Vol. 3, No. 2, September, 2012

COMPREHENSIVE BULLETIN ON SAFE MOTHERHOOD INITIATIVE

THEME : OBSTETRIC ANTEPARTUM HEMORRHAGE

Safe Motherhood Committee - FOGSI

Let the Life of Every Mother & Neonate Count

Editor : **Dr. Sadhana Gupta**
Chairperson
Safe Motherhood Committee (2011-2013)

Safe Motherhood Committee – FOGSI reaches the people in difficult areas

At different villages in Bundelkhand region, North Zone Coordinator of Safe Motherhood Committee – Dr. Hema J. Shobhane organized huge rural camp in month of April and July 2012. In the camps doctors from different field were participated. Dr. Alok Sharma of Shimla conducted Health Education Program in the School.

Dr. Behram Ankleseria

Dr. Behram Ankleseria whom we met in only last conference, moving around with friends and FOGSI family members suddenly chose to meet God in early morning of 30th May 2012. We are still not able to comprehend that really we will not able to listen his authentic voice which always had a purpose and humor.

Dr. Behram Ankleseria served Federation of Obstetrical & Gynaecological Society of India in many capacities. He was Organizing Chairperson of AICOG 2000 at Ahmedabad, Chairperson of Breast Committee, Vice President and than President of FOGSI in year 2004-2005. He incepted and visualized vision of satellite conference in his presidential year in accordance with his theme and vision of ***"technology for all"***. He worked as Immediate Past Chairman of Indian College of Obstetrician & Gynaecologist (ICOG). On last evening of his life he was with his beloved members of Ahmedabad Society.

His life and death echoes his often repeated words in our heart –'FOGSI is my extended family'.

FOGSI Events - Maternal Mortality Workshop

On 20th May 2012 at Meerut, President FOGSI 2012 Dr. P. K. Shah and Dr. Sadhana Gupta attended the conference as faculty. Dr. Usha Shrma and Dr. Bharti Maheshwari were key organizer. Workshop attended by 100 participants.

At Navi Mumbai on 27th May 2012, Dr. Sadhana Gupta, Dr. Suchitra N. Pandit, Dr. Vinayak Khedeker were faculty of the workshop and Dr. Bharti More was key organizer. Workshop attended by 60 participants.

On 14th July 2012 at Raipur, Dr. Sadhana Gupta & Dr. Ragini Agrawal were guest faculty. Workshop attended by 70 participants. Dr. Abha Singh and Dr. Nalini Mishra were key organizer.

On 25th August 2012, at Nabha, Dr. Sadhana Gupta & Dr. Alok Sharma were guest faculty. Dr. Khuspreet Kaur, Dr. Manju Kaur were key organizer. Workshop attended by 100 participants.

Capt. Dr. Laksmi Sehgal

24.10.1914 – 23.07.2012

Capt. Dr. Laksmi Sehgal was born on 24.10.1914 at Madras (Chennai). Her father Mr. S. Swaminathan was a famous lawyer in Madras High Court and her mother Ammu Swaminathan was a social worker and freedom fighter. Laksmi Swaminathan opted for medical education and passed her M.B.B.S. from Madras Medical College in 1938. A year later, she received her diploma in Gynaecology and Obstetrics. In 1940 she went to Singapore and opened a medical clinic for migrant Indian laborers.

Netaji Subhash Chandra Bose in his endeavour for freedom of India visited Singapore and organized women regiment of his Azad Hind Fauz. Dr. Laxmi Swaminathan joined the army as captain. After sad defeat of Azad Hind Fauz she was arrested by British army. After release from jail, she married Captain Prem Kumar Sehgal and settled at Kanpur (U.P) and started medical practice, which continued till last day of her life. She was a prominent leader of Marxist Communist party and elected for Rajya Sabha. During the Bangladesh crisis, she organized relief camps and medical aid in Calcutta for refugees who streamed into India from Bangladesh. She was one of the founding members of AIDWA in 1981 and led many of its activities and campaigns. She led a medical team to Bhopal after the gas tragedy in December 1984, worked towards restoring peace in Kanpur following the anti-Sikh riots of 1984. She was honored with Padma Bhushan in 1998 and contested for post of President in 2002. Throughout her life she fought for cause of equality and harmony.

Capt. Laxmi Sehgal is survived by her two daughters — Subhasini Ali, a prominent political leader and Anisa Puri. After her death, as per her will her eyes were donated, and 15 year old Babli & 55 year old Rampyari saw the world from her eyes. Her body was donated to Kanpur Medical College.

Her Life and death both sets an example for all of us.

FOGSI Events - Postpartum Care Workshop

On 19th February 2012 at Kanpur Dr. Sadhana Gupta and Dr. Hema J. Shobhane were guest faculties. Dr. Madhu Kumar, Dr. Usha Goenka were organizer. Workshop attended by 50 participants.

On 14th April 2012 at Azamgarh, Dr. Sadhana Gupta delivery the guest lecture, workshop attended by 70 participants. Dr. Sasti Singh and Dr. G K Tripathi were organizers.

On 24th June 2012 at Gorakhpur, Sadhana Gupta delivery lecture on MMR. Workshop attended by 60 participants. Dr. Kiran Srivastava and Dr. Anju Mishra were key organizers.

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West Zone : **Dr. Bharti Morrey**

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MESSAGE

FROM THE DESK OF EDITOR

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FOGSI Events - East Zone Yuva FOGSI

On 4th, 5th May 2012 in East Zone Yuva FOGSI Conference at Kolkata, Chairperson Safe Motherhood Committee Dr. Sadhana Gupta delivering guest lecture on Current Trends in Maternal Mortality in India.

World Congress on PopulationStabilization on 6th, 7th July 2012 at Jaipur
Dr. Sadhana Gupta & Dr. Niranjan Chavan moderating the panel discussion on Impact and Effect of Medical Abortion.

Satellite Conference on 21st, 22nd July at Ahmedabad Dr. Sadhana Gupta participated in Panel on Critical Care in Obstetrics.

JHIPEGO workshop for TOT training of Paramedicals and Non Specialist doctor foe emergency obstetric care at Bangalore on 11th August, under leadership and vision of FOGSI President Elect 2013 – Dr. Hema Diwakar. A full day TOT Workshop was organized by JHIPEGO. About 100 participants actively participated in the workshop.

Dr. P.K. Shah
President, FOGSI 2012

Dear Friends

In our country we still have unacceptably high maternal and neonatal morbidity and mortality, particularly in several states and regions. We have taken theme of FOGSI 'Let every mother and newborn count' this year and planed and organized many programme at grass root level throughout the country. Safe Motherhood Committee is one of the important pillars of FOGSI for achieving the target of reducing maternal and infant mortality to minimum possible.

Dr. Sadhana Gupta as chairman of Safe motherhood committee is doing tremendous work and publication of third issue of safe motherhood bulletin itself speaks for her persistence hard work. APH is one of the common obstetric problems faced by clinicians in every setting. I believe that articles published in bulletin will serve as a fast and ready reckoner for our members and help a lot in management of APH and prevention of its complications. The previous issues have been admired highly for its content quality and aesthetic look. And we can look forward that every forthcoming issue will be progressively better. I also congratulate her for inception of column of India Speaks and project, which have opened new insight beyond the boundaries of clinics and hospitals.

I wish her all the best for her all future endeavourers, as we move forward to achieve highest health indices for women of our country.

P.K. Shah

Dr. Hema Divakar
President, Elect FOGSI 2013

Dear FOGSIANS

Its a call for action !

Not only with regard to APH but also for SAVING MOTHERS and saving the nation.In both situations - the Speed matters !

Iam sure that this volume would capture all essestial steps towards prevention, recognition and action for saving lives in a situation of APH and would make a quick reading, effective recall and swift excecution of algorythms.

GOD and Sadhana Gupta are the two things that would come to our mind when we think of SAFE MOTHERHOOD !

Such is the effort that Sadhana ji and team of safe motherhood committee is putting together to disseminate knowledge.

We compliment them for their brilliant work and commit to them our help!

As always.

Hema Divakar

Dr. Mandakini Parihar
Vice President, FOGSI 2010
Associate Professor,
K J Somaiya Medical College
Jt. Treasurer, IMS
Member, Governing Council ISAR, ICOG
Director, Mandakini IVF Center, Mumbai

"Knowledge rests not upon truth alone, but upon error also. - Carl G. Jung."

Maternal mortality is a clear indicator of the status of healthcare of any country. It is appalling that India in 21st Century is still struggling with its high maternal mortality. Every efforts should be made by all involved in looking after maternal health to improve the quality care. All of us work individually for the betterment of women's health but joint effort is required by GOI, medical associations, doctors and all the stake holders for catalystic effect in improving maternal mortality. Safe Motherhood committee of FOGSI is working in close association with all stakeholders and we are all contributing to bringing down the high maternal mortality rate.

The pervasiveness of discrimination, lower nutritional status, early marriage, complications during pregnancy and childbirth contribute to mortality. In addition there is a large unmet need – the lack of 3 A's which contribute to our high maternal Mortality - Awareness, Availability and Access and maybe we should a 4th A - Affordability! Partnership between Public and Private sector is the best way to bridge this gap. FOGSI is already doing the EMOC program with GOI and each and everyone one of us should do our little bit to help.

This Bulletin of magazine "Safe Motherhood" edited by Dr. Sadhana Gupta, Chairperson of The Safe Motherhood Committee of FOGSI has successfully managed to address all these issues and bring about sensitization for special health needs of women in India. I congratulate her for bringing out this Bulletin and highlighting the importance of Antepartum hemorrhage and addressing an important and preventable cause of maternal mortality. I also would like to congratulate her and her team for all the work they are doing to help in decreasing the Maternal Mortality. Let's not LET OUR MOTHERS DIE.

With warm regards

Mandakini Parihar

Dr. Laxmi Shrikhande
2nd Vice President, FOGSI
Director, Shrikhande IVF Centre
National Vice President, FOGSI 2012

In 2003 a mother died every 5 minutes but, by 2011, she is dying every 8 minutes. In India MMR has definitely improved but still it is a long way to go. India is expected to bring down its MMR to 135 per 100,000 live births by 2015, which falls short of the required 109 per 100,000 live births.

Obstetrical hemorrhage is the leading cause of maternal mortality & morbidity. Prompt & adequate Emergency Obstetric services will go a long way in saving the lives of these dying mothers. FOGSI is deeply concerned about the high rates of maternal mortality & morbidity in our country. EMOC training programme of FOGSI is one such step & is being widely acclaimed by Government of India.

Safe Motherhood Committee of FOGSI is doing commendable job towards reducing these high rates. I congratulate Dr Sadhan Gupta for her dedication & tireless work in this direction. I am sure this quarterly bulletin on Obstetrical APH will update the FOGSI members on the current scenario & prompt management of these cases.

With best wishes,

Laxmi Shrikhande

MESSAGE

Dr. Mandakini Megh
Vice President in-charge

In recent past our country has progressed in many fronts but sadly our health indices especially for women' health is not very encouraging. As vice-president in-charge of safe motherhood committee we have planned various programs like organizing advanced postpartum care workshop. Regular publication of safe motherhood bulletin with specific theme in each issue has made an impact on creating sensitivity of our members on issue of safe motherhood and spreading correct and simple clinical practice in management of major causes of maternal mortality.

Publication and circulation of bulletin of such high standard is a mammoth task and I applaud sincere and hard effort of Dr. Sadhana Gupta – Chairman Safe Motherhood Committee of our federation.

Mandakini Megh

EDITORIAL

Dr. Sadhna Gupta
Editor

It gives me immense sense of pleasure and satisfaction to present third issue of safe motherhood bulletin to all of you as editor and chairman of safe motherhood committee of our beloved and prestigious organization of FOGSI. This issue is focused on theme of ante partum hemorrhage, which is not only common variant of obstetric hemorrhage but also confusing and difficult to manage due to varied range of clinical presentations. Ante partum hemorrhage can be precursor of many obstetric complications like postpartum hemorrhage, sepsis, coagulation disorders, surgical and medical complications. Beside topic of A.P.H. usually takes a back seat in C.M.Es and conferences, so we decided to give full stage to Ante partum hemorrhage in this issue of safe motherhood bulletin.

I am heartily thankful to all authors who have taken pains and efforts to contribute high class articles on the subject. We have tried to cover almost every aspect of APH right from imaging modality to complications and non obstetric causes of APH. Beautiful photographs in article compelled us to publish this issue in four colors.

In India Speaks Dr. Saswati has given meticulous details of status of maternal health in different states of North East region, where still today we are facing violence and suffering. Dr Ramaraju has shared his experience on EMOC.

This year we lost our beloved past president FOGSI and immediate past chairman ICOG Dr. Behram Ankleseria. His sudden heavenly abode left us grief stricken with irreplaceable vacuum. We all will miss him immensely in FOGSI meetings and conferences.

Another important though less known personality we lost is Capt. Dr. Lakshmi Sehgal. She fought as Captain in Indian National Army under leadership of Netaji Subhash Chandra Bose and served as doctor especially women till last breath of her life at age of 92 years.

We as a token of our deep love and respect to both of them, dedicate this issue to them. May we learn to serve and stand for the cause till our last breath of life. I end my writing with shloka of Bhagvad Gita —

'The soul has no birth and death. It has no being and thus never cease to be. Birth less, deathless and without the beginning or end the soul is not destroyed, when the body is destroyed'

Sadhna Gupta

MANAGEMENT OF PLACENTA PREVIA

Prof. Uma Singh
CSM Medical University, Lucknow

Placenta previa is an important cause of maternal mortality and morbidity. It is an obstetric complication in which the placenta attaches in the lower portion of the uterus instead of in the normal position that is in the upper segment of uterus. It is a leading cause of antipartum haemorrhage. It affects approximately 0.5 % of all pregnancies.

Placenta previa is hypothesized to be related to abnormal vascularisation of the endometerium caused by scarring or atrophy from previous trauma, surgery or infection.

TYPES

Type 1 : Low lying placenta : In this condition, lower placenta margin just encroaches on the lower uterine segment but does not reach upto the internal os and the edge lies within 3.5 cm of internal cervical os.

Type 2 : Marginal Placenta previa : Placenta reaches the internal os when closed, but does not cover it. It can be- anterior or posterior.

Type 3 : Partial Placenta previa : Placenta covers internal os when closed. Placenta does not cover os when fully dilated

Type 4 : Complete Placenta previa (Central Previa) : Placenta covers internal os even when fully dilated

With both total and partial placenta previa, a certain degree of spontaneous placental separation is an inevitable consequence of lower uterine segment formation and cervical dilation. Such separation is usually associated with hemorrhage. It can lead to complication for both mother and baby like abruption, hemorrhage, preterm labour and anemia. Placenta previa occurs in about 1 in 200 births.

CAUSES

A number of factors can increase the likelihood that the placenta will be located in the lower part of the womb and potentially cover the cervical opening.

Scar tissue in the upper regions of the uterus can promote growth of the placenta in the relatively unscarred lower segment of the uterus. Scarring of the tissues in the upper uterus can be a result of prior Cesarean deliveries, prior D&C procedures for miscarriages or induced abortions and any surgery or instrumentation of the uterine cavity.

In some cases, placenta previa occurs because the placenta grows larger to compensate for decreased function (lowered ability to deliver oxygen and/or nutrients) or a need for greater function. This need for a larger placental area can increase a woman's risk of developing placenta previa. Examples include multiple gestation (twins, triplets, etc.), cigarette smoking and living at high altitude.

The risk of having placenta previa also increases with increasing maternal age and with the number of previous births. Women who have had placenta previa in one pregnancy are at greater risk for this complication in subsequent pregnancies. Asian women also have a slightly greater risk of placenta previa than women of other races, although the reason for this is unclear.

Since the placenta normally migrates away from the cervical opening as pregnancy progresses, women in the earlier stages of pregnancy are more likely to have placenta previa than are women at term. Up to 6% of

women between 10 and 20 weeks' gestation will have some evidence of placenta previa on ultrasound examination, but 90% of these cases resolve on their own as the pregnancy progresses.

CLINICAL FINDINGS

The most characteristics event in placenta previa is painless haemorrhage, which usually does not appear until near the end of the second trimester or after. However, bleeding may begin earlier and some abortions may result from such an abnormal location of the developing placenta.

Fortunately, the initial bleeding is rarely so profuse as to prove fatal. Usually it ceases, only to recur. Labour sometimes starts within several days of heavy bleeding. Sometimes, bleeding may not occur until after labour starts.

The bleeding is augmented by the inherent inability of myometrial fibers of the lower uterine segment to contract and thereby constrict the avulsed vessels.

GENERAL EXAMINATION

Patient may or may not be in shock depending on the amount of bleeding. Pallor and shock are corresponding to the amount of visible blood loss.

PER-ABDOMEN EXAMINATION

Abdomen is soft. The uterus is relaxed and non-tender, corresponding to the period of amenorrhoea Malpresentation are often associated Foetal parts are easily felt and FHS may be normal. Presenting part is floating. "Stallworthy's sign" may be present in type II b and type III placenta previa.

PER-SPECULUM EXAMINATION

Fresh bleeding coming from inside os is diagnostic of placenta previa. Rarely placental tissue may be seen if the os is open. Other local causes of bleeding like polyp, cancer cervix can also be ruled out simultaneously.

PERVAGINAL EXAMINATION

It is not to be done in a case of antepartum haemorrhage, unless placenta previa is ruled out because it may provoke serious bleeding which may be life-threatening If USG is not available for diagnosis then a double set up vaginal examination can be done on OT table with all preparations for immediate caesarean section.

ASSOCIATED CONDITIONS

Placenta previa can be associated with other complications of pregnancy. Placenta accreta occurs when the placental tissues grows too deeply into the uterine wall, attaching to the muscle layer, resulting in difficulty in separating from the wall of the uterus at delivery. Placenta accrete occurs in 5% to 10% of women with placenta previa and can cause life threatening bleeding. Preterm premature rupture of the membranes (PPROM) can result from the bleeding of placenta previa. Other abnormalities of the placenta or umbilical cord can be associated with placenta previa Breech or abnormal presentation of the fetus can be associated with placenta previa due to the presence of the placenta in the lower part of the uterus. Some studies have shown a reduction in fetal growth associated with placenta previa. Finally, placenta previa, like other complications of pregnancy, can have a significant emotional impact on the mother after it has been diagnosed.

DIAGNOSIS

Clinical :

High index of suspicion should be kept if foetal malpresentation or even slight per-vaginal bleeding is noticed in the late pregnancy, or if predisposing factors are present. If ultrasound is not available, a diagnosis can be established by PV examination in OT with readiness for immediate surgery, by direct visualization during caesarean section and examination of placenta following delivery.

INVESTIGATIONS

Ultrasonography is the most important tool for diagnosis. It is simple, precise and safe. Sometimes obesity may obscure the placental localization. With the use of transabdominal sonography, it is possible to

precisely define the relation of the lower border of the placenta to the internal cervical os. False positive results are often a result of bladder distension. Therefore, scans in apparently positive cases should be repeated after emptying the bladder.

MRI is helpful in diagnosing placenta accrete and percreta. Radioactive isotopes study (Technetium scanning) Arteriography Soft tissue placentography Thermography Transabdominal imaging

INVESTIGATIONS FOR MANAGEMENT

Investigations for management Hemoglobin, PCV Blood group VDRL Urine IF Rh Negative-coomb's test Kleihauer-Betke test Pap Smear

MANAGEMENT OF PLACENTA PREVIA

Placenta previa diagnosed in early pregnancy will often correct itself during pregnancy. In more than 90% of women diagnosed with placenta previa in the 2nd trimester, the placenta will migrate by the end of the pregnancy. The placenta itself does not actually moves but, as the uterus stretches it is not as close to the cervix as it was earlier in pregnancy.

Treatment for placenta previa depends on various factors, including :

- The amount of vaginal bleeding
- Whether the bleeding has stopped
- Duration of pregnancy
- Amount of bleeding and maternal condition
- Fetal condition
- The position of the placenta
- Labour onset

FOR LITTLE OR NO BLEEDING WITH PRETERM FETUS

Expectant treatment is given (by Macafee and Johnson), in an attempt to improve the fetal salvage without increasing undue maternal hazards in situations when pregnancy is preterm and amount of bleeding has been mild.

