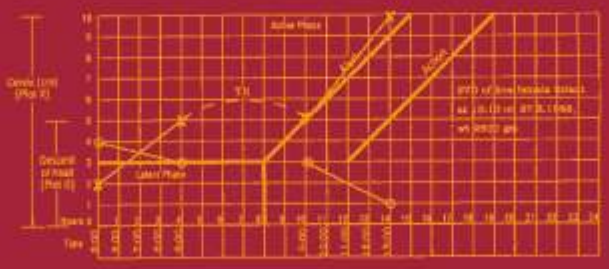
Vol. 7, No. 4, February, 2014

COMPREHENSIVE BULLETIN ON SAFE MOTHERHOOD INITIATIVE

THEME : SAFE OBSTETRIC PRACTICE



INNOVATION TO IMPLEMENTATION

Safe Motherhood Committee - FOGSI

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

FOGSI representation at WHO Meeting

12-14 September, 2013 - Chairman Safe Motherhood Committee Dr. Sadhana Gupta represented FOGSI at 66th regional meet of member countries at South East Asia Regional Office (SEARO), New Delhi. Chairman interacted with other NGOs representatives and observed the discussions. Her report, brief remarks and FOGSI recommendations in consensus with President Dr. Hema Divakar for Maternal & Child health, prevention strategies for Cancer Cervix and metabolic disorders were appreciated.

16-18 December, 2013 - Quality care for reproductive, maternal, newborn, child and adolescent meeting was organized by WHO. President Dr. Hema Divakar and Chairman Safe Motherhood Committee Dr. Sadhana Gupta attended meeting. Both took active part in group discussions and presented report of their group in impressive manner. Chairman presented abstract of HMS program Pan India in 2013 on 1st day and displayed innovative tools of Debdas bag, growth tape and all issues of safe motherhood bulletin on table of India. It drew a lot of attention and appreciation.

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Helping Mother Survive (HMS) FOGSI Jhipiego fast track initiative

20th October - Gwalior – Program organized for medical college team as well members of Gwalior Obs & Gynaec Society. Dr. Sadhana Gupta, Dr. Hema Shobhane were guest faculty. Dr. Jyoti Bindal was key organizer, and Dr. Charu Mittal acted as coordinator and local master trainer. 70 participants participated actively. A very interactive program , well published in print media.

26th October Srinagar (J&K) - HMS organized at Lal Dad Hospital, which is only hospital for obstetric care of Srinagar and adjoining areas. Dr. Shahnaj Tang and Dr. Habib Rijwana were key organizers. All faculties, residents and students took part in role plays, interactive session with a lot of enthusiasm and keenness for learning. There was warm hospitability, and very conducive environment. It was probably first program of FOGSI in this important zone and hospital, we look forward to more and more program in the place which is –Heaven on the Earth

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Chairperson Safe Motherhood Committee – FOGSI (2011 – 2013)

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Helping Mother Survive (HMS) FOGSI Jhipiego fast track initiative

9th November B.H.U., Varanasi - HMS organized in one of the premiere institute-Banaras Hindu University, Varanasi on 9th November. Dr. Nisha Agrawal and Dr. Anjali were key organizer. All faculty members, residents and students, were trained and sensitized for key issues. Dr. Charu Mittal and Dr. Sadhana Gupta were master trainers

15 Dec, Noida - HMS at Sharda Medical College, Noida. Key organizer was Dr. Nimmi Chutani and Master trainer were Dr. Sadhana Gupta, Dr. Sangeeta Gupta and Dr. Taru. Beside medical college people members of Noida Society took part in large numbers. Participants are willing to learn and change to right protocols, beside enjoying the program to the end.

Contents ...

PATH FOGSI PPH workshop-Oxytocic Initiative

1st Dec 2013 - At U.P. State Chapter conference at Lucknow PPH PATH FOGSI workshop was organized, Dr. Chandrawati, Dr. Manju Shukla and Dr. Preti Kumar were key organizer. President FOGSI Dr. Hema Divakar, Dr. Sheela Mane, Dr. Uma Singh, Dr. Yashodhara Predeep, Dr. Richa Singh participated in panel and scientific deliberations. Dr. Sadhana Gupta acted as coordinator of workshop and panel on revisiting PPH. A huge audience of 500 plus attended workshop. Every participant was given Video film prepared by PATH FOGSI emphasizing right use of oxytocic.

5th December, District women Hospital, Gorakhpur - PPH workshop on oxytocic initiative was organized at district hospital, Dr. Kiran Srivastav key organizer, Dr Sadhana Gupta faculty. 100 nurses and doctors were sensitized on the issue of correct use, storage and dosage of different oxytocics and treatment of PPH

President's Message

Dear FOGSIAN's

Through the years, we have believed deeply in the power of information.

We, at FOGSI innovate to inspire a new generation of change makers.

I have no doubt that the progress made would be yet another landmark in INDIA and bring in newer levels of excellence to the academia in the State and in the Federation.

I congratulate Dr. Sadhana Gupta and her team for the insights provided through a variety of educational programmes and workshops involving experts in the field of obstetrics. This would help our members to enhance the quality of their practice and impact by empowering through knowledge and skill transfer. The contents of this issue on 'Safe Obstetrical Practice' stand testimony to this.

Wishing great success in all the future endeavors under the able leadership of Dr. Sadhana Gupta, whose unstinting efforts continue to scale beyond expectations!

Dr. Hema Divakar
President FOGSI 2013

Dear FOGSI Friends,

I convey my hearty congratulation to editor Safe Motherhood Bulletin and Chairman Dr. Sadhana Gupta at the moment of release of 7th issue of the bulletin.

All the previous six issues have been incepted, edited and presented in very well organized way and this issue will be no exception. The quality of this important publication speaks for it self, as the bulletin received twice the Prestigious Dr. D.C. Dutta award for best FOGSI Focus Publication.

Obstetric art is to be learnt and practiced. As obstetrician it is our responsibility to keep this art alive and updated by practicing evidence base medicine, judicious use of technology and updating skill to young generation obstetrician. Publication of such bulletin is a step ahead in achieving these aims.

I again congratulate and appreciate for all positive and hard work done by Safe Motherhood Committee in leadership of Dr. Sadhana Gupta and wish her all the best.

Dr. Suchitra N Pandit
President Elect. 2014
FOGSI

PATH FOGSI PPH workshop-Oxytocic Initiative

7th Dec Allahabad - PPH workshop was organized at Allahabad society, Dr. Ranjana Khanna and Dr. Amita Tripathy key organizer, Dr. Hema J. Shobhane as faculty. Workshop attended by 60 members and a lot of doubts and concern were cleared.

17 Dec. Ghaziabad - At Ghaziabad this workshop was organized by Ghaziabad Obs & Gynaec society. Dr. Archna Verma was key organizer, Dr. Sadhana Gupta and Dr. Taru Gupta, Dr. Rekha participated as faculty. About 60 members participated and appreciated the workshop whole heartedly

Vice-President's Message

Dear Friend's

Safe Obstetrical practices play a key role in optimizing the outcome of every pregnancy. Sadly non adherence to standard protocol, unnecessary interventions and delayed diagnosis of obstetrical complications are not very uncommon. This issue is focused on theme of 'Safe Obstetrical Practices' which will be of great help of practitioners and obstetric care givers.

It will also give the ready reckoner to deal emergency situations in labor room like shoulder dystocia, cord prolapse or a limp newborn. Obstetrical surgical procedures need revisiting with time and this bulletin takes care of it.

I congratulate and appreciate whole heartedly the untiring work of Chairman Safe Motherhood Committee Dr. Sadhana Gupta for multi dimensional activities in safe motherhood committee and over all programs, academics and social program of FOGSI. I have all the best wishes for her all endeavours.

Dr. Manider Ahuja
Vice-President (North Zone)
FOGSI

Dear FOGSIAN's

It is my privilege to write message for 7th issue of Safe Motherhood Bulletin edited by Dr. Sadhana Gupta, who is going to complete her very active and worthy tenure as Chairperson Safe Motherhood Committee of FOGSI (2011-2013).

The safe obstetric practice is subject close to my heart due to my association as chairman Practical Obstetric Committee of FOGSI. The bulletin has covered every important topic related to safe obstetrics. All articles have been authored by experienced contributors and I am sure that reader will find it highly beneficial in their clinical day to day practice.

I have all the appreciation for commendable and mammoth work due by Dr. Sadhana Gupta from platform of Safe Motherhood Committee as chairman and wish her all the best for further Endeavour.

Dr. Alpesh Gandhi
Vice-President
FOGSI-2013

FOGSI PHFI Certified Course of Contraception

Dr. Sadhana Gupta took a lead to conduct 4 days certified course of contraception at Deptt of Obs & Gynaec, B.R.D. Medical College, Gorakhpur along with co faculty Dr. Amrita S. Jaipuriar. Record 30 participants registered and 24 received certificates. Principal of College, Dr. K.P. Kushwaha appreciated the workshop and effort

Editor's Desk

It is a moment of great contentment for me, while I write the last editorial of 7th issue of Safe Motherhood Bulletin in the capacity of Chairperson Safe Motherhood Committee – FOGSI (2011-2013).When I look back, it seems a long past time when I was elected with your huge support for this prestigious as well responsible post. I had silent intuition and inspiration in heart for two important works to be done in this tenure — ***Conduct of skill based workshops in societies and teaching institution focused on combating major causes of maternal mortality and publication of book/ focus/ magazine for comprehensive management for major killers of mother in our country***. With His grace and blessing both become not only reality, but also caused radiation transformation of myself as a doctor, editor, author, organizer and human being.

This issue has the theme of Safe Obstetric Practice, obstetric is said to be **'A lost art'** in eyes of senior generation of obstetricians. Like all arts, in the last twenty years, obstetrics art has been replaced by equipment and technology based medicine with its pros and cons. Beside, mind set of obstetricians as well patient and families are changing, some times at such fast pace that it is feared to lose control of pivot of scientific basis and evidence. Ultra low threshold of cesarean section, fear of unpredictability in vaginal delivery, intolerance for labor pains is changing practice and statistics of labor room. On the whole obstetric care giver as well receiving families keep safety issue in obstetrics as the foremost priority. Safe Obstetric Practices are one of the key components of safe motherhood. Readers will go through a short and well directed journey through almost every aspect of Safe Obstetric Practices.

In the present issue we have chosen topic which covers our day to day practice in obstetrics. All the obstetric and labor room practice should be safe and effective in its aim like detection of fetal distress, use of surgical procedure in form of episiotomy, assisted vaginal delivery, and cesarean section. Dr. Laxmi Shrikhande, Dr. Vinayak Khedkar, Dr. Alok Sharama, Dr. Habib Rizwana have given concise and comprehensive articles on the subject.

So often obstetric emergency appears like a bolt from blue. Few such situations are Cord Prolapse, Shoulder Dystocia: how to manage in fast and efficient way with optimum safety of mother and baby. Experts Dr. Hiralal Konner and Dr. Sangeeta Gupta tell you how to deal these situations. Please practice these tips in mock drill and be always ready.

Prepare and keep Emergency Obstetric kit ready in your labor room. It is a ongoing message of Safe Motherhood Committee Dr. Shela Mane emphasizes and elaborate in her article. Dilemma of trial of vaginal birth after cesarean is cleared by Dr. Jayant Rath.

Prevention and timely detection and management of infection are one of key intervention to prevent maternal critical illness and morbidity. Likewise obstetric anesthesia is different due to marked physiological changes in pregnancy, concern of two patients, and its emergency nature. Dr. Haresh Doshi and Dr. Puspa Sethi cover the finesse of chorioamnionitis and obstetric anesthesia, for benefit of all practitioners.

A healthy newborn is the ultimate product of obstetric journey. Our labor rooms and OT should be ready to receive this new guest. Dr. Abhay Patnaik gives you step wise details of neonatal station and resuscitation.

Finally test your knowledge sportingly with interesting quiz compiled by Dr. Charu Mittal.

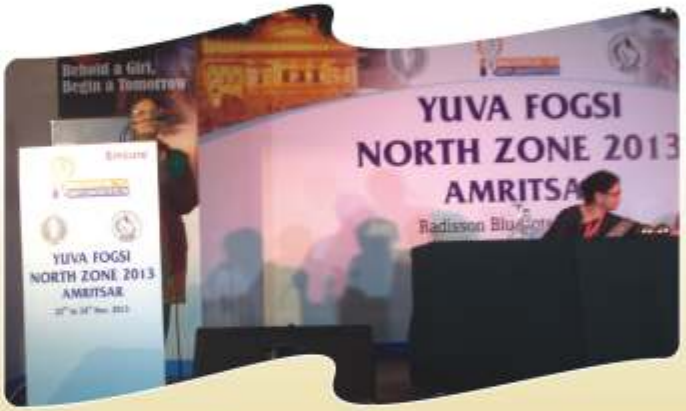
India Speaks is column where we speak from heart and life. Dr. Jyotika Desai shares her views and concern for potential yet underutilized role of professional bodies to reach the unreached and vulnerable people.

I thank immensely with gratitude for all authors for their valuable time, efforts and contribution. I believe with this galaxy of learned and experienced authors on well chosen practical topics, reader will find this issue very useful and worth keeping in your library.

Yours sincerely
Dr. Sadhana Gupta

Safe Motherhood Committee at FOGSI Conference

FIGO FOGSI International Conference, 14-16th Sept. 2013 Hyderabad - Maternal Mortality workshop was the one full day workshop on maternal health. Panel on SAMM moderated by Dr. Hiralal Konner was brain storming.



North Zone Yuva FOGSI 22-24th November, 2013 - Theme of NZY FOGSI was midlife. Organization was superb, inauguration attracted all important persons from health department and scientific sessions were well planned and attended.
Visit to Golden Temple was the most serene experience.

Nari Samman 14th Nov. 2013 - An innovative and essential in present context whole one day program on various issues related to value, safety and respect was organized at Trident Hotel, Nariman Point, Mumbai. Government officials, representatives from diverse NGOs took part in all discussions. President Dr. Hema Divakar lead was appreciated by one and all.
Dr. Mandakini Megh, Dr. Ashwini Bhalerao Gandhi were key coordinator.

Acknowledgment

Editing of all the seven issues of Safe Motherhood Bulletin has been enjoyable learning experience for me. I owe all the thanks for each and every word and thought of suggestion, contribution, massages, and appreciation.

My special thanks to Sir Dr. S. Arulkumaran, who has been always gracious to give messages, articles and words of encouragement for the safe motherhood bulletin. I owe warm and affectionate thanks to Dr. Hema Diwakar, President FOGSI 2013 for being source of energetic inspiration. I thank my previous President Dr. Sanjay Gupte, Dr. P.C. Mahapatra, Dr. P.K. Shah and President Eect Dr. Suchitra Pandit for their advice and appreciation. Vice President In-charge of Committee for three years – Dr. Nandita Palshetkar (2011), Dr. Mandakini Megh (2012) and Dr. Alpesh Gandhi (2013) have been like immediate guardian of the Safe Motherhood Committee, whom I looked forward for guidance and support. Any publication is what its author makes it so. This whole exercise of publication of record seven issues of safe motherhood bulletin fulfilled its purpose because of class articles contributed by learned authors. I owe invaluable thanks for all authors for their time and hard work and also responding to my unending requests and reminders.

My special thanks to Secretory General Dr. Nozer Sheriar, Deputy Secretory General Dr. Hirikesh Pai for approval of my all requests for release of series of bulletins and Treasurer Dr. Jaydeep Tank, Joint treasurer Dr. Madhuri Patel to fulfill all the financial formalities. I also thanks to staff of FOGSI office for their love and cooperation.

Dr. Hema J. Shobhane was always with me in the whole Endeavour as Joint Editor and I extend my affectionate thanks to her. Also young team Dr. Charu Mittal, Dr. Alok Sharma, Dr. Gorakh Mandrupkar, and Dr. Preti Kumar was always ready for me in time of emergency and I convey my gratitude for them at this juncture.

I also thank my team members and Moti Paper Converter for their very hard work done for aesthetic formatting and printing of all issues of Safe Motherhood Bulletin.

Finally the Safe Motherhood Bulletin was incepted only to reach our members of FOGSI.I have tried my best to send all the issues to members, conference delegates and teaching institution. The teachers, practitioners, as well postgraduate student and even person from other medical fraternity have appreciated all the issues in volumes. As an editor and chairman Safe Motherhood Committee I reciprocate their love and warmth for their open hearted acceptance and words of appreciation.

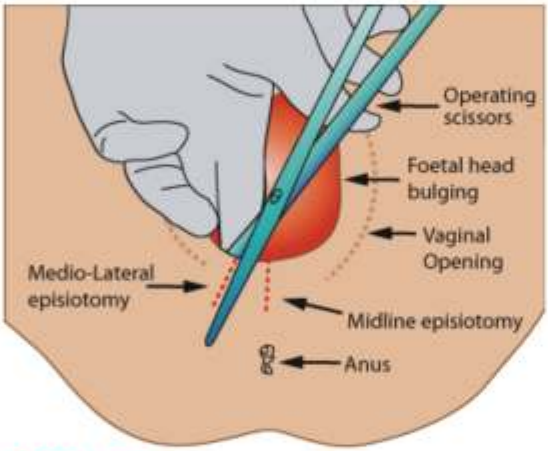
It is pleasure and pride to receive Dr. D.C. Dutta, Best FOGSI FOCUS Publication award continuously for year 2012 and 2013. This gave me sense of more responsibility in each forthcoming issue of this bulletin. I thank all the judges and our esteemed federation for the honor and grace given to the Safe Motherhood Bulletin.

Let's move on in journey to Safe Motherhood. Our roles may be changing, but not the aim, we work together for safe and healthy mother and newborn to make our own world happy and worth living.

EPISIOTOMY- Revisted

Dr. Vinayak Khedkar
Chairperson,
Practical Obstetric Committee, FOGSI
Jyoti Maternity Home, 52,
Surana Nagar
Aurangabad, Maharashtra

An **episiotomy** also known as **perineotomy**, is a planned, surgical incision on the perineum and the posterior vaginal wall during second stage of labor. The incision, which can be a done at a 90 degree angle from the vulvatowards the anus or at an angle from the posterior end of the vulva (medio-lateral episiotomy), is performed under local anesthetic (pudendal anesthesia), and is sutured closed after delivery. It is one of the most common medical procedures performed on women, and although its routine use in childbirth has steadily declined in recent decades, it is still widely practiced in many parts of the world including Latin America, Poland, Bulgaria, India and Qatar.[1]



Contents

Historical Perspective

The origin of episiotomy is difficult to determine, but one of the first to describe it was a midwife, Sir Fielding Ould. In 1742, in his *Treatise of Midwifery in Three Parts,* he recommended the procedure for those cases in which the external vaginal opening is so tight that labor is dangerously prolonged.[4] The first report of the procedure in the United States was 110 years later in a journal entitled *The Stethoscope and Virginia Medical Gazette.* Taliaferro cut a small mediolateral episiotomy to facilitate delivery in young eclamptic women.[5] For these women, episiotomy was used to facilitate an unusually difficult labor. The use of episiotomy was expanded in 1921, when DeLee published a paper entitled "The Prophylactic Forceps Operation." In this publication, he recommended the use of forceps with a mediolateral episiotomy, which he believed saved the fetal brain from injury, preserved the integrity of the pelvic floor, and restored the parturient canal to "near perfect."[6]

DeLee believed labor to be disease producing and therefore to be a "decidedly pathologic process."[6] Historically, physicians have been trained to intervene in disease processes, including protecting the mother from the morbidity of the birthing process. It was on this basis that numerous modalities to support the perineum as well as to incise it have been described. In the 1920s, a shift to hospital deliveries occurred and with it an increase in operative procedures. A 1915 mail survey of prominent obstetricians indicated that few physicians routinely used episiotomy.[3,7] By 1938, Diethelm asserted that the indications for episiotomy were well established and needed no defense.[8] This opinion supported the increasing trend of the use of episiotomy. The desire to maximize maternal comfort and safety, to improve infant outcomes, and to facilitate the

delivery process came together at a time when technological intervention and hospital-based delivery were prevalent.[3]

Couples have now become more involved in the decision-making process surrounding the birth of their infant and have questioned the routine use of technology during labor and delivery. Along with many other "routine" practices, the use of episiotomy has been examined. The data supporting the use of episiotomy, other than to shorten the second stage of labor and perhaps to allow for a simpler repair, have been observational rather than controlled.

