternal near miss cases were gravid 2/gravid 3 followed by 35.6% cases were primigravida.11.5% cases were gravid 4 or >gravida 4.

Booking status

In this study 69.2% patients were unbooked, while only 30.8% patients were booked. Incidence of maternal near miss cases were high in unbooked patient due to lack of antenatal health care. Obstetric status at the time of admission.

73.1% patients were admitted in antepartum status while 26.9% patients were in postpartum condition.It indicates maternal near miss cases,if managed properly during pregnancy,can reduce maternal morbidity and mortality to much extent.

Obstetric complications

In this study 75.9% patients were admitted due to obstetric complications.

Maximum obstetric complications were due to Eclampsia(20.3%) followed by antepartum haemorrhage (17.7%), pulmonary complications(12.5%), ruptured ectopic pregnancy (12.5%),severe preeclampsia (9.5%), severe anemia (7.5%),postpartum haemorrhage (7.5%),jaundice(7.5%),puerperal sepsis(2.5%),rupture uterus (2.5%).

Non obstetric complications

In our study 24.1% cases were due to non obstetric complications. Maximum cases were of heart disease(20%) and convulsive disorder(excluding eclampsia) (20%), followed by peritonitis(16%), poisoning (12%), autoimmune disorders(8%), transfusion /drug reaction(8%), animal bite(8%). Minimum cases were of acute renal failure(4%) and electric injury(4%). Management A)Investigations- During the study all patients (n=104)underwent basic investigations such as hemogram renal function test, liver function test, random blood sugar, HBsAg, HIV antibody ,serum electrolyte, blood gas analysis, bleeding time, clotting time, PT INR,D dimer, B hcg, Hepatitis A/Hepatitis E/Hepatitis C Antibodies IgM/IgG, urine routine microscopy, culture sensitivity, blood culture sensitivity, wound swab, vaginal swab, peritoneal pus culture and sensitivity, thyroid function test, antiphospholipid antibody test etc. Radiographic investigations like ultrasonography obstetrics /abdomen pelvis, chest x ray, x ray abdomen erect, CT scan and MRI plain and contrast of brain/abdomen, 2 D echo etc.

B) Mode of delivery

Out of 67 patients admitted in antenatal status,12 were full term pregnancies in spontaneous labour and 1 was preterm pregnancy in spontaneous labour. Total 13 patients were spontaneously delivered vaginally.

8 patients of full term pregnancies were induced with pge2 gel and catheter traction. Out of which 7 patients were of severe preeclampsia and 1 patient was of autoimmune disease (SLE).2 preterm patients were induced with pge2 gel and catheter traction. Indications were severe preeclampsia and SLE.

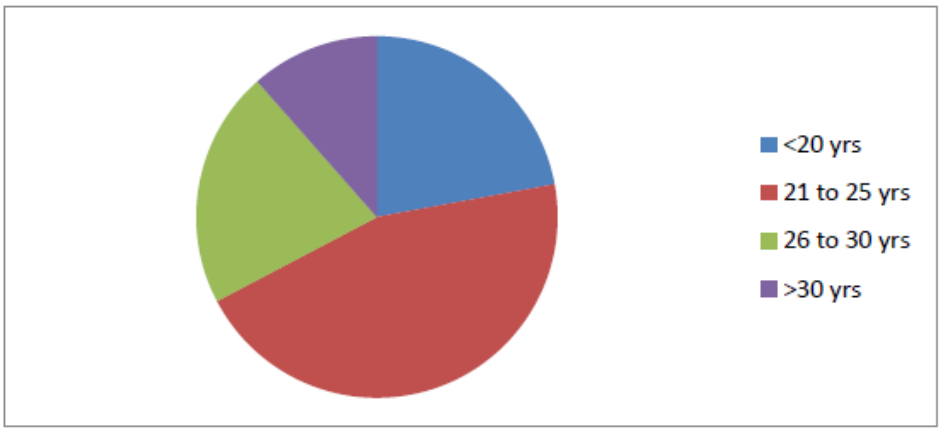
44 patients (42.3%) were terminated by emergency lower segment caesarean section. Indications were antepartum eclampsia, antepartum haemorrhage, foetal distress etc.