- Bed rest at home with bathroom privileges
- Investigations like hemoglobin estimation and blood grouping .
- Periodic inspection of the vulval pads and fetal surveillance .
- Supplementary haematinics.
- Avoid sex, which can trigger bleeding.
- Exercise should also be avoided
- Corticosteroids for fetal lung maturation
- If bleeding or contractions occur, the patient must rapidly go to the hospital for evaluation.

The expectant treatment is carried upto 37 weeks of pregnancy.

FOR HEAVY OR CONTINUING BLEEDING

- Blood transfusion to replace lost blood,if bleeding is severe.
- Emergency cesarean section even if the baby is premature
- Corticosteroids to speed baby's lung development.

FOR BLEEDING THAT WON'T STOP

If bleeding can't be controlled or baby is in distress, an emergency cesarean section is necessary even if the baby is premature.

DELIVERY OPTIONS

Type 1- Vaginal delivery is possible. Blood loss is usually mild and the mother and fetus remain in good condition.

Type 2- Vaginal delivery is possible, particularly if the placenta is anterior. Blood loss is usually moderate, although the conditions of the mother and fetus can vary. Fetal hypoxia is more likely to be present than maternal shock. Type 2 posterior placenta previa is also known as dangerous placenta previa because major thickness of the placenta overlies the sacral promontory, thereby diminishing the antero-posterior diameter of the inlet and preventing engagement of the presenting part. When patient

delivers vaginally, the placenta is likely to be compressed between the presenting part anteriorly and the sacral promontory leading of foetal hypoxia. There are greater chances of cord compression or cord prolapsed.

Type 3- Vaginal delivery is inappropriate because the placenta precedes the fetus. Bleeding is likely to be severe, particularly when the lower segment stretches and the cervix begins to efface and dilate in late pregnancy.

Type 4- Cesarean section is essential in order to save the lives of the mother and fetus. Torrential haemorrhage is very likely.

Most often, a transverse uterine incision is possible. A vertical incision is sometimes employed into an anterior placenta.

Because of the poorly contractile nature of the lower uterine segment, there may be uncontrollable hemorrhage following placenta removal. It can be managed by-

- Oversewing the implantation site with 0-chromic sutures.
- Bilateral uterine or internal iliac artery ligation.
- Packing of lower uterine segment with gauze.
- Pelvic artery embolization

If such conservative methods fail, and bleeding is brisk, then hysterectomy is necessary.

COMPLICATIONS

Maternal

Complications - Maternal Long hospital stay Due to hemorrhagic shock & hypotension, e.g. Adult respiratory failure, renal cortical necrosis PROM, preterm labour, cord prolapsed More operative interference due to CS and emergency surgery Risk of sensitization in Rh negative patient DIC Problems specific to placenta previa are: Placenta accreta Uterine atony and PPH

FETAL COMPLICATIONS

Fetal Complications Prematurity Asphyxia Birth trauma Fetal malpresentations Fetal abnormality (Eg. Spina bifida) Foetal hypovolemia Perinatal mortality ranges from 7-25%.

PROGNOSIS

Mother : A marked reduction in maternal mortality rates from placenta previa was achieved during the last half of the 20th century. Reduction of maternal deaths from placenta previa to less than 1% or even to zero has been recorded in some centres. Women with placenta previa need to be carefully monitored by a health care provider. Careful monitoring and delivery by cesarean section help prevent most complications. The biggest risk is severe bleeding that can be life threatening to the mother. The morbidity is somewhat raised due to hemorrhage and operative delivery.

Neonate : The reduction in perinatal mortality is principally due to judicious extension of expectant treatment thereby reducing the loss from prematurity, liberal use of caesarean section which greatly lessens the loss form anoxia and improvement in the neonatal care unit. Still the perinatal mortality ranges from 10-25%. Causes of death are prematurity, asphyxia and congenital malformation.

ABRUPTIO PLACENTA

Dr. Gorakh Gopalkrishna Mandrupkar
Inchrge, High Risk Pregnancy Unit
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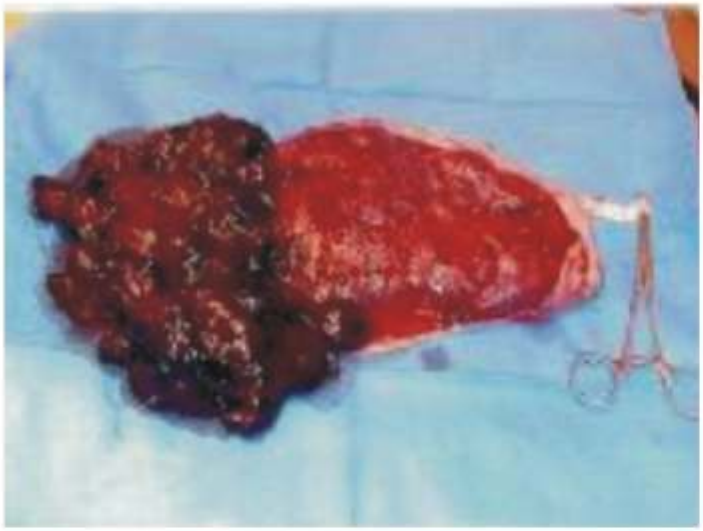
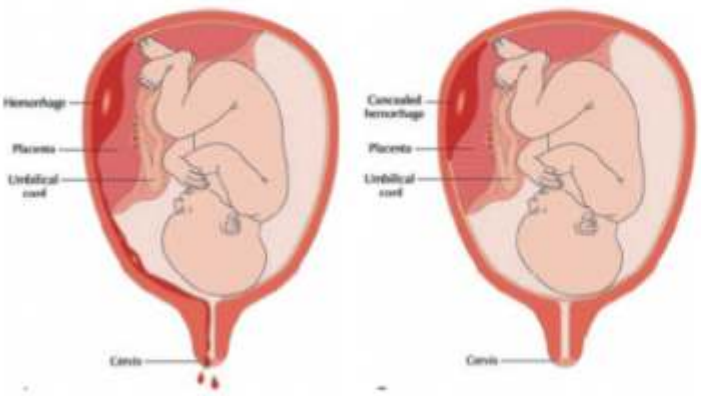


Placental abruption, defined as the premature separation of the placenta, complicates approximately 1% of births.[1] Abruption is an important cause of vaginal bleeding in the second half of pregnancy and is associated with significant perinatal mortality and morbidity.



Abruption may be "revealed," in which case blood tracks between the membranes and the decidua, and escapes through the cervix into the vagina. The less common "concealed" abruption occurs when blood accumulates behind the placenta, with no obvious external bleeding.

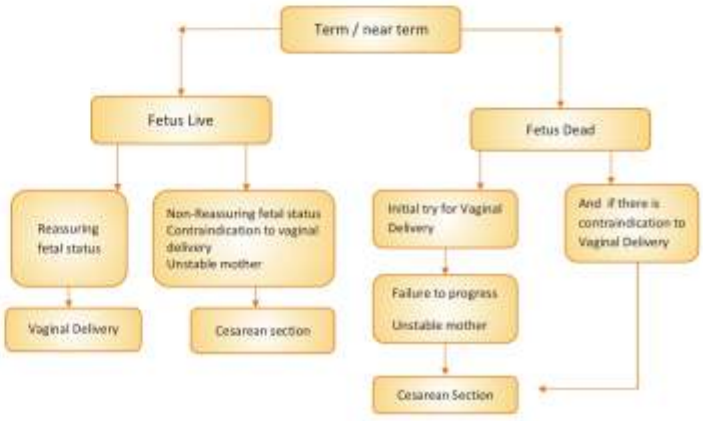
Placental abruption has a wide spectrum of clinical significance, varying from cases with minor bleeding and little or no consequences, to massive abruption leading to fetal death and severe maternal morbidity.

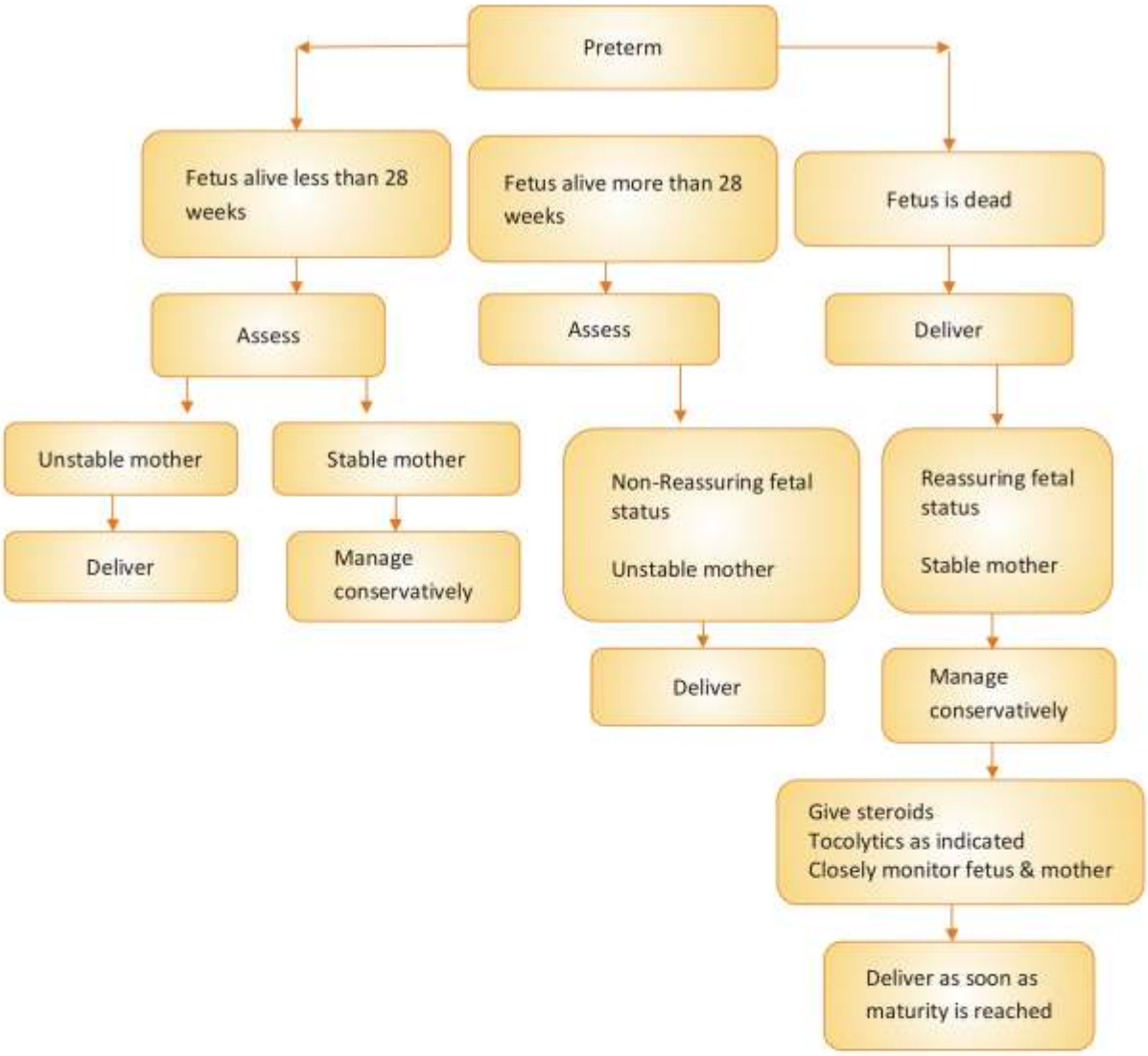
MANAGEMENT

Resuscitation / Initial Management :

- Begin continuous external fetal monitoring for the fetal heart rate and contractions.
- Obtain intravenous access using 2 large-bore intravenous lines.
- Institute I.V. fluid resuscitation for the patient
- Type and cross match blood.
- Begin a transfusion if the patient is hemodynamically unstable after fluid resuscitation.
- Correct coagulopathy, if present.
- Administer Rh immune globulin if the patient is Rh-negative.

Management once patient is settled.... Given in flow chart. It depends on the presentation, the gestational age, and the degree of maternal and fetal compromise.





Opted from : *Oyelese. Placental Abruption. Obstet Gynecol 2006.*[2]

MANAGEMENT IN SUBSEQUENT PREGNANCY

Women with an abruption are at approximately ten-fold increased risk of abruption in a subsequent pregnancy.[3] In addition, they are at increased risk of other adverse pregnancy outcomes, including preterm birth and preeclampsia[3]. Although no interventions have been demonstrated to reduce this risk, some recommendations are possible. Women who smoke tobacco or use cocaine should be counseled on the adverse effects of exposure to these substances, and encouraged to quit before the next pregnancy.

Hypertension should be controlled before and during the subsequent pregnancy.

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OPTIMIZING ROLE OF ULTRASOUND AND OTHER IMAGING MODALITIES IN MANAGEMENT OF APH

Dr. Jayprakash Shah
MD; FICOG

Fetal Medicine expert, Chairman – Imaging science committee, FOGSI 2009-2011, Ex Hon sinologist, Sheth V.S. General hospital & Smt NHL Municipal Medical College, Ahd. Fetal Medicine expert Akanksha IVF, Anand

Dr. Parth Shah
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Fellow in Gynec Endoscopy Surgery,
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APH is a terminology used for group of conditions (table 1) where a pregnant lady bleeds significantly before delivery in 2nd trimester – after 20 weeks onwards but prior to onset of labor pains. It is one of commonest complication affecting nearly 5% of pregnancies. Patients, history is of course a first step towards the differential diagnosis. Imaging modality is the right step towards the pin point diagnosis & line of management in cases of APH. Ultrasound among all imaging modality is gold standard noninvasive modality.

Antepartum hemorrhage
Placenta previa
Accidental hemorrhage – Abruptio placenta
Vasa previa
Uterine rupture
Medical disorder in pregnancy
Hematuria

Out of all three most important causes are placenta previa & Accidental hemorrhage, of course vasa previa is important to predict outcome of the neonate.

PLACENTA PREVIA

Placenta previa and accrete, relatively rare, account for a large percentage of maternal morbidity and mortality in modern obstetrics. Hemorrhage is a major complication of abnormal placentation, and early diagnosis and intervention in these conditions can more readily enable the physician to minimize the risks to mother and fetus. Widespread & routine use of ultrasound in obstetrics has greatly advanced our ability to diagnose and manage abnormal obstetric bleeding.

Placenta previa is a condition in which the placenta is implanted in the lower segment of the uterus and covers partly or completely the cervical os after 20 weeks of pregnancy before onset of labor. Placenta previa can be associated with increased incidence of placenta invasion into the myometrium. Placenta accreta, increta and percreta indicate progressively greater degree of penetration of the myometrium which is difficult do be distinguished by ultrasonography. Placenta accreta is present in 5% of placenta previa's cases and 30% of all cases are associated with placenta previa.

Incidence – 0.5% of pregnancies. Black women are ore prone to placenta previa compared to white population. Women at extremes of reproductive agre are more prone.

Four grades are described

Low lying placneta - The term *low-lying placenta* has been used when the placental edge does not reach the cervical os. Placental edge that approaches to within 2 cm of the cervix on ultrasound examination
Marginal placenta previa - the edge of the placenta is considered to be at the margin of the internal os
Complete placenta previa - the cervical os is completely covered by the placenta.

Central Placenta Previa | Marginal Placenta Previa | Low lying Placenta previa

Diagnosis of placenta previa, before the era of ultrasound in clinical practice, was largely dependent on clinical history & diagnosis was always in dilemma. Application of ultrasound has made a difference in accurate

diagnosis & prognosis as well as management.

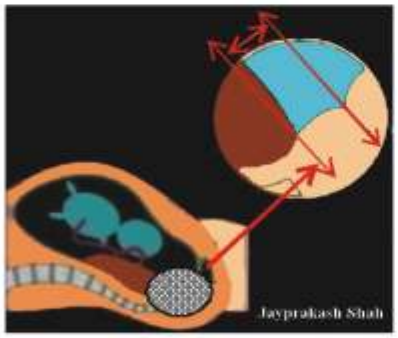
ULTRASOUND

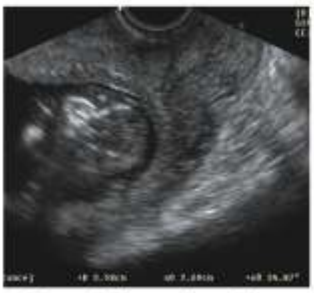
Early pregnancy : During early pregnancy scan when a G. sac is identified implanted over lower segment near internal os, keep high suspicious of Low placenta / placenta previa. Positions of G. sac in decidua also specify its position whether anterior or posterior.

11-14 weeks scan : One can easily pick up whether placenta is low or high. Placenta reaching nearly to internal os to be classified as low placenta. At this stage placenta previa cannot be coined unless placenta completely central implanted.

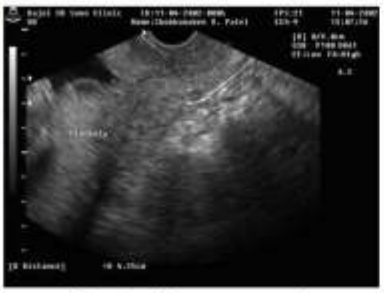
2nd trimester scan : This is right time to specify the position of placenta. Abdominal scan is routinely used with little full bladder. Locate the position of placenta & it/s relation with internal is. (Table II)

Position of placenta	G. Age (weeks)	
Distance of placenta from internal os	16-24 weeks	< 24 weeks
> 20 mm	No Previa	No Previa
10-20 mm	Low Lying	Marginal Previa
0-10 mm	Low Lying	Marginal Previa
Covering internal os	Previa	Complete previa

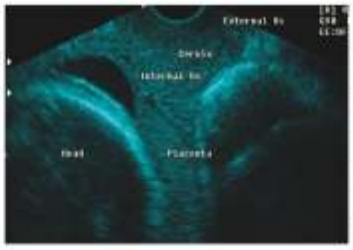




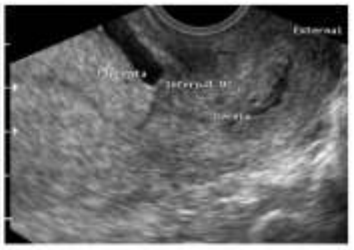
Normal Placental position



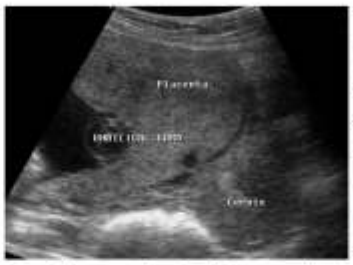
Marginal Placenta previa



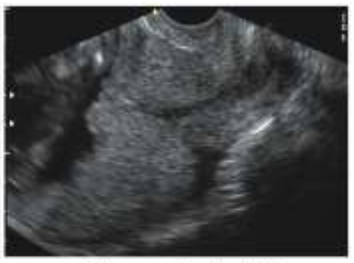
Marginal Placenta previa TVS



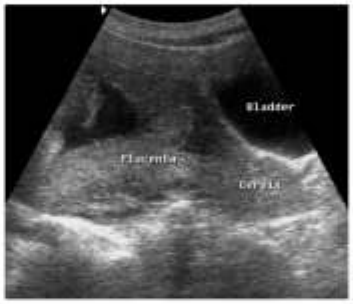
Marginal Placenta previa Abdomenal



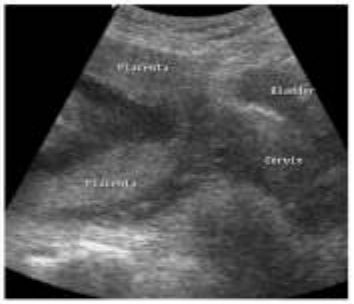
Placenta Previa Abdomenal



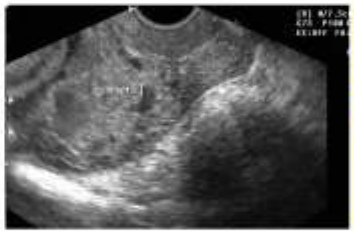
Placenta Previa TVS

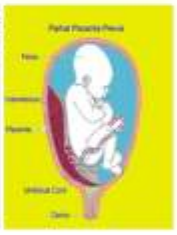


Complete Placenta Previa



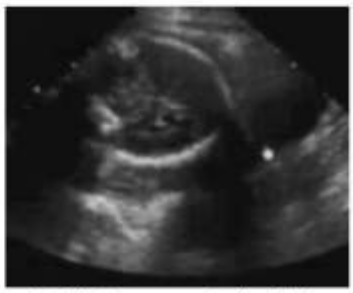
Complete placenta previa – Thinned out central portion