Uses

Episiotomy is done as prophylaxis against soft-tissue trauma. Vaginal tears can occur during childbirth, most often at the vaginal opening as the baby's head passes through, especially if the baby descends quickly. Tears can involve the perineal skin or extend to the muscles and the anal sphincter and anus. The midwife or obstetrician may decide to make a surgical cut to the perineum with scissors or a scalpel to make the baby's birth easier and prevent severe tears that can be difficult to repair. The cut is repaired with stitches (sutures). Some childbirth facilities have a policy of routine episiotomy.[2]

Though indications on the need for episiotomy vary, and may even be controversial (see discussion below), where the technique is applied, there are two main variations. Both are depicted in the above image. In one variation, the midline episiotomy, the line of incision is central over the anus. This technique bifurcates the perineal body, which is essential for the integrity of the pelvic floor. Precipitous birth can also sever—and more severely sever—the perineal body, leading to undesired birth sequelae such as incontinence. Therefore, the oblique technique is often applied (also pictured above). In the oblique technique, the perineal body is avoided, cutting only the vagina epithelium, skin, and muscles (transversalius and bulbospongiosus). This technique aids in avoiding trauma to the perineal body by either surgical or traumatic means.

In 2009, a Cochrane meta-analysis based on studies with over 5,000 women concluded that: "Restrictive episiotomy policies appear to have a number of benefits compared to policies based on routine episiotomy. There is less posterior perineal trauma, less suturing and fewer complications, no difference for most pain measures and severe vaginal or perineal trauma, but there was an increased risk of anterior perineal trauma with restrictive episiotomy".[2] The authors were unable to find quality studies that compared mediolateral versus midline episiotomy.[2]

Indications

- There is a serious risk to the mother of second- or third-degree tearing
- In cases where a natural delivery is adversely affected, but a Caesarean section is not indicated
- "Natural" tearing will cause an increased risk of maternal disease being vertically transmitted
- The baby is very large
- When perineal muscles are excessively rigid
- When instrumental delivery is indicated
- When a woman has undergone FGM (female genital mutilation), indicating the need for an anterior and or mediolateral episiotomy
- Prolonged late decelerations or fetal bradycardia during active pushing
- The baby's shoulders are stuck (shoulder dystocia), or a bony association (Note that the episiotomy does not directly resolve this problem, but it is indicated to allow the operator more room to perform maneuvers to free shoulders from the pelvis)

Types

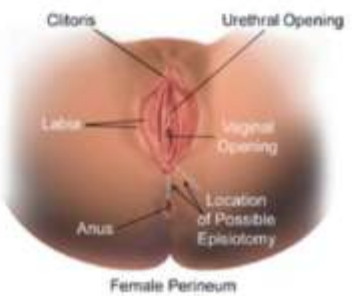
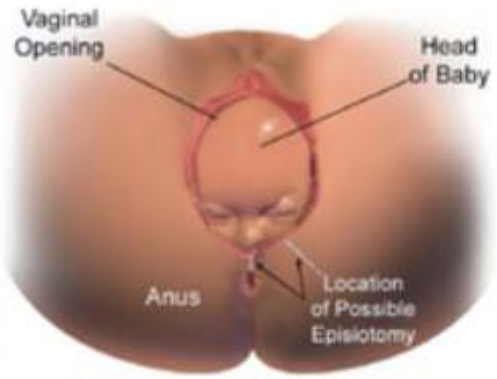


Illustration of midline and medio-lateral incision sites for possible episiotomy.



Crowning and Episiotomy

Illustration of infant crowning and midline and medio-lateral incision sites for possible episiotomy during delivery.

There are four main types of episiotomy:[3]

- Medio-lateral: The incision is made downward and outward from midpoint of fourchette either to right or left. It is directed diagonally in straight line which runs about 2.5 cm away from the anus (midpoint between anus and ischial tuberosity).
- Median : The incision commences from centre of the fourchette and extends on posterior side along midline for 2.5 cm.
- Lateral : The incision starts from about 1 cm away from the centre of fourchette and extends laterally. Drawback include chance of injury to Bartholin's duct; thus some practitioners have totally condemned it.
- *J*-shaped : The incision begins in the centre of the fourchette and is directed posteriorly along midline for about 1.5 cm and then directed downwards and outwards along 5 or 7 o'clock position to avoid the anal sphincter. This is also not done widely.

Care of Episiotomy

Daily attention should be directed to the episiotomy. Discomfort should progressively abate. Any evidence of infection is then promptly acted on to avoid such serious complications as necrotizing fasciitis. An episiotomy is a wound, and its care parallels that of any other wound. The perineum needs to be kept clean and dry. Unlike most wounds, cleanliness is made difficult by defecation and micturition. Daily cleansing with soap and water is helpful in keeping the area clean and free from secretions. A squeeze bottle of water to irrigate the perineum has also been found to be helpful for maintaining cleanliness as well as for providing comfort.

The use of sitz baths has been long advocated in the relief of perineal pain and wound care. The temperature of the water is now also being debated. Droegemueller[28] found that ice chips added to the bath actually diminished edema and reduced pain. He believes that this relief is partially due to reduced swelling but is also attributable to slowed nerve conduction. Prolonged relief occurred with ice in comparison with warm sitz baths in his study. Many patients with perineal incisions or lacerations require oral analgesics for several days after delivery. The requirements for a good postpartum analgesic are that it be rapid acting and highly effective. It should also allow new mothers to be free of pain but alert and should be safe for patients who are still experiencing pain but are ready to be discharged.[29] Antiprostaglandins are often sufficient to reduce swelling and offer analgesia. Codeine is sometimes necessary initially. Regardless of what drug is used, symptoms should improve daily.

Controversy about common usage and history of the technique

Traditionally, physicians have used episiotomies in an effort to lessen perineal trauma, minimize postpartum pelvic floor dysfunction by reducing anal sphincter muscle damage, reduce the loss of blood during delivery, and protect against neonatal trauma. While episiotomy is employed to obviate issues such as post-partum pain, incontinence, and sexual dysfunction, some studies suggest that episiotomy surgery itself can actually cause all of these problems.[4] Research has shown that natural tears typically are less severe (although this is perhaps not surprising since an episiotomy is designed for when natural tearing will cause significant risks or trauma). Slow delivery of the head in between contractions will result in the least perineal damage.[5] Studies in 2010 based on interviews with postpartum women have concluded that limiting

perineal trauma during birth is conducive to continued sexual function after birth. At least one study has recommended that routine episiotomy be abandoned for this reason.[6]

In various countries, routine episiotomy has been accepted medical practice for many years. Since about the 1960s, routine episiotomies have been rapidly losing popularity among obstetricians and midwives in almost all countries in Europe (except for Poland and Bulgaria),Australia, Canada, and the United States. A nationwide U.S. population study suggested that 31% of women having babies in U.S. hospitals received episiotomies in 1997, compared with 56% in 1979.[7] In Latin America it remains popular, and is performed in 90% of hospital births.[8]

Discussion

Having an episiotomy may increase perineal pain during postpartum recovery, resulting in trouble defecating, particularly in midline episiotomies.[9] In addition it may complicatesexual intercourse by making it painful and replacing erectile tissues in the vulva with fibrotic tissue.[10]

In cases where an episiotomy is indicated, a mediolateral incision may be preferable to a median (midline) incision, as the latter is associated with a higher risk of injury to the anal sphincter and the rectum.[11]

Impacts on sexual intercourse

Some midwives compare routine episiotomy to female circumcision.[12] One study found that women who underwent episiotomy reported more painful intercourse and insufficient lubrication 12–18 months after birth, but did not find any problems with orgasm or arousal.[13]

Lessening the need for episiotomy

Controlled delivery of the head that allows slow gradual stretching of the perineal tissue can help in minimizing damage to the perineum.

Perineal massage beginning around the 34th week has been shown to reduce perineal damage by 6%.[14]

A perineal dilator can be used to stretch the perineal tissue gradually and train it in preparation for first births. The "Epi-no Birth Trainer" consists of a small inflatable silicone balloon pumped with the same pump as a sphygmomanometer. The Epi-no device has been shown to reduce perineal damage by 50% at first births.[15] Where episiotomy is never practised, the sutured tear rates for first birth were documented to be about 30%.[16] Among 104 consecutive primiparous women who practiced with an Epi-No birth trainer before birth and had normal vaginal births, 10% had sutured perineums. Neither group suffered any third- or fourth-degree tears. The average birthweight was 3,400 g. This 10% rate of sutured perineums among first births who used Epi-No birth trainer is the lowest reported for healthy primiparous women to date.[17]

Episiotomy : When it's needed, when it's not

An episiotomy was once a routine part of childbirth. Today, the procedure is recommended only in certain cases. Here's what you need to know about episiotomy risks, benefits and recovery.

The episiotomy tradition

For years, an episiotomy was thought to help prevent more extensive vaginal tears during childbirth — and heal better than a natural tear. The procedure was also thought to keep the bladder from drooping and the rectum from protruding into the vagina after childbirth.

Today, however, research suggests that routine episiotomies don't prevent these problems after all.

Recovery is uncomfortable, and sometimes the surgical incision is more extensive than a natural tear would have been. Infection is possible. For some women, an episiotomy causes pain during sex in the months after delivery. An extensive episiotomy might also contribute to fecal incontinence after childbirth.

The new approach

Episiotomy

Routine episiotomies are no longer recommended. Still, the procedure is warranted in some cases.

Your health care provider might recommend an episiotomy if :

- Extensive vaginal tearing appears likely
- Your baby is in an abnormal position
- Your baby needs to be delivered quickly

If you need an episiotomy and you haven't had any type of anesthesia or the anesthesia has worn off, you'll likely receive an injection of a local anesthetic to numb the tissue. You shouldn't feel your health care provider making the incision or repairing it after delivery.

Absorbable stitches for repair of episiotomy and tears at childbirth

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Abstract

Background : Approximately 70% of women will experience perineal trauma following vaginal delivery and will require stitches. This may result in pain, suture removal and superficial dyspareunia.

Objectives : To assess the effects of different suture materials on short and long term morbidity following perineal repair.

Search methods : searched the Cochrane Pregnancy and Childbirth Group's Trials Register (February 2010).

Selection criteria : Randomised trials comparing different suture materials for perineal repair after vaginal delivery.

Data collection and analysis : Two review authors independently assessed trial quality and extracted data.

Main results : 18 trials with 10,171 women; comparisons included: catgut with standard synthetic (nine trials), rapidly absorbing synthetic (two trials), and glycerol impregnated catgut sutures (two trials); and standard synthetic sutures with rapidly absorbing synthetic (five trials) and monofilament sutures (one trial).

Compared with catgut, standard synthetic sutures were associated with less pain up to three days after delivery (risk ratio (RR) 0.83, 95% confidence interval (CI) 0.76 to 0.90); and less analgesia up to ten days postpartum (RR 0.71, 95% CI 0.59 to 0.87). More women with catgut sutures required resuturing (15/1201) compared with synthetic sutures (3/1201) (RR 0.25, 95% CI 0.08 to 0.74); while more women with standard synthetic sutures required the removal of unabsorbed suture material (RR 1.81, 95% CI 1.46 to 2.24). Comparing standard synthetic with rapidly absorbing sutures, short and long term pain were similar; in one trial fewer women with rapidly absorbing sutures reported using analgesics at 10 days (RR 0.57, 95% CI 0.43 to 0.77). More women in the standard synthetic suture group required suture removal compared with those in the rapidly absorbed group (RR 0.24, 95% CI 0.15 to 0.36). There was no evidence of significant differences between groups for long term pain (three months after delivery) or for dyspareunia at three, or at six to 12 months. When catgut and glycerol impregnated catgut were compared, results were similar for most outcomes, although the latter was associated with more short term pain. One trial examining monofilament versus standard polyglycolic sutures found no differences for most outcomes.

Authors' conclusions : Catgut may increase short term pain compared with synthetic sutures. There were few differences between standard and rapidly absorbing synthetic sutures but more women needed standard sutures removing. For other materials, there was insufficient evidence to draw conclusions. Findings should be interpreted in the context of the related Cochrane review on suturing techniques.

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Assisted Vaginal Delivery in Modern Obstetrics

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An **assisted vaginal delivery** (AVD) occurs when a pregnant female goes into labor and requires the use of special instruments such as forceps or a vacuum extractor to deliver her baby vaginally. Instrumental vaginal delivery is a key element of essential obstetric care, scaling up its use in resource poor countries through training and supply of appropriate equipment is likely to contribute significantly to reduced maternal and newborn morbidity/mortality.[1]

A recent survey by the World Health Organization (WHO) of method of delivery and pregnancy outcomes in 9 Asian countries analyzed 107, 950 births. Of these births, 3.2 percent were by operative vaginal delivery procedures.[2]

The overall rate of operative vaginal delivery has been diminishing, but the proportion of operative vaginal deliveries conducted by vacuum assisted births has been increasing and is more than four times the rate of forceps assisted births. In regions with high caesarean section rates, when operative delivery is indicated during the second stage of labour, clinicians are more likely to ask whether assisted vaginal delivery or caesarean section would be better for the mother and her baby. However, in settings in which caesarean section is not easily available, the question for clinicians becomes which instrument for assisted delivery is best in terms of maternal and perinatal health outcomes.

Despite the current popularity of vacuum extractor, forceps are the instrument of choice for many older clinicians. This is because of medical conservatism and original training, higher success rates, and a presumption of improved speed and control of the birth process. Nonetheless, vacuum extraction has gained popularity as it is seemingly easy to use, requires less anesthesia/analgesia, has lower maternal morbidity, and is commonly believed to be safe.

Indications for Instrumental Delivery

There are few absolute indications or contraindications to instrumental delivery. Each case should be judged on its merits taking into account the relative benefits and adverse effects of the possible courses of action. Instrumental delivery is employed to accelerate delivery in the presence of :

- *Fetal compromise suspected or anticipated in second stage of labor* - It is fortuitous that, at the time of greatest fetal risk, instrumental delivery can often be rapidly and safely accomplished.
- Delay in the second stage of labour.
- *Maternal effort contraindicated* - Maternal valsalva may sometimes be contraindicated with maternal conditions such as cerebral aneurysm, risk of aortic dissection, proliferative retinopathy, severe hypertension or cardiac failure. Such women may benefit from epidural analgesia and elective instrumental delivery.

Prerequisites for instrumental delivery -

A legitimate indication must be there. It is the foremost requisite, as many of the problems and complications are not in the process of Assisted vaginal delivery but the unwarranted or premature intervention.

The following prerequisites must be checked and confirmed by operator :

- Head must be engaged
- The presentation must be vertex or face with chin anterior
- Cervix must be fully dilated
- Membranes are ruptured
- There should be no suspected cephalopelvic disproportion
- The urinary bladder must be empty
- Uterus is not in inertia

- Necessary personnel and equipment must be available

Technique of Forceps application

It is an art to be learnt and practiced. Unfortunately or fortunately new generation obstetrician are not exposed to this art which is tremendously useful to save mother from caesarean in second stage which have it's own problems and complications and Save life of baby.

The important points to consider are -

- Good Selection of patient and situation
- Good obstetric analgesia in form of parenteral sedation and perineal infiltration or paracervical block or epidural anaesthesia if available.
- Antiseptic preparation
- Instrument check for forceps blade and in vacumm appropriate size of cup and confirmation of suction
- Preliminary assessment, if required episiotomy
- Correct cephalic application, and confirm easy locking
- Traction in right direction, not forceful or gentle, preferably during uterine contraction and not prolonged

Complications of instrumental delivery

The adverse effects of instrumental delivery must be weighed against the consequences of awaiting vaginal delivery or alternatively performing a caesarean section with the head deep in the pelvis. The more serious complications are very uncommon but include :

Fetal complications

- *Subaponeurotic/subgaleal haemorrhage* - A potentially life threatening complication, occurring in approximately 1 in 300 cases of vacuum delivery.[3,4]
- Facial nerve palsy, corneal abrasion, retinal haemorrhage - Facial nerve palsy and corneal abrasion are more common with forceps and retinal haemorrhage with vacuum delivery.[5]
- Skull fracture and/or intracranial haemorrhage
- *Cervical spine injury* - A consequence of rotational forceps delivery may be minimised by ensuring uterine relaxation prior to performing the rotation.

Maternal complications

The Cochrane review indicates a lower incidence of serious maternal injury (vaginal trauma and anal sphincter damage) with vacuum assisted delivery when compared to forceps.[5]

What instruments should be used for operative vaginal delivery?

The operator should choose the instrument most appropriate to the clinical circumstances and their level of skill. Forceps and vacuum extraction are associated with different benefits and risks. Failed delivery with selected instrument is more likely with vacuum extraction.

Vacuum Extraction Versus Forceps

There is long-term debate concerning when assisted delivery is appropriate and which instrument (vacuum extractor or forceps), is best.[6,7] Although the instruments are largely interchangeable for most applications there are factors favoring the use of one instrument over the other. Important factors include the following :

- *Anesthesia* : The meta-analysis reported by Johanson observed a significant reduction in the requirement for anesthesia with vacuum extraction operations in comparison with forceps deliveries.[6]
- *Instrument failure* : vacuum extraction operations are more likely to fail than forceps procedures.[8] The relative risk of failure with vacuum extraction versus forceps operations is 1.69 (95% CI 1.31 to 2.19). The higher failure rate reflects a number of factors: poor instrument applications, incorrect vector of force in traction efforts, improper methods of applying traction, fetal malpositioning, poor choice of cases, and operator inexperience as well as the intrinsic inability of the vacuum extractor to exert as much force to the fetal head as forceps.[9]

- *Maternal injury :* Any instrumental delivery is associated with an increased risk of perineal/rectal injury versus the incidence of these complications following either a spontaneous or a cesarean delivery. A consistent finding is an increased incidence of perineal tears following forceps as opposed to vacuum extraction.[6,10]
- *Fatal fetal injury* : A study reported by Towner and coworkers collected mode of delivery and birth injury data from several large populations.[11] The report by Demissie and coworkers includes information from total United States births for 1995-8 (n= 11,939,388) as well as data from New Jersey (375,351).[12] These data indicate that delivery by vacuum extraction is least as safe as forceps delivery with fatal complications in both cohorts statistically similar.

When should operative vaginal delivery be abandoned?

Operative vaginal delivery should be abandoned where there is no evidence of progressive descent with moderate traction during each contraction or where delivery is not imminent following three contractions of a correctly applied instrument by an experienced operator.

Is there a place for sequential use of instruments?

The use of sequential instruments is associated with an increased risk of trauma to the infant; however, the operator must balance the risks of a caesarean section following failed vacuum extraction with the risks of forceps delivery following failed vacuum extraction.

Conclusion

Operative vaginal procedures, mainly vacuum extraction and obstetric forceps delivery have a long history but both still have a place in contemporary obstetric practice. In competent hands and with strict adherence to guidelines, the outcomes for the mother and child are excellent. There is great gain in ensuring that these arts are not lost to the modern day obstetrician.

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Tips for Safe Caesarean Section

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Caesarean is defined as the delivery of fetus, placenta and membranes through an abdominal and uterine incision. It is one of the most common procedures in obstetric practice and a life saving procedure for both mother and baby in some circumstances. Over past 30 years the caesarean section rates are rising globally. The reasons for the increase are complex, one consideration being the relative safety of the procedure nowadays. In some conditions, caesarean is considered to be safer than even vaginal delivery as the technique of caesarean as well as anesthesia has evolved and made it quite safe.

However, it is a major surgery and there are potential risks like haemorrhage, infection, surgical accidents and post-partum haemorrhage. The risks are mainly influenced by whether it is an elective or emergency caesarean, if infection prevention measures have been taken or not and technique and skill of operating team. The risk of bleeding and blood transfusion is higher with increased risk of infection and readmission to hospital. The surgical risk of damage to bladder and bowel, ureteric injury and injury to fetus is there. The morbidity due to wound infection, postpartum haemorrhage and deep venous thrombosis is also increased. Anesthesia complications also add to morbidity and mortality. The main risk to babies born by caesarean is prematurity and Acute respiratory distress syndrome. There is also a chance of maternal mortality of 1 per thousand women undergoing caesarean even in low risk group while as the mortality increases in high risk group of patients. Also, one significant risk is the need for repeat Caesarean section which carries high risk of morbidity and mortality by increasing chances of scar rupture, bladder injury, placental site abnormalities like placenta-praevia and need for hysterectomy. Chances of morbidity and mortality also increase if the patient is having high risk factor like pre-eclampsia, eclampsia, diabetes, heart disease, jaundice, placenta-praevia, bleeding disorder and anemia etc. However, obstetrics is very tricky and a low risk patient can change to high risk category in a very short period.

To make caesarean safe, we should have ideal quality standards. All professionals involved in the case of a woman who may need caesarean should be sufficiently and appropriately trained and competent to deliver the actions and interventions. The institute where caesarean is being done should follow all the protocols of safety and infection prevention. Operation theatre should be fully equipped, blood bank facility, high dependency ward and ICU facilities should be there. Senior consultant obstetrician should be available on call round the clock. Experienced neonatologist, consultant anesthetist and haematologist should also be ideally present during surgery especially of high risk patients. WHO Guidelines for safe surgery and NICE guidelines for caesarean need to be followed ideally. The guidelines on caesarean are aimed towards achieving best possible outcome for mother and baby.