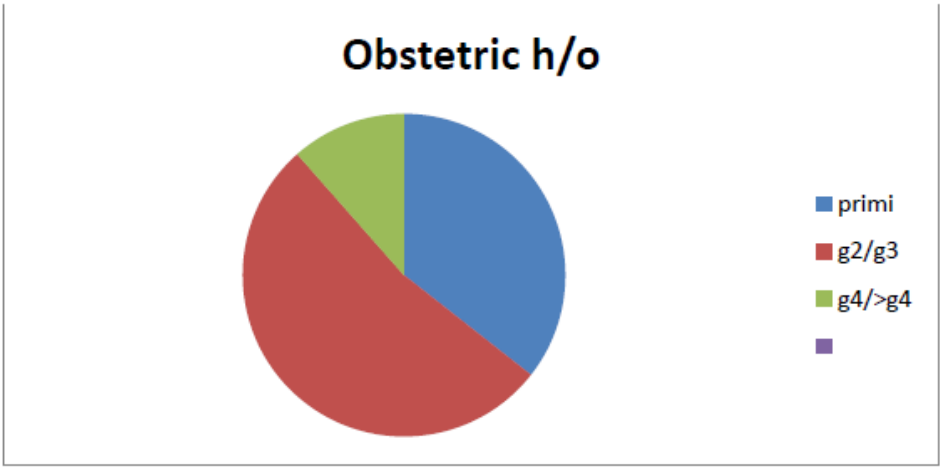
13 cases were managed by exploratory laparotomy. Among these patients, 10 patients were ruptured ectopic pregnancy, Evidence of haemoperitoneum and ruptured fallopian tubes were found during operative procedure.2 patients were of ruptured uterus. Both cases were of scar dehiscence. One was case of peritonitis, perforation of small bowel was repaired with the help of general surgeons.

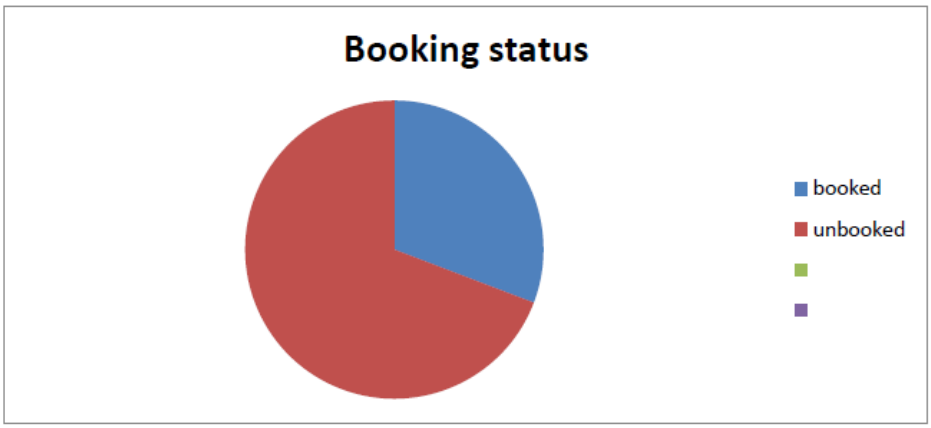
5 patients of atonic postpartum haemorrhage were posted for obstetric hysterectomy as medical management failed to cure post partum haemorrhage in these patients. Medical management involved uterine massage followed by Inj oxytocin 20 IU In each Ringer lactate solution drip followed by Inj Carboprost im. It was followed by

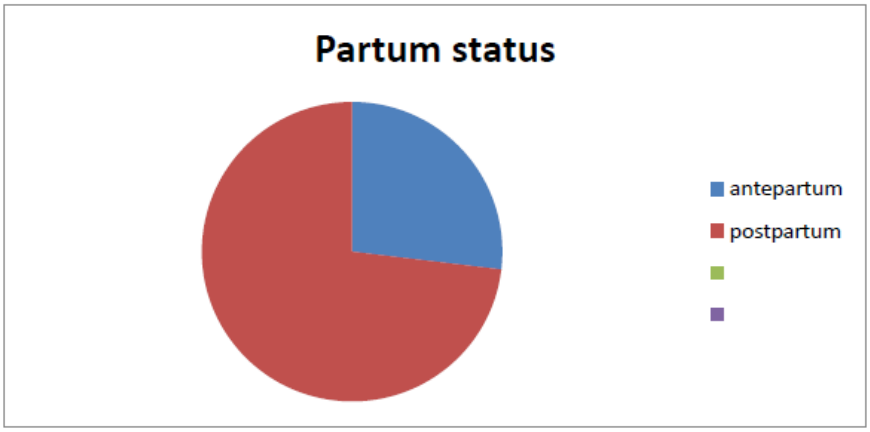
bilateral uterine arteries ligation followed by internal iliac arteries ligation. When above management failed, obstetric hysterectomy was done in these patients.