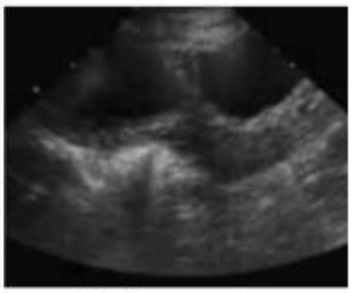


Bleeding results from small disruptions in the placental attachment during normal development and thinning of the lower uterine segment

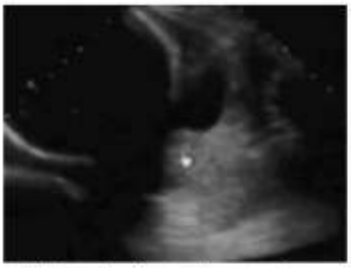
Pitfalls – Artifact in placenta previa



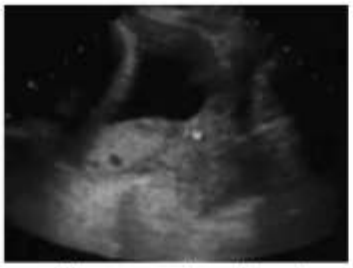
Doubtfull placenta previa by Abd scan



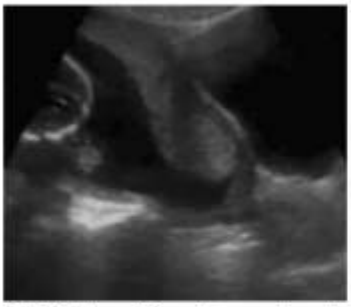
No Placenta previa



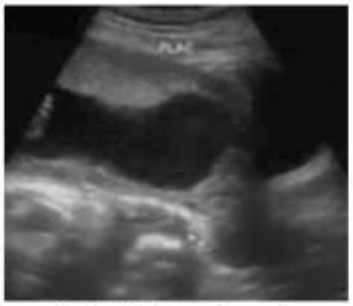
Shadow by Head obstruct view



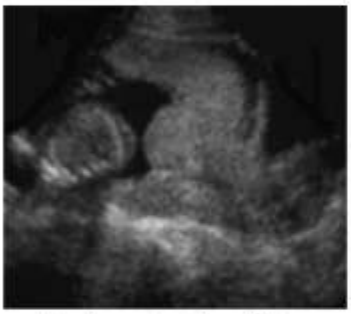
Placenta previa confirmed when No head shadow



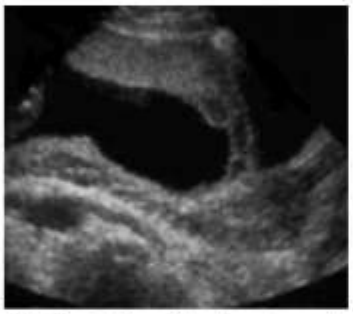
Full Bladder – Wrong Impression of Placenta previa



Empty bladder – No previa



Uterine contraction – False Inpression of PP



No Contration – No placenta previa

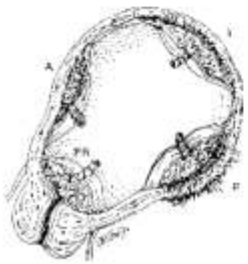
INVASIVE PLACENTA

Invasive placentas are classified according to the degree of myometrial invasion.

Placenta accrete - the abnormally adherent placental villi are attached directly into the myometrium, but do not invade it.

Placenta increta - the villi invade the myometrium.

Placenta percreta - placental villi penetrate through the myometrium, reaching the serosal surface of the uterus



- (A) placenta accreta,
- (I) placenta increta,
- (P) placenta percreta,
- (PR) placenta previa.

Placenta accreta, increta, and percreta occur much less frequently, from 1 in 1600 to 1 in 12,000 patients. Placenta accreta often occurs in combination with placenta previa. In the presence of placenta previa, accreta will also be noted in 24% to 67% of cases, increasing with the number of prior uterine scars. Decidua protects from penetration of placenta in to myometrium. When there is deficiency of decidua as it occures with previous LSCS or badly cureeted endometrium – chances of invasive placentation is very high.

ULTRASOUND

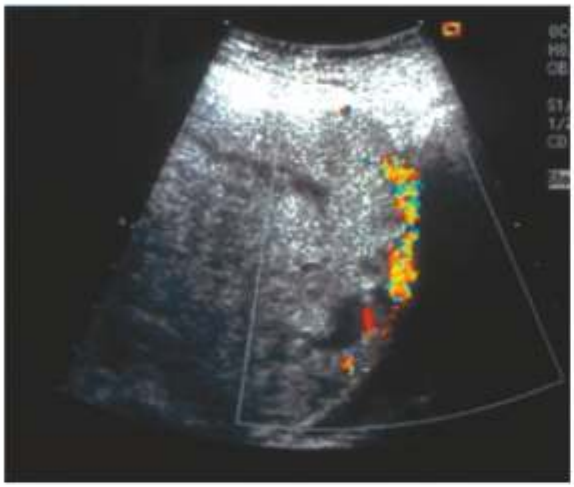
There is little doubt that transabdominal sonography will remain as the first-line diagnostic means for the localization of placenta previa. Transvaginal sonographic placental localization appears to be a simple, reliable, and safe technique,[19] and it is recommended as a second-line diagnosis in patients who are diagnosed to have minor placenta previa by transabdominal sonography. Transperineal sonography is another technique for imaging the cervix during the third trimester of pregnancy

Despite the encouraging research results, MRI diagnosis of placenta previa is still an experimental technique and is not widely used in a clinical setting 20. Disadvantages associated with MRI for diagnosis of placenta previa include: (1) safety concerns regarding moving a patient from labor and delivery to a radiology suite; (2) the relatively lengthy examination (typically 30 to 60 minutes); (3) long-term safety in pregnancy has yet to be established; and (4) MRI scans are more costly than ultrasound examination.

The sonographic characteristics of a placenta accreta are the absence of the normal retroplacental clear space, placental tissue contiguous with myometrium, and prominent placental venous lakes and uterine vascularity. Absence of the hypoechoic zone is thought to represent a defect in decidua basalis and adjacent myometrium, whereas the vascular changes may be a result of alternative vascular patterns associated with an abnormal basal plate. Rosemond and Kepple17 described

a case in which abnormal sonographic findings were appreciated only with transvaginal color Doppler sonography. When Doppler flow studies of the normal retroplacental clear space are performed, multiple venous flow signals are seen in this area.17 18 Absence of this space represents abnormal placentation.

PLACENTA PERCRETA



PLACENTAL ABRUPTION

Premature seperation of normal positioned placenta after 20 weeks of geastation & before 3rd stage of labour is termed as Abruptio placenta. It may be associated with reveled bleeding – Revealed abruption placenta; or may be retroplacental bleeding – Concealed placental abruption.

Epidemiology

The estimated incidence is at ~ 1% of all pregnancies.

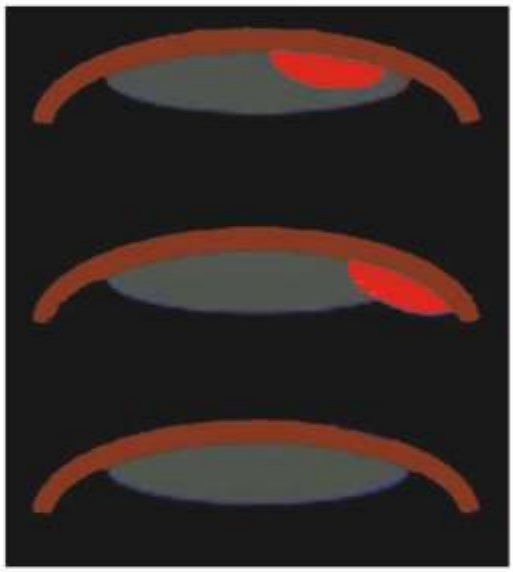
Clinical presentation

Patients with a placental abruption typically present with antepartum bleeding, uterine contractions usually tonic contraction, and fetal distress. The exact aetiology is unknown, but the final pathophysiology is likely rupture of a spiral artery with hemorrhage into the decidua basalis leading to separation of the placenta.

Associations and risk factors

A number of risk factors have been associated with placental abruption, including :

- maternal trauma
- maternal age of 35 years or older
- maternal cigarette smoking
- maternal cocaine use
- thrombophilia
- previous placental abruption
- chorioamnionitis
- prolonged rupture of membranes
- Pre eclampsia and maternal hypertension : often seen in as many as 50% of cases
- short umbilical cord
- increased parity



ULTRASOUND

The sonographic signs of placental abruption include :

- retroplacental clot (often poorly echogenic)
- intraplacental anechoic areas
- separation and rounding of the placental edge
- thickening of the placenta - often to over 5 1/2 cm
- thickening of the retroplacental myometrium : usually shrould be 1-2 mm unless there is a focal myometrial contraction
- intra-amniotic clot

A retroplacental haematoma may be identified only in 2 25% of all abruptions.

- The echogenicity of haematomas will depend upon their age. Acute haematomas imaged at the time of symptoms tend to be hyperechoic or isoechoic compared to the adjacent placenta. As the haematoma is commonly iso-echoic to the placenta, it may be mistaken for focal thickening of the placenta. **A 'normal' ultrasound does not exclude a placental abruption** - particularly as the blood may have escaped through the vagina in the case of external haemorrhage

In other cases the retroplacental haematoma may be hypo-echoic or of heterogeneous echogenicity.

COMPLICATIONS

- intra-uterine growth restriction (IUGR) : particually when the abruption exceeds 30 - 40 % of the placetal area
- fetal demise : with a large unattended abruption

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MORBIDLY ADHERENT PLACENTA – A DREADED SCENARIO

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Morbidly Adherent Placenta (MAP) remains the greatest challenge in modern obstetrics. It is a dreaded complication which invariably leads to severe maternal morbidity and mortality. In the earlier days, it was rarely diagnosed before birth ultimately leading to intractable PPH, DIC,emergency hysterectomy, severe maternal morbidity, sometimes even maternal death (upto10%).[1] This condition needs urgent attention as the incidence is on the increase.

Asim Kurjak in june 2010, emphasized that prenatal diaognosis with imaging modalities is necessary for good outcome.[2]

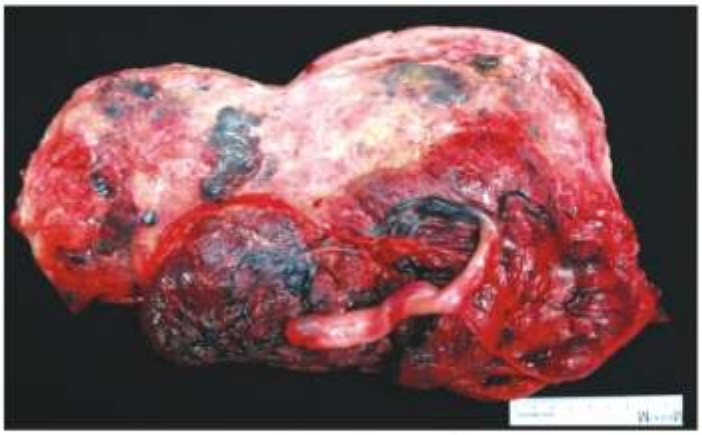

Fig. 1 Morbidly Adherent Placenta

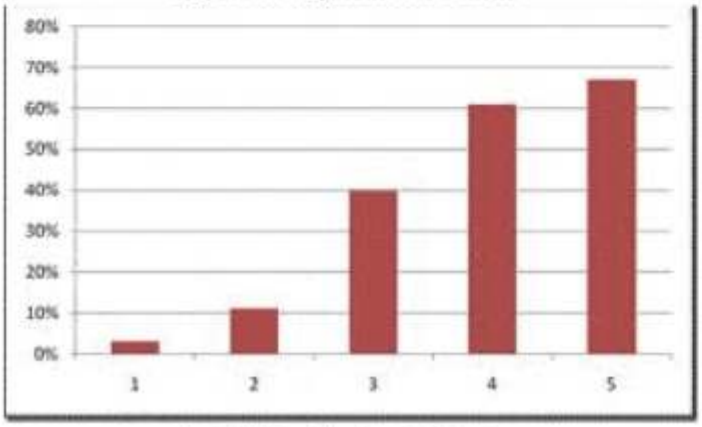

Fig. 2 MAP with No. of C Section

INCIDENCE

The American College of Obstetricians and Gynecologists estimated that MAP complicated 1 in 2500 deliveries.[3]

It has risen to 10 folds in last 50 years

1980	1 in 2500
2002	1 in 535
2006	1 in 210

The increasing Caesarean Section rate and incidence of Placenta previa are two important contributing factors. About 10 % of placenta previa had associated accreta. (Miller & associates, 1997) [4]

The risk of placenta accreta in the presence of placenta previa increases dramatically with the number of CS, with a 25% risk for one prior CS, and more than 40% for two prior CS.[5](Fig. 2)

ACOG warns of 40% risk of accreta in Placenta Previa with previous 2 Caesarean Section with anterior or central placenta.

Advancd maternal age,Multiparty, Smoking,Previous curettage, MRP, Septic endometritis and Submucous myoma are other risk factors

Morbidly Adherent Placenta (MAP) is defined as abnormal adherence either in whole or in part of the placenta to the underlying uterine wall.

It occurs due to partial or total absence of the decidua basalis and imperfect development of the fibrinoid or Nitabuch Layer.

Biswas in placental biopsies of these cases noted that there is

Primary deficiency of decidulisation

Over invasiveness of the trophoblast.

Radial and arcuate arteries show loss of muscular and elastic tissue making them unresponsive to vasospasm leading to torrential haemorrhage[6]

Morbidly Adherent Placenta can be classified according to the :

1. Degree of Adherence

Placenta Accreta (78%) - Chorionic Villi adherent to superficial myometrium

Placenta Increta (17%) - Chorionic Villi involving myometrium

Placenta Percreta (5%) - Chorionic Villi penetrating full thickness of myometrium and involving serosa

2. Amount of Placental Involvement

Focal adherence - Part of a single cotyledon is involved

Partial Adherence - More than one cotyledon is involved

Total Adherence - Whole Placenta is involved

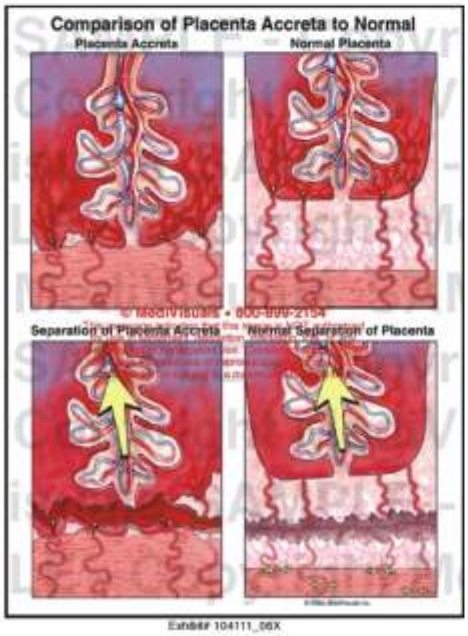

Fig. 3

CLINICAL PRESENTATION

During pregnancy MAP may be either asymptomatic or may present with antepartum hemorrhage, abdominal pain or acute abdomen, while intrapartum it may present as retained placenta, postpartum haemorrhage (PPH) or uterine rupture.[7]

A high index of clinical suspicion in high risk cases backed by directed scans and advanced imaging techniques are key to early antenatal diagnosis.

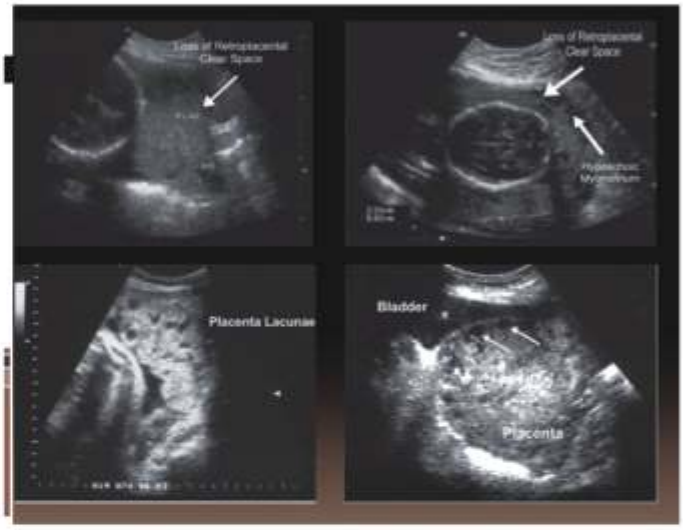

Fig. 4 USG Suspecion of MAP

DIAGNOSIS

With the advent of radiological facilities of Ultrasound, Doppler and MRI, antenatal diagnosis has brought revolution in the management of these cases. Antenatal Imaging at 32-34 wks is the key to diagnosis. MAP can be suspected if these findings are present

i) Loss of Retroplacental Clear Space

ii) Uterine serosa – Bladder interphase less than 1mm.

iii) Extension of placental tissue beyond uterine serosa

iv) Intraplacental lacunae (Swiss cheese appearance)

v) Intraparenchymal placental lacunar flow.

vi) Bladder -Uterine serosa hypervascularity.

vii) Prominence of subplacental venous complexes.[8]

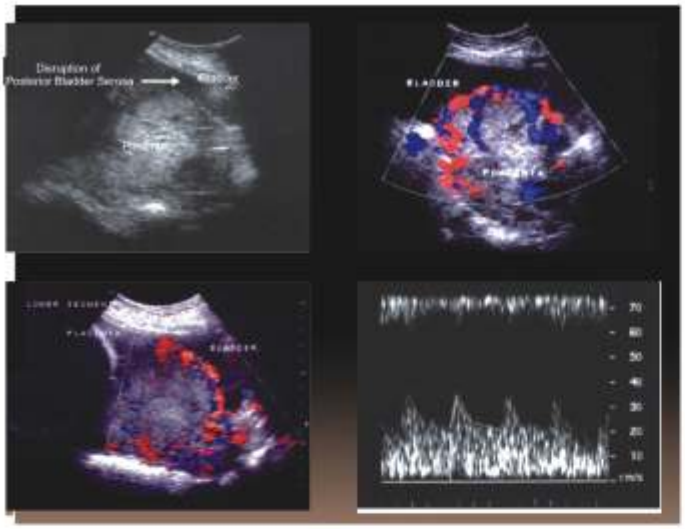

Fig 5 - Grey Scale Imaging and Colour Doppler showing MAP

Grey Scale Imaging gives about 51% positive predictive value & Colour Doppler 47%. It improves significantly with 3D Power Doppler to 76%. Shih J.C.et al[9]

It is the multiplannar imaging & dynamic assessment of uterine wall-bladder interphase &

the study of vascular network which gives an accurate diagnosis.

MRI gives additional information in equivocal cases

Suggestive findings are

Uterine bulging

Heterogenous signal intensity within the placenta

Presence of dark intraplacental bands on T2-weighted imaging (Lax 2007)

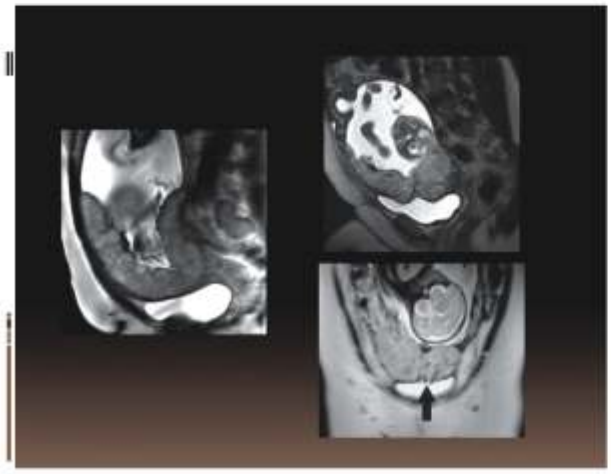

Fig. 6 : MRI showing Normal & Adherent Placenta

Warshak CR et al[10] suggested ***Two Step Protocol*** using MRI as an adjunct to sonography in suspicious cases of Placenta accreta. USG followed by MRI optimizes diagnostic accuracy.

OTHER INDICATORS

Elevated alpha feto protein in second trimester in absence of foetal anomaly with low lying placenta.

There is a strongly positive EGFR (Epidermal growth Factor Receptor) and a reduced VEGFR-2 (Vascular Endothelial Growth Factor)[11]

MANAGEMENT

Multidiscplinary approach is recommended, requiring an Experienced Obstetrician, Neonatologist, Hematologist and a Urological Surgeon if required.

Elective delivery is preferred. Elective delivery is not recommended before 36-37 wks of gestation for placenta accreta by RCOG guidelines 2006. Caesarean Hysterectomy is the safest option.[12]

Attempt not to remove placenta

Placental removal before Hysterectomy results in increased maternal morbidity. Problems depend on site and depth of implantation and number of lobules involved.

Preoperative identification with Planned Caesarean Hysterectomy without removal of Placenta was associated with significantly reduced morbidity (36 versus 67%) compared with those of attempted removal of placenta.[13]

Warshak et al[14] reported 99 cases of Placenta accreta. Prenatal diagnosis was possible in 66 cases. At 34- 35 wks En block hysterectomy was planed without removal of placenta. Maternal morbidity reduced dramatically

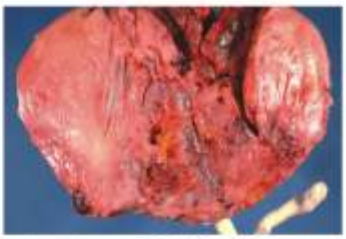

Fig. 7 : Specimen of Enblock Hysterectomy

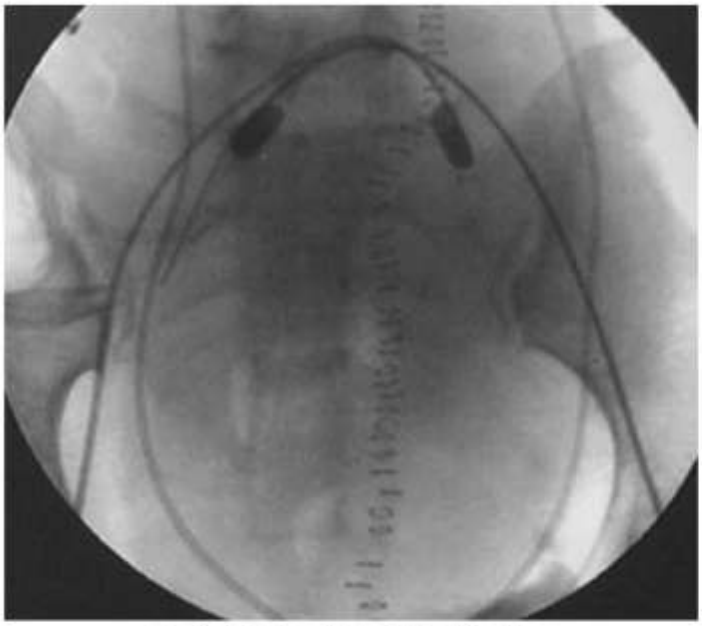

Fig. 8 : Uterine Artery Cathetarization

Conservative Management

Patients who have needs preservation of fertility and/ or with focal defects may be offered conservative management. It includes

Leave the entire/partial placenta inside and close the uterine incision[15]

May be given intra/postoperative Methotrexate,15 %. Many required subsequent hysterectomy, planned or because of bleeding/ Infection[16,17]

Localized resection with uterine repair

Stepwise Uterine Devascularisation

Compression sutures

Uterine/ Internal Iliac artery embolization

Preoperative uterine arterial cathetarization and embolization if required

Preoperative bilateral ureteral stunting if required

These procedures are more risky and may lead to severe morbidity

Conservative treatment for Placenta Accreta is being tried since 1996 and increasing significantly. In March 2010 Stantihes Loic et al from France reported 311 cases of Placenta accreta with conservative treatment with a success rate of 78.4% and a severe maternal morbidity rate of 6.0%[18]

KEY POINTS

High index of clinical suspicion is required.

- Imaging modalities are of great value in antenatal early diagnosis.
- Management needs multidisciplinary approach at tertiary centre.
- Elective C-section at 34-36 wks with En-block Hysterectomy with arrangements for massive blood transfusion is the safest option.
- No attempt to remove placenta gives better results.
- Conservative options are also being tried
- Preoperative Uterine Artery catheterization and embolization if required

CONCLUSION

Morbidly Adherent Placenta (MAP) is still a great challenge to the Obstetricians. The incidence is rising because of an increase in Caeserean Section.

Efforts to keep the primary C- section rates low, prediction and timely management of adherent placenta are the only ways to save these mothers .It should be suspected in high risk cases even in first trimester ,those who are undergoing MTP or suction evacuation.

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BE AWARE OF VASA PREVIA

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The term **Vasa Previa** refers to fetal blood vessels running through the membranes over the cervix, unprotected by umbilical cord or placental tissue[1].Consequently, when the membranes rupture, these vessels frequently rupture too, resulting in fetal exsanguination. The main risk to the mother is bleeding but often maternal bleeding is mild and therefore not life-threatening. Vasa Previa remains a challenging obstetrical complication with a significant risk of both fetal morbidity and mortality[2].Undiagnosed antenatally, vasa previa carries a perinatal mortality as high as 56%[3]. These complications can be minimised if an appropriate and timely prenatal diagnosis is obtained.

INCIDENCE

The diagnosis of vasa previa is often missed, and thus accurate estimates of the frequency of this condition are difficult to make. Nonetheless, vasa Previa is a rare condition with a reported incidence of approximately 1:2500 pregnancies[1].

RISK FACTORS

Major risk factors include

1. Second trimester low-lying placentae or placenta previa : This risk exists even when the placenta previa is no longer low-lying by the time of delivery[3,4].
2. In-Vitro fertilization pregnancies : The incidence is reported to be 1 in 300 IVF pregnancies[5,6] and has been attributed to the increased proportion of placental morphologic alterations seen in assisted conceptions[7,8].
3. Velamentous cord insertion
4. Presence of a succenturiate lobe or bilobed placenta
5. Multiple pregnancy

VARIANTS

Two variants have been reported[9]

Type 1: Associated with a velamentous cord insertion

Type 2: Associated with cases of suucenturiate placental lobe or a bilobed placenta

PATHOPHYSIOLOGY

While the exact reason remains unknown, two main hypotheses exist regarding the pathogenesis of vasa previa :

1. The portion of the placenta that overlies the cervix undergoes atrophy because of poor vascularity in that region, leaving blood vessels exposed through the membranes.
2. The placenta grows preferentially towards the better vascularised upper segment, leaving blood vessels exposed during its differential growth.

CLINICAL PRESENTATION

Vasa previa typically presents with painless vaginal bleeding at the time of spontaneous or artificial rupture of membranes. Fetal heart rate abnormalities quickly follow, leading to emergency caesarean delivery for fetal distress. A sinusoidal fetal heart rate tracing in this scenario is virtually pathognomonic of vasa previa (Fig 1). Pressure on the exposed vesels by the presenting part may lead to recurrent variable decelerations, even in cases with intact membranes.

DIAGNOSIS

Usually the diagnosis of vasa previa may be based on a history of fetal death or distress associated with bleeding

when the membranes rupture. Rarely fetal vessels may be palpated in the unruptured membranes during a cervical examination[1].Sometimes, direct visualisation of the vessels with an amnioscope may be possible, or alternatively, a blood test is performed to determine the presence of fetal haemoglobin in the vaginal loss[10]. The use of amnioscope in modern obstetrics is not common. The delivery of an extremely pale, exsanguinated infant and the finding of ruptured velamentous vessels on placental examination after delivery confirms the diagnosis.

With the advancements in ultrasound technology and the introduction of the sonographic evaluation of the cervix during the late 1980s, several groups reported high degree of success in diagnosing vasa previa using transvaginal sonography supplemented by colour Doppler[11-21]. This has led to a paradigm change in the approach to the diagnosis of vasa previa. Substantial evidence has accumulated showing high specificity (upto 91%) of ultrasonography for the detection of vasa previa[22].This approach also resulted in a substantial minimization of both the morbidity and mortality that have been associated with it. In modern Obstetrics, ultrasonography is the mainstay of diagnosis of vasa previa.

The first reported diagnosis of vasa previa on ultrasound was by Gianopolous and colleagues in 1987[11]. It was however, only in 1996 that the first case of vasa previa was diagnosed at the time of routine second trimester anomaly scan[23]. Determining placental cord insertion during the anomaly scan is reported to take less than a minute and can be easily incorporated into the allocated scanning time with no additional skill requirement[24].

The ultrasound technique for ruling out vasa previa is based on

- Assessment of placental cord insertion
- Assessment of placental appearance and location
- Consideration of other risk factors

The umbilical cord inserts into the placental mass centrally or paracentrally in 90% 0f pregnancies. In 10% the insertion is marginal with 1% being velamentous cord insertion. When the site of cord insertion into the placental mass is clearly identified, the possibility of vasa previa type I is very low and no further action is required[25]. In contrast, when the insertion site cannot be identified,efforts should be made to exclude velamentous cord insertion as this group has a higher risk of having vasa previa (6%). It is imperative to scan the area above the internal os using a transvaginal approach with colour Doppler when a velamentous cord insertion cannot be clearly demonstrated in the upper uterine segment.

Recently, investigators have utilized three-dimensional (3D) USG for accurate diagnosis of vasa previa[26].3D USG permits the reconstruction of the coronal plane of the cervix, which can demonstrate the cervical os and its relation to any traversing abnormal blood vessels. In addition multiple display modalities, especially the Tomographic US imaging (TUI) mode, can improve the diagnostic ability by displaying the successive images that depict the relation between the abnormal vasculature and the internal cervical os. Nevertheless in most cases, two dimensional US with Doppler evaluation is sufficient for the diagnosis of vasa previa.

Oyelese and colleagues found vastly improved outcomes with a prenatal diagnosis, with survival of 97% in cases with a prenatal diagnosi against 44% survival without a prenatal diagnosis. It is important to know that the authors concluded that prenatal diagnosis and gestational age at delivery were the only predictors of neonatal survival.

DIFFERENTIAL DIAGNOSIS

The diagnosis of vasa previa can be difficult at times. Owing to significant management implications, it is important to differentiate it from other conditions in which vasculature may be found adjacent to the cervix.

1. Umbilical cord funic presentation: A free loop of cord is sometimes detected over the internal cervical os. However in a funic presentation, the vessels will move away from the cervix with change in maternal position. Furthermore placental cord insertion is expected to be normal in cases of funic presentation.

2. Maternal uterine or cervical vessels near internal os: A power Doppler evaluation to assess the pulsatility of the vessel is useful in such cases.

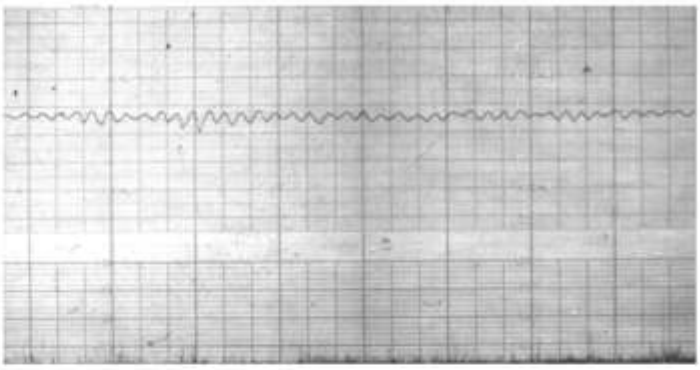
MANAGEMENT

The management of vasa previa is challenging and focuses on minimizing the risk of rapid fetal exsanguinationwith spontaneous rupture of membranes or labour. Even when emergency caesarean section is performed in these cases, the risk of fetal exsanguinations is substantial and has been associated with a mortality rate of over 56% in one study[3]. Hence the mainstay of managementis an accurate, timely prenatal diagnosis and early intervention with caesarean delivery prior to labour or membrane rupture. This approach has significantly improved the fetal outcome among women with this potentially lethal condition.

There is paucity of evidence comparing the management strategies. However all asymptomatic women with a second trimester diagnosis of vasa previa should be informed about the diagnosis and explained the severity of the condition. They should be told to report to the hospital immediately should they experience contractions, bleeding or leaking. Sexual intercourse should be avoided. Patients may be admitted to hospital at approximately 32 weeks gestation. The major purpose of admission is to ensure quick access to immediate ceserean delivery if the membranes rupture. Prophylactic steroids are usually administered as there is always a potential for preterm delivery. The patient should be delivered in a centre with adequate neonatal back up where facilities for immediate neonatal transfusion is available. Usually elective ceserean delivery is performed at 35-36 weeks gestation or as an emergency procedure when membranes rupture. At ceserean delivery, a transverse uterine incision can be made, but it is important to avoid incising or rupturing the membranes after the uterine incision. Every attempt should be made to deliver the fetus *en caul*.

Perinatal deaths from vasa previa are usually preventable, and good outcome depend on the prenatal diagnosis and delivery by caesarean section before the membranes rupture. Hence instead of saying "Beware of Vasa Previa", its better to "Be Aware" and prevent potential serious complications.

Fig 1 : Sinusoidal fetal heart tracing



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JUDICIOUS USE OF DRUGS IN APH

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Obstetric haemorrhage (both antepartum and postpartum haemorrhage) is one of the leading causes of maternal mortality in the developed world. Antepartum haemorrhage (APH) is defined as any bleeding from the genital tract after the 20th week of pregnancy and before the onset of labour. Some of the causes of antepartum haemorrhage might also cause intrapartum bleeding, such as an abruption or placenta praevia. Antepartum haemorrhage complicates 2-5% of all pregnancies. It is associated with increased rates of perinatal morbidity and mortality and contributes to significant healthcare cost ,

Classification of an APH is according to the site of bleeding and is commonly defined as follows :

Placenta Praevia (Accounts for about 30% of APH cases) and it is bleeding from a placenta located in the lower uterine segment.

Placental abruption (Accounts for about 25% of APH) is bleeding from a normally situated placenta. This may be a marginal bleed (bleeding from the placental edge or margin) or in association with significant placental separation.

Vasa Praevia is a rare condition in which umbilical blood vessels traverse the fetal membranes of the lower uterine segment, unsupported by the umbilical cord or the placenta. Bleeding from these vessels is almost always associated with rupture of the fetal membranes.

Cervical and lower genital tract bleeding (Accounts for about 45% of APH) includes bleeding from any site within the genital tract and include :

Cervical lesions such as an ectropion, dysplasia, cervicitis, polyps or carcinoma.

Cervical bleeding in pregnancy may occur spontaneously, or follow sexual intercourse, a clinical examination or Pap smear. Bleeding from the lower genital tract is uncommon.

On occasion, bleeding from the urinary tract (haematuria) or ano-rectum (e.g. haemorrhoids) may be confused with an APH. Taking a complete history and conducting an appropriate clinical examination will greatly assist the clinician in making the correct diagnosis.

What drugs to use to manage APH should be base on nature of problem, its acuteness and severity.

Regardless of the site of bleeding, women presenting with an APH may be broadly divided into two groups: Those with a major haemorrhage and those with an APH where immediate resuscitative measures are not required.

MANAGEMENT OF A MAJOR APH

The majority of women presenting with an APH will not require immediate resuscitation. However, the actual blood loss is often more than is immediately apparent from haemodynamic assessment (e.g. pulse and blood pressure). This is because otherwise healthy women are well able to compensate for acute loss without overt signs or symptoms of shock.

Early resuscitative measures are important, particularly if there has been substantive blood loss. These include control of bleeding, restoration of circulating blood volume for oxygenation of tissues and diagnosing and treating the underlying cause of the bleeding. The required urgency of assessment and the escalation of treatment will largely depend upon the amount of bleeding, haemodynamic stability of the woman, her

degree of shock, gestation and general maternal and fetal wellbeing.

An important part of resuscitation in a major APH is replacing the blood cells lost, with the transfusion of blood products. All hospitals should have a massive transfusion protocol that may be initiated for women with a major APH. Also, all hospitals should have a protocol on the management of women who refuse blood products.

Prompt assessment is imperative. Members of the treating team including an experienced obstetrician, anaesthetist, haematologist and other assistance as needed may carry out the following actions simultaneously.

The following principles will assist in the prompt assessment and management of a major APH:

HISTORY AND INITIAL ASSESSMENT

- assess the woman's general condition - Record pulse, blood pressure, temperature, respiratory rate and oxygen saturation level. NB. A healthy adult may maintain vital signs within the normal range until shortly before a critical point is reached and then suddenly and rapidly deteriorate.
- record history – Expected due date, history of any bleeding in pregnancy, other relevant history e.g. recent trauma.
- check blood group, Rhesus and antibody screen, ultrasound scan results for placental site.
- note blood loss (amount, consistency and colour). It has been shown that practitioners often underestimate the volume of blood loss, particularly when blood loss is large.[2]
- considerable blood loss may be contained within the uterus (concealed), therefore the volume of visible blood may not be an accurate representation of the total amount of blood being lost. A tense tender uterus may signify the presence of concealed blood.
- if there has been a severe abruption (tense, tender uterus with a fetal death in utero), consider an early blood transfusion.
- additional support – Midwives, obstetric staff, anaesthetist, haematologist and neonatologist.

Basic Life Support

- if required, establish an airway and administer oxygen therapy or assist ventilation.
- infuse fluids at approximately the rate that blood is being lost. In initial resuscitation, fluid replacement with crystalloid is as effective as with colloid.[3]
- insert an in-dwelling urinary catheter with urometer. Record hourly urine output.
- if blood component therapy is indicated and consented to, advice should be sought from a haematologist regarding appropriate therapy.
- in the absence of a massive transfusion protocol or specialist haematology advice, consider the following:

FLUID REPLACEMENT AND FLUID BALANCE

- IV access. One or two size 16 gauge or larger bore cannulae.
- infuse fluids at approximately the rate that blood is being lost. In initial resuscitation, fluid replacement with crystalloid is as effective as with colloid.
- insert an in-dwelling urinary catheter with urometer. Record hourly urine output.
- if blood component therapy is indicated and consented to, advice should be sought from a haematologist regarding appropriate therapy.
- **If maternal haemodynamic state can only be improved by delivery, this should be considered**
- if there has been a severe abruption (tense, tender uterus with a fetal death in utero), consider an early blood transfusion.
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- in the absence of a massive transfusion protocol or specialist haematology advice, consider the following:

  If maternal haemodynamic state can only be improved by delivery, this should be considered, irrespective of gestational age.

APH where immediate resuscitative measures are not required

MEDICATIONS

- the need for analgesia should raise concerns of a moderate or severe placental abruption, or that the woman is in labour. Offer analgesia and antiemetics if required.
- give corticosteroids if gestation is less than 34 weeks. (Two doses of Betamethasone 11.4mg, 24 hours apart).
- administer 625iu Anti-D, as an intramuscular injection, if the woman is Rhesus D negative. Additional doses of Anti-D immunoglobulin may be required if the Kleihauer-Betke test indicates a large feto-maternal haemorrhage.
- if birth is imminent at a gestation less than 30 weeks gestation, consider a magnesium sulphate infusion for fetal neuroprotection.[4]

The question arises use of drugs like tocolyrtics, progesterone ,tranxemic acid , even injectables like proluton depot. In this era of evidence based medicine judicious use of drugs are need of hour. Before prescribing any medication it should be justified.

It is imperative to have a minimum basic protocol for every hospital till we have our national guidelines. Till then we can take help of international guidelines to make our own protocol.

There is no role of progesterones , tocolyrtics and hemostatic agents in most of the cases , Targeted approach to accurate diagnosis and management of cause is indicated

The basis of international guideline selection was: The publication after the year 2000 and international guidelines published by obstetric and gynaecology professional bodies.

The areas of clinical care covered in protocol should include :

- definition and incidence of APH
- causes of APH outlined
- emergency management of a major APH
- causes and specific management of APH
  - Placenta Praevia
  - Abruption
  - Vasa Praevia
  - Cervical and lower genital tract bleeding
- quick reference guides

UTERINE RUPTURE – A TRAGIC & CATOSTROPHIC OBSTETRIC EVENT .. !!

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Uterine rupture is undoubtedly one of the most tragic events that can occur in a women's life. It is one of the major factors contributing to maternal mortality. **Delee** had said 'once cesarean section always a cesarean section' but according to **Munrro Kerr** the dictum has changed to **'once cesarean section always a hospital delivery'**[1]. It is not an exaggeration to say that the incident of uterine rupture is an index of obstetric civilization of a country, these two factors being inversely proportional to each other.

DEFINITION AND CLASSIFICATION

The term 'uterine rupture' is used to denote partial or total disruption of wall of the uterus in a gravid patient after age of viability has been reached. The uterine rupture can be classified according to

1. **Type of rupture as -**
   a) Complete rupture,
   b) Incomplete rupture..
2) **Previous scar on uterus -**
   a) Dehiscence-
   b) Rupture of scar proper-
3) **The uterine rupture can be classified according to site of involvement into 3 types :**
   1. Fundal,
   2. Upper segment
   3. Lower segment.

Uterine rupture can occur in following circumstances :

A) Rupture occurring during pregnancy.

B) Rupture occurring during labour.

A. Rupture occurring during pregnancy : It is of rare occurrence and in almost all cases uterus has a previous scar, commonest being scar of previous classical caesarean section or abdominal hysterectomy.

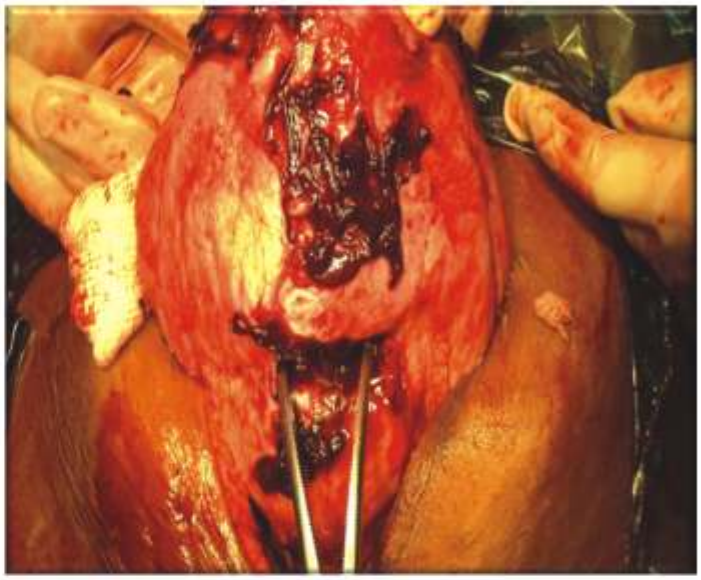


Fig. 1 : Rupture at previous scar

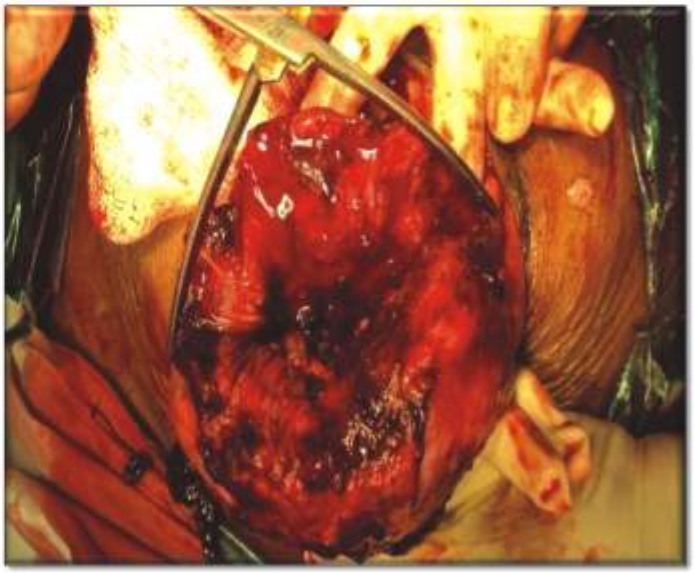


Fig. 2 : Fundal Rupture

B. Rupture occuring during labour :

I) Rupture of unscarred uterus:

a) SPONTANEOUS –

This is the commonest variety. Factors responsible for such a rupture are –

i. High parity

ii. Obstructed labour.

iii. Unrecognized previous injury to uterine wall.

b) TRAUMATIC -

The chances of uterine rupture following traumatic instrumental vaginal delivery are high.

CLINICAL FEATURES

Clinical features of rupture uterus can be considered under two headings :

A) Clinical features of antepartum rupture -

Ruptures during pregnancy are remarkably "silent". Gradual dehiscence of scar and eventual rupture of caesarean section scar in later half of pregnancy is a classical example

B) Clinical features of intrapartum rupture -

It commonly depends upon whether or not rupture follows obstructed prolonged labour.

Intrapartum rupture

Premonitory signs and symptoms are –

a) History of prolonged labour.

b) Constant pain over lower abdomen

c) Increasing frequency and intensity of uterine contractions.

d) Symptoms and signs of maternal exhaustion.

e) Signs of fetal distress followed by fetal death,(absent FHS)

f) Hematuria.

g) Vertical stretching and thinning of lower segment.

h) Bandl's ring can be palpated and it rises progressively high in abdomen.

i) On Per Vaginal examination – Cervix is usually partially or fully dilated, thick, edematous, loosely applied to presenting part. Vagina is hot and edematous and extreme degree of caput and moulding will be seen in vertex presentation. Commonly there is abnormal presentation like brow or face or shoulder.

C) Clinical features following rupture -

a) Feeling of something giving way.

b) Acute, stabbing pain in lower abdomen coincident with occurrence of rupture.

c) Cessation of uterine contractions.

d) Alteration in uterine contour if foetus is completely or partially extruded in peritoneal cavity.

e) Foetal parts may be palpable separately and retracted uterus as a distinct swelling.

f) FHS are absent in most of the cases.

g) Signs and symptoms of shock.

h) Variable degree of bleeding per vagina

i) Signs and symptoms of intra- abdominal bleeding.

j) Hematuria.

PREVENTIVE MEASURES OF UTERINE RUPTURE

"Prevention is better than cure" eminently applicable to the problem of uterine rupture. Prophylaxis of uterine rupture may be antenatal or intranatal.

Antenatal Prophylaxis

i) Prenatal counseling is of prime importance.

ii) Careful antenatal surveillance –Details of past obstetric history with special reference to history of prolonged labour in previous pregnancy and history of previous uterine surgery.

iii) Clear instructions for danger signals of uterine rupture and early referral to tertiary care centre.

iv) Family planning advice with stress upon sterilization operation after two children.

Intranatal Prophylaxis

The prophylactic measures that should be undertaken are

i) Vigilant supervision during labour.

ii) All Oxytocin drips to be started and monitored by trained personnel

iii) Avoid traumatic manipulations or unindicated instrumentation.

iv) Judicious and liberal use of caesarean section in cases of obstructed labour.

v) **"Once a caesarean always a hospital delivery"**

MANAGEMENT

Patients were commonly managed by three modalities of treatment.

1) Suturing of rent without sterilization

2) Suturing with sterilization

3) Hysterectomy — → Total- Where rupture extends to cervix or vagina ↘
Subtotal

Associated surgeries include-

1) Internal iliac artery ligation

2) Bladder repair

1) Suturing of tear without sterilization

Indications-

a) Young gravid who has not finished child bearing

b) Rupture of caesarean section scar if the edges are suturable.

c) In severely shocked patients to reduce operating time.

2) Suturing of tear with sterilization

Indicated in young patients who have two or more children, Uterus is preserved to maintain normal menstrual function, a factor which is of relevance to Indian women.

3) Hysterectomy is indicated in -

i. Extensive irregular tear unable to suturing

ii. Infected cases

iii. Associated colporrhexis.

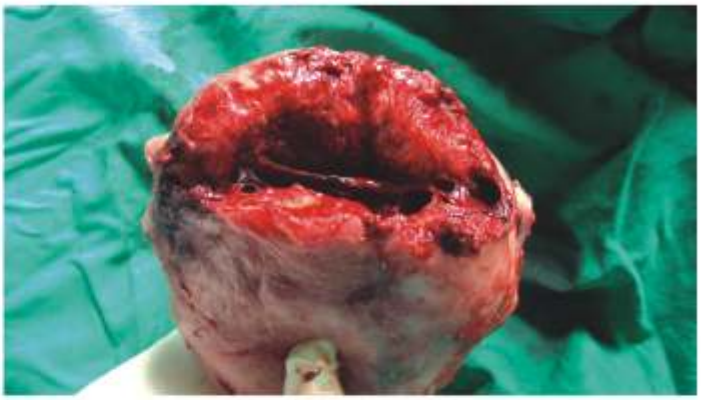


Fig 3 : Obstetric Hysterectomy Specimen

Internal iliac artery ligation is required when-

1) To control hemorrhage following the laceration of uterine artery which is difficult to clamp.

2) In the presence of broad ligament hematoma.

3) To control bleeding from stumps and vault.

4) Suturing of rupture with internal iliac artery ligation in patients with low parity.

In our hospital,, there were 46 cases of uterine rupture out of 42,542 deliveries in 3 years (2009-2011) giving an incidence of 1 in 924.

Table No. 1 : Nature of Admission:

	Deliveries	Percentage (%)
Booked cases	26,270	61.75
Referred	16,272	38.25
Total	**42,542**	**100%**

In our study it can be noted that out of 42,542 deliveries 16,272 (38.25%) patients were referred patients from peripheral hospitals and rural areas. Incidence of rupture uterus is three times as common in emergency cases as

Above table clearly denotes increased incidence of rupture in areas where there is lack of health services and lack of transport and communication.

Table No. 2 : Incidence Of Uterine Rupture In Relation To Parity.

Parity	Para I	Para II-IV	Para Above IV
No. of cases	2	34	10
Incidence (%)	4.34	73.91	21.73

The above table clearly shows that the incidence of uterine rupture was maximum in parity II

Table 3 : Classification Of Uterine Rupture Depending Upon Etiology.

Nature of rupture	No. of cases	Percentage (%)
a) Rupture during pregnancy	2	4.35
i. Spontaneous	2	4.35
ii. Traumatic	0	0
b) Rupture during labour	44	95.65
a) Rupture of intact uterus	13	22.72
i) Spontaneous	9	69.24
ii) Traumatic	4	30.76
b) Scar rupture	31	70.45

Most common cause was previous cesarean section with short interpregnancy interval. And second most common cause found to be Grandmultiparity. Of malpresentations, transverse lie was the commonest malpresetation of labour.

Table 4 : Distribution Of Rupture Site On Laparatomy

Site of rupture	No. of cases	Percentage
Fundus	2	4.34
Upper segment	3	6.52
Lower segment :	37	80.43
a) Anterior wall	5	17.24
b) Posterior wall	4	13.79
c) Broad ligament hematoma	10	21.73
d) Extension to cervix and vagina	4.	8.69
e) Extension to lateral wall	11	37.93
f) Extension to bladder	4	8.69
g) Ureter involvement	0	0

Graph No.6 : Distribution Of Rupture Site On Laparotomy

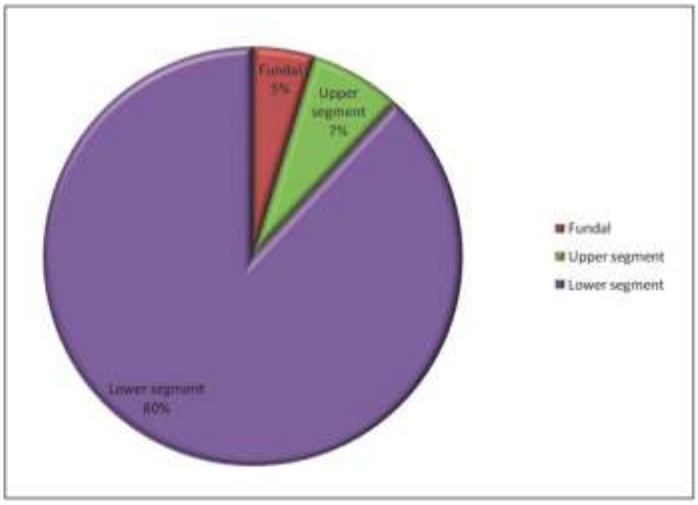


Table 12 : Analysis of Modalities of Treatment

Modality of treatment	No. of Cases	Percentage (%)
i. Suturing of tear without sterilization	16	34.78
ii. Suturing of tear with sterilization	-	-
iii. Subtotal hysterectomy	28	60.86
iv. Total hysterectomy	2	4.34
v. Internal iliac artery ligation	27	58.69
vi. Repair of bladder tear	5	10.86

Table 5 : Analysis of Post-operative Complications

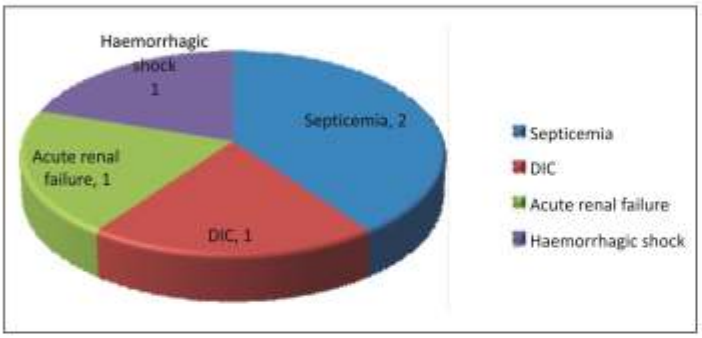
Complications	No. of cases	Percentage (%)
A) Early		
Fever	23	38.9
Urinary Tract Infection	12	20.3
Paralytic ileus	09	15.3
Respiratory complications	06	10.2
Acute renal failure	02	3.4
B) Late-		
Septicemia	04	6.8
Wound dehiscence	11	18.6
Jaundice	03	5.1
Burst abdomen	03	5.1
DIC	01	1.7
VVF	01	1.7

In present study, most of the patients presents with multiple complications. Out of which- fever, urinary tract infection, wound dehiscence, paralytic ileus were commonest post-operative complications.Incidence of post –operative morbidity was 51.6%

Table 6 : Perinatal Outcome-

Fetal outcome	No. of cases	Percentage (%)
Live birth	11	23.91
Still Birth	35	76.08

Graph No. 8 : Causes of Maternal Death



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COAGULATION DISORDER IN APH

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Antepartum haemorrhage (APH) is defined as bleeding from or in to the genital tract, occurring from24th week gestational age to term. The most important causes of APH are placenta praevia and placental abruption. APH complicates 3–5% of pregnancies and is a leading cause of perinatal and maternal mortality worldwide.[1] Women may have disordered hemostasis associated with pregnancy due to an underlying congenital bleeding disorder or to acquired thrombocytopenia or coagulopathy arising from problems in the pregnancy itself, bleeding associated with these disorders remain an important cause of maternal death worldwide.[2]

DISSEMINATED INTRAVASCULAR COAGULATION

Disseminated Intravascular Coagulation (DIC) is a pathologic condition associated with inappropriate activation of coagulation and fibrinolytic system that result in a tendency towards hypercoagulability but paradoxically result in seveer bleeding. Disseminated Intravascular Coagulation is always a secondary phenomenon and not a disease entity.[3] Obstetric related DIC is encountered in 1 in 500 deliveries for the severe type of DIC.

COMMON OBSTETRIC CONDITIONS AND DIC

Placental Abruption : Liberation of tissue thromboplastin and intrauterine consumption of fibrinogen and clotting factors in retro placental clot - leads to activation of extrinsic system.

Retained dead fetus : Liberation of tissue thromboplastin from non viable tissue.

Amniotic fluid embolism : Liberation of tissue thromboplastin, intrinsic procoagulant property of fluid and associated hypotension, hypoxaemia and tissue acidosis encourage coagulation factors.

Pre-eclampsia and eclampsia : It is postulated that the abnormality may reflect platelet adherence to exposed collagen at the sites of damaged endothelium. This condition is also associated with chronic coagulation abnormalities that lead to thrombocytopenia and elevation of Fibrin Degradation Product.

Septic abortion : Release of tissue thromboplastin and bacterial endotoxin

CLINICAL FINDINGS

It relates primarily to haemorrhage, anaemia and ischaemia. Patients generally have frank bleeding or a tendency to bleed from mucous membranes, intravenous line sites and surgical incisions. Abnormal bruising, purpura, petechiae and ecchyrnosis frequently are noted. There may be haematemesis, haematuria and vaginal bleeding. The quality and character of bleeding are directly related to severity of the disease process.[4]

Essentials of diagnosis

- History of recent bleeding diathesis, especially concurrent with some obstetric condition.
- Clinical evidence of multiple bleeding points associated with purpura and petechiae on physical examination.

BED SIDE TESTS

Whole blood clotting. (Normal value 1 to 10 minutes). 5ml of blood is taken in a glass tube and observed for clot formation. If the clotting time is prolonged, it indicates deficiency of coagulation factors.[5] Absence of clotting indicates a fibrinogen level < 50 mg/dl.

Clot retraction test (Normal value – 30 to 60 minutes). A weak friable clot indicates hypofibrinogenaemia while early dissolution indicates enhanced fibrinolysis.

LABORATORY TEST

Peripheral smear and platelet count.

Peripheral smear shows thrombocytopenia, leucocytosis and evidence of overt haemolysis like schistocytes. The platelet count may fall below 20, 000/ ul (normal > 1m50,000/ul).

Prothrombin time (PT) (normal – 10 to 13 seconds).

It tests the integrity of the extrinsic and the common pathway. When fibrinogen levels decrease below 100 mg/dl, it is prolonged. The International Normalised Ratio calculates the ratio of patient's prothrombin time to the laboratory's control prothrombin time. A normal INR is between 0.9 and 1.2. It is prolonged in deficiency of factors I, II, V, VII or X. The test is most sensitive to a fall in factor VII which is one of the vitamin K dependant factors.

Partial thromboplastin time (PTT) (normal 25 – 35 seconds)

PTT or APTT (activated PTT) tests the integrity of extrinsic and the common pathway. Its prolongation suggests a decrease in coagulation factors activity to less than 30% and fibrinogen levels <100 mg/dL

Thrombin time (Normal < 18 seconds)

Thrombin time is extended when functional fibrinogen levels are below 100 mg/dL

Fibrinogen levels. Hypofibrinogenaemia is the hallmark of DIC. The normal circulating level of fibrinogen in late pregnancy is raised to about 300-600 mg/dl and bleeding occurs if this level falls below 100-150 mg/dL However, plasma fibrinogen levels may remain in the normal range despite consumption in coagulation activity, because this protein is an acute-phase reactant. Therefore, it is suggested that finding of hypofibrinogenaemia is useful diagnostically only in very severe cases of disseminated intravascular coagulation.[6]

D-dimer assay, fibrinopetide-A titer, FDP titer are elevated and can be detected with assays using monoclonal antibodies.

COAGULATION INHIBITORS

Low plasma levels of coagulation inhibitors, such as antithrombin III, protein C may help in diagnosis as well as determining the prognosis.[6]

Of all the tests described, the D-dimer assay has been found to be the most useful test for diagnosing DIC, abnormal levels reported in 94% of patients with DIC. Other tests which showed a high sensitivity were fibrinopeptide – A titer, the AT-III level, and the FDP levels.[7]

Laboratory findings in DIC are described in Table given below :

Test	Normal Results	DIC
Fibrinogen	150-600 mg/dl	Reduced (< 150 mg/dl)
Prothrombin time	11-16 seconds	Prolonged
Activated partial thromboplastin time (APTT)	22-37 seconds	Prolonged
Thrombin time (TT)	15-25 seconds	Prolonged
Platelet count	1.2-1.5 lakh/mm^3	Reduced
D-dimer	< 0.5 mg/L	Increased (>0.5 mg/L)
Fibrinogen degradation products (FDP)	< 10 µg/dl	Incresed (10µg/dl)

ABNORMAL RESULTS OF COAGULATION PROFILE IN CASES OF DIC

Spectrum of severity of DIC [8]

DIC is an acute emergency and there is chances of rapid progression from stage 1 to stage 3 if appropriate measures are not taken, There is a great spectrum of manifestation of ranging from a compensated state with no clinical feature but evidence of increased production and breakdown of coagulation factors to the condition of massive uncontrollable Haemorrhage,

Severity of DIC		Obstetric conditions commonly	In vitro finding associated
Stage-1	Low grade compensated	FDPs ↑ Soluble fibrin complexes ↑ Ratio VWF to factor VIII cl ↓	Pre-eclampsia Retained dead fetus
State-2	Uncompensated but no haemostatical failure	As above plus fibrinogen ↓ Platelets ↓ Factor V and VIII ↓	Small abruptio placentae Severe Pre-eclampsia
Stage-3	Rampant with haemostatic failure	Platelets ↓ Gross depletion of coagulation factors fibrinogen ↑ FDPs ↑	Abruptio placentae Amniotic fluid embolism Particularly Eclampsia

MANAGEMENT OF DIC

Basic principles of management

- Understanding pathophysiology
- Eliminate underlying cause
- Use perinatal team approach for support of patient and family

Treatment of disseminated intravascular coagulation requires the correction of the underlying problem and is usually associated with intrauterine pathology and when the uterus is emptied the DIC fades away. Simultaneous supportive treatment is vital to restore the circulatory system, maintain blood pressure, urinary output and electrolyte balance.[9] The aim is to maintain normovolaemia by administration of crystalloids or colloids initially while blood is awaited. But the situation can become worse by the administration of synthetic volume expanders like dextrans. It is suggested that quite apart from fibrinogen dilution which occurs with intravenous dextran, the fibrinogen may be precipitated as fibrin or inactivated by forming a fibrinogen-dextran compound. It is also more difficult to cross-match the patient's blood for subsequent transfusion after infusing dextran.Thrombocytopenia may be aggravated further.

Transfusion of blood and blood products.

Haemodynamic stabilization is the main stay of treatment. Shock in DIC should be treated by blood (to replace lost haemoglobin) and plasma expanders. The aim is to maintain the haematocrit at 25-30% or higher and a urine output of at least 30 ml/h. Whole blood transfusion is not preferred due to high risk of infections and transfusion reactions. Instead, packed erythrocytes should be given, one unit of packed cells increases haematocrit by 3-5%. Component therapy is the mainstay of treatment. Plasma expanders should consist not of synthetic materials but mainly of fresh frozen plasma (FFP), which provides fibrinogen and factors VIII and V as well as the vitamin K-dependent factors II, VII, IX, and X. One unit of FFP (200-250 ml) increases fibrinogen by 10 mg/dl. Alternatively, fibrinogen or cryoprecipitate, which is rich in fibrinogen and factor cryoprecipitate, which is rich in fibrinogen and factor VIII, XIII, and V can be given. Each unit of cryoprecipitate increases fibrinogen by 10 mg/ dl.[15] It may be necessary to administer large volumes of plasma (up to 6 units per 24 hours) to correct the coagulation defect. Use of coagulation factor concentrates in patients with disseminated intravascular coagulation is generally not advocated because the concentrates may be contaminated with traces of activated coagulation factors, which could exacerbate the coagulation disorder. Also, These concentrates contain only selected coagulation factors in contrast to fresh frozen plasma which contains all the necessary clotting factors, Platelets are transfused if there is thrombocytopaenia, each unit (50 ml) raises the platelet count by 7500/ul[16]Where massive transfusion (equivalent to 10 or more units of blood) is necessary, as it often is, excessive amounts of citrate may be acquired by the patient. Calcium gluconate up to 2 g intravenously may be given to counter the citrate effect. FFP is not indicated in disseminated intravascular coagulation without bleeding. The doses of FFP and cryoprecipitate should be guided by coagulation studies that include APTT and PT.[10,11] Surgical and obstetric patients with microvascular bleeding require platelet transfusion if the platelet count is less than 50 x 10^9 /L, It is rarely indicated if it is greater than 100 x 10^9/L.[12]

OTHER THERAPIES

Heparin therapy.

Although heparin is not routinely recommended in patients with DIC due to the risk of bleeding, it may be

useful in selected patients with clinically overt thromboembolism or extensive deposition of fibrin with an intact vascular circulation. The dose of heparin advised in these patients is much lower than routinely prescribed for thromboembolism (300 to 500 U per hour as continuous infusion). Low-molecular, weight heparin may also be used as an alternative to unfractionated heparin.[13]

Antithrombin III. Antithrombin (AT) therapy is preferable to heparin, due to the haemorrhagic risks of the latter, and may be given when the AT activity is less than 70%.[14] The close recommended is 1500-3000 units/ day infusion for 2 days.Other newer agents used in the treatment of DIC include agents targeted to restore physiological anticoagulant system like recombinant human activated protein C (APC). In a double blind randomized trial comparing APC with unfractionated heparin for the treatment DIC, APC was found to be more effective than heparin with less risk of haemorrhage and a significantly lower maternal mortality.[14]

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EXTRAPLACENTAL CAUSES OF APH

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Antepartum Haemorrhage is unpredictable and the patient's condition may deteriorate rapidly before, during, or after presentation. Management depends on general as well as specific measures. Most common cause of APH is placental origin (praevia and abruption), but it may be due to extra placental causes. Extraplacental causes may be more aggravated and rapidly morbid to the mother and fetus than the placental causes of APH, like rupture uterus with heigher maternal morbidity, mortality and fetal mortalty or it may be pure mortal for fetus like vasa praevia thus definitive diagnosis is extremely important. Other common extraplacental causes of APH are mostly local, like show, cervicitis, cervical erosion, endocervical polyp, trauma, vulvovaginal varicosity, genital tumor/ infection, hematuria and bleeding from haemorrhoids.

Excessive bloody show— heralds onset of labour. It is mixed with mucus and results from tearing of small veins as the cervix dilates and effaces at the start of labour. **Rupture uterus**—It's occurrence in modern obstetrics cannot be denied. There is severe abdominal pain, tenderness, cessation of contractions, often loss of tone. Mild to moderate vaginal bleeding with fetal instability or even absence of complete heart sounds may be seen. It's a life threatening condition for mother and the baby. Some associated risk factors include previous uterine surgery including LSCS (40%), grand multipara, injudicious use of excessive oxytocin , shoulder dystocia, and trauma. **Vasa previa—** It is the only cause of fetal origin of APH. It is a rare condition in which painless vaginal bleeding is associated with rupture of membrane and fetal instability but normal maternal signs. Often symptoms of labour are present. In this condition the fetal blood vessels traverse the lower uterine segment in advance of the presenting part. Neither the umbilical cord nor the placenta supports the vessel.

If there is no maternal compromise a **full history** should be taken. Clinical history should determine whetherthere is pain associated with the haemorrhage, continuous pain with abruption and intermittent pain with labour. Ask for risk factors for abruption and placenta praevia. Ask for fetal movement. If APH with rupture of membrane, bleeding from a ruptured vasa praevia should be considered. Previous cervical smear history may be useful in order to assess the possibility of a neoplastic lesion of the cervix as the cause of bleeding. Stage one cancer is asymptomatic, symptomatic pregnant women usually presents with coitus, APH is mostly postcoital or with vaginal discharge and its incidence is around 7.5cases per 100,000 delivery.

Examination of all women presenting with APH should have their pulse and BP recorded. Women should be assessed for tenderness or sign of acute abdomen. A woody tender abdomen suggests abruption, a soft nontender uterus may suggests a low genital tract cause or bleeding from placenta praevia or vasa praevia. an atonic or abnormally shaped uterus with abdominal tenderness suggest uterine rupture.

As the local lesion can be readily seen with a **speculum**, it is desirable to pass a speculum but surely not a finger in to the vagina in any patient with slight APH to discover extraplacental lesion if any. The speculum examination may be performed to see source and amount of bleeding. If blood is seen coming through the cervical os, it can be assumed that the bleeding is intrauterine in origin, light bleeding with mucus suggest bloody show of labour. Sudden painless bleeding with bright red colour suggests placenta previa or vasa previa. Dark red clotted blood suggests abruptio placentae or

uterine rupture. It may be rarely combined, in such cases bleeding may still have placental site even in presence of some local pathology. If a local cause for bleeding is discovered, patient can sometimes be sent home with necessary advice or appropriate investigations and treatment started without any further delay. A mucus or small fibroid polyp can be twisted off. Bleeding may occur if the vagina is very irritated from an infection or a health disorder such as thrush or Gardnerella. Occasionally the infection may be caused by a sexually transmitted infection such as chlamydia, gonorrhea, syphilis, and genital warts from HPV. Cervical erosion or chronic cervicitis merits cytological examination of cervical scraping, as the same is obligatory for cases of suspected cervicitis. In cervicitis, if the cytology is negative, nothing need to be done except perhaps to repeat the smear examination once or twice during the pregnancy, or it can be dealt with, if needed, after delivery. Symptomatic relief may be provided for legs and vulval varicosities. Specific therapy is better avoided by application of foam, rubber pad across the vulva by a belt of the type used with a perineal pad. Rarely, a large varicosities may rupture, resulting in profuse haemorrhage , necessitating immediate and proper treatment. Spontaneous vaginal deliveries are usually acomplished without any complication in most of the cases with vulval or vaginal varicosities. The rare association of coagulation defects or blood dyscrasis should be kept in mind. During pregnancy a woman's cervix softens and has an increased blood supply. For some women, sexual intercourse can sometimes cause light bleeding in the hours or days that follow. This should settle down when resuming sex after the birth of the baby. Be aware that having sex may not always be the reason for the bleeding (just a coincidence). Elective LSCS should be performed in diagnosed cases of Vasa Previa. Laparotomy is done for diagnosed rupture patients. Optimum outcome of the treatment in pregnant carcinoma cervix patient's would mean(2): a) preserving the life of a pregnant women, b) optimum cure of the malignant disease, c) protecting the fetus as well as the newborn baby from potentially harmful effects of the treatment, d) preserving a woman's procreation ability. The treatment of cervical cancer depends on the stage of the disease, the gestation period, and a patient's wish to carry a pregnancy to term. Thus identification of the definite aetiology, prevention and providing appropriate treatment should be the prime concern of the obstetrician.

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OBSTETRIC ANTEPARTUM HEMORRHAGE

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1. A patient presents at 28 weeks gestation with severe abdominal pain, bleeding and hypertension. The most likely diagnosis is :
   A. Placenta previa
   B. Accidental hemorrhage
   C. Vasa previa
   D. Rupture of ectopic pregnancy
2. Abruptio placentae occurs in all except :
   A. Smokers
   B. Alcoholics
   C. PET
   D. Folic acid deficiency
3. Causes of antepartum hemorrhage are all except:
   A. Placenta previa
   B. Atonic uterus
   C. Abruptio placenta
   D. Circumvallate placenta
4. All are casues of Antepartum hemorrhage (APH) except :
   A. Placenta previa
   B. Abruptio placenta
   C. Circumvallate placenta
   D. Battledore placenta
5. A32 weeks pregnant women presents with mild uterine contraction and on examination her vitals are stable and placenta previa type III is present. Best m/n is :
   A. Bed rest + Dexamethasone
   B. Bed rest + Nifedipine and Dexamethasone
   C. Bed rest + sedation
   D. Immediate caesarean s ection
6. One of the following is not true about vasa previa:
   A. Blood of maternal origin
   B. May be a cause of antepartum hemorrhage
   C. Blood of fetal origin
   D. Singer's test positive
7. A primigravida at 37 week of gestation reported to labour room with cnetral placenta previa with heavy bleeding per vaginum. The fetal heart rate was normal at the time of examination. The best management option for her is :
   A. Expectant management
   B. Cesarean section
   C. Induction and vaginal delivery
   D. Induction and forceps delivery
8. A women at 8 months of pregnancy complains of abdominal pain and slight vaginal bleed. On examination the uterine size is above the expected date with absent fetal heart sounds. The diagnosis:
   A. Hydramnios
   B. Concealed hemorrhage
   C. Active labour
   D. Uterine rupture
9. Singers Alkali denaturation t est is done with:
   A. Maternal Hb
   B. Fetal Hb
   C. Amniotic fluid
   D. Menstrual fluid
10. Consevative management is contraindicated in a case of placenta previa under the following situations, except :
    A. Evidence of fetal distress
    B. Fetal alformations
    C. Mother in a hemodynamically unstable condition
    D. women in labour

11. Most deaths involving placenta previa result from:
    A. Infection
    B. Toxemia
    C. Hemorrhage
    D. Traumatic rupture of uterus

12. Treatment of choice in placenta accreta:
    A. Manual removal
    B. Hysterotomy
    C. Hysterectomy
    D. Wait and watch

13. A primigravida presents to casualty at 32 weeks gestation with acute pain abdomen for 2 hours. Vaginal bleeding and decreased fetal movements. She should be managed by:
    A. Immediate Cesarean section
    B. Immediate induction of labour
    C. T ocolytic therapy
    D. Magnesium sulphate therapy

14. Which of the following is true about vasa previa except :
    A. Incidence is 1:1500
    B. Mortality rate of 20% with undiagnosed case
    C. Associated with low lying placenta
    D. Cesarean section is indicated

15. Couvelaire uterus is seen in:
    A. Abruptio placentae
    B. Placenta previa
    C. Pelvic inflammatory disease
    D. Multiple myomata

16. Placenta previa is associated with all of the following except :
    A. Large placenta
    B. Previous C.S scar
    C. Primigravida
    D. Previous placenta previa

17. A positive "strawworthy's sign" is suggestive of which of the following conditions :
    A. Twin pregnancy
    B. Breech presentation
    C. Vesicular mole
    D. Low lying placenta
    E. Pregnancy induced hypertension

18. The earliest indication of concealed acute bleeding in pregnancy is:
    A. Tachycardia
    B. Oliguria
    C. Postural hypotension
    D. Low body temperature

19. The best way to diagnose the degree of placenta previa is:
    A. Trans vaginal sonography
    B. Double set-up examination
    C. Observing during C.S
    D. Examination of placenta after delivery

20. All the following are indications for termination of pregnancy of APH patient except:
    A. 37 weeks
    B. IUD
    C. Transverse lie
    D. Continuous bleeding

KEY WITH EXPLANATION

1. **Ans : B** Accidental hemorrhage

2. **Ans : B** Alcoholics
   Risk factors :
   - Increased maternal age
   - Increased parity
   - Pre eclampsia
   - Chronic hypertension
   - Preterm ruptured membranes
   - Sudden uterine decompression as in hydraminos and twin pregnancy
   - Cigarette smoking
   - Thrombophilia
   - Cocaine abuse
   - Previous abruption
   - External trauma
   - Folic acid deficiency
   - Uterine leiomyoma

3. **Ans : B** Atonic uterus

4. **Ans : D** Battledore placenta
   Causes of Antepartum Haemorrhage
   1. Placenta previa
   2. Abruptio placenta
   3. Local causes like: -Polyp, varicose veins, Carcinoma cervix, Trauma
   4. Circumvallate placenta
   5. Vasa previa
   6. Unclassified or indeterminate

Note: Battledore placenta = It is a condition in which the umbilical cord is attached to the margin of placenta.

5. **Ans : B** Bed rest, Nifedipine and Dexamethasone
   - At 32 weeks patient is presenting with uterine contraction which is warning symptom of preterm labour
   - Glucocorticoids are given to hasten lung maturity

6. **Ans : A** Blood of maternal origin

7. **Ans : B** Cesarean section
   the patient in the question:
   1. has gestational age = 37 weeks i.e fetus has attained maturity so immediate termination of pregnancy is recommended
   2. Central placenta previa - vaginal delivery is contraindicated, cesarean section has to be done. Patient is having heavy bleeding.

8. **Ans : B** Concealed hemorrhage

9. **Ans : B** Fetal hemoglobin can be distinguished from Adult hemoglobin by:
   1. Weight stain: On staining blood with wright stain if RBC's appear nucleated, the blood is of fetal origin.
   2. singers alkali denaturation test:
      It is based on fact that fetal hemoglobin is more resistant to alkali denaturation

   Test - Blood + Sodium hydroxide/Potassium hydroxide.
   Blood turns yellow (i.e hemoglobin is denatured) Blood remain pink (hemoglobin intact)
   Maternal origin Fetal origin

10. **Ans : C** Hemodynamically unstable condition.
    Candidates: Suitable for expectant management are:
    - Mother in good health status - Hemoglobin >10gm%
    - Hematocrit >30%
    - Duration of pregnancy less than 37 weeks
    - Active vaginal bleeding is absent
    - Fetal well being is assured by USG and cardiotocography
    - The expectant management is carried upto 37 weeks of pregnancy until baby matures.

11. **Ans : C** Hemorrhage

12. **Ans : C** Hysterectomy

13. **Ans : A**Immediate Cesarean section
    - Patient presenting to the casualty with acute pain in abdomen and vaginal bleeding at 32 weeks of gestation are diagnostic of abruptio placentae after USG, CTG and evaluation of maternal parameters including coagulation profile.

14. **Ans : B** Mortality rate of 20% with undiagnosed case
    - VASA PREVIA-It is a condition in which the fetal blood vessels unsupported by either umbilical cord or placental tissue, overlies the internal os and is vulnerable to rupture when supporting membrane rupture.
    - Thus bleeding in case of vasa previa of fetal origin and not maternal origin (Unlike placenta previa and abruptio)
    - This explains that option. i.e. Mortality rate is 20% in undiagnosed case in incorrect (mortality is 75-100%)

15. **Ans : A** Note: Couvelarie uterus is seen in abruptio placentae, due to extravasation of blood into the uterine musculature and beneath the serosa. These hemorrhage seldom interfere with myometrial contractions to cause atony and are not an indication for hysterectomy.

16. **Ans : C** Primigravida
    Risk factors for placenta previa:
    - Prior surgery (Cesarean section/ Myomectomy Hysterotomy
    - Previous uterine curettage
    - Endometritis
    - Increasing maternal age (>35 years)
    - Increasing parity
    - Placental size - increased (as in multiple pregnancy)
    - Placental abnormality - Succenturiate lobe
    - Smoking (due to defective decidual vasculalrisation)

17. **Ans : D** Stalworthy's sign: slowing of the fetal heart rate on pressing the head down into the pelvis and prompt recovery on release of the pressure is termed Stalworthy's Sign and is suggestive of posterior placenta previa.

18. **Ans : A** Tachycardia

19. **Ans : A** Trans vaginal sonography

20. **Ans : C** Transverse lie
    Active management is done when:
    1. Patient is bleeding heavily/bleeding is continuing
    2. Pregnancy >37 weeks
    3. Patient is in labour
    4. Patient is in exsanguinated state
    5. Gross fetal malformation/dead fetus
    6. Fetal distress present.

MATERNAL HEALTH IN NORTH - EASTERN STATES – FACING MULTIPLE CHALLENGES

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North eastern region of India can be compared to a rainbow with its diverse flora and fauna, mysterious clouds, different ethnic people, combination of both plains and difficult hilly terrain. It includes seven sister states - Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Tripura, and one cousin Sikkim. Troubled by history and geo-political situations, it is one of the most backward regions of the country especially with its trauma of partition in 1947 which created hurdles in the economic development. The bottle-neck connection with the rest of the country also slowed the development in totality. Ninety six percent of its boundary consists of international border areas which also pose threats of migration of people with its inherent socio-economical and health issues. The developmental gap exists not only with the rest of the country but also within the regions of hills and plains in the same region.

ASSAM

Assam popularly called land of Red river and blue hills, is the gateway of north east. It has 27 districts and population of 31.2 million out of which 14percent is urban. There are special groups of population in Assam who are socio-economically backward; one being the migrated group from Bangla Desh mostly residing in Riverine areas and another group is the tea garden laborers who originally belong to Bihar and Jharkhand. The female literacy rate is 67.3% but the social status of women is not poor as there is no dowry system and sex ratio is 953 according to Census 2011. There are 4 functioning Medical colleges and one in Barpeta also started recently and another one in Tezpur is under construction. There is one Regional dental college one Ayurveda college three Govt. Homeopathic colleges, 2 BSc Nursing Colleges23 GNM schools and 18 ANM training school. There are 28 District Hospitals out of which 3 are new, 13 sub divisional civil hospitals, 168 CHC of which 60 are new, 968 PHC of which 68 are new and 4804 sub centers. Private sector in health is still in growing stage and except in cities and major towns it does not play a major role in the provision of health care. The inaccessible areas include not only the hilly terrain but also the riverine areas where only mode of transport is by water route. In a review by NHSRC, number of facilities identified as 51 inaccessible areas, most difficult consists of 41 and difficult are 51

The Maternal Mortality Ratio of Assam was 490 in the year 2003-6, 480 in the year 2004-06 and 391 in 2007-8 as per SRS data. Annual Health Survey in 2007-9 has shown that it has come down to 381. Institutional delivery is 35.3 percent , 46.4 % have more than 3 ANC. 39.4 % had ANC in first trimester.

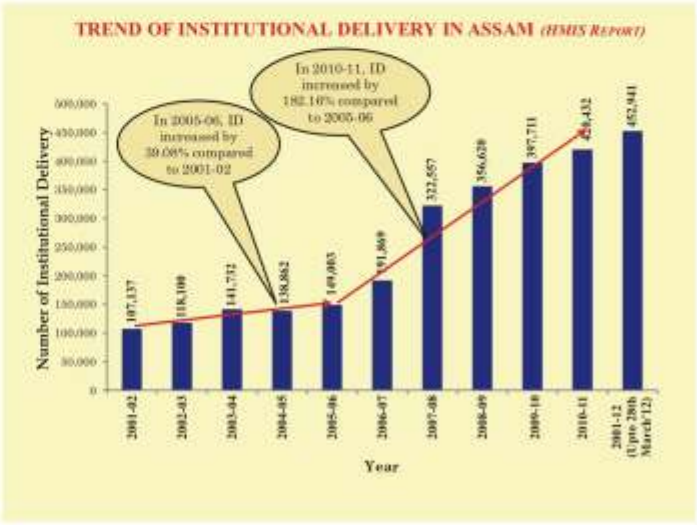


Fig 1. Institutional delivery trends in ASSAM (Source NRHM Assam)

ACTIVITIES BY NRHM ON MATERNAL HEALTH

Since NRHM started working in Assam there has been a drastic change in the infrastructure development.

NRHM has involved 29,071 trained ASHA workers equipped with drug kit and pregnancy kit for maternal and child health care. These ASHA workers are supported by 2664 ASHA facilitators.SBA training is provided to all ANMs and staff nurses. Government of Assam is providing "MAMONI" nutritional support of Rs 1000 in 2 installments with two TT doses and encouraging mothers to stay for 48 hrs in the institution for prevention of PPH with provision of "MAMATA" kit for the baby. Initially JSY scheme and since 15th August, 2011 JSSK scheme is also provided under which all mothers are getting every medicine and investigations free of cost and charges for blood transfusion and ICU treatment is also provided free of cost for a period of one month. A good number of MO, PHC is trained in BEmOC and LSAS in different Medical colleges. Sub centers are upgraded for delivery by Rural Health Practitioner and SBA trained ANM. At present 261 RHP have been posted in sub centers. MBBS doctors are made to serve rural areas for one year to become eligible for PG courses. Labor rooms have been constructed in SCs & PHCs and operationalizing of 415 PHC into 24X7 is in progress. Upgradation of SDHC and CHC to 38 functional FRU having specialist doctor and provision of blood transfusion and C-section facilities is undergoing. To strengthen referral from village to health centers 108 Mrityunjay service and hospital ambulance service in between health facilities for referrals is available.

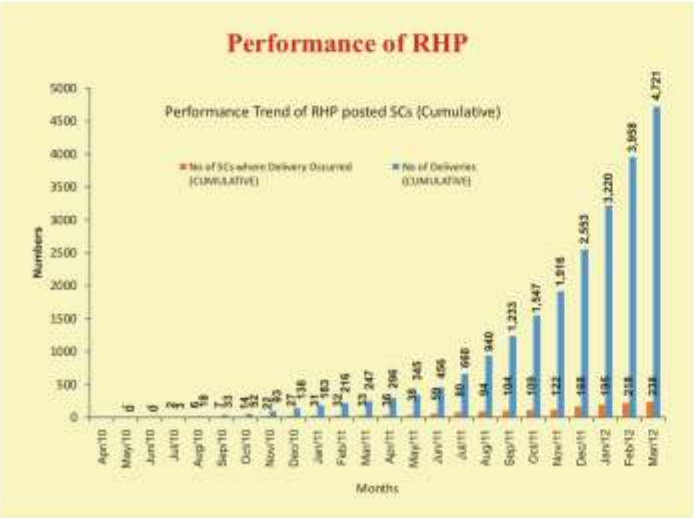
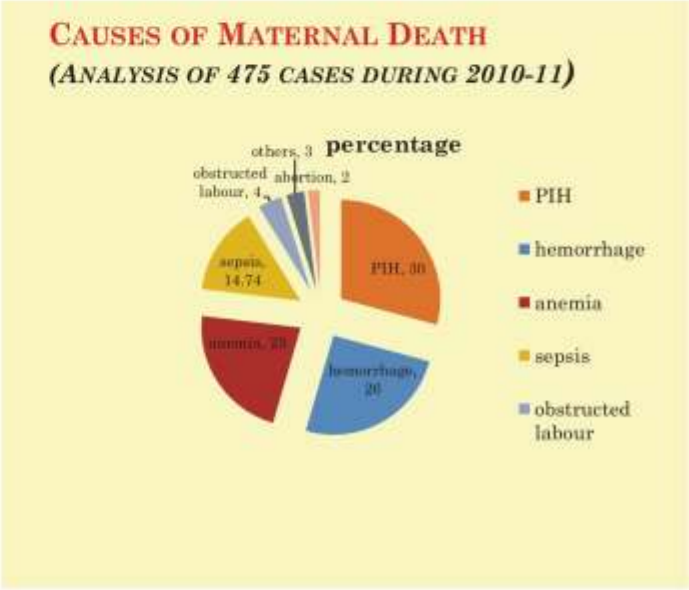


Fig. 2 : Rural health Practitioners performance in 2011 in Sub centers (Source NRHM Assam)

MATERNAL DEATH REVIEW

MDR started in the state since mid part of the year 2010 and analysis of reported deaths in last two years showed decrease in the death due to hemorrhage in 2011-12 but PIH was the highest cause of mortality in both the years. Death due to anemia remains same in last two years which is 23%. Though the incidence of obstructed labor has considerably decreased, yet there is scope to eliminate this cause. Abortion related deaths are still present showing the unmet need. Another area which needs to be addressed is death due to anemia which is 100 percent preventable. Injection of Iron sucrose in severe anemia has been started by NRHM since 2011 on patients non- compliant to oral iron. It must be mentioned here that there is no cent percent reporting of maternal deaths. This analysis of maternal deaths is made from the reported deaths to state MDR committee. Community based MDR is done in very low percentage of cases but it is growing as the state level task force takes keen interest in maternal death reporting and monitoring is done with high level enquiries which have sensitized not only the health personnel but also the community in different parts. To reduce death due to eclampsia Magsulph injection is given to all the case of pregnant mothers having a blood pressure of 160 /110 mm of Hg or higher.



CAUSES OF MATERNAL DEATH

(Analysis of 475 cases during 2010-11 source NRHM Assam)

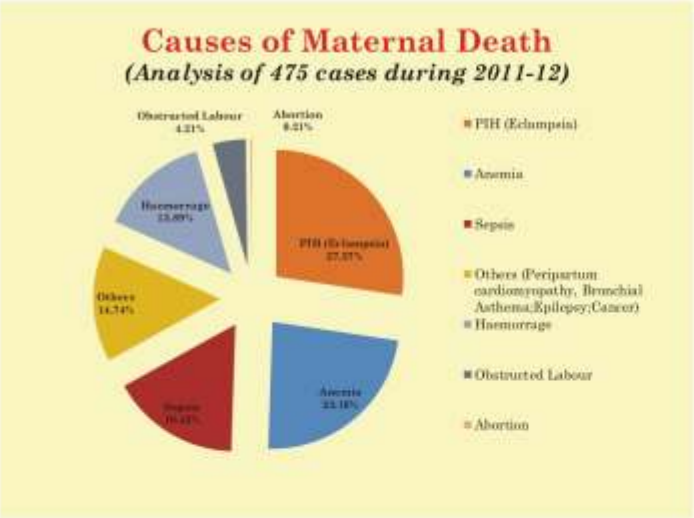


Fig 3. Maternal Mortality in 2011-12 Source NRHM Assam

FAMILY PLANNING

Male sterilization has shown an increasing trend since 2009. 14,072 males were sterilized in 2009-10 in comparison to 1144 in 2008-09 and 12,398 in 10-11. Female sterilization remains same in 2009-10, 2010-11 and 2011-12 which is around 67-68000. IUCD insertion showed a gradual rise since 2009 onwards and up to Dec 2011, 58,371 IUCD was used. This trend is mostly due to the PPIUCD program. The number of OPD as well as indoor attendance by the patients also showed an increase trend from 2009.

INITIATIVE TO REACH THE OUTREACH

NRHM has taken several steps to reach uncovered and riverine areas. Mobile Medical units started since 2007 and around 15,766 camps were held till 2012 Feb where22, 92391 patients were treated. Total 15 boat clinics are operational in 13 districts of the state The activity of these boat clinics comprises of organizing camps for general health check up, ANC, PNC, family planning and vaccinations. In riverine areas 50 new PHCs constructions are taken up and at present these are functioning by posting one MO (Ayur), one lab technician, one pharmacists and 1 ANM.

In spite of these developments, the human resource is still lagging. The need for Allopathic doctors is 3787 where 3154 are in position including both regular and contractual ones. The number of Gynecologists is adequate but the number of pediatricians and anesthetists and radiologists are far behind the required. Although the number of ANM is just 300 less than required, number of Staff nurse, laboratory technicians and pharmacist is less than half of required.

Under Assam Vikash Yojana, a program called "Majoni" has been initiated which a social assistance is given to a girl child born in the family up to second order. Under this scheme, a fixed deposit of Rs 5000 for 18 years is provided to the girl child.

ARUNACHAL PRADESH

This state has a long international border with Bhutan to the west, China to the north and North-east and Myanmar to the east. The terrain is totally hilly with sparse population in areas. It has a population of 1.3 million mostly consisting of tribes with a female literacy rate of 59.6% and sex ratio of 920. It has 14 district hospitals in 16 districts and no Medical College. RCH II outcome shows decline in institutional delivery as well as ANC and unmet needs. The incidence of anemic pregnant women is 49.2percent. Referral transport is inadequate and areas are inaccessible with very bad road conditions. Data of MMR of the state is unavailable

MEGHALAYA

Meghalaya has 7 districts and with a population of 29, 64007 of which 20% is urban. The female literacy rate is 73.8% and sex ratio of 986. It has one North East *Indira* Gandhi Regional Institute of Medical Sciences and no other medical colleges. According to NFHS 2 & 3 mothers having full ANC has increased from 11.5% to 14.4% which is still very low but the institutional delivery rate has gone down from 32.5to 24.4%. Unmet

need of family planning declined from 55.3 to 32.7 percent. State has initiated EMRI services in 2008 and launched services through mobile medical units in 2008. Out of 15 targeted, state has operationalized 3 FRU, 4 MOs trained in LSAS and 5 in EmOC so far against a target of 15. East Khasi hills district has a better institutional delivery rate of 44.7 % and lowest is East Garo hills where it is only 10.6%. Data of MMR of the state is not available

MIZORAM

Mizoram is the lowest part of the north eastern states and it has a population of 10, 91014 of which 51% is urban with a female literacy rate of 89.4% and sex ratio of 975. RCH II outcomes shows progress being significant. Mothers having full ANC has increased from 19.1 to 32.9%. Institutional delivery marginally increased from 52.6 to 55.9 percent. Unmet needs of family planning decreased from 25 to 17%. State has operationalized 8FRU against the target of 12 and 32 PHCs as 24X7 against a target of 57. Four doctors trained in LSAS and 2 doctors in EmOC. Aizawl district has highest Institutional delivery of 88.6% as well as contraceptive use. Though the MMR data is unavailable but as urbanization is high and literacy rate as well as a higher institutional delivery rate they probably have a low MMR in comparison to other NE states

MANIPUR

Manipur shares its border with Myanmar in the east with a population of 2.7 million of which 30% is urban. Female literacy rate is 73.2% and sex ratio of 987. The state has 2 medical colleges and 7 district hospitals. Infant mortality rate of Manipur is lowest in the country. According to NFHS II institutional delivery increased from 34.5 to 45.9% and percentage of mothers who had at least 3 ANC has gone up to 68.6 from 54.7. Unmet needs of family planning have declined from 23.6 to 12.4%. The state has operationalized one FRU against target of 16 and 20PHCs as 24X7. Four MBBS doctors are trained in LSAS and four in EmOC

NAGALAND

This state has a population of 19, 80602 and population is entirely tribal, with 29% urban and a sex ratio of 900 as compared to 933 of the country. The female literacy rate is 76.7%. There are 11 district hospitals and no medical college. There is an increase in the percentage of mothers having 3 ANC from 21.9 to 32.7 as per NFHS II and decrease in institutional delivery from 12.1 to 11.6%. Initiation of breast feeding within one hour has doubled from 24.5 to 54.1percent

TRIPURA

This is a state that shares its border with Bangla Desh with a population of 36, 71032. It has 4 districts and the female literacy rate is 83.1% and sex ratio is 948. It has 2 Medical Colleges. Mothers having 3 ANCs has gone down from 13.7 to 13.3% as well as institutional delivery from 61 to 46.3 according to DLHS 3. Eight MBBS doctors are trained in LSAS against target of 10 and are posted in FRUs. Two MBBS doctors have been trained in EmOC against a target of 10. Institutional delivery and contraceptive use is highest in west Tripura district and lowest in Dhalal. MMR of the state is unavailable

SIKKIM

The state is dominated by most majestic mountain chain in the world including Kanchanjenga which is worlds 3rd highest peak. It has a population of 0.54 million, sex ratio of 889 which is very low with female literacy rate of 76.4 percent It has one Private Medical College and 4 district hospitals. DLHS III has shown decreased institutional delivery by 8 percent and increase in ANC. Institutional delivery is highest in East Sikkim and lowest in west Sikkim. Prevalence of anemic pregnant mothers is 53% and state has operationalized 1 FRU against the target of 6

CONCLUSION

It has been seen that due to difficult terrain with hills and riverine areas and with less female literacy rate,

most of these NE states is far behind the benchmark. The disturbance in the geo-political situation also hampers development to a great extent. Except that few states have a good sex ratio all the figures are very gloomy. Except Assam, the data of MMR is also not available which is most disturbing. It is not possible for these states as yet to set the target for reducing MMR and also the areas which needs strengthening is not available as the causes of MMR is also not known. Educating people and development of better communications will take lot of time. Stress should be made in the improvement of road conditions so that transport of both mothers and doctors become easier to reach the MDG goals

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INNOVATIVE MEASURES TO CURB MATERNAL MORATLITY IN INDIA

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INTRODUCTION

Motherhood

'Of all the Rights of Women ,the greatest is to be a MOTHER'.

Lin Yatang

"Off all the rights of women greatest is to be the mother"
- Lin Yatang

Every girl (female) want to be the mother sometime or the other in her lifetime.

But journey of women through girlhood to motherhood is not safe as we think. It brings with it tragedy like maternal and fetal mortality and morbidity if properly not taken care during pregnancy and child birth. As obstetricians we have very daunting task of making this journey through womanhood quite safely and memorable.

Pregnancy /Child Birth – Most dangerous journey of mankind, both for the mother and child.

ICD-10 defines maternal mortality as : Death of a women while pregnant are within 42 days of termination of pregnancy irrespective of duration and site of pregnancy from any cause related to or aggravated by pregnancy.

Pregnancy -The most dangerous journey of mankind

Every year 5,60,000 die due to pregnancy and related conditions worldwide. 75% maternal death occur in developing countries like India and South East Asian countries.

Every minute we lose one mother. Astonishingly Sri Lanka has lowest 30/100,000 which is remarkable for any underdeveloped country. Currently MMR of India stands at avg.220/100,000 LB it ranges from 700/100,000 Bihar etc. to 100/100,000 Kerala.

Kerala seems to stands ahead of all the states in India in healthcare, basic region being high literacy rate.It is sad that even 6 decades offer our independence we have not achieved satisfactory literacy rate. Only Kerala has done remarkable job that has reflected very well in improved health indices.

Mohammed Fathellah – Father of Safe motherhood

"Women are dying not because of diseases we cannot treat, but because societies have yet to decide their lives are worth saving"

It is said even after 3 decades of initiation of safe

motherhood we are not able to bring down maternal mortality rate to acceptable minimum standard.

Death of a healthy women in childbirth speaks of an acceptable tragedy given the technological advances of the day.

What I feel keep aside general education for now, at least we can provide health education which is very simple, cost effective, easy to bring home message to the people through public awareness programmes.

India's maternal mortality is high due to lack of political will, administrative and managerial failures rather then absences of expertise.

- WHO magazine 2008

For politicians, health is a low priority

- Govt. expenditure on health 0.9% GDP
- Large % spent on Defence and untargeted subsidies and non vital infrastructure

  No political party has maternal health on its priority agenda.

Vaclav Havel

- **Vision is not enough,it must be combined with the venture.**
- **It is not enough to stare at the steps,We must step up the stairs.**

Vision is not enough it must be combined with venture. It is not enough stare at the step, we must step up the stairs.

- Vaclav Havel

There are dozens of notable causes for maternal mortality :

But when you analyze carefully there are 4 Giants killers of mother (APES)

1) . Anaemia → IDA – most common
2) PPH → Post partum haemorrhage
3) (E)Hypertensive disorders of pregnancy (Pre-eclampsia, Eclampsia).
4) Sepsis → Septic abortion, puerperal sepsis

Most of these MATERNAL DEATH ARE are preventable, IF we act promptly in right way at right time.

Pre-eclampsia eclampsia contribute to 20% maternal deaths. Though pathophysiology of preeclampsia is enigmatic and it can't be predicted atleast eclampsia which is most dangerous can be predicted and effectively preventable. Once a women progress from preeclampsia to eclampsia both maternal and fetal mortality and mortality becomes manifold.

When a woman traverses from Pre-eclampsia–eclampsia both MMR, PNMR & Morbidity becomes multifold.

It is our duty to screen women early for the disorder pre-eclampsia. Eclampsia can be prevented. Magnesium Sulphate is no doubt the best anticonvulsant to date à CET Trial.

We have come a long way from Pritchard (44gms) to low dose (Dhaka) single dose (14 gm) Sokoto (Nigeria) as far as the dosage of MgSo4 is concerned. But Pritchard regimen standard worldwide but we cannot simply follow this regimen in a resource poor setting (underdeveloped countries) where we have dearth of manpower, equipments and drugs, not only this sometimes dosage is quite high for Indian women who have lesser BMI than their Western counterpart may not necessarily require higher dosage.

We can use smaller dose regimes.(Suman sardesai, Dhaka, ZUSPAN).

Mortality in eclampsia depends more on convulsion to delivery interval and no. of convulsions. By adopting these regimen we can administer MgSO4 at the earliest at periphery and ensure seizure free transport to referral centre. Regular EMOC kill training programme conducted to enlighten 24x7 medical officers about safe motherhood initiative.

High dependency unit set up or periphery wide ANC coverage, early pick up of high risk patient by screening, cases appropriate managed by institutional delivery.

INDUSTRIAL REVOLUTION

17th & 18th century we had enormous progress in the field of Agriculture, manufacturer, mining, transport evolved enormously.

GREEN REVOLUTION

1943-1964 high yield varieties of seeds increased usage fertilizers and irrigation lead to increase production of food grains.

India (1967-77) became food deficiency to sufficient state.

WHITE REVOLUTION

Gujarat by Varghese Kurien – India became largest producer of milk and milk products.

More recently we have communication revolution internet (mobile) etc world has now become a one global village. No place is too far from reaching be it for physical presence or otherwise through mobile, internet, teleconference.

WHEN IS HEALTH CARE REVOLUTION ?

Though we have seen great innovation & development in health sector (Medical Field) as far the technology and skills are considered but we are far from passing this benefit much needy common man.

What I mean by this that urgently we need Health Care Revolution – as far as the delivering the health care to the each and every citizen which is the very much need of the hour. Because evolution takes many centuries to do this.

Reaching the unreached last years fogsi theme is campaign it self explanatory. We have no dearth of scientific knowledge and technology. We have failed to give it to much needy people at the gross root level.

Indias progress in reducing maternal death is crucial to the global achievement of Millenium Development goal[5]

- Dilip Mavalankar, Kranti Vora

FOGSI initiative of Reaching and the Unreached which is more relevant in present scenario. It is also collecting data on various events like Eclampsia, Maternal mortality through National Registries. So that we can able to gather our on data to formulate our own appropriate policies that can succeed in combating these national tragedies.

Recently we had WHO reporting that India has got more mobiles than toilets.

There is no doubt that toilets are quite essential to maintain health & hygiene. We have failed in impressing our people about its important.

Each new day a new mobile company venturing into the business and attracting the consumer with so many offers and benefits at the lowest affordable cost possible.

So also we should educate our people ,women in particular about the importance of health check up like antenatal care, institutional deliveries etc.

We need not to have to tell people now about the benefits of mobile, on similar lines we should impress upon them the importance of accessing the healthcare.

For this health education has to be given to people on a widespread (war footing) manner through all the possible means of communication available.

It is very sad that various means of mass communication like TV, Radio, Newspapers, internet have failed to focus the importance on health and related issues like maternal mortality because there are only worried about their TRP rating.

For eg. 25/11 Mumbai attack, we lost hundred of lives, floods in South India we lost thousand of lives but several hundreds of thousands of people really felt sorry for the two tragedies only because of their wide coverage on mass media. These tragedies are once in blue moon. But we lose 5 lakh women/year, each minute/women dye during childbirth (MMR) but nobody seems bothering much because it is not been / highlighted in

neither of the mass media.

People relate much issues with the **celebrities** so we can make avail their help in drive home message on maternal mortality. They should become brand **ambassadors of national healthcare system. They should twitter on Social networking on health issues.T**hese days AMIR KHANS SATYA MEV**A JAYATHE is** welcome sign which has already dealt with female foeticide. Hope we will soon see issue of maternal mortality on his show.

Making Maternal Mortality Into the TEXT Of Schools and College;

I remember **Bhopal gas tragedy** in my highschool text decades ago. If tragedy like it can enter the text why not tragedy of maternal mortality? Which is directly related to the health(lives) of students,teachers,their families and public at large.

We FOGSI being the largest professional body of world with 25,000 member can urge Govt.and Education Department to introduce chapter on maternal health (MMR).

Healthcare personnel and Govt. may be doing quite a lot to "! MMR. It is just not enough. It should not be the responsibility of only medical personnel.

It should be the responsibility of each and every citizen.

By introducing this in our curriculum we are enlightening our youngers, their parents, teachers, about this MMR menace. Todays youth (25% of population) are tomorrows adults.

They are huge manpower can help in disseminating health education to the people at large as a part of extra curricular activity.

They should be taught about the various issues of maternal mortality, common causes, simple remedies like, preventing anaemia, (Fe – Supplementation) by voluntary blood donation can save the womens lives in PPH.

Regular school health programmes conducted, each student should know their blood group and Hb%.

They can make public role play. They can include the theme of safe motherhood ***"Save Mother to Save Mankind"*** in school, colleges, fests. Off late We have seen ad on TV ***"Save Tigers"*** because their number is decreasing alarmingly, after seeing this I feel some day down the line we should not come across campaign called ***"Save Mothers"*** because already we are losing girls children as female foeticide, others in child birth (MMR) if this menace continue and if we are not able to curb it someday we may have to declare save mothers campaign.

Hope we will not become so complacent to come across such a tragic scenario.

Recently we have a controversy over **including sex education** in curriculum though we have equal no. for and against the idea. Whether or not we include sex education in curriculum at this hour, it is very much it is essential to include **health education like maternal** mortality.

Burden of Maternal mortality contributed by Teenage Pregnancy, illegal abortion must be taught in schools and colleges. Nutritional disorders ,menstrual disorders their contribution to anaemia in young girls, because they are the future mothers of India. Importance of Iron supplementation.

Anaemia; 60-80% of Indian women are anaemic 90% them is nutritional IDA contributing to 17% of MMR. Most women enter pregnancy with a negative iron stores. root cause of which lies in poor nutrition in adolescent years. It would be sensible to adopt 12/12 initiative to bring all girls of 12 age to 12gm Hb.

As we have fortified salt with Iodine to conquer Thyroid disorders.

We can also **fortify common food** items with Iron to combact IDA (Prevention)

- Traditional oral iron therapy has to be replaced with IV sucrose. Because oral therapy is low bioavailable and poor patient compliance.

It is time we focus on more appropriate technology if I.V. Iron sucrose both ante/postnatal women to treat

iron deficiency anaemia. Though it is costly the funds can be mobilized from government and donors.

Adolescents in school / college are encouraged towards volauntary blood donations so that we have enough of safe blood in our banks to treat emergencies like PPH etc. youth clubs can be form to health educate the general population and social service.

We can even rope in some any of NGO with regards to disseminating health educational regarding 4 giant killers of mother. They can even be of some help in distributing fortified food, blood donations etc.

Sepsis : Septic abortion ,Puerperal sepsis not uncommon even today.

Make sure that no women/girl even resort to septic abortions. abortion should be made safe, medical abortion should be made safe, handy and acceptable to needy. No women should deliver unattendedly in unhygienic condition leaving women vulnerable to infection and sepsis..

Educate and Encourage them to have 100% institutional deliveries.

Establishment of more blood banks at all health centres. Collect data on blood grouping of students, maintain a blood group registry which is made available at the nearest health centre.

More ambulances at all the health centers EQUIPED with ICU facilities and on board EMOC SPECIALIST. For fast and effective patient transfer to referral center.

Census of India should include information on maternal mortality rather than the caste of individual. We had controversy over collecting caste.

100% Reservation for health access.

Recently we had controversy over 33% reservation for women in parliament, whether or not you give 33% reservation for the women in power they definitely need 100% reservation in accessing health care.

Provide every Indian not only the ROTI.KAPDA.MAKAN But also HEALTH, WOMENS HEALTH in particular.

Make people responsible for their own health. Huge manpower of Youth should be made use of in implementing various health policies.

Rural service of Post-Graduates should be made compulsary :

Health services are urban centered. 70% people live in villages only we have 30% health personnel there but in cities we have 30% of population 70% health personnel which is great tragical disparity.

To minimize this disparity we can make rural services compulsory for the post graduate (MD/DGO)

It is already in vogue in few states like Tamilnadu/ Kerala/Maharashtra but should be adopted evenly throughout the nation.

There is one complaint we often here from the consultants who hesitate to go to rural set up because of poor living conditions. This can be solved if we can allow the post graduate to do rural service of whatever duration like 6/12 months compulsory rotating basis in his town home town or nearby place.

So that no poor living conditions becomes not a problem. They will be their home, serving their own village, by doing some service to community they pay back the govt. (people) who have spent lacks of Rs. on their education.

By this we are equipped with specialist at the rural hospitals , who are localities if they wish they can continue there, they will provide, provide services outside after their rotationship.

We will make sure that all round the year Some specialist are available even at the remote periphery. They will treat certain emergencies, make appropriate first aid and referral services so that smooth transfer of patient can occurs.

NRHM

National Rural Health Mission, EMOC and SBA services must reach the nook and corner of the mission in its full probability.

Lacks qualified midwives is a major human resource constraint for providing locally accessible skilled delivery for rural women. Without a clear strategic focus on SBA and EMOS and referral services. India will not be able to reduce MMR rapidly in achieving millennium development goal 5. So we have to train 24 x 7 medical officers and other health personnel in EMOC skill training programmes in combat in Obstetrics emergences.

Village adoptions - each societies adopted and take care of health of the inter village. Mobile clinics 108 services (ambulance) emergency 24x7 transport to minimized delay in transport as a part of 3 delays module.

Provide ATM cards to all pregnant ladies; ATM means **any time any where medical services** with unique I.D. People can access health care service both at the public and private set up. They need not have to pay for the care. No doctor/hospital should refuse to take care of pregnant lady. On a monthly/yearly based remuneration for private consultants can be paid from Government/Philontropist.

Now a days, people have become entertainment SAVY, TV, Movie etc.

We have 100 + channels telecasting equal no of serials of family masala of saas bahu stories but none have ever dealt with the issue of maternal mortality.

I think non of our film makers of modern era making parallel cinema have not come out with movies, short films educating people on maternal morality.Because entertainment media is such a powerful media we should take up such issues there.

INDIA'S SILENT TRAGEDY MATERNAL MORTALITY FINDS A VOICE

MAPEDIR : Henry Kaltor, Johnhopkins Maternal and perinatal death response.

Started in Rajasthan, Madhya Pradesh, Orissa, Jharkhand, West Bengal, Bihar.

Six steps

- Sensitizing communities birth preparedness and complications readiness.
- Reporting and investigating maternal death
- Interview all families – biological and social cause of maternal mortality.
- Analysis and interpret data.
- Monitoring the interventions with on going maternal death and queries and developing new evidence based interventions as needed.

CONCLUSION

To make our distant dream of 300-30-3 years a reality every one private sector, public sector NGO & professionals like us should join hands put out untired efforts. Safe motherhood day celebration should not be any society's private meeting it should become Public Celebration. Maternal mortality can be reduced with combined efforts of government healthcare personnel and public at large by means of health education, various public awareness policies both existing and newer in reaching the unreached.

Jeet hamari hai
Agar Zindagi hai to Khwab hai
Khwab hai to Manjile hai
Manjile hai to Raste hai
Raste hai to Muskile hai
Muskile hai to Housle hai
Housle hai to Vishwas hai
Ki Jeet Hamari hai

FOGSI Events - UNFPA SAFOG Workshop at Sri Lanka

Dr. Sadhana Gupta and Dr. Prakash Bhatt represented FOGSI in UNFPA SAFOG workshop held at Sri Lanka on 27th, 28th, 29th April 2012, on issue of Training of Paramedical & Non Specialist Doctors for achieving MDG Goal 5. Dr. Alokendu Chatterjee as SAFOG, President Elect graced the workshop inauguration. 150 participants from different countries of South Asia participated actively in discussion and different consensus statement.

Data Collection of Case History of Maternal Mortality & Near Miss Maternal Mortality To Improve the Quality of Obstetric Care

Coordinator

Dr. Sadhana Gupta

Chairperson Safe Motherhood Committee (2011–2013)

Dr. Sheela Mane

Immediate Past Chairperson Safe Motherhood Committee (2008–2010)

Question No.	Questions	Response	Answer	Comments of Team
A. Case Details				
1.	Hospital Name			
2.	Date of case extraction	Date:		
3.	Name of women			
4.	Registration No. (if any)	No. / NA		
5.	Antenatal record available in case-notes	Yes : No :		
6.	Date & Time of admission	Date: Time:		
7.	Pulse	Rate /minute		
8.	Blood Pressure	Systolic mm/Hg Diastolic mm/Hg		
9.	Alive	Yes .....1 No 2		
10.	Date & Time of Discharge			
11.	Dead:Date & Time of Death	Date:		
12.	No. of days in the hospital			
13.	Was the woman referred TO the hospital from elsewhere?	Yes ..... 1 No 2		
14.	From where?			
15.	For what reasons?			
16.	Discharge diagnosis			
B. Woman's Details				
1.	Age			
2.	Parity	No. of deliveries :		
3.	Gravidity	No. of pregnancies :		
4.	Maternal complication in previous pregnancy	Yes ..... No		
5.	Early pregnancy losses	No :		
6.	Live births	No :		
7.	Stillbirths	No :		
8.	Neonatal deaths	No :		
9.	Low birth weight	No :		
10.	Preterm births	No :		
11.	Any others	No :		
C. Obstetric Hemorrhage				
1.	When did the hemorrhage start	Before admissionAfter admission		
2.	At what time of day did the hemorrhage start?			
3.	Was the hemorrhage ante-, intra- or postpartum?	Antepartum Intrapartum Postpartum		
4.	Total estimated amount of blood loss			

5.	Status of clinician who saw the patient on admission	Student midwife Midwife Senior midwife Medical student Medical officer Senior medical officer Specialist obstetrician Other (specify)		
6.	Was an experienced member of staff informed?	Yes :		
7.	At what time was a senior member of staff informed of the hemorrhage?	Time:		
8.	At what time did a senior member of staff first examine the patient?	Time:		
9.	Was intravenous access achieved?	Yes : No :		
10.	Blood type/ Cross match	Yes :		
		No :		
11.	Hemoglobin/ Hematocrit	Yes : No :		
12.	Was a request made for units of blood	Yes : No :		
13.	How many units of blood were requested	Unit :		
14.	Time span between request and availability of blood for transfusion	Hours : Minute:		
Where there any of the following indications of the need for coagulation tests?				
1.	Placenta abruption	Yes : No :		
2.	Preeclampsia	Yes : No :		
3.	Sepsis	Yes : No :		
4.	Transfusion of more than 2 liters of blood	Yes : No :		
Were any of the following tests carried out?				
1.	Bleeding time/ Clotting time	Yes : No :		
2.	Platelet count	Yes : No :		
3.	Was a blood transfusion given?	Yes : No :		
4.	Were intravenous fluids given	Yes : No :		
5.	How many unit and which I/v fluids (crystalloids and/ or colloids) given?	Less than 3 liters / 3 liters or more		
6.	Was the pulse rate monitored at all in the first two hours after the hemorrhage was recognized?	Yes : No :		
7.	At what intervals was the woman's pulse measured during the first two hours after the hemorrhage was recognized?	15 minute intervals 30 minute intervals Other (specify)		
8.	Was the blood pressure monitored in the first two hours after recognizing the hemorrhage?	Yes : No :		
9.	At what intervals was the woman's blood pressure measured?	15 minute intervals 30 minute intervals Other (specify)		
10.	Was a urinary catheter inserted	Yes : No :		
11.	Was urine output measured at all?	Yes : No :		
12.	Was it measured at least once every hour?	Yes : No :		
13.	Was the patient ever taken to the operating theatre because of the hemorrhage?	Yes : No :		
14.	Which operation was performed?	Yes : No :		

15.	What was the date of operation?	Date : Time :		
In the event of antepartum hemorrhage were any of the following examinations conducted				
1.	Abdominal examination	Yes : No :		
2.	Ultrasound Scan	Yes : No :		
3.	Vaginal examination	Yes : No :		
4.	Was the placental site known (by scan) at the time of vaginal examination?	Yes : No :		
5.	Where was the vaginal assessment conducted?	Operating theatre Labor/ maternity ward Other (specify)		
6.	Were oxytocics used in the treatment of the postpartum hemorrhage	Yes : No :		
D: Eclampsia				
1.	Where did the first convulsion occur?	In the hospital In another hospital In a health centre/clinic At home Other (specify)		
2.	Date & Time of first convulsion?	DD MM YY Time : AM PM		
3.	Was a management plan formulated for this case?	Yes : No :		
4.	Who formulated the management plan?	Student midwife Midwife Senior midwife Medical student Medical officer Senior medical officer Specialist obstetrician Other (specify)		
5.	What was the highest diastolic blood pressure recorded in the case notes?	mmHg		
6.	Is it severe hypertension? *(severe hypertensive BP on two occasions at least 4 hours apart) >160/110 mmHg*	Yes : No. :		
7.	Was anti hypertensive treatment given?	Yes : No :		
8.	What was route and dosage of anti hypertensive drug?			
9.	Anti convulsant used	Yes : No :		
10.	Dose and route of Anti convulsant	Magsulph Diagepam Other		
Were the following measurement taken whilst the woman was receiving Magnesium Sulphate				
1.	Respiratory rate	Yes : No :		
2.	Tendon reflexes	Yes : No :		
3.	Urine output	Yes : No :		
Were the following investigations performed at least once during the woman's in patient stay?				
1.	Bleeding/ Clotting time	Yes : No :		
2.	Platelet count	Yes : No :		
3.	Urine albumin/Renal function test	Yes : No :		
4.	Liver function test	Yes : No :		
5.	Did the woman labor at the hospital?	Yes : No :		

6.	Mode of delivery	Normal : Instrumental : LSCS :		
7.	Outcome of delivery	Normal : NICU : Still birth :		
Was a fluid balance chart maintained				
1.	Before labor?	Yes : No :		
2.	During labor?	Yes : No :		
3.	Was the blood pressure monitored after delivery?	Yes : No :		
4.	How often was the blood pressure monitored?	At least once every hrs. Longer than every hrs.		
5.	How long after delivery did this monitoring continue?	< 48 hrs. ≥ 48 hrs.		
6.	Was urine output monitored after delivery	Yes : No :		
7.	How often was urine output monitored?	At least once every hrs. Longer than every hrs.		
8.	How long after delivery did this monitoring continue?	< 48 hrs. ≥ 48 hrs.		
Obstructed Labor				
1.	Date and Time of the diagnosis of obstructed labor?	DD MM YY AM PM		
2.	Method of documentation of labor	Verbal Clinical note Partogram Paperless partogram		
3.	Was the interval of time between the diagnosis of obstruction and delivery of the fetus	Less than 2 hrs. Two hrs or more		
4.	Were any reasons given in the case notes for this delay in delivery	Yes (specify) No (reasons)		
5.	Was a urinary catheter inserted?	Yes : No :		
Monitoring of Obstructed Labor				
1.	Urine output	Yes : No :		
2.	Blood pressure	Yes : No :		
3.	Pulse	Yes : No :		
4.	Temperature	Yes : No :		
5.	Was blood taken for typing and cross matching?	Yes : No :		
6.	Was intravenous access achieved?	Yes : No :		
7.	Were any antibiotics started once obstructed labor was diagnosed?	Yes : No :		
8.	Date and time of antibiotics first started	DD MM YY AM PM		
9.	Detail of doses route and type of anibiotic given			
10.	Mode of delivery	Normal : Instrumental : LSCS :		
11.	Outcome of delivery	Normal : NICU : Still birth :		

Forthcoming ISSUE...

Dear Readers,

It is our pleasure to communicate that theme of our forthcoming issues are as follows –

1. **Obstetric Postpartum Hemorrhage**
2. **Infection in Pregnancy**
3. **Antenatal Care**

I invite your contribution in form of article, atypical case situation and quiz on theme of issues.
I also request to send your experience on any difficult situation, your project, work individually or as a group in rural areas, underprivileged area.

Thanks in advance.

Dr. Sadhana Gupta
Chairperson Safe Motherhood Committee

We thankfully acknowledge

Sun Pharmaceuticals

East India Pharmaceuticals

for their contribution
in Safe Motherhood Bulletin.

This issue is dedicated to

Dr. Behram Anklesaria

&

Special tribute to

Capt. Dr. Lakshmi Sahgal

न जायते म्रियते वा कदाचि -
न्नायं भूत्वा भविता वा न भूयः।
अजो नित्यः शाश्वतोऽयं पुराणो -
न हन्यते हन्यमाने शरीरे ॥

The soul has no birth or death,
it has no being & hence will never cease to be.
Birthless, Deathless and without a beginning or an end,
the soul is not destroyed when the body is destroyed.