India is a vast country and it is difficult to provide ideal medical facilities in every nook and corner. To decrease maternal and perinatal morbidity and mortality , caesareans are now done in CHC's also. To make caesarean as safe as possible in all situations, all hospitals need to have a standard protocol which should be followed by everybody. There should be checklists at every stage i.e pre-operative, intra-operative and post-operative stages.

Obstetrician has to be aware of the complications, anticipate them and be able to deal with them. Care must be taken in each and every patient to prevent or at least minimize complications. Monthly meeting should be held to change strategies for safe Caesarean.

Here are some of the tips which can help us in minimizing the complications.

Pre-operative Assessment

Pre-operative assessment of a patient is very important. In elective surgery we can assess the patient thoroughly, but it is important to assess the patient properly in emergency cases also.

- Quick short history to determine the gestational age, parity any significant medical illness or surgical intervention is important.
- Always do a quick general, local examination and checking of FHS before starting surgery.
- Baseline investigations like Hb estimation, blood grouping and platelet count are important in all emergency cases. Elective surgeries should be fully investigated especially in high risk pregnancies.
- Blood should be kept cross matched even in low risk groups because we never know which patient will have post-partum haemorrhage.
- In high risk patients bed in ICU and/or High dependency ward should be kept ready. Haematologist and Neonatologist should also be available.
- Informed consent from patient and relatives to be taken.
- Antibiotic prophylaxis 30 minutes before start of skin incision reduces rate of infection considerably and has been seen to have no side effect on baby.
- Checklist all the above.

Proper Preparation in Operation Theater

- Proper sterilization protocol should be followed in operation theater both by the operating team and paramedical staff to minimize infection. Proper scrubbing and proper sterilization of instruments is very important.
- Ensure availability of drug for mother and baby, suture material and instruments.
- Anesthetic equipment, maternal monitoring equipment and neonatal resuscitation equipments should be in working condition.
- Operating team should include consultant obstetrician, house officer or assistant surgeon, anesthesiologist, neonatologist and trained paramedical staff . In high risk patients senior consultant obstetrician and anesthetist, haematologist, experienced paediatrician should be available.

Choice of Anesthesia

- Regional anesthesia like spinal or epidural is safer.
- However, in emergency cases like acute fetal distress, haemorrhage, eclampsia etc. general anesthesia is preferred.

Technique Of Caesarean

- Hair to be clipped at surgical site prior to incision to reduce chances of infection. (shaving has been seen to increase infection rate).
- Operation site to be preferably cleaned with chlorhexidine solution.
- Transverse skin incision is preferred. Give incision 3cm above symphysis pubis and open subsequent tissue layers bluntly or by scissors as it is associated with shorter operating time and reduces post operative febrile morbidity. Incision should be adequate to take out the baby.
- Vertical incision preferred in emergency cases of cord prolapse, haemorrhage etc.
- Use only taped gauge swabs.
- Use checklist for instrument and gauge count.
- Open parietal peritoneum high in repeat

caesarean or previous history of any abdominal surgery to avoid bladder injury.

- Correct uterine rotation prior to giving incision in uterus.
- Proper reflection of bladder should be done to avoid injury.
- Open uterus in lower segment only unless there is some obstruction or indication for classical incision.
- Adequate incision in lower segment should be given to avoid uterine tears. In case of thick lower segment, give crescent or J shaped incision to avoid tears in uterus, which extend downwards or cause injury to uterine vessels.
- Incisions should be extended by scissors preferably to avoid irregular edges.
- Immediately suction baby's nose and mouth and then deliver shoulder and body to prevent aspiration syndrome.
- To prevent postpartum haemorrhage give injection syntocinon 20 units in 1litre of crystalloid at 10ml /min as soon as head and shoulder is delivered.
- If prophylactic antibiotic has not been given, then give one dose of prophylactic antibiotic as soon as cord is clamped.
- Never remove placenta manually, only by controlled cord traction. This will reduce risk of haemorrhage and endometritis .Remove membranes,vernix and clots from uterine cavity before closing it.
- Always close uterine incision in two layers.
- Before closing the abdomen, ensure there is no injury to adjoining organs like gut, bladder, uterine vessels etc. If any tears in uterus, stitch them properly and take care of haemostasis. Mop or suck out any free blood in abdominal cavity.
- Pre- closure disclosure of instruments and packs for count will ensure that nothing is forgotten in abdominal cavity.
- Close abdominal wound in layers. In case subcutaneous tissue is deep or more than 2 centimeters it should be sutured to reduce chances of wound haematoma, seroma and wound disruption
- Immediately apply sterile dressing.
- Do a vaginal examination to remove clots, look for bleeding, ensure uterus is contracted and do vaginal toilet when patient is still under anesthesia.
- Indwelling catheterization is advisable in high risk patients like obstructed labor, eclampsia etc and if there is even faint hematuria.

Problems During Surgery

A. Bleeding Not Controlled

a) Atonic uterus :

- Exteriorize the uterus and massage it.
- I/V or I/M ergometrine is to be given.
- 20 unit syntocin in drip to be given
- I/M or intra-myometrial injection of PGF2.
- Haemostats like inj. Tranaxemic acid.

b) Bleeding from placental bed :

- Direct pressure will help
- Suture over placental bed.

c) Bleeding persists :

- Ligation of the uterine artery
- Four artery ligation (ovarian and uterine).
- Mass suture of uterus and bracing sutures to be given
- Blood transfusion to be given.
- Caesarean hysterectomy (should be last resort).

B. Placenta Praevia

If patient is diagnosed by USG & Doppler sonography, then senior consultant obstetrician, senior anesthetist and experienced staff should perform the surgery. Blood should be kept cross matched. Prior informed consent to be taken and interventional modalities like hysterectomy to be discussed with patient and attendants. High dependancy ward or ICU to be kept ready. Experienced surgeon to be kept

on call for ligation of anterior division of internal iliac artery and bladder repair if need be. In case the center does not have these facilities, then patient should be referred to tertiary care centre beforehand.

During Surgery :

- If low anterior placenta is encountered incise through it and deliver the fetus and clamp the cord immediately.
- Under run the bleeding site with catgut sutures.
- In adherent placenta especially in previous scar, low vertical or classical incision should be given to avoid incision into anterior placenta percreta and bladder. If attempt for complete removal of placenta not possible abandon it and close the uterus. If bleeding persists, uterine artery ligation should be done. If still bleeding persists to save the patient, hysterectomy may have to be done.
- Blood transfusion is must in massive haemorrhage.

C. Baby is Breech

- Grasp a foot and deliver it through incision and then complete the delivery as in vaginal breech delivery.

D. Baby is Transverse

- Adequate uterine incision is required.
- Grasp the ankle of baby and then deliver as in breech.

E. Impacted Head

- Ask the assistant to push the head through vagina and then scoop out to avoid uterine tears.

F. Floating or High Head

- Insert hand below floating head like a shoe horn and ask assistant to give fundal pressure and gently take out the head.

G. Miscellaneous

- Bladder injury:- Stitch tear in two layers by 3-0 vicryl and indwelling catheterization for one week to ten days is must.
- Bowel injury:- Very rare. Repair at right angle to bowel axis in two layers.

Post Operative Care

Post operative monitoring with regular observation in immediate post surgical period by an expert in post operative care is key part of managing potential complications associated with caesarean. This needs to happen alongside the core postnatal care all women receive in the hospital after delivery.

- Monitoring of patient on one to one basis by trained personell especially if caesarean is done under general anesthesia is important till patient regains airway **control**, cardio-respiratory stability and is able to communicate.
- After recovery from anesthesia, observe patient for pulse, blood pressure, respiratory rate, pain and sedation, bleeding P/V every half hour for two hours and then one hourly for four hours.
- Provided the observations are stable then monitoring should be done every four hours till 24 hours. Temperature, pulse, blood pressure, respiratory rate, O2 saturation, pain and, bleeding P/V to be observed.
- In unstable patients more frequent observations are required.
- Fluid balance chart to be maintained.
- Observe wound for soakage and signs of infection.
- Encourage early ambulation after 6 – 8 hours to reduce deep venous thrombosis.
- Give thromboprophylaxis in high risk cases like women who have varicose veins, heredity thrombophillia or basal metabolic index of 30 or greater, sickle cell anemia or who have not moved in four days.
- Early breast feeding to be encouraged.
- Early feeding especially in uncomplicated patients.

Care of newborn

- Early contact with mother.
- Baby to be examined by neonatologist.
- Early breast feeding to be promoted.
- In case of Acute respiratory distress syndrome or prematurity may need NICU admission.

To conclude, caesarean section is a very challenging surgery and no set of rules can apply to all situations. It can vary from a simple surgery to a complicated one. Sometimes a low risk surgery may turn out to be a high risk one. In the end, the safety depends upon the skill, flexibility, alertness and practice of the operating obstetrician and his/her team. The operating team has to be prepared for any type of complication and be ready to tackle it.

Key Message

For Safe Caesarean

- Need to have proper pre-operative assessment of patient.
- Maintain proper asepsis to prevent infection.
- Try to minimize haemorrhage.
- Try to prevent surgical accidents.
- Never be in haste while doing surgery.
- Use checklists at every stage.
- Proper post-operative care is important.
- Early mobilization of patient.

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Never be complacent and
take every caesarean as a new challenge.

Obstetric Anaesthesia - How is it different?

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The delivery of the infant into the arms of a conscious and pain free mother is one of the most exciting & rewarding moments in medicine – ***Moir D***

Introduction

James Young Simpson, the Professor of midwifery in Edinburgh, Scotland, was among the first to use ether for the relief of labour pain. On January 1847, he used ether to ameliorate the pain of labour in a young woman with rickets & severely deformed pelvis, who was at grave risk of dying. She survived the complicated delivery pain free. But his concept of etherization of labour was strongly condemned by the clergy. Queen Victoria was given relief of pain during labour by John Snow using chloroform on a folded handkerchief. The Queen abruptly terminated the religious debate over the appropriateness of analgesia for labour. Since then labour analgesia has gained popularity and neuraxial analgesia has become the gold standard for the same.

Recent trends in providing pain relief during labour includes intravenous use of remifentanyl, inhalational sevoflurane, use of adjuvants like clonidine, neostigmine epidurally along with local anaesthetics, use of ropivacaine, continuous spinal analgesia, computer integrated patient controlled epidural analgesia, Programmed Intermittent or automated mandatory epidural boluses and Ultrasound guided neuraxial technique.

The difference in the practice of obstetric anaesthesia lies in the fact that it deals with care of the mother and the fetus simultaneously. Also, the physiological changes during pregnancy make the pregnant woman different from other individuals of same demographic profile.

The American society of Anaesthesiologist task force on obstetrical anaesthesia has set practice guidelines for obstetrical anaesthesia. The guidelines focus on the anaesthetic management of pregnant patients during labour, non operative delivery, operative delivery and selected aspects of post partum care.

A few salient features of those guidelines include:

Preanaesthetic evaluation:

History and Physical examination

The history and physical examination in obstetric anaesthesia has the prime focus on maternal health history, any anaesthesia related obstetric history and airway examination. Airway management in a pregnant patient is always considered to be difficult due to mucosal edema which may manifest as glossal, pharyngeal, laryngeal or tracheal edema and consequent difficulty in securing airway during attempted endotracheal intubation. Moreover, certain diseases as asthma and cardiac diseases may exacerbate during pregnancy causing potential perianaesthetic risks.

Intrapartum coagulation profile.

Certain conditions in pregnancy such as pregnancy induced hypertension and abruptio placenta can cause bleeding diathesis. Regional anaesthesia may be contraindicated in these conditions. However a specific platelet count predictive of regional anaesthetic comlications has not been determined.

Fasting in obstetric patients

An obstetric patient for anaesthesia is always considered full stomach. Prophylaxis against acid aspiration includes both physical and pharmacological methods.

Physical methods include stomach aspiration by a nasogastric tube and application of cricoid pressure as soon as conciousness is lost. Pharmacological methods includes drugs :

- To reduce gastric acid secretion (e.g. H2 receptor antagonists)
- To raise gastric acid pH (e.g. antacids)
- To increase tone of lower esophageal spincter and hasten gastric emptying (e.g. metoclopramide).

The oral intake of modest amounts of clear liquids may be permitted for uncomplicated labouring patients. Solid foods should be avoided in patients with active labour. The patients undergoing elective caesarean delivery should undergo a fasting period for solid and liquid intake consistent with the hospital policy.

Anaesthesia care for labour and vaginal delivery

It has long been known that painful labour produces several adverse changes in maternal physiology & biochemistry. Some changes have important implications for the baby also.

1. Maternal respiration increases by 75-150% during 1st stage of unmodified labour.

   This is associated with a number of maternal changes that may have adverse fetal effects :

   a. Hypocarbia & respiratory alkalosis.

   b. Increased O2 consumption.

   c. Under-ventilation between contractions, resulting in episodes of haemoglobin desaturation which are more pronounced when systemic opioids are given.

   d. Compensatory metabolic acidosis which appears to be transferred readily to the foetus.

   e. Vasoconstriction which affects the uterine arteries.

   f. A shift in the maternal oxyhaemoglobin dissociation curve counteracting the Double Bohr effect.

2. Maternal hyperventilation lowers the umblical artery PCO2, but as labour progresses this change is overtaken by metabolic acidosis of increasing severity. Such that the longer the second stage of labour, the lower the cord pH at birth.

3. Maternal pain & stress have adverse fetal effects, maternal anxiety is associated with increased plasma catecholamines, cortisol, ACTH & lipoprotein Increased sympathoadrenal activity may lead to uncoordinated uterine activity & reduce uterine perfusion .

4. Metabolic outcome is hyperglycemia with a poor insulin response, lipolysis with increased fatty acids, ketones & lactate. These acids cross the placenta and produce fetal acidosis & increase fetal O2 requirement.

Maternal request represents sufficient justification for pain relief, but the selected analgesia technique depends on the medical status of the patient, the progress of the labour and the resources of the facility.

There are both non pharmacological and pharmacological methods for labour analgesia.

Non pharmacological methods include psychoprophylaxis, hypnosis[9], TENS, acupuncture, under water delivery, acupressure & music therapy.

Pharmacological methods include inhalational analgesics like nitrous oxide, desflurane, sevoflurane[4] or use of systemic analgesics like opoids[6], ketamine, etc. Pharmacological methods are easy to use but may provide variable pain relief and have the potential to cause maternal or neonatal respiratory depression, delayed gastric emptying, prolongation of labour.

Regional analgesia techniques includes lumbar epidural block, caudal epidural block, sub arachnoid block, combined spinal epidural block[8], para cervical or pudendal block[3]. In recent years, introduction of walking epidurals have gained popularity. This form of pharmacological analgesia has become the mainstay in labour pain management[1], especially in tertiary care facilities. Either intermittent or

continuous infusion of local anesthetic can be ad ministered with a possible patient controlled epidural anesthesia (PCEA)[7] option. However, this technique requires skill and continuous monitoring.

In modern obstetric anaesthetic practice[5] the aim is to produce a selective sensory block from T10 to L1 while at the same time sparing the motor supply to the lower limbs, L2-L5, the "Mobile Epidurals or Walking Epidurals"[2]. This sparing of motor fibres has been achieved by decreasing the concentration of local anaesthetics used by the addition of opioid, most commonly fentanyl. Bupivacaine ranging from 0.0625% to 0.1% with fentanyl 2mcg/ml is the most popular solution used till recently. For safety reasons Bupivacaine is gradually being replaced by L-bupivacaine and Ropivacaine.

Anaesthetic choices for caesarean delivery.

Spinal, epidural, combined spinal epidural techniques or general anaesthesia can be used effectively for caesarean delivery.

Anaesthetic considerations

Regardless of the eventual technique that will be used for the caesarean section, the anaesthesiologist must accomplish several preparatory tasks prior to the actual administration of the anaesthetic. A caesarean section is a major operation that requires meticulous administration of anaesthesia, and should be undertaken carefully.

The patients chart must be reviewed for relevant laboratory and test reports(e.g. coagulation studies, hematocrit), the presence of any co existing maternal disease (e.g. hypertension, preeclampsia, heart disease, diabetes etc). in addition to maternal factors, chronic uteroplacental insufficiency or abruption placentae should be noted. The reason for the caesarean section should be identified.

Patient preparation : this includes taking a thorough patient history, performing a physical examination, discussing the planned anaesthetic to inform the patient of the best option, alternatives, associated risksand inspire confidence in the anaesthesiologist's ability and relieve patient anxiety.

Airway assessment : the importance of airway assessment cannot be overemphasized. Some of the factors contributing to difficult tracheal intubation include the fact that the emergent nature of the procedure, trained and senior personnel may not be available, optimal head and neck positioning for visualization of the larynx in the presence of obesity, preeclampsia and large breasts may not be performed. The pregnant patient's airway is always considered difficult due to the above reasons and the mucosal edema.

B. Premedication is administered as prophylaxis against acid aspiration.

The patient should be transported to the operation theatre lying on her side(to avoid aorto caval compression) and kept in this position as long as possible.

An intravenous infusion should be established with preferably, a bolus of 15 to 20 ml/kg of a non glucose containing balanced salt solutionwhich should be administered rapidly through a large bore intravenous cannula within 30 minutes of the administration of a regional anaesthesia to maintain intravascular volume in the presebce of sympathetic blockade.

A rapid glucose infusion stimulates fetal insulin secretion sufficient to cause hypoglycemia and hyponatremia in the new born.

Ephedrine and atropine must be available to treat the hypotension and bradycardia associated with a high block.

A means to prevent hypotension due to aortocaval compression and to provide left uterine displacement must be present. This may be a table tilt to the left or a small pillow or widge placed under parturient's right hip.

The anaesthesia for obstetric patients shall take into consideration that the dose of anaesthesic agents is reduced in obstetric patients.

The anaesthesia in a parturient should be directed so as to avoid hypoxia, hypotension or acidosis as these have detrimental effects on fetus.

To conclude the field of obstetric anaesthesia is

rapidly progressing in term of medicines and analgesia techniques especially walking epidural, which has changed the outlook of the society as well as medical fraternity towards labour analgesia. Considering the need for safe outcomes for both mother and the baby, obstetrics provide unique challenges for both anaesthesiologist and obstetrician.

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Role of emergency obstetric kit in labor room

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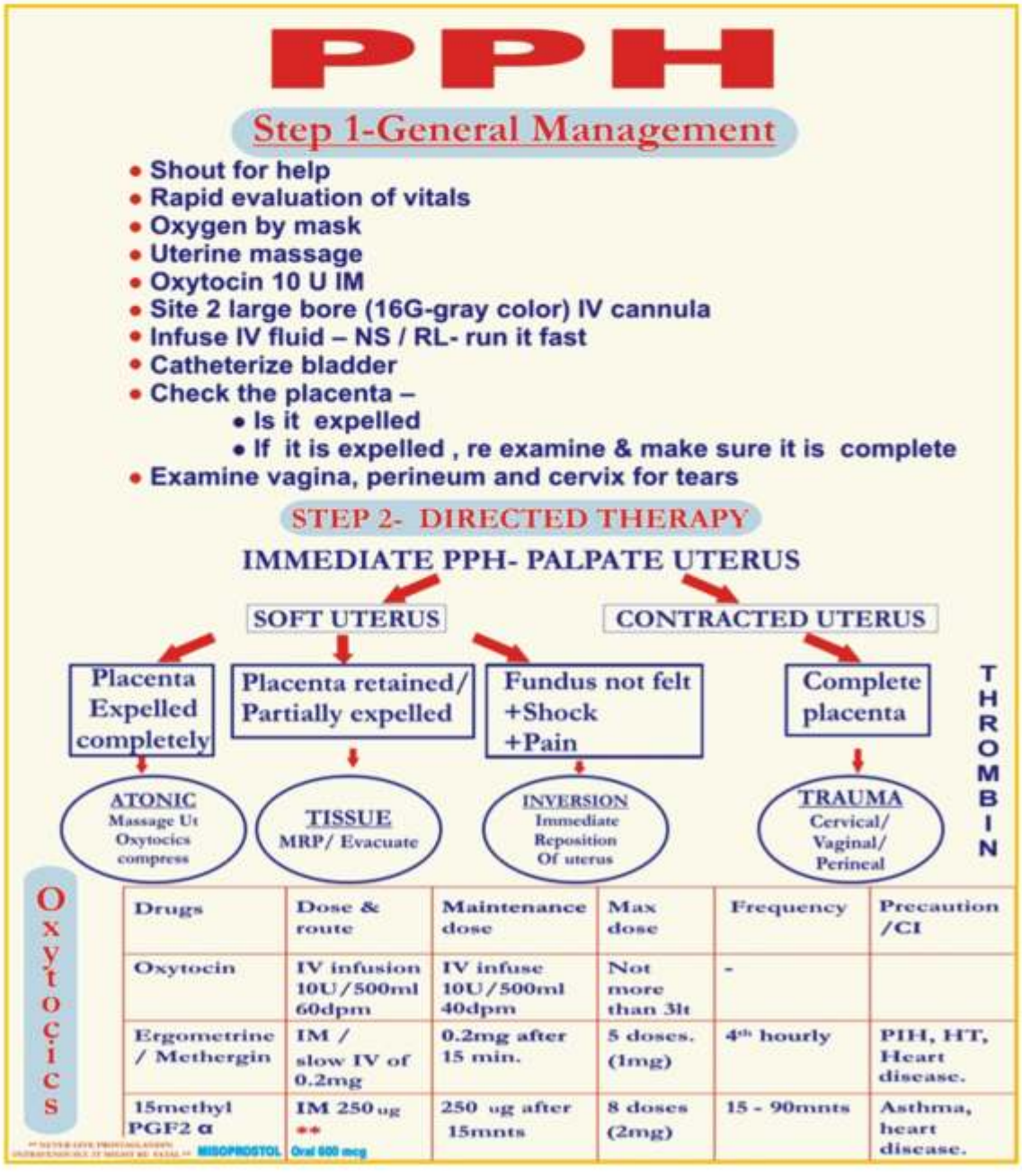
The need for Emergency Obstetric box, PPH drug box and Eclampsia drug box

PPH is the most common emergency in Obstetrics and majority of cases will occur in women without obvious risk factors. The preparedness to deal with the emergency, protocols, education and simulation as pre-empt to obstetric emergencies have gained increasing acceptance especially over the last decade in developing countries. The gap between the mortality rates from postpartum hemorrhage in developed countries and developing countries underscores the need for effectiveness and timeliness of the health systems/ providers in responding to Obstetric emergencies. Part of this preparation should include availability of the equipment and medication needed to deal with the emergency. We thought that there is an urgent need to have low-cost interventions which could be used in any labour ward set up. This would reduce the latent phase between recognition and treatment, hence



promote prompt and efficient treatment provided in the "Golden hour".

To improve the preparedness and efficiency of treatment in a PPH or any obstetric emergency situation, we have designed low cost, portable, comprehensive obstetric emergency box, PPH and eclampsia drug boxes. These boxes are aimed to provide effective medical management of obstetric emergencies. PPH trauma inspection tray and balloon tamponade tray are kept separately. Special equipments for surgical management are not included in this article.

Who should have the box

Obstetric emergency box, PPH drug box and Eclampsia drug box should be made available in **ALL** labour rooms and could even be carried with the personnel if the delivery was being conducted at home. The box could be carried in the ambulance during transfer.

Where should the box be kept

The emergency Obstetric box should be kept in the labour ward in a designated place. For eg. on the crash trolley if a crash trolley is provided. PPH drug box is to be kept in the fridge.

The Emergency Obstetric box is kept separate from the PPH drug box since the emergency Obstetric box can be used for other emergencies eg. in eclampsia where the Eclampsia drug box is used along with the Emergency Obstetric box. Hence the Obstetric emergency box can be used as a primary box in all obstetric emergencies. Secondly the PPH drug box is kept separate since Oxytocin and PGF2 alpha have to be stored at 4^0 C or less.

When should the box be used

The Obstetric emergency box should be kept in the vicinity of an obstetric patient needing resuscitation eg., PPH, eclampsia, sepsis, collapse etc. The PPH box is immediately fetched when there is either an anticipation/recognition of postpartum haemorrhage occurring.

How to maintain the box

The box should be clearly labeled as Obstetric emergency box

The boxes should be kept sealed with an adhesive

tape after checking all the contents according to the list pasted on the box.

The contents should be promptly refilled if the box has been opened for use according to the label provided on the box. The label should be replaced if wet or torn

The expiry date of all contents and drugs should be checked every week and also when contents are replaced.

The status of the box should be a part of handover both for nurses and doctors.

The contents of the box should be strictly utilized only for emergency purposes.

Appendix 1 : List of contents of the obstetrics emergency box

Box size : 20x15inches

Box type : Transparent plastic box

Emergency Obstetrics Drug Box

Contents	Number
IV Cannula	Gray # 1 Green #1
Blood sample bottles	Pink #1 Blue #1 Red #1
Syringes	20ml #2 10 ml #4 5 ml #2 2ml #6
Plaster to fix the cannula	1
Foley's Catheter size16	1
Urobag	1
Distilled water 10 ml	1
Infusion set	1
Blood set	1
Sterile gloves size 6½ Cotton swabs	1 pair
Pair of Scissors	1
Ringer lactate	1 unit
3 way	1
Oxygen mask	1
Airway (medium)	1

Appendix 2

PPH DRUG KIT

Box size : 5X5inches

Box type : Transparent plastic

(To be kept in the refrigerator)

Oxytocin	5 amps
Ergometrine	2 amps
PGF2 Alpha 250mcg	2 amps
Misoprostol 200 µg	4 tabs

Appendix 3

Eclampsia Kit

Box size : 10x10inches

Box type : Transparent plastic box

MgSO4 50%	10 amp
Syringes 20ml	
10 ml	12
Sterile water for inj	2
Cap Nicardia 5mg	4
Inj Calcium Gluconate	1

Shoulder Dystocia

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Shoulder Dystocia (SD) is the nightmare of obstetricians. Despite its low incidence, Shoulder Dystocia still represents a huge risk of morbidity for both the mother and fetus. Even though several studies showed the existence of both major and minor risk factors that may complicate a delivery, Shoulder Dystocia remains an unpreventable and unpredictable obstetric emergency. When it occurs, it is difficult to manage due to the fact that there are not univocal algorithms for its management. Nevertheless, even if it is appropriately managed, it is one of the most litigated cause in obstetrics, because it is frequently associated with permanent birth-related injuries and maternal complications.

Shoulder dystocia is defined as a vaginal cephalic delivery that requires additional obstetric manoeuvres to deliver the fetus after the head has delivered and gentle traction has failed. Typically SD is heralded by the classic "turtle sign": after the fetal head is delivered, it retracts back tightly against the maternal perineum. An objective diagnosis of a prolongation of head-to-body delivery time of more than 60 seconds has also been proposed. Shoulder dystocia occurs when either the anterior, or less commonly the posterior, fetal shoulder impacts on the maternal symphysis, or sacral promontory, respectively.There is a wide variation in the reported incidence of shoulder dystocia. Studies involving the largest number of vaginal deliveries (34 800 to 267 228) report incidences between 0.58% and0.70%[1]. There can be significant perinatal morbidity and mortality associated with the condition, even when it is managed appropriately. Maternal morbidity is increased, particularly the incidence of postpartum haemorrhage (11%) as well as third and fourth-degree perineal tears (3.8%). Their incidences remain unchanged by the number or type of manoeuvres required to effect delivery. Brachial plexus injury (BPI) is one of the most important fetal complications of shoulder dystocia, complicating 2.3% to 16% of such deliveries. Most cases of BPI resolve without permanent disability, with fewer than 10% resulting in permanent neurological dysfunction[2]. Shoulder dystocia is an obstetric emergency, and fetal demise can occur if the infant is not delivered, due to compression of the **umbilical cord** within the birth canal.

Mechanism

The reason shoulder dystocia occurs is a mechanical one. During the fetal head's cardinal movements of descent, flexion, and internal rotation within the bony pelvis, the shoulders descend to reach the pelvic inlet. During the head's subsequent extension, delivery, and external rotation, prior to final expulsion, the shoulders need to rotate within the bony pelvis in a winding fashion to end in the most accommodating dimension of the pelvis, its oblique diameter. If either the fetal shoulder dimensions are too large or the maternal pelvis is too narrow to permit shoulder rotation to the oblique pelvic diameter, or both, persistent anterior-posterior orientation of the fetal shoulders may result in the anterior shoulder being obstructed behind the symphysis pubis, impeding delivery. This leads to shoulder dystocia. If the sacral promontory also obstructs the posterior shoulder, bilateral (and more difficult) shoulder dystocia occurs.

Risk Factors

Clinicians should be aware of existing risk factors in labouring women and must always be alert to the possibility of shoulder dystocia.

Antepartum risk factors for shoulder dystocia are listed below in order of importance :

- History of shoulder dystocia in a prior vaginal delivery
- Fetal macrosomia (having a disproportionately large body compared to head) Diabetes/ impaired glucose tolerance (false positive glucose challenge test)
- Excessive weight gain (>35 lb) during pregnancy
- Obesity (body mass index >25)

Post term pregnancy

Intrapartum risk factors are as follows :

- Precipitous second stage (< 20 min)
- Operative vaginal delivery (vacuum, forceps, or both)
- Prolonged second stage
- Without regional anesthesia (>2 h for nulliparous patients, or > 1h for multiparous patients)
- With regional anesthesia (>3 h for nulliparous patient, >2 h for others)

Induction of labor for impending macrosomia Based upon level A evidence ACOG states that "the diagnosis of fetal macrosomia is imprecise." The ACOG also states that"for suspected fetal macrosomia, the accuracy of estimating fetal weight using fetal biometery is no better than that obtained by clinical palpation (Leopold'maneuvers)"[3]. Maternal obesity is associated with macrosomia and thus, obese women are at risk for shoulder dystocia."

Prevention

According to RCOG Induction of labour does not prevent shoulder dystocia in non-diabetic women with a suspected macrocosmic fetus. However Induction of labour at term can reduce the incidence of shoulder dystocia in women with gestational diabetes.Elective caesarean section should be considered to reduce the potential morbidity for pregnancies complicated by pre-existing or gestational diabetes,regardless of treatment with an estimated fetal weight greater than 4.5 kg.[4] The NICE diabetes guideline recommends that pregnant women with diabetes who have a normally grown fetus should be offered elective birth through induction of labour, or by elective caesarean section if indicated, after 38 completed weeks[5]. ACOG recommends that diabetic patients with estimated fetal weight greater than 4500 grams and estimated fetal weight of 5000 grams in women without diabetes may be offered prophylactic caesarean delivery.[3] The rate of shoulder dystocia in a woman who had previous shoulder dystocia is 10 times higher than the rate in general population ranging between 1% and 25% [6]. Either a vaginal delivery or caesarean section can be appropriate after a previous shoulder dystocia. The decision should be made after considering factors such as the severity of any previous neonatal or maternal injury,predicted fetal size and maternal choice. ACOG states that 'because most subsequent deliveries will not be complicated by shoulder dystocia,the benefit of universal elective caesarean delivery is questionable in patients who have history of shoulder dystocia"

Two-dimensional sagittal view of shoulder dystocia where anterior shoulder is impeded behind the symphysis.

Management

Diagnosis

All birth attendants should be aware of the methods for diagnosing shoulder dystoia and the techniques required to facilitate delivery. The attendant health provider should routinely observe for :

- difficulty with delivery of the face and chin
- the head remaining tightly applied to the vulva or even retracting (turtle-neck sign)

- failure of restitution of the fetal head
- failure of the shoulders to descend.

Routine traction in an axial direction can be used to diagnose shoulder dystocia but any other traction should be avoided.

Ensure adequate personnel are present in the delivery room.

1. Experienced care provider
2. Two labor and delivery nurses

Notify, NICU neonatologist, and anaesthesiologist if the shoulder dystocia is suspected.

Ensure that the bed is in a lowered position or a stool is available to assist with specific maneuvers.

The care provider should discuss with the nursing personnel the sequence and maneuvers that might be performed.

Remember the mnemonic **BE CALM**, which outlines interventions for the nurse and provider, and stands for:

Breathe, do not push. Lower the head of the bed and encourage the woman to breathe or pant.

Elevate the legs into McRobert's position. McRoberts Maneuver is hyperflexion and abduction of the maternal hips. This procedure straightens the lumbar sacral angle and rotates the symphysis pubis anteriorly to dislodge the anterior shoulder.

Call for help. Initiate emergency plan; includes, but not limited to, the following:

- Additional nursing staff (prepare for newborn resuscitation)
- Physician able to perform c-section
- Anesthesia provider
- Pediatric provider
- Respiratory therapy (assist with newborn resuscitation).

Apply suprapubic pressure (NOT fundal pressure).

En**l**arge the vaginal opening. Provider may perform a large episiotomy when additional

maneuvers are necessary to allow for more room.

Maneuvers - additional maneuvers may be needed as listed below :

- Delivery of the Posterior Arm
- Woods Corkscrew
- Rubin
- Gaskin
- Zavanelli

These maneuvers are designed to rotate the baby NOT to pull on the shoulders, which may result in birth trauma.

Nurse audibly signals each one (1) minute interval after delivery of fetal head (due to decreasing fetal pH of 04. per minute, making resuscitation very difficult after seven (7) minutes.

CAUTION : NEVER USE FUNDAL PRESSURE as it may further worsen impaction of shoulder and may result in uterine rupture.

Protocol

Step 1.

Inform those in the room of the clinical condition and ask for cooperation; **call for assistant to help with the delivery**; ask that Anesthesiology and Neonatology should be summoned into the room. Have someone **note the exact time** and signal each minute of time that passes. Avoid forceful downward traction on the fetal head while attempting to deliver the infant. Fundal pressure is not useful and is counterproductive.

Communicate with those in the room (charge nurse; patient, and family).

Clear the room of all unnecessary items and have a step stool available.

Ensure the patient's bladder is empty.

Step 2.

First Line Maneuvers : First line maneuvers may be done alone, in combination, or in sequence.

McRobert's Maneuver : Have assistants sharply flex the patient's legs against the abdomen (this results in straightening of the sacrum relative to the lumbar vertebrae with a cephalic rotation of the pelvis).

Suprapubic Pressure : Have an assistant apply a moderate suprapubic pressure obliquely to

the anterior shoulder (This may help to dislodge the impacted anterior shoulder).

Episiotomy : If not performed previously, perform generous episiotomy or extend existing episiotomy as needed and repeat McRobert's maneuver and suprapubic pressure (although the perineum is not the cause of the shoulder dystocia, an episiotomy can facilitate the performance of subsequent maneuvers and delivery).

Step 3.

Second Line Maneuvers : May be done in any sequence according to need.

Delivery of the Posterior Arm : Introduce a hand into the vagina along the fetal posterior humerus; maintain flexion at the elbow and sweep the arm across the fetal chest; the fetal hand is then grasped and the arm extended along the side of the face; the posterior arm is then delivered from the vagina (mechanism: the shoulders are rotated into an oblique diameter and subsequent delivery of the anterior shoulder and infant may be completed).

Woods Corkscrew Maneuver : Place a hand behind the posterior shoulder and rotate the posterior shoulder 180 degrees (this rotation will "corkscrew" the fetus out of the vagina).

Rubin Maneuver : Place a hand on the most easily accessible shoulder and push the shoulder toward the anterior surface of the fetal chest (this may result in abduction of both fetal shoulders and decrease the shoulder to shoulder dimension freeing the impacted anterior shoulder).

Repeat first and second line maneuvers if the infant remains undelivered (repeating the maneuvers, listed in step 2 and 3 should be tried before proceeding to the following extraordinary maneuvers).

Note : There is no conclusive evidence that any particular management sequence is superior to another once the shoulder dystocia occurs. However, performance of McRobert's maneuver is a reasonable initial approach.Gaskin position or "all fours"position help to resolve shoulder dystoia by moving t**he labouring patient to her hands and knees**. The "all fours" position exploits the effects of gravity and increased space in the hollow of the sacrum to facilitate delivery of the posterior shoulder and arm.

Step 4.

Extraordinary Maneuvers

Last effort maneuvers that only should be used when the above steps are unsuccessful.

Fracture of the clavicle : Deliberate fracture of the clavicle may be accomplished by pressing the anterior clavicle against the ramus of the pubis. Fractures of the clavicle usually heal rapidly without permanent sequelae.

Cephalic replacement : (Zavanelli maneuver) return the fetal head to the OA or OP position; flex the fetal head and slowly push it back into the vagina. Uterine relaxation may be required for this maneuver, which is followed by emergency cesarean section.

Abdominal rescue : If all maneuvers fail and unable to replace the fetal head into the vagina, a cesarean section can be performed to manually rotate the anterior shoulder into the oblique diameter; vaginal delivery is then accomplished (this results in a prolonged head-to-delivery interval and requires two skilled delivery attendants).

Symphysiotomy : This should only be performed by individuals who have knowledge and experience in this procedure[7].

Tips

Insert fingers prior to attempting delivery to ensure proper assessment of the shoulder orientation.

Use fetal maneuvers as the *initial* management of some shoulder dystocia deliveries to become adroit and remain competent and facile at them.

During McRoberts maneuver, suprapubic pressure, or both, keep traction to the head limited in magnitude and directed axially as much as possible. Avoid repeating attempt at traction, as they are likely to increase in magnitude and increase the risk for brachial plexus injury.

Be aware that McRoberts maneuver and suprapubic

pressure are less effective in patients who are obese because of additional soft tissue preventing full abduction of the thighs against the abdomen and transmission of pressure applied by ancillary personnel to the anterior shoulder.

Unless room is needed posteriorly to perform fetal maneuvers, an episiotomy is not needed and is potentially damaging to the patient's perineum

Complications

The major concern of shoulder dystocia is damage to the upper brachial plexus nerves. These supply the sensory and motor components of the shoulder, arm and hands.[2] The aetiology of injury to the fetus is debated, but a probable mechanism is manual stretching of the nerves, which in itself can cause injury. Furthermore, excess tension may physically tear the nerve roots out from the neonatal spinal column, resulting in total dysfunction. The ventral roots (motor pathway) are most prone to injury, as they are in the plane of greatest tension (anterior, sensory nerves are somewhat protected due to the usual inward movement of the shoulder). Klumpke paralysis, Erb's Palsy, Fetal hypoxia, Fetal death, Cerebral palsy. Maternal post partum hemorrhage are the main complications.

Documentation

Documentation should be accurate and comprehensive.

It is important to record within the birth record the :

- time of delivery of the head and time of delivery of the body
- anterior shoulder at the time of the dystocia
- manoeuvres performed, their timing and sequence
- maternal perineal and vaginal examination
- estimated blood loss
- staff in attendance and the time they arrived
- general condition of the baby (Apgar score)
- umbilical cord blood acid-base measurements
- neonatal assessment of the baby.
- It is particularly important to document the position of the fetal head at delivery as this facilitates identification of the anterior and posterior shoulder during the delivery

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Umbilical Cord Prolapse

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Introduction :

Umbilical cord prolapse is one of the few obstetric events that can transform a normal labour and delivery into a tragic outcome, as delay in management is associated with a significant increase in neonatal morbidity and mortality. High perinatal mortality rate is expected with cord prolapse occurring outside hospital. However even in hospital set up, reports have suggested that even if the neonates were delivered immediately, the complication rates remained elevated. Thus understanding of its predisposing factors can assist in speedy diagnosis and treatment. Although cord compression occurs routinely in normal labors and is commonly seen during fetal heart rate monitoring, severe cord occlusion can result in dangerous alterations in fetal and placental circulation. Prolapse of the umbilical cord to a level at or below the presenting part exposes the cord to intermittent compression between the presenting part and the pelvic inlet, cervix, or vaginal canal. Compression of the umbilical cord compromises fetal circulation and, depending on the duration and intensity of compression, may lead to fetal hypoxia, brain damage, and death.

Definition and types - *Umbilical cord prolapse* is defined as]descent of the umbilical cord into the lower uterine segment, where it may lie adjacent to the presenting part (occult cord prolapse) or below the presenting part (overt cord prolapse).

Cord presentation is defined as the presence of the umbilical cord between the presenting part of the fetus and the cervix. In both conditions a loop of the cord is below the presenting part. The difference is in the condition of the membranes; if intact it is cord presentation and if ruptured it is cord prolapse.

Incidence - The incidence of umbilical cord prolapse reported in the literature ranges from 0.1% to 0.6%. In the case of breech presentation, the incidence is slightly higher than 1%. It has been reported that male fetuses appear to be predisposed to cord prolapse. The incidence is influenced by population characteristics and is higher where there is a large percentage of multiple gestations. In the early to mid-1900s, the fetal mortality rate ranged between 32% and 47%. Since then, fetal mortality has decreased significantly both as a result of the more liberal use of cesarean delivery and improved neonatal resuscitation and care. In the last 2 decades, perinatal mortality rates reported in association with umbilical cord prolapsed have decreased to less than 10%.

Risk factors - Over 70 years ago, Mengert mentioned that umbilical cord prolapse was nearly impossible if all three of the following conditions were met: intact membranes, average length umbilical cord (50 cm), and presenting parts filling the pelvic basin. In recent literature, the umbilical cord length is not emphasized or discussed as an important contributor to umbilical cord prolapse. The most widely accepted risk factor is the clinical situation in which the maternal pelvis is incompletely filled by the presenting part (precluding the complete occlusion of the cervical canal), thus placing the woman at risk for umbilical cord prolapse at the time of labor and membranes rupture (Table 1). However, some authorities have also speculated that cord abnormalities (such as true knots or low content of Wharton's jelly) and fetal hypoxia–acidosis may alter the turgidity of the cord and predispose to prolapse.

Table 1 : Risk factors for umbilical cord prolapse –

Fetal factors	Maternal factors	Obstetric manipulation	Others
Abnormal presentation Twin gestation Male fetus Birth weight less than 1500g Prematurity (birth <37 weeks gestation) Polyhydramnios Fetal anomaly	Grand multiparity Abnormal pelvis Unengaged presenting part	Amniotomy Placement of internal monitors External cephalic version Manual rotationInternal podalic version	Abruption Previa Abnormal (>80 cm) long umbilical cord

Ante partum diagnosis – Cord presentation before rupture of membranes is a predisposing factor to umbilical code prolapse. This is visualized on ultrasound in approximately 1 in 167 (0.6%) live births. The increased use of antepartum obstetric ultrasound, especially with color flow Doppler, has assisted in making the diagnosis of a presenting cord and preparing for cesarean delivery before overt or occult prolapse. However, routine ultrasound examination is not sufficiently sensitive or specific for identification of cord presentation antenatally and should not be performed to predict increased probability of cord prolapse, unless in the context of a research setting. In two Canadian studies, cord prolapse was preceded by the identification of cord presentation at routine ultrasound (real time with colour mapping) in only 12.5% of cases. Just one of 13 cases of suspected cord presentation developed cord prolapse. Some authors advocate selective screening for cord presentation in those with suspected fetal malpresentation or with a poorly applied presenting part at term. These authors suggest that if a cord presentation is discovered, the woman should be admitted to the hospital and consideration given to elective cesarean delivery to avoid complications of umbilical cord prolapse.

Prevention

i) Identification/awareness of risk factors - One study evaluated outcomes in 29 women with transverse or unstable lie after 37 weeks of gestation. When managed expectantly as outpatients, five (17%) eventually presented in labour with a persistent transverse lie. Major complications included two prolapsed cords and one neonatal death. Therefore with transverse, oblique or unstable lie, elective admission to hospital after 37+6 weeks of gestation should be discussed and women should be advised to present quickly if there are signs of labour or suspicion of membrane rupture. Women with noncephalic presentations and preterm prelabour rupture of the membranes should be offered admission.

ii) Artificial rupture of membranes (ARM) should not be done when the station is high. If ARM is essential to manage a difficult obstetric situation and the head is not engaged and high the following process is to be followed: (a) controlled ARM by senior medical staff / midwife AND (b) ensure emergency theatre is available prior to ARM. The same procedure should take place in the situation of polyhydramnios.

Diagnosis - The diagnosis of cord prolapse should be suspected when prolonged fetal bradycardia or repetitive moderate to severe variable decelerations occur in the setting of ruptured membranes. The diagnosis is confirmed when the umbilical cord is palpated in the vagina below the presenting part or, more rarely, when it is visualized in the vagina during a speculum examination. Because ruptured membranes are a prerequisite for umbilical cord prolapse, a careful digital examination should be performed both before amniotomy (to detect a cord presentation) and after amniotomy (if fetal bradycardia occurs). Mean cervical dilation at diagnosis of umbilical cord prolapse is approximately 5 cm in most series.

In the presence of predisposing risk factors a vaginal examination should always be performed after the

membranes rupture spontaneously or if a fetal bradycardia occurs after rupture of membranes.

Management of umbilical cord prolapse at viable gestation :

The contemporary obstetric management of umbilical cord prolapse with a viable pregnancy is generally prompt delivery. If the woman is in the first stage or early second stage of labor, cesarean delivery is recommended. If the prolapse occurs during the second stage, operative vaginal delivery can be considered. Following is the outline of management.

- *Call for assistance* - When cord prolapse is diagnosed before full dilatation, assistance should be immediately called and preparations made for immediate delivery in theatre.
- Note the time
- *Position the woman* - The patient should be immediately repositioned in knee-chest position (Fig.-1), which reduces the pressure of the presenting part on the cord. If the patient is unable to assume the knee-chest position because of epidural or body habitus, or for patient comfort during prolonged positioning, steep Trendelenburg position or exaggerated Sims position also may be used. In exaggareted Sims position the woman lies on her left side in semiprone position with her right knee and thigh drawn up. Her left arm lies along her back while the hips and buttocks are elevated on pillow.This relieves pressure on umbilical cord. Oxygen should be administered to the mother.

Figure 1 : Knee-chest position to relieve cord compression during cord prolapse emergency. (Bennet VR, Rrown LK [eds]: Myles Textbook for Midwives, p 408. 11th ed. New York, Churchill-Livingstone, 1978.)

- *Cord management* – (a) cord protrudes from the vagina – Cord should be replaced back to the vagina if possible. However, overhandling of the umbilical cord increases the risk of cord compression and vasospasm. If cord can not be replaced inside the vagina with minimal handling, apply warm normal saline soaked gauge over it as reduction of temperature and cooling can cause spasm of the cord. (b)Cord remains inside the vagina –Digital pressure should be applied to the presenting part as elevation of the presenting part decreases decompression of the cord. Vaginal dilatation, presentation and station should be assessed to determine the mode of delivery. Palpation for cord pulsation will provide useful information regarding fetal well being. (c) In certain circumstances (i.e. when there is likely to be a long delay before delivery), urinary bladder may be filled with fluid to elevate the presenting part off the compressed cord. Bladder filling can be achieved quickly by inserting the end of a fluid giving set into a Foley's catheter. The catheter should be clamped once 500–750 ml has been instilled. It is essential to empty the bladder again just before any delivery attempt, be it vaginal or caesarean section.
- *Fetal heart monitoring* – Fetal heart should be auscultated as soon as possible. Continuous fetal heart rate monitoring should be initiated to allow constant assessment of fetal well being. An ultrasound should be done immediately if no cord pulsation can be felt or fetal heart can not be found on auscultation .
- *Intravenos therapy* – Ceasing oxytocin may decrease contractions which cause pressure on cord. So oxytocin infusion, if any, should be stopped immediately. Intravenous canulla to be inserted to commence compound sodium lactate solution intravenously.
- *Tocolysis* - As uterine contractions can exacerbate cord compression tocolysis is advocated to inhibit uterine activity. Injection Terbutalin 250 mic gm can be considered for women in established labor.
- *Mode of delivery* - Caesarean section is associated with a lower perinatal mortality and reduced risk of Apgar score less than three at 5

minutes compared with spontaneous vaginal delivery in cases of cord prolapsed when delivery is not imminent. However, when vaginal birth is imminent, outcomes are similar or better when compared with caesarean section. Thus caesarean section is the recommended mode of delivery in cases of cord prolapse when vaginal delivery is not imminent, to prevent hypoxia–acidosis. In presence of fetal heart alteration caesarean section should be performed with the aim of delivering within 30 minutes or less. In such situation verbal consent is satisfactory. With modern techniques, the complications of general anaesthesia are rare but still higher than for regional anaesthesia. If fetal heart rate pattern is normal, regional anaesthesia may be considered in consultation with an experienced anaesthetist. Vaginal birth, in most cases operative, can be attempted at full dilatation if it is anticipated that delivery would be accomplished quickly and safely. Breech extraction can be performed under some circumstances, such as after internal podalic version for the second twin. Neonates born live after cord prolapse are highly likely to require resuscitation, as evidenced by a high rate of low Apgar scores; 21% at 1 minute and 7% at 5 minutes. A practitioner competent in the resuscitation of the newborn should attend all deliveries with cord prolapse. Paired cord blood samples should be taken for pH and base excess measurement.

Conservative management of umbilical cord prolapse at previable gestation

At extreme preterm gestational age (before 24 weeks), temporary measures have been recorded for periods up to 3 weeks. Prolongation of pregnancy at such gestational ages creates a chance of survival but morbidity from prematurity remains a frequent serious problem. There are few case reports describing the conservative management of cord prolapsed (prolapse to delivery interval > 24 hours) to prolong gestation in periviable pregnancies. Expectant management should be discussed for cord prolapse complicating pregnancies with gestational age at the limits of viability. Uterine cord replacement may be attempted.

Documentation – Detailed notes of the incident should be documented in the medical records.

Support and debriefing (by senior medical staff) - After severe obstetric emergencies, women might be psychologically affected with postnatal depression, post-traumatic stress disorder or fear of further childbirth. Women with cord prolapsed who undergo urgent transfer to hospital might be particularly vulnerable to emotional problems. Debriefing is an important part of maternity care and should be offered by a professional competent in counselling.

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Chorioamnionitis in Pregnancy

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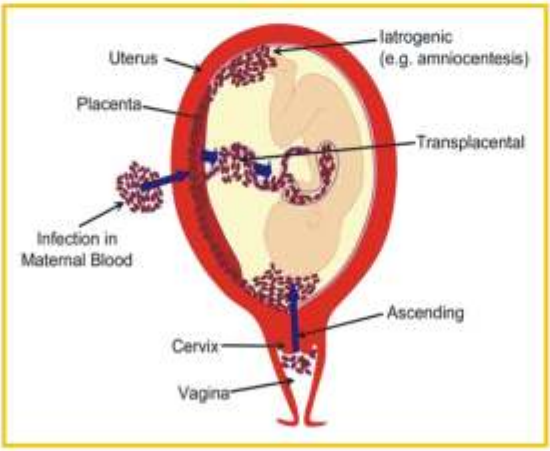
Chorioamnionitis is an acute inflammation of the membranes amnion and chorion due to polymicrobial bacterial infection.

Incidence :

Its incidence is from 1 to 4% of all pregnancies. It is much higher in preterm pregnancies than term pregnancies.

Routes of infection :

Ascending in fection from the lower genital tract i.e. cervix and vagina is the most common route. This occurs most commonly in the presence of rupture of membranes, but is also possible with intact membranes. Other routes of infection include hematogenous (blood borne) or transplacental infection, retrograde infection from the pelvis, and transuterine infection caused by medical procedures, such as amniocentesis and chorionic villus sampling (CVS), but all these are comparatively rare. These are shown in figure below.[1]



Organisms :

Infection is usually polymicrobial and in a majority of cases is caused by a combination of anaerobic and aerobic bacteria. The pathogens that are most frequently isolated in the amniotic fluid of patients with chorioamnionitis are those that are found in the vaginal flora, including *Ureaplasma urealyticum, Mycoplasma hominis, Gardnerella vaginalis, Bacteroides, Group B streptococci, Peptococcus, Peptostreptococcus*, and *Escherichia coli.* In hematogenous route of infection Listeria monocytogens is isolated.

Epidemiology :

Several risk factors for chorioamnionitis are identified. They are as follows :

A : Labour characteristics :

- PROM, PPROM – It is the most common etiology
- Prolonged labour
- Induction of labour
- Multiple vaginal examinations
- Meconium stained amniotic fluid
- Internal monitoring during labour (rare in our country)

B : Personal characteristics :

- Nulliparity (Length of labour is increased)
- Teenage pregnancy (due to social or lifestyle factors)
- Short cervix
- Bacterial vaginosis
- Asymptomatic or untreated bacteriuria
- Low socioeconomical status (malnutrition-less immunity, poor hygiene)
- Smoking, alcohol, drug abuse (uncommon in our country)
- Coitus during late pregnancy.
- Poor oral hygiene
- Obesity

Pathogenesis :

Entry of organisms can create initial infection of the chorion and adjacent decidua in the area overlying internal os. Then progression leads to full thickness involvement of the membranes chorion and amnion. Organisms then spread along

the chorioamniotic surface and infact the amniotic fluid. Subsequently there is inflammation of umbilical cord-funisitis. Fetal infecton then results from aspiration, swallowing, hematogenous route or other direct contact with infected amniotic fluid.

After colonizing the uterine cavity, bacteria not only infect the fetus but also release endotoxins that, in sufficient quantities, are believed to initiate a maternal and fetal inflammatory response. Bacterial endotoxins trigger a release of cytokines in maternal and fetal tissue that leads to a release of additional cytokines, leukocyte migration, and then prostaglandin release from the myometrium and fetal membranes. This prostaglandin release, which can lead to rupture of the fetal membranes and/or to the initiation of uterine contractions and preterm labour.

As part of this inflammatory response, the fetus appears to have a particularly "exuberant" production of cytokines (interleukins-1 and -6; tumor necrosis factor-á). It is believed that these cytokines are involved in initiating necrosis of white matter in the fetal brain and to long-term neurologic sequelae, including Cerebral Palsy.

In an early study on this relationship, chorioamnionitis was associated with nearly a five-fold increase in the risk of CP. A meta-analysis of approximately 30 studies that was conducted in 2000 also found an association between chorioamnionitis and development of PVL-Periventricular leucomalacia (relative risk [RR], 3.0; 95% confidence interval [CI], 2.2-4.0) and cerebral palsy in the preterm (RR, 1.9; 95% CI, 1.4-2.5) and term (RR, 4.7; 95% CI, 1.3-16.2) neonate. Newer studies have supported these findings and found that chorioamnionitis is an independent risk factor for CP not only among preterm infants, but among term and near-term infants as well (odds ratio [OR], 4.1; 95% CI, 1.6-10.1).[2]

Risks :

Maternal :

- Increased chances of Cesarean section
- Increased chances of dysfunctional labour
- Increased chances of PPH
- Chorioamnionitis in mother can lead to infectious morbidity like wound infection, endomyometritis and pelvic abscess.
- Rarely septic shock, DIC, ARDS and maternal death can occur.

Perinatal :

Neonatal sepsis – Signs and symptoms of neonatal sepsis are often nonspecific and subtle. Neonate may demonstrate behavioural abnormalities such as lethargy, hypotonia, weak cry and poor sucking.

Fetal Inflammatory Response syndrome(FIRS) - FIRS is associated, particularly among preterm neonates of multiorgan injury, chronic lung disease, periventricular leucomalacia, cerebral palsy and death.

Diagnosis : Usually it is clinical based on signs and symptoms as follows :

Mother :

- Fever is the most important for diagnosis. Fever of > 100.4^0 F (38^0 C)

  Any fever of > 100.4^0 F persistent for more than 1 hour warrants evaluation.
- Tachycardia (>100 bpm)
- Uterine tenderness (fundal tenderness)
- Malodorous or foul smelling vaginal discharge

Fetal :

- Fetal tachycardia > 160 bpm.
- USG : Decreased Biophysical pofile(BPP), Lack of fetal breathing.

  Hyperechogenic free floating material in amniotic fluid.

  Sensitivity of different clinical parameters for diagnosis of chorioamnionitis is shown in table below.[1]

Clinical parameter	Description	Sensitivity
Fever	➢ 100.4 F twice	95-100% sensitive
Maternal Tachycardia	➢ 100/min	50-80% sensitive
Fetal Tachycardia	➢ 160/min	40-70% sensitive
Fundal tenderness	Tenderness on palpation	4-25% sensitive
Vaginal discharge	Foul smelling discharge	5-22% sensitive

Laboratory :

- Leucocytosis (>15,000/uL), Increased C reactive protein (CRP) in mother.
  Leucocyte count may increase if mother is given steroids to prevent RDS in preterm gestation , but C reactive protein remains unaffected.
- Commonly used screening tests for septic neonate are : leucopenia (< 5,000/uL) , leucocytosis (>30,000/uL), markedly diminished neutrophil count (500-1500 /uL, and an immature – total neutrophil ratio (>0.3 -0.4)

Amniotic fluid parameters : Being invasive amniocentesis is not routinely done. It itself can lead to chorioamnionitis or other complications like preterm labour, rupture of membranes or rarely placental separation.

Amniotic fluid assessment include gram staining (positive), leucocyte count (increased), glucose estimation (<15 mg/dl, increased IL-6 > 7.9ng/ml) and leucocyte esterase(positive).

Amniotic fluid culture is the diagnostic but reports are not available upto 3 days. Nonculture based molecular detection of microbes in amniotic fluid and cervicovaginal secretions is under research and may be available in future.

Histological diagnosis of chorioamnionitis is characterized by number of polymorphonuclear leucocytes per high power field. Histological diagnosis is sensitive (83-100%) but not specific (23-52%).

Differential diagnosis :

A. infections :- Respiratory tract infection, urinary tract infection, viral infections, Appendicitis
B. Noninfectious causes :- Placental abruption, red degeneration of fibroid, colitis, Thrombophlebitis
C. Epidural fever (when epidural catheter is inserted for painless labour)

Management :

Prevention :

- Expectant management of preterm PROM is a major cause of chorioamnionitis. So strictly no P/V examination and P/S examination only if necessary with complete aseptic precautions should be carried out.
- Unnecessary P/V examinations in labour should be avoided.
- Membranes in labour should not be ruptured unless there is compelling evidence to do so.
- In cases of PROM beyond 34 weeks, induction of labour is recommended.
- In cases of PPROM with conservative management adequate broad spectrum antibiotic cover should be instituted, awaiting report of vaginal swab culture.
- In western countries as per new CDC guidelines (2010) screening for GBS infection at 35-37 weeks is practiced.[3]

Clinical management :

Early diagnosis, adequate antibiotic cover and prompt delivery is the mainstay of treatment.

Ampicillin + Gentamycin + Metrogyl take care of almost all common organisms responsible for causing chorioamnionitis.[4] Due to Ampicillin resistant E. coli infections third generations cephalosporins e.g.Cefotaxime is now commonly used. Mothers who are allergic to peniciilin group, Clindamycin can be given. Clindamycin has an added advantage of covering Ureaplasma group. Antibiotics are substituted once culture reports are available.

Intravenous antibiotics are given for 24 hours after fever has subsided or till delivery and then oral antibiotics are given.[5] Cochrane Reviews has cautioned against use of Amoxicillin + Clavulinic acid combination due to increased risk of neonatal necrotising enterocolitis.[6]

Antipyretics to treat fever are administered, because fetal acidosis in the setting of fever is associated with increased incidence of neonatal encephalopathy. For first 48 hours frequent assessments of mother should be done and supportive care as necessary is given.

If there is no obstetric indication for caesarean

section, labour is induced by prostaglandins and augmented by oxytocin appropriately. Shortening the time between diagnosis of chorioamnionitis and delivery by doing caesarean section has not shown to improve maternal or perinatal outcomes and may increase maternal morbidity.[7,8] Steroid administration to prevent RDS can be given in< 34 weeks gestation. It does not further increase the risk of infection if patient is under antibiotic cover.[9,10]

Immediate care of the septic neonate include warmth, monitoring of vital signs, preparedness to perform a full resuscitation including intubation and positive pressure ventilation. Further treatment if required include treatment of hypotension, shock and respiratory &/ metabolic acidosis, surfactant replacement therapy, Glucose homeostatsis and assessment and treatment of thrombocytopenia and coagulopathy.

Key points :

- Chorioamnionitis typically occurs in a setting of prolonged rupture of membranes or prolonged labour.
- Diagnosis is usually clinical and fever of > 100.4 F is most important
- Chorioamnionitis is associated with postpartum maternal infections and potentially devastating fetal complications including premature births, neonatal sepsis and longterm pulmonary and neurological complications.
- Optimal management of chorioamnionitis includes antibiotic therapy and delivery. Cefotaxim + Gentamycin +Metrogyl should be used to cover all common organisms.
- Shortening the time between diagnosis and delivery by doing CS has been shown not to improve outcome.
- Silent chorioamnionitis can exist and may be the cause of preterm births or PPROM. Conversely the woman with chorioamnionitis may appear ill, even toxic and may be in shock.
- Longterm prognosis for the mother is excellent and future fertility is rarely compromised.

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Vaginal Birth after Cesarean Section

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Introduction

Vaginal Birth after Cesarean Section (VBAC) versus Elective Repeat Cesarean Section (ERCS) has been one of the most discussed and debated topics over the last several decades due to a global rise in primary CS rates both in developed and developing countries and in the public and private sector. Current evidence suggests that this trend will continue to rise exponentially. Worldwide, barring Sub-Saharan Africa C-Section rates have almost quadrupled in the last two decades[1,3]. In USA the incidence was 5.5% in 1970[2] rising to 24.4% in2001 and 32.3% in 2008[4,5]. **ERCS alone contributes to more than 30% to this rising trend. A potential approach to reverse this rising trend is an attempt to reduce the incidence of ERCS, with increasing recourse to VBAC[6]. In properly selected patients VBAC can be achieved safely and successfully provided adequate facilities are available for monitoring of both mother and fetus and emergency caesarean section.**

Maternal Risks of VBAC :

Neither repeat cesarean delivery nor trial of labor is risk free.

- **Rupture Uterus –** Even though the absolute risk is very low, uterine rupture is the major cause of short term (though often catastrophic) morbidity. Risk of rupture with planned VBAC is estimated to be 0.78% as compared to 0.026% in ERCS[31]. However to avoid one symptomatic uterine rupture 370 ERCS has to be performed.

  Risk of rupture depends on various factors like type of previous scar, previous rupture, number of previous CS, method of closure and sepsis.

Type of Previous Scar : With an H/O Low transverse incision, incidence of rupture is 20-150 / 10,000 [9], with H/O Classical C-section Scar – 200-900 / 10,000. Compared with ERCS trial of labor increases risk of uterine rupture by 2.7/10,000 cases.

Number of Previous-CS : Rates of hysterectomy and blood transfusion are more when VBAC is attempted in cases of more than one previous CS[10]. Risk of rupture is significantly higher in women with two prior cesareans than in women with one prior cesarean[32].

Method of Closure : A higher incidence of rupture with single layer closure has been reported[11,12]. The National Collaborating Center for Women's & Children's Health of RCOG recommends a double layer closure of the uterus pending further evidence[13].

- **Maternal Death :** Absolute Risk of Maternal Death – 1-2 /1, 00,000 with attempt at VBAC and 5-10/ 1,00,000 with ERCS[14]. Mortality is increased when emergency section is undertaken following a failed VBAC.
- **Maternal Morbidity :** The National Institute of Child Health and Human Development study (2004) shows that morbidity is increased in unsuccessful VBAC in comparison to successful VBAC[9].

Fetal Risks of VBAC : In the NICHD study the perinatal morbidity at term among women having a planned VBAC was 32/10,000 whereas in women undergoing ERCS it was 13/10,000[8]. Incidence of intra-partum Hypoxic ischemic encephalopathy is 78/ 10,000 in planned VBAC compared to 0/10,000 in ERCS. However there is

no data comparing effects of VBAC or ERCS on long-term squeal like cerebral palsy[8]. With ERCS intracranial hemorrhage incidence is 1 in 2750, with operative vaginal birth it is 1 in 600 – 900.

Mternal benefits of VBAC : AC is successful in72–76% cases selected for trial, and a successful VBAC is associated with-fewer complications, quicker recovery, less hospital stay, less expensive, psychologically more satisfying for the woman and devoid of risks associated with CS and anesthesia. There is also reduced risk of the possible future risks related to having multiple cesareans, (hysterectomy, bowel and bladder injury, transfusion, infection), and abnormal placental conditions (placenta previa and placenta accreta).

Fetal Benefits of VBAC - Less iatrogenic prematurity and RDS. Decreased risk of neonatal respiratory morbidity and decreased rates of NICU admission (4.9% in VBAC and 9.3% in ERCS)[15]. Decreased incidence of tachypnoea in new born (1.3-5% in VBAC and 2.4-6% in ERCS)[16]. Children born vaginally have lower incidence of asthma and pulmonary hypertension when compared to those born in CS[17].

Predictors of VBAC Success

Indications of Prior CS - as a predictor of success in subsequent VBAC :- CPD – Lowest success rate (60–65%), Fetal Distress – 2nd lowest success rate (69–73%), Non-recurring indications like Breech, Placenta praevia, herpes – highest success rate (77–89%)[18].

Prior Vaginal Delivery - Patients who have had a successful VBAC following a Cesarean Section have a very good chance of another successful and shorter duration of VBAC (93%)[10,19].

Induction of Labor - Patients with a history of CS when induced for labor have a 2-3 fold increased risk of another Cesarean Delivery compared to those presenting with spontaneous labor[20].

Condition of Cervix on Admission - The more advanced the cervical effacement and dilation at the initial presentation, the higher the rate of successful VBAC. Patients presenting with dilation of 4cm or more have an 86% rate of successful VBAC[21].

Inter–Delivery Interval - Inter-delivery interval of less than 19 months in patients with history of one previous CS is associated with decreased rate of successful VBAC in patients undergoing induction of labor[22]. An inter-delivery interval of 24 months or less is associated with a 2-3 fold increase in the risk of uterine rupture compared to an interval of more than 24 months[23]. A shorter inter-delivery interval is also associated with increased risks for placenta praevia and abruption[24].

Role of USG Thinning of the lower uterine segment is seen in patients with previous CS after 27th wk of gestation. 74% of women with lower segment thickness of less than 2 mm (detected by transvaginal USG) developed incomplete uterine rupture one wk before ERCS[25]. Thus women with a history of previous CS, abdominal pain, and sonographic finding of thinning of lower uterine segment with ballooning of membranes into the scar should suggest a diagnosis of uterine dehiscence and be offered ERCS to prevent a catastrophic complete uterine rupture brought about by labor contractions[26].

Mullerian Duct Anomalies : Vaginal delivery is common among women with mullerian duct anomalies who attempt VBAC but the rates of uterine rupture and other complication s are high. The incidence of uterine rupture is as high as 8%[12].

Other Factors with decreased probability of Success[33] : Increased maternal age, short stature, maternal obesity, maternal diseases like diabetes or hypertension, gestational age beyond 40 weeks, presence of recurrent indication like cervical dystocia, need for labor induction or acceleration and estimated fetal weight more than 3.5 kgs.

Candidates suitable for trial of labor following prior cesarean birth[27,34]

- One previous lower transverse CS delivery with vertex presentation, average sized baby and

preferably an engaged head.

- Adequate pelvis with no suspicion of even mild CPD.
- No other uterine scar.
- Prior section not following a prolonged labor and with a living child. No history of post-operative infectious morbidity.
- A favorable cervix at term.
- A physician who is competent to monitor labor and perform emergency CS should be available throughout labor.
- Availability of anesthetist, neonatologist and infrastructure for emergency surgery & blood transfusion.

External Cephalic Version (ECV) - This is not contraindicated in a woman with a previous scar if she is otherwise suitable for ECV and VBAC[35].

Contraindications of Trial of Labor

- More than one previous section
- Previous classical C-Section or J shaped or inverted T scar.
- Evidence of post-operative infective morbidity
- Fetal loss following prior CS.
- Obstetric indications like placenta praevia, abnormal lie of fetus, previous H/O uterine rupture, known or suspected CPD or any other complication of the present pregnancy like hypertension or diabetes that warrants urgent delivery.
- Uterine corrective operations and myomectomy (involving the endometrium) or hysterotomy
- Non-hospital setting

VBAC – Recommendations for Management

A conservative approach is wise -

- All patients should be adequately counseled. Unbiased, evidence based information regarding risks & benefits of VBAC should be given. An informed consent is mandatory.
- Only patients at term with history of one previous uncomplicated lower segment Cesarean Section with no complications & no contra-indications for vaginal birth should be given the option of VBAC.
- Review the operative notes of the prior CS to elicit the indication, type of uterine incision and complications, if any.
- VBAC should be planned in a hospital setting having facilities of continuous intrapartum monitoring, emergency CS and advanced neonatal resuscitation.
- A partogram is mandatory.
- There should be a low threshold for emergency CS. If in spite of adequate uterine activity, cervicometric progress is static for 2 hrs or more, or decent of head is inadequate early recourse to emergency CS can prevent rupture of uterus
- Continuous electronic FHM would be mandatory as an abnormal cardiotocograph is the earliest and most consistent finding in uterine rupture.
- In women who are very obese or restless it is often difficult to asses uterine contractions by palpation and the use of intra-uterine pressure catheters to measure uterine activity would be advisable.
- Epidural analgesia is not contraindicated in planned VBAC as it does not mask the signs and symptoms of uterine rupture. In the NICHD study planned VBAC success rate in patients receiving epidural analgesia was 73.4% in comparison to only 50.4% in those not receiving epidural analgesia[28].
- Induced labours tend to be prolonged, require augmentation and are therefore associated with increased risk of rupture (0.4% for spontaneous labor, 0.9% for augmented labor, 1.1% for oxytocin alone and 1.4% with prostaglandins). Induction/augmentation though not contra-indicated should always be decided by a senior consultant after proper obstetric assessment. Oxytocin if required should be used extremely cautiously and under continuous supervision. If

augmentation is decided upon oxytocin is to be used only if uterine activity is clearly inadequate and great care must be taken to avoid uterine hyper stimulation. Augmentation should be titrated to achieve not more than 3-4 contractions/10 minutes[29]. **ACOG contraindicates the use of prostaglandins for induction of labor in patients with previous CS because of a high incidence of scar disruption[34].** Mechanical methods like trans cervical Foley's catheter is a preferable method in a scarred uterus as it is not likely to cause hyperstimulation.

- Continuous surveillance throughout labor is mandatory to enable prompt detection and management of uterine rupture.

  The presence of any of the following should **NOT** be ignored.

  — Inadequate progress (cervical dilatation less than 1cm/hr) despite good uterine contractions and maternal effort, In-coordinate uterine activity, abnormal FHR(fetal bradycardia, late deceleration, reduced baseline variability), severe abdominal pain, particularly if persisting between contractions (sometimes in spite of epidural),,scar tenderness, Bandl's ring, supra-pubic tenderness, abnormal vaginal bleeding, cessation of uterine activity, hematuria, receding fetal part, chest pain, shortness of breath, hypotension or shock.

- Post-partum examination of uterine scar digitally is not recommended routinely as those cases that need surgical repair are usually symptomatic[30].

- Observe patient carefully for at least 2 hours after delivery.

Counselling

In modern obstetric practice the decision for an ERCS or VBAC should be a mutual decision between the obstetrician, patient and her husband after assessing the risks and benefits of both. The discussion should be tailored to the patient's individual circumstances so that she can choose her intended mode of birth based on personally relevant information. An informed consent has to be obtained.

With a history of prior cesarean birth, women need to be counseled on their likelihood of successful VBAC, risks of uterine rupture and availability of obstetric services in the community. Most women with a prior cesarean birth are candidates for a VBAC and should receive extensive counseling. Counseling should be done during the antenatal visits and should not be postponed to the last minute. This is particularly important in women planning large families[4].

Conclusion

1. In spite of the risks of uterine rupture (0.5-1.1%), VBAC remains an option for many patients with a history of CS, with a success rate of 75%[1]. Increasing recourse to VBAC, after careful selection of cases can potentially reduce the prevailing high Cesarean incidence. The NIH panel recognizes that VBAC is a reasonable option in women who have undergone a cesarean section[2].
2. Decision to undergo a trial of labor for CS should be individualized. Counseling and informed consent is of paramount importance. The choice between ERCS & VBAC, like every other medical decision, involves a fine balance between risks & benefits.
3. Misoprostol is contraindicated in previous CS as risk of rupture is 5.6%.
4. A cautious approach is advisable in cases of multi-fetal pregnancy, fetal macrosomia, multiple previous CS births, short inter delivery interval and induction of labor with an unfavorable cervix.
5. **VBAC IS SAFE, AND KEY TO SUCCESS IS – PROPER COUNSELLING, CAREFUL SELECTION OF CANDIDATES, VIGILANT MATERNAL & FETAL MONITORING, LOW THRESHOLD FOR INTERVENTION, AND AVAILABILITY OF FACILTIES FOR IMMEDIATE CESAREAN SECTION.**

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Cardiotocography in Labour Room - Do, Interpret and Act

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Background

Cardiotocography (CTG) or electronic fetal monitoring (EFM) is the most widely used technique for assessing fetal well-being in labor in the developed world. The primary purpose of fetal surveillance by CTG is to prevent adverse fetal outcomes.

In today's modern era it's irrational usage, wrong interpretations, delayed intervention has led to unnecessary increases in cesarean or operative vaginal deliveries[1]. At some places it is widely used, whether required or not, and at some places still the traditional method of monitoring is used using a stethoscope. So one has to understand when to use CTG, how to interpret it, and what appropriate action is to be taken for that clinical situation so that a good obstetric care is given and intrapartum hypoxia is prevented.

Pathophysiology

Blood flow from the maternal circulation is momentarily interrupted during a contraction. Clinical and experimental data indicate that fetal death occurs when 50% or more of transplacental oxygen exchange is interrupted, hypoxia can easily occur. A normal fetus can withstand the stress of labor without suffering from hypoxia because sufficient oxygen exchange occurs during the interval between contractions. A fetus whose oxygen supply is marginal cannot tolerate the stress of contractions and will become hypoxic. During hypoxic conditions baroreceptors and chemoreceptors in the central circulation of the fetus influence the fetal heart rate(FHR) by giving rise to contraction-related or periodic FHR changes. The hypoxia will also result in anaerobic metabolism. Private and lactic acid accumulates, causing fetal acidosis. This FHR graph generated by the CTG helps us in the interpretation of the oxygenation status of the fetus.

History

It was way back in 17th century that fetal heart sounds (FHS) were first discovered by Marsac and Soon, Killian proposed that fetal heart rate could be used to determine fetal well being. This idea went unnoticed until 1818 when Kergaradee suggested that fetal heart sounds could be used to determine fetal viability and life (Grant, 1989). In 1833, Evory Kennedy published guidelines for fetal distress and recommended auscultation of the fetal heart rate as a tool of intrapartum monitoring. DeLee-Hillis foetoscope since its invention in 1924, remained at the forefront of intrapartum fetal monitoring for the next half-century.

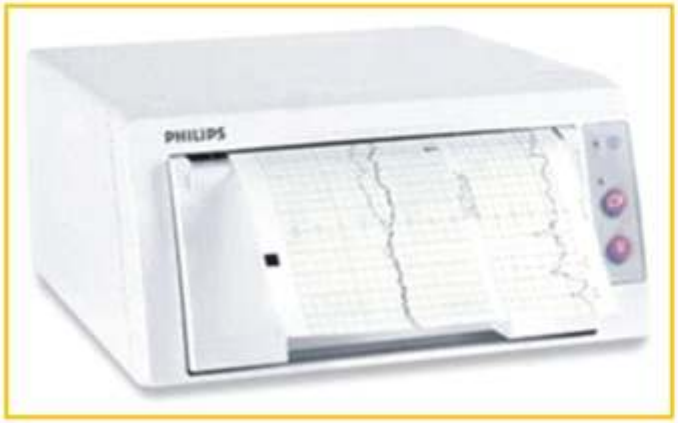
In the 1960s, EFM system was made commercially available in the United States by Hon and also in other parts of the world by other researchers. Inspite of controversies comparing Cardiotocography (CTG) with Intermittent Auscultation (IA), CTG continues to be widely used today as a routine monitor of fetal well-being in labor rooms worldwide. Although the majority of perinatal morbidity and mortality may not be prevented by improved fetal monitoring in labour (Nelson 1996)[2], failures to identify abnormal fetal heart rate patterns and lack of appropriate actions are considered to be significant contributing factors (MCHRC 1997; MCHRC 1998; MCHRC 1999).[3,4,5]

Intrapartum Fetal Monitoring During Labour

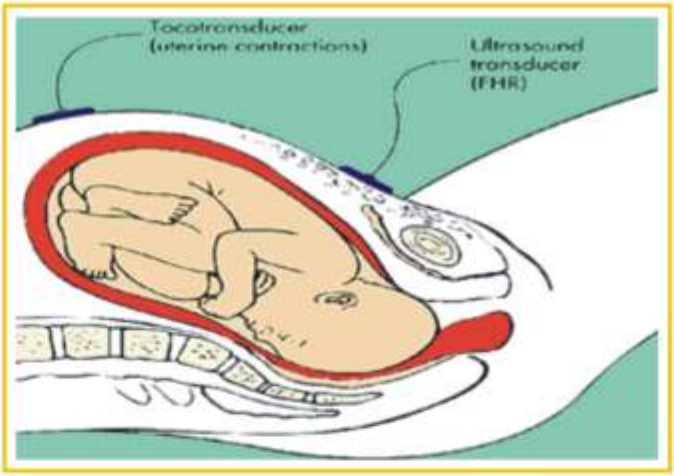
There are various methods of monitoring fetal heart rate during labour, such as

auscultation of the fetal heart :by stethoscope or Doppler probe, Continuous Electronic fetal monitoring which includes external monitoring and Internal monitoring. Auscultation of the fetal heart is performed every 15 minutes after a uterine contraction during the first stage of labor. Auscultation of the fetal heart is performed at least every 5 minutes after a uterine contraction during the second stage of labor. By continuous electronic fetal monitoring , early recognition of changes in heart rate patterns that may be associated with such fetal conditions as hypoxia and umbilical cord compression would serve as a warning and enable the physician to intervene to prevent fetal death in the uterus or irreversible brain injury.

Cardiotocography *(CTG)* is used in pregnancy to monitor both the fetal heart as well as the contractions of the uterus. Its purpose is to monitor fetal well-being & allow early detection of fetal distress. An ultrasound transducer similar to a Doppler fetal monitor measures the fetal heartbeat. A pressure-sensitive transducer, called a tocodynamometer (toco), measures the frequency of uterine contractions. It can be performed externally and internally

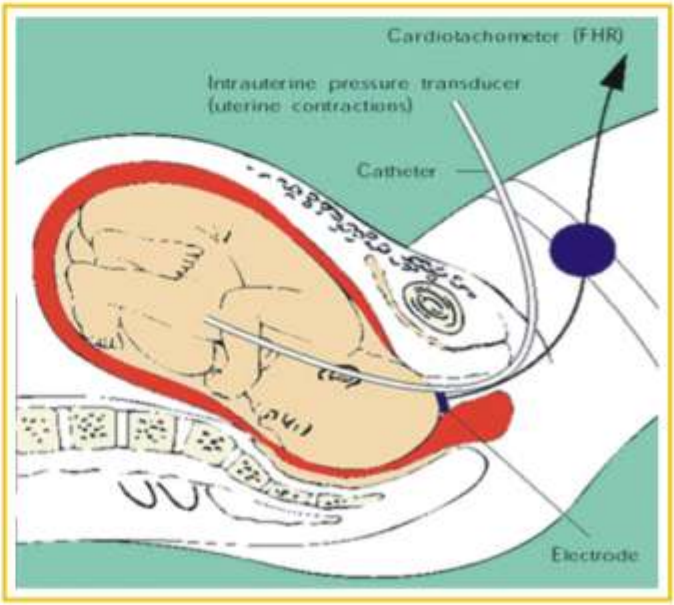


External measurement means taping or strapping the two sensors to the abdominal wall with the heart ultrasonic sensor overlying the fetal heart and the contraction sensor measuring the tension of the maternal abdominal wall, an indirect measure of the intrauterine pressure. External Fetal Monitor (EFM) has the advantage that it is non invasive & does not pose risk for infection. It provides continuous tracing of fetal heart rate and enables the doctor to detect



signs of fetal distress.

Internal measurement requires a certain degree of cervical dilatation it involves inserting a pressure catheter into the uterine cavity attaching a scalp electrode to the child's head to adequately measure the pulse Internal measurement is more precise, and might be preferable when a complicated childbirth is expected. It has the advantage that it is not affected by fetal movement. It provides continuous and accurate recording even if woman moves and changes position. It has the disadvantage that it is invasive procedure and carries risk for infection risk for infection.



Preparation

- Determine indication for fetal monitoring.
- Perform an abdominal examination to determine lie and presentation

- Give the woman the opportunity to empty her bladder
- The woman should be in an upright or lateral position (not supine)
- Check the accurate date and time has been set on the CTG machine
- Maternal heart rate must be recorded on the CTG at commencement of the CTG in order to differentiate between maternal and fetal heart rate.

Machine Settings (NICE 2008)[6]

- CTG paper speed at 1cm/min.
- Sensitivity displays at 20 beats per minute/cm.
- Set FHR range display at 50 – 210 bpm.
- Ensure date and time are correct on commencement of CTG.
- Check that date and time settings on CTG tracings are regularly validated.
- Label CTGs with the mother's name, date, time commenced and hospital record number.

AS PER ACOG[7]

- Paper speed 3 cm per minute
- Sensitivity – 30 beats per minute(bpm)/cm
- FHR range – 30 to 240 bpm

Indications for CTG in Labour

It is currently recommended that the Pinard stethoscope should be used in the first instance to determine that there is a fetal heart before applying a CTG or when any concern arises (MHRA 2010)

For women with no risk factors for fetal hypoxia in normal labor, intermittent auscultation is the method of choice because of the increased level of intervention associated with electronic fetal monitoring (Alfirevic et al. 2006; NICE 2007).

Common indications are :

Any pregnancy considered high risk

- Induction or augmentation of labor
- Decreased fetal movement
- Premature labor
- Premature rupture of membranes
- Oligohydramnios
- Hypertension
- Abnormal fetal heart rate
- Fetal malpresentation in labor
- IDDM
- Multiple Gestation
- Previous C/S
- Trauma
- Meconium

While specific abnormalities of the fetal heart rate pattern on CTG are proposed as being associated with an increased risk of cerebral palsy (Nelson 1996), the specificity of CTG for prediction of cerebral palsy is low with a reported false positive rate as high as 99.8%, even in the presence of multiple late decelerations or decreased variability (Nelson 1996).

CTG traces are often interpreted differently by different caregivers (inter-observer variation) and even by the same caregiver interpreting the same record at different times (intra-observer variation) (Devane 2005a). Such variation in interpretation of CTG tracings may result in inappropriate interventions, or false reassurance and lack of appropriate intervention.

So to avoid that certain guidelines have been made, they are

Electronic fetal monitoring definitions as per **ACOG 2009**

Definitions

Baseline

The mean FHR rounded to increments of 5 beats per minute during a 10-minute segment, excluding :

— Periodic or episodic changes

— Periods of marked FHR variability

— Segments of baseline that differ by more than 25 beats per minute

- The baseline must be for a minimum of 2

minutes in any 10-minute segment, or the baseline for that time period is indeterminate. In this case, one may refer to the prior 10-minute window for determination of baseline.

- Normal FHR baseline: 110–160 beats per minute
- Tachycardia: FHR baseline is greater than 160 beats per minute
- Bradycardia: FHR baseline is less than 110 beats per minute.

Foetal **tachycardia** it can be caused by :

- Foetal hypoxia
- Chorioamnionitis – if maternal fever also present
- Hyperthyroidism
- Foetal or Maternal Anaemia, Foetal tachyarrhythmia

Mild bradycardia of between 100-120bpm is common in the following situations:

- Post-date gestation
- Occiput posterior or transverse presentations

Severe prolonged bradycardia (< 80 bpm for > 3 minutes) indicates severe hypoxia

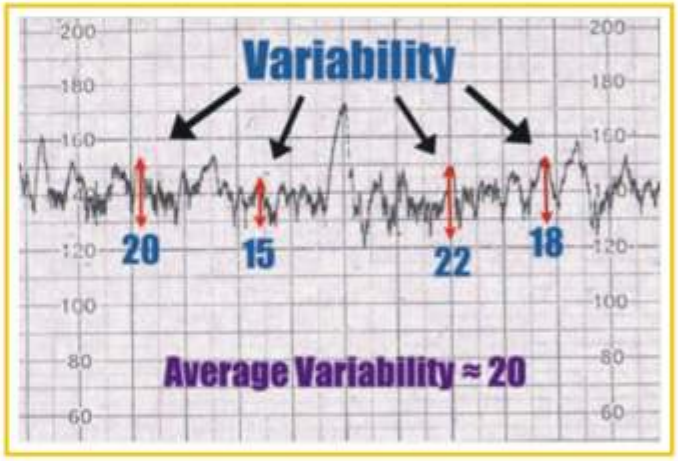
Causes of prolonged severe bradycardia are:[1]

- Prolonged cord compression
- Cord prolapse
- Epidural & Spinal Anaesthesia
- Maternal seizures
- Rapid foetal descent

Baseline variability

Fluctuations in the baseline FHR that are irregular in amplitude and frequency

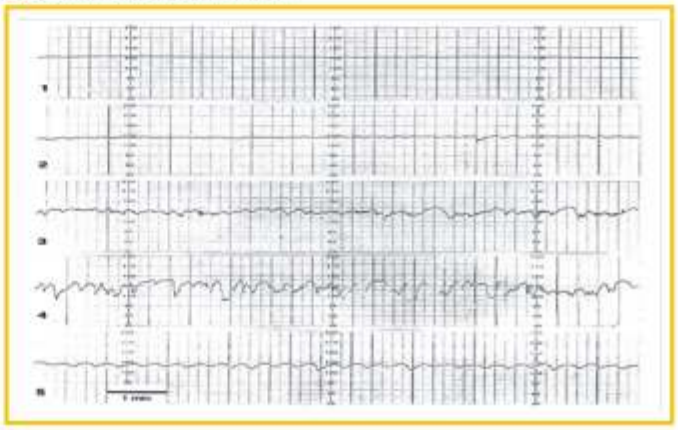
- Variability is visually quantitated as the amplitude of peak-to-trough in beats per minute.
  - — Absent — amplitude range undetectable
  - — Minimal — amplitude range detectable but 5 beats per minute or fewer
  - — Moderate (normal) — amplitude range 6–25 beats per minute
  - — Marked — amplitude range greater than 25 beats per minute



Reduced variability can be caused by:[3]

- Foetus sleeping - this should last no longer than 40 minutes – most common cause
- Foetal acidosis (due to hypoxia) – more likely if late decelerations also present

Congenital heart abnormalities.



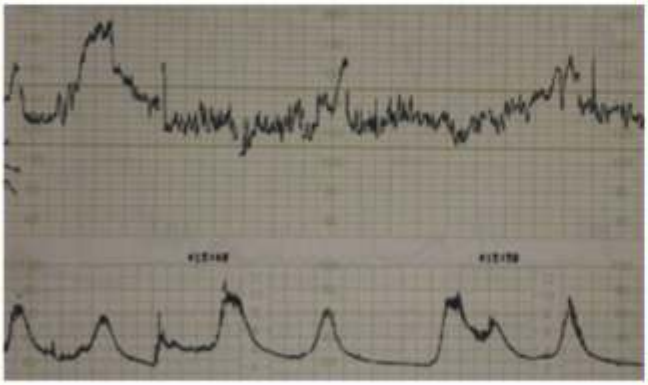
1. Absent variability, 2. reduced, 3. moderate, 4. marked, 5. sinusoidal

- Foetal tachycardia
- Drugs – opiates, benzodiazipine's, methyldopa, magnesium sulphate
- Prematurity – variability is reduced at earlier gestation (<28 weeks)

Acceleration

A visually apparent abrupt increase (onset to peak in less than 30 seconds) in the FHR

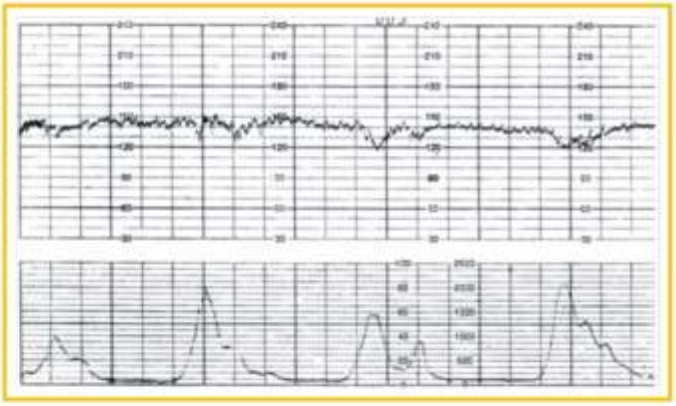
- At 32 weeks of gestation and beyond, an acceleration has a peak of 15 beats per minute or more above baseline, with a duration of 15 seconds or more but less than 2 minutes from onset to return.
- Before 32 weeks of gestation, an acceleration has a peak of 10 beats per minute or more above baseline, with a duration of 10 seconds or more but less than 2 minutes from onset to return.
- Prolonged acceleration lasts 2 minutes or more but less than 10 minutes in duration.
- If an acceleration lasts 10 minutes or longer, it is a baseline change.



Early deceleration

Visually apparent usually symmetrical gradual decrease and return of the FHR associated with a uterine contraction

- A gradual FHR decrease is defined as from the onset to the FHR nadir of 30 seconds or more.
- The decrease in FHR is calculated from the onset to the nadir of the deceleration.
- The nadir of the deceleration occurs at the same time as the peak of the contraction.



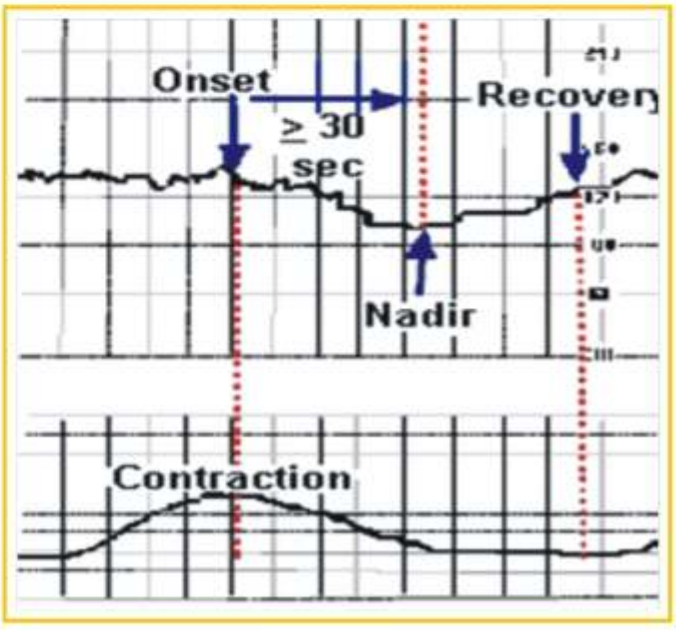
- In most cases the onset, nadir, and recovery of the deceleration are coincident with the beginning, peak, and ending of the contraction, respectively.

Early deceleration

Related to cervical dialatation and are physiological(Hon 1958 & not pathological.

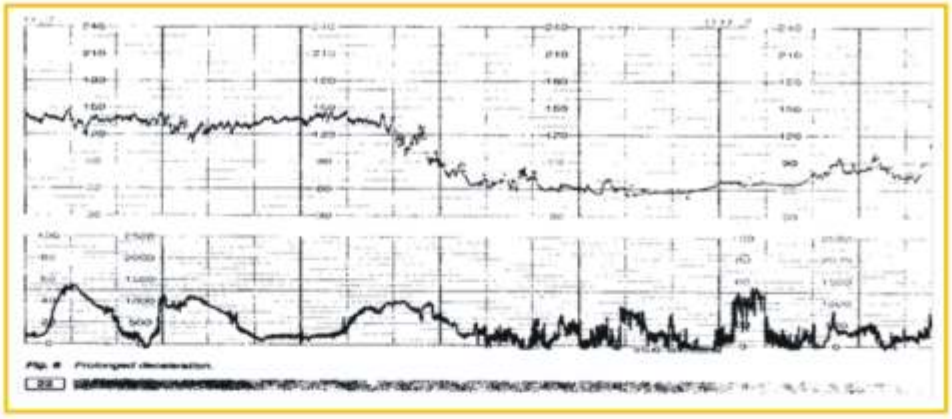
Late deceleration

- Visually apparent usually symmetrical gradual decrease and return of the FHR associated with a uterine contraction
- A gradual FHR decrease is defined as from the onset to the FHR nadir of 30 seconds or more.
- The decrease in FHR is calculated from the onset to the nadir of the deceleration.
- The deceleration is delayed in timing, with the nadir of the deceleration occurring after the



peak of the contraction.

- In most cases, the onset, nadir, and recovery of the deceleration occur after the beginning, peak, and ending of the contraction, respectively.

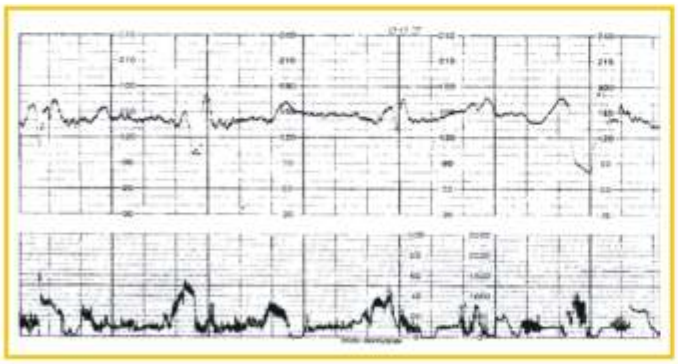


Late deceleration

insufficient blood flow through the uterus & placenta

Variable deceleration

- Visually apparent abrupt decrease in FHR
- An abrupt FHR decrease is defined as from the onset of the deceleration to the beginning of the FHR nadir of less than 30 seconds.
- The decrease in FHR is calculated from the onset to the nadir of the deceleration.
- The decrease in FHR is 15 beats per minute or greater, lasting 15 seconds or greater, and less than 2 minutes in duration.
- When variable decelerations are associated with uterine contractions, their onset, depth, and duration commonly vary with successive uterine contractions.



Variable deceleration

Usually caused by umbilical cord compression

Prolonged deceleration

Visually apparent decrease in the FHR below the baseline

- Decrease in FHR from the baseline that is 15 beats per minute or more, lasting 2 minutes or more but less than 10 minutes in duration.
- If a deceleration lasts 10 minutes or longer, it is a baseline change.

Sinusoidal pattern

- Visually apparent, smooth, sine wave-like undulating pattern in FHR baseline with a cycle frequency of 3–5 per minute which persists for 20 minutes or more.

A sinusoidal pattern indicates :

- Severe foetal hypoxia
- Severe foetal anaemia
- Foetal/Maternal haemorrhage

Interpretation of CTG (ACOG 2009)

Three-Tiered Fetal Heart Rate Interpretation System

Category I

Category I FHR tracings include all of the following :

- Baseline rate: 110–160 beats per minute
- Baseline FHR variability: moderate
- Late or variable declarations: absent
- Early decelerations: present or absent
- Accelerations: present or absent

Category II

Category II FHR tracings includes all FHR tracings not categorized as Category I or Category III. Category II tracings may represent an appreciable fraction of those encountered in clinical care. Examples of Category II FHR tracings include any of the following:

Baseline rate

- Bradycardia not accompanied by absent baseline variability
- Tachycardia

Baseline FHR variability

- Minimal baseline variability
- Absent baseline variability with no recurrent decelerations
- Marked baseline variability

Accelerations

- Absence of induced accelerations after fetal stimulation

Periodic or episodic decelerations

- Recurrent variable decelerations accompanied by minimal or moderate baseline variability.
- Prolonged deceleration more than 2 minutes but less than10 minutes
- Recurrent late decelerations with moderate baseline variability
- Variable decelerations with other characteristics such as slow return to baseline, overshoots, or "shoulders"

Category III

Category III FHR tracings include either

- Absent baseline FHR variability and any of the following :
  — Recurrent late decelerations
  — Recurrent variable decelerations
  — Bradycardia

Sinusoidal pattern

The overall impression is determined by how many of the CTG features were either reassuring, non-reassuring or abnormal. The NICE guideline below demonstrates how to decide which category a CTG falls into.

Table 1 : Definition of normal, suspicious and pathological FHR traces

Category	Definition
Normal	All four features are classified as reassuring.
Suspicious	One feature classified as non-reassurig and the remaining features classified as reassuring.
Pathological	Two more features classified as non-reassuring or once or more classified as abnormal.

Table 2 : Classification of FHR trace features

Feature	Baseline (bpm)	Variability (bpm)	Decelerations	Accelerations
Reassuring	110-160 [3]	5	None	Present
Non-reassuring	100-109 161-180	< 5 for 40-90 min	Typical variable decelerations with over 50% of contractions, for over 90 min Single prolonged deceleration for up to 3 min	The absence of accelerations with otherwise normal trace is of uncertain significance
Abnormal	< 100 > 180 Sinusoidal pattern [3] 10 min	< 5 for 90 mm	Either atypical variable decelerations with over 50% of contractions or late decelerations, both for over 30 min Single prolonged deceleration for more than 3 min	

Interpretation of FHR patterns can be problematic because of lack of agreement on definitions and nomenclature. Studies demonstrate poor interrater reliability of experts, even in controlled research settings.

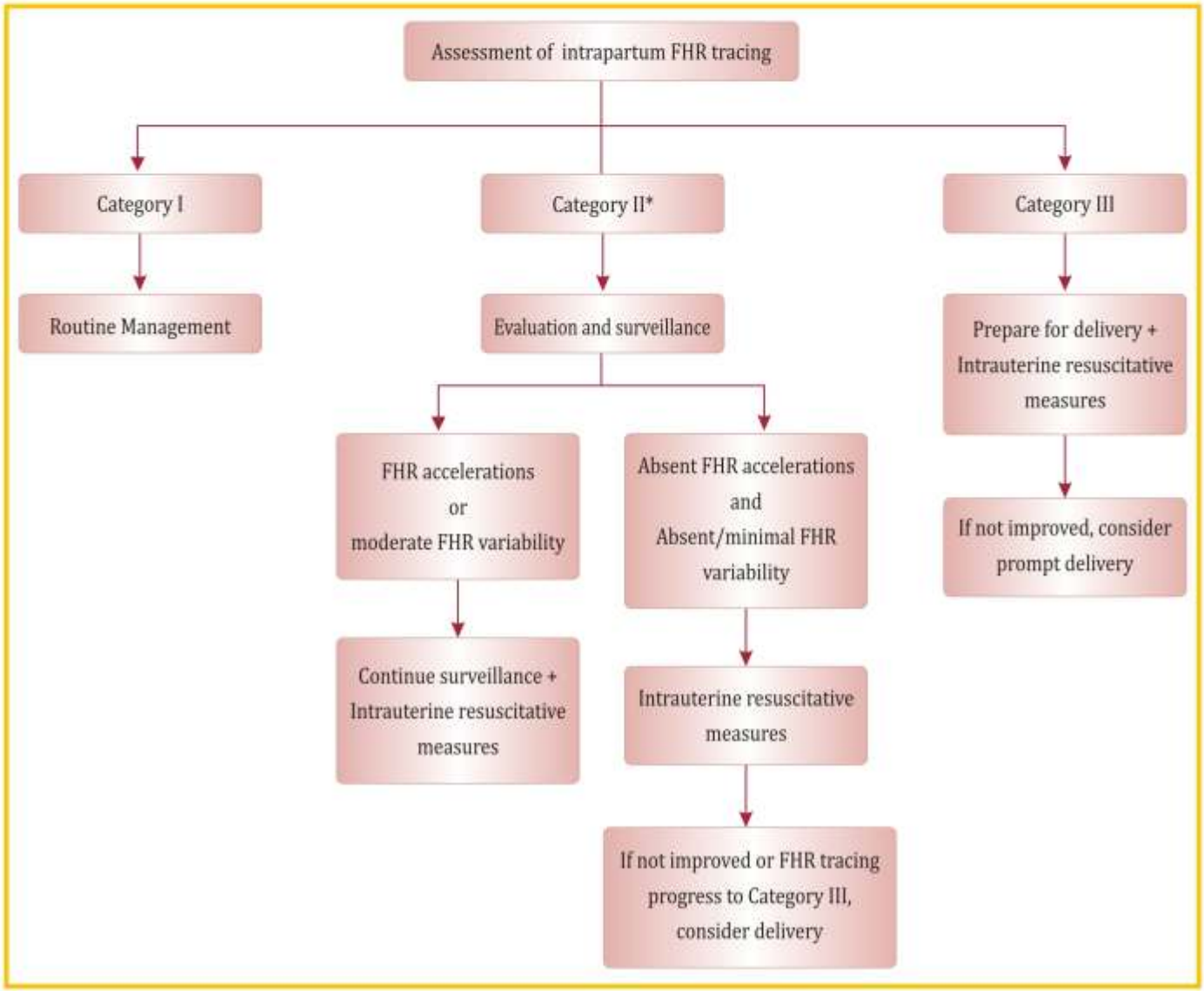
NICHD research planning workshop was convened in 1997 to standardize definitions.

Which was adopted by the ACOG in 2002 and revised in 2008 workshop.

Also curriculum developed the mnemonic **DR C BRAVADO** to teach a systematic, structured approach to continuous EFM interpretation that incorporates the NICHD definitions.

- DR : Determine risk High, medium, or low risk
- C : Contractions Rate, rhythm, frequency, duration,
- BRA : Baseline rate
- V : Variability Reflects central nervous system activity
- A : Accelerations Spontaneous; stimulated; none
- D : Decelerations Absent, early, variable, late, or prolonged
- O : Overall assessment and written plan.

How to Act after Interpretation?



Clinical Considerations and Recommendations

- With normal CTC the chance of fetus to develop hypoxia is 1.5% due to So a normal CTG is always reassuring
- NR CTG is not always worrisome.
- There is a high false positive rate which leads to unnecessary operative intervention for fetal distress.

Accelerations

- Absence of accelerations on an otherwise normal CTG remains unclear.
- Presence of FHR Accelerations has Good outcome.

Early deceleration

- Should not be disregarded if they appear early in labor or Antenatal.
- Clinical situation should be r/v

Late deceleration

- Place patient on side
- Administer O2 by tight face mask
- Discontinue oxytocin.
- Correct any hypotension
- IV hydration.
- If hyperstimulation is present consider terbutaline 0.25 mg SC
- If late decelerations persist for more than 30 minutes despite the above maneuvers, fetal scalp pH is indicated.
- Scalp pH > 7.25 is reassuring, pH 7.2-7.25 may be repeated in 30 minutes.
- Deliver for pH < 7.2 or minimal baseline variability with late or prolonged decelerations and inability to obtain fetal scalp pH

Suspicious (Equivocal) CTG : continuous monitoring for further development towards better or worse Ideally check the trace while instituting the corrective measures. However, if liquor is meconium stained — expedite the delivery.

Pathological CTG : DELIVER as soon as possible.

There are no internationally agreed practice recommendations. However, various authorities such as ACOG, RCOG, NICE and RANZCOG have published guidelines. Any of these guidelines as per the individual settings can be used to lower the rates of birth asphyxia

Summary

The primary goal of all obstetrician is to minimize the deleterious effects of labour on the mother and the same time, prevent adverse fetal outcomes. Electronic fetal monitoring also known as cardiotocography (CTG) helps in timely intervention and helps in achieving the standard care. Low risk women can be managed with intermittent auscultation. In the modern era where litigations are on rise CTG can also be used as defensive medicine. But at the same time we should understand its limitations. Despite the evidences, proving that the rates of cerebral palsy and perinatal death rate have remained the same, EMF has become the standard tool for assessing the oxygenation status of a fetus in labour and will remain the tool for monitoring in years to come.

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Neonatal Resuscitation - First Golden Minute (FGM)

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India accounts for nearly 30% of global neonatal deaths per year. Nearly half of under-5 deaths occur in neonatal period and .most of these deaths occur within few days of birth. Birth asphyxia and sepsis are major causes of death. National Population Policy (NPP) goal of IMR below 30/1000 live births by 2010 though we have not achieved, mandates urgent measures to put in place to prevent these deaths to reach the goal. One of the effective measures to prevent neonatal deaths is to have skilled birth attendants trained in neonatal resuscitation and prevention of infection, maintenance of temperature within 1 hour of life, and is estimated to save a number of newborns. A single and reliable intervention – **"Neonatal Resuscitation"** - deals with problems of birth asphyxia as it occurs. Need for resuscitation should always be anticipated, thus every birth attendant should be skilled in newborn resuscitation (including anticipation, preparation, timely recognition, quick and correct action and should have necessary equipment and supplies) to be able to respond quickly and correctly when needed.

Adequate ventilation is more important than additional oxygen, quick action with bag and mask is more important than intubation. Therefore resuscitation can be and should be initiated virtually anywhere, including those places where oxygen is not available. **The most common causes of failed resuscitation are failure to recognise the problem promptly, not reacting quickly enough and not ventilating effectively**. Correct technique and assessment of the effectiveness of the ventilation are critical. Advance procedures like chest compression, intubation are needed only in small proportion of cases and is carried out by a more experienced person or a specialist. In reality even the simplest equipment is frequently not available and skilled health workers are lacking. Basic resuscitations done correctly will help most of the cases.

Neonatal resuscitation means to revive or restore life to a baby from the state of asphyxia. Approximately, 90% of newborn babies make the transition from intrauterine to extra uterine life without difficulty, requiring little or no assistance to begin spontaneous and regular respiration whereas around 10% of newborns require some assistance to begin breathing at birth and only roughly 1% may need extensive resuscitative measures to survive. As any baby can have breathing difficulties at birth, it is important to anticipate and be prepared for this eventualities in all deliveries.

Key to successful resuscitation is :

- Anticipation
- Preparation.
- Be Fast.
- Provide warmth.
- Be gentle.
- Maintain hygiene.
- Call for help.
- Documentation.

Preparation for Birth

Prepare personnel - Birth attendant identifies a helper and explains his role

Preparation in Delivery room - Every Delivery room should have a newborn corner or room to receive the newborn baby with equipments and supplies as follows :

1) A draught free, warm room with temperature >25 degree centigrade.
2) A clean dry and warm delivery surface.

- A radiant warmer, if not available an overhead lamp with 200 watt bulb.
- Two clean, warm towels.
- A rolled piece of towel or a shoulder roll.
- A Newborn size self inflating Bag (250-500 ml) with Infant Mask in two sizes, 1 for normal weight babies and 0 for premature and smaller babies.
- A suction device and a mucus extractor (Do not use pressure >100 mm of Hg).
- Oxygen cylinder with connection of newborn mask.
- A clock.
- Two Normal Saline Cotton Swabs.
- One Identification Tag and
- One Head Cap.

Equipments must be cleaned and checked after each delivery and must be checked once again before the next delivery to ensure it is ready for use. It is always mandatory to recheck the bag and mask immediately before its use.

Routine Care :

Provide warmth, Suction mouth and nose, Cut the cord, Keep the baby with the mother and initiate breast feeding.

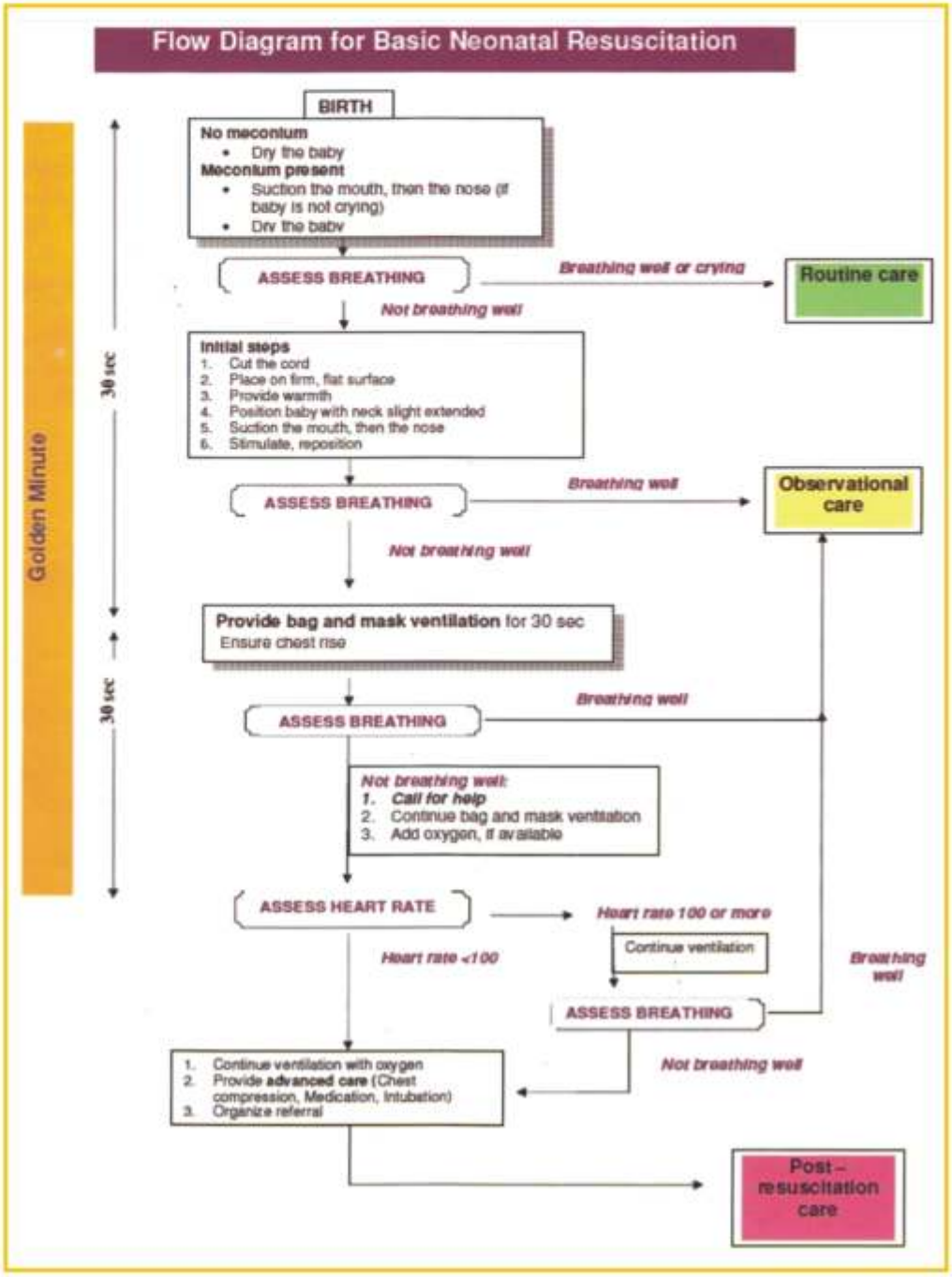
Obsevational Care :

Provide warmth, Observe breathing and temperature, Watch for complications, initiate breast feeding and inspect every 15 minutes for a period of one hour.

Post Resuscitation Care :

Provide warmth, Observe breathing, temperature, colour, CFT, Monitor blood sugar, Watch for complications, Initiate breastfeeding and keep the baby in a semi-ICU.

Complications which can occur in post resuscitation baby are convulsion, coma, poor feeding, lethargy, respiratory distress. If any such signs are present baby should be referred immediately for more specialised care.



Assesment at Birth :

A newborn baby should be delivered into mother's abdomen. If the baby is not delivered on to the mother's abdomen, make sure there is a clean warm towel or cloth on the baby tray to place the baby on. ***Note the time of Birth*** and dry the baby (***keeping the baby warm at birth is a priority***) with a warm towel. After drying the wet towels or clothes should be replaced and the baby loosely wrapped in clean, dry and warm towels. If the baby remains wet after birth, it can lead to heat loss which will lead to hypothermia. Breathing should be assessed while drying. Drying itself often provides sufficient stimulation for mildly depressed baby.

If meconium is present and baby is not crying, immediate suction to be done. First do suction from **M**outh by inserting tube of the suction catheter not more than 5 cm from the lip, apply suction while withdrawing, apply the suction only 1-2 cm in to each **N**ostrils, suck from your mouth by a mucus extractor or attach it to the suction machine but it should be below 100 mm Hg. Stop suctioning when secretions are clear. Vigorous suction to be avoided as it may cause vagal response.

Asses the breathing, chest should move equally on both sides without any difficulty between 30-60 times a minute.

Steps of Resuscitation :

Close doors and windows; switch off the AC and Fans before birth. Place the newborn baby under radiant warmer after tying and cutting the cord, Provide warmth, Position the baby, Clear the air way, Stimulate and reposition.

Position the head—place the baby on its back, position the head so that it is slightly extended by putting a shoulder roll below the shoulder which will open the airways, clear the air ways by suction of mouth and nose, if the baby does not cry then gentle stimulation by flicking at the feet or gently rubbing the newborn back, if the baby cries and breathing well then go for ***Observational care*** of the baby.

If baby is still not breathing, the baby should be ventilated ***(ventilation of the lungs is the single most important step in resuscitation of the newborn)***. If the baby is not breathing or breathing is abnormal at the end of 30 seconds after providing initial steps of resuscitation, then immediately ventilation to be started with bag and mask.

Preparation for ventilation :

Select the appropriate size mask, Clear the air way, Position the head and neck, Position yourself at the head end, Positioning the Bag and Mask on the face.

Initiation of ventilation - breath should be delivered at a rate of 30 to 40 per minute, if you squeeze the bag on breath and release when you say two three you will probably ventilate in a proper rate, hence the sequence is **Breath-two-three** → **Breath-two-three** → **Breath-two-three** →, to continue for 30 seconds ensuring chest rise during each ventilation.

How do you evaluate success of ventilation?

Improvement is indicated by spontaneous breathing. Some babies improve quickly and begin breathing well after 30 seconds of adequate ventilation but some babies require prolong ventilation, then gradually reduce the volume and rate of breath. If baby is breathing well then stop the ventilation and provide ***Observational care***.

If baby is not crying well after 30 seconds of resuscitation, continue bag and mask ventilation, provide oxygen and asses the heart rate, HR >100 is normal, if HR is < 100 continue Bag and mask ventilation. In such situation it may require intubation and other specialised treatments like chest compression and medications. The procedure of bag and mask ventilation should be continued until baby establishes spontaneous breathing. ***If there is no signs of life after 20 minutes of birth ventilation may be stopped.***

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Safe Obstetric Practice

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1. Value of blood sugar 2hrs following 75gms glucose challenge test during pregnancy more than ..... mg% suggests gestational diabetes.
   a. 100
   b. 120
   c. 140
   d. 160

2. Drugs to be avoided during pregnancy are all except
   a. Enalapril
   b. Amikacin
   c. Cirofloxacin
   d. Rifampicin

3. Pregnant patients with cardiac disease are at an increased risk of cardiac decompensation at all of the following periods except
   a. 16 to 20 weeks gestation
   b. 28 to 32 weeks gestation
   c. During labour and delivery
   d. 4 to 5 days post partum

4. The presence of ..... in vaginal secretions between 20 to 36 weeks of gestation may be used to predict risk of preterm labour
   a. Nitrazine
   b. Fibronectin
   c. Collagen
   d. Relaxin

5. All of the following are components of AMTSL (Active Management of Third Stage of Labour) except
   a. Inj Oxytocin 10 IU IM after delivery of baby
   b. Controlled cord traction
   c. Manual placental removal
   d. Uterine massage

6. Vaccum extraction should be abandoned after ..... cup detachments
   a. Two
   b. Three
   c. Four
   d. Five

7. All of the following are indications for outlet forceps application except
   a. Station 0
   b. Fetal prematurity
   c. Cord prolapse
   d. Lack of maternal co-operation

8. Long term healing potential of following incision on lower uterine segment is poor
   a. Transverse
   b. Inverted T shaped
   c. J shaped
   d. U shaped

9. All of the following maneuvers are useful to avoid cord compression till delivery in case of cord prolapse except
   a. Directly replacing cord in vagina
   b. Filling bladder with 500ml of sterile saline
   c. Placing patient in Knee chest or Trendelenburg position
   d. Manually lifting presenting part away from brim

10. Medical management of ectopic pregnancy with methotrexate should not be attempted in following situation
    a. Gestational sac size <5cms
    b. No evidence of hemoperitoneum on USG
    c. Serum bhCG level 5000 iu/ l
    d. Absent fetal cardiac activity

11. It is necessary to counsel parents that single fetal demise in twins after 14 weeks can result in 20% probability of ..... damage of the survivor
    a. Cardiac
    b. Neurologic
    c. Hematological
    d. Hepatic

12. In case of abruptio placentae with fetal demise, assessment of average intra-partum blood loss (mostly retro-

QUIZ

placental) is likely to be around

a. 1000 ml
b. 1500 ml
c. 2000 ml
d. 2500 ml

13. Dopamine agonists for lactation suppression are contra-indicated in women with

a. Pre-eclampsia
b. Anemia
c. Renal disease
d. Cardiac disease

14. Criteria for delivering patients with severe pre-eclampsia are all except

a. BP >= 160/100 mmHg after anti-hypertensives
b. UOP <400ml/ 24hrs
c. Platelet count <50,000/ cu mm
d. Early decelerations on CTG

15. Single dose of antenatal prophylaxis with anti D in non sensitized Rh negative mother should be administered at ..... weeks of gestation

a. 24
b. 28
c. 32
d. 34

16. Monitoring of maternal thyroid status during pregnancy with hypothyroidism requires assessment of

a. Serum T3, T4, TSH
b. Serum Free T3, TSH
c. Serum Free T4, TSH
d. Serum TSH

17. Post molar pregnancy indications for chemotherapy are all except

a. hCG plateau in 3 consecutive serum samples
b. rising hCG in 2 consecutive serum samples
c. raised hCG level 6months after evacuation (even if falling)
d. no pulmonary, vulval or vaginal mets with falling hCG levels

18. In CPT repair the primary end to end repair of anal sphincter is superior to primary overlap repair with lower risk for fecal urgency and anal incontinence. True/ False

19. Peritoneal irrigation with antibiotic is advantageous to reduce the incidence of infectious morbidity after Cesarean section True/ False

20. Risk of post partum endometritis can be reduced by prior treatment of bacterial vaginosis True/ False

Answers

1. c
2. d
3. a
4. b
5. c
6. b
7. a
8. b
9. a
10. c
11. b
12. d
13. a
14. d
15. b
16. c
17. d
18. False
19. False
20. True

Professional Bodies and women : How far, how near

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The one Professional body known and dear to all gynaecologists of India is the Federation of Obstetricians and Gynaecologists of India or FOGSI. FOGSI was formed with the object of sharing solidarity amongst the obstetricians and gynecologists so that a common and authoritative voice could be presented in the progress of the ever expanding sciences of Obstetrics and Gynecology. The large human resource of FOGSI has been harnessed from its inception down to this day in attempting to better the health of the women in in our country. The sheer size of our country and its population and our limited resources are a challenge, regardless of the size of any organization. A lot has been done but a lot more needs to be done. This article presents a bird's eye view of what FOGSI has done over the ages to improve the lot of the Indian woman.

Small opportunities are often the beginning of great enterprises. Demosthenes

FOGSI was born on January 6th, 1950 with Dr. J. Jhirad as its first President. The focus was on Maternal and Child Health care. This included scientific sessions and work on prevention of anemia, promoting the importance of a balanced diet and provision of blood transfusion services. FOGSI was affiliated as a founder member of the International Federation of Obstetricians and Gynecologists (FIGO) in 1954, headquartered in Geneva, with a seat on the executive board. FOGSI also got affiliated to the Asian Federation of Obstetrics and Gynecology (AFOG) in 1959.

FOGSI and Safe Abortions

In 1965 the GOI formed the Dr. Shantilal Shah Committee for the legalization of abortions where FOGSI was represented by the FOGSI President, Dr V.N Shirodkar, Dr B.N Purandare and the Secretary. Against much opposition and resistance but with support from professional, women's organizations and other NGOs, the GOI changed the statute and called the bill the **MTP Act of 1971.**

The Indian Penal Code, which was enacted in 1860 and was written in accordance with British law at the time of its creation, declared induced abortion as illegal. Induced abortion was defined as purposely "causing miscarriage". Abortion practitioners would either be incarcerated for up to three years, fined, or both; women undergoing abortions could be imprisoned for up to seven years and also be charged an additional fine. The only exception was when abortion was induced in order to save the life of the woman. Despite the fact that this passage in the penal code was changed in Great Britain in 1967, India did not change it until 1971.

Year	1972	1975	1980	1985	1990	1995	2000	2003	2007	2010
Abortions reported	24,300	214197	388405	583704	581215	570914	725149	763126	641786	620472

Dr Kamini Rao's theme was "Safe abortion saves lives". The **Safe Abortion** initiative was undertaken in 2001 to address the challenges posed by unsafe abortion with 52 workshops conducted across India by the MTP committee to sensitize over 10,000 doctors. FOGSI provided technical support in the promotion of MVA and medical abortion as also the amendments of **the MTP Act and Rules in 2002 and 2003.**

The MVA Pilot Project was the first major technical implementation partnership with the

GOI and WHO to train 120 medical officers from PHCs and CHCs of 16 districts from 8 states. It demonstrated the feasibility of creating a training infrastructure and conducting training in MVA for these grass root practitioners in just two weeks.

All countries should have accessible and safe services in place to provide abortion as permitted by law (WHO 2003). In developing countries, where a vast majority of the population resides in rural areas with limited access to hospitals or health services, to reach to such masses is a huge challenge to governments. To address abortion related morbidities and mortalities, there is urgent need to broad base the abortion service providers, to make qualified service providers available in rural, far and difficult areas where currently unqualified persons are providing illegal and unsafe abortion services. This gap in service needs to be recognized and acted upon, perhaps by training, non-Allopathic physicians and other qualified health care providers in PAC: post abortion care (Ipas, IHCAR 2002, AOFOG, 2007).

However, even four decades after the Act has come into effect, unsafe abortions are a reality. Making out a strong case to amend the Act to increase the availability of safe and legal abortions in India, all stakeholders argue that unsafe abortions still continue to outnumber safe and legal abortions in the country. Unsafe abortions contribute to eight per cent of the total maternal deaths even today. The time limit for abortions has been increased from seven to nine weeks to facilitate family planning by the Drug Controller General of India. Dr Nozer Sheriar, Secretary General of FOGSI, said: "The Drug Controller General has increased the time limit of abortions to 63 days that is nine weeks. This is very important as around eight percent of maternal deaths take place due to unsafe abortions". In the last two years, 332,000 medical abortions were carried out, which show that if given a choice, women do want to limit their families. FOGSI is promoting medical abortions along with Intrauterine Devices (IUD) to help people plan their families better.

FOGSI and Contraception

The decades from 1960 to 1980 were consolidation