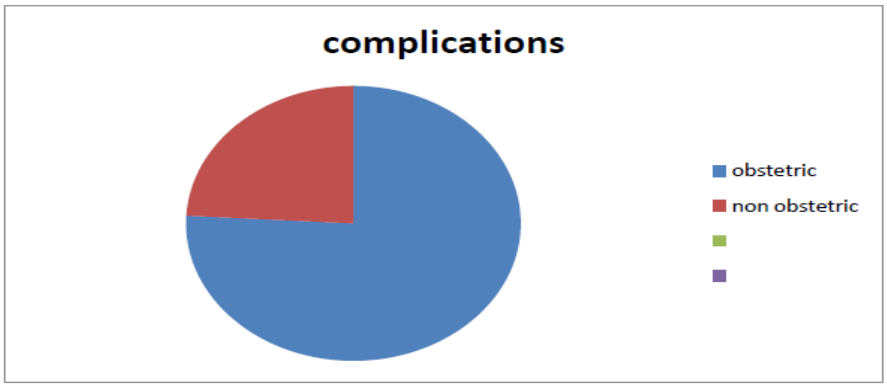
Age distribution











Clinical diagnosis of patients (obstetric etiology).

Clinical diagnosis	No.of patients	Percentage
Eclampsia	16	20.3%
Abruption placenta	9	11.4%
Placenta previa	5	6.3%
Pulmonary complications	10	12.5%
Ruptured ectopic pregnancy	10	12.5%
Severe preeclampsia	7	9.5%
Severe anemia	6	7.5%
Pph	6	7.5%
Jaundice	6	7.5%
Puerperal sepsis	2	2.5%
Rupture uterus	2	2.5%
Total	79	100%

Clinical diagnosis of patients (non obstetric etiology)

Clinical diagnosis	Number	Percentage
Heart disease	5	20%
Convulsive disorders (excluding eclampsia)	5	20%
Peritonitis	4	16%
Poisoning	3	12%
Autoimmune disease/SLE	2	8%
Transfusion /Drug reaction	2	8%
Animal bite	2	8%
Acute renal failure	1	4%
Electric injury	1	4%
Total	25	100%

Table showing investigations done in patients

No.	Investigations	No.of patients
1	Hemogram	104
2	Renal function test	104
3	Liver function test	104
4	Random blood sugar level	104
5	Chest x ray/abdomen x ray	14
6	USG Obstetrics/abdomen + pelvis	98
7	CT scan/MRI	16
8	2 D Echo	5
9	Urine /stool routine microscopy and culture sensitivity	3
10	Bleeding time/Clotting time/PT INR	63
11	D dimer level	10
12	B hcg level	10
13	Serum electrolyte	84
14	Blood gas analysis	84
15	HIV test	104
16	HbsAg	104
17	HAV/HCV/HEV IgM/IgG	6
18	Others(Thyroid function test/Antiphospholipid Ab)	3

Mode of management of patients in the study

Mode of management	Number	Percentage
LSCS	44	42.3%
FTND	20	19.2%
Conservative management	19	18.3%
Exploratory laparotomy	13	12.5%
Obstetric hysterectomy	5	4.8%
PTVD	3	2.9%
Total	104	100%

19 patients were conservatively managed

10 severe anemic patients were having hemoglobin <6 gm%, blood transfusion was given to elevate haemoglobin level. 7patients of poisoning and animal bites were treated by antidote and other conservative measures.

1 patient of acute renal failure was admitted in Intensive Care Unit. Patient came with chief complaint of retention of urine since 48 hrs. She was G3P2L2 with 24 weeks of gestation not in labour. After routine checkup and medicine consultation, dialysis treatment was planned for this patient.

1 patient with electric injury-G2P1L1 with 32 weeks of gestation not in labour. On local examination 4cm x 5cm burnt area was present over right hand. Patient was managed by local dressing, sulfasalazine ointment and broad spectrum antibiotics.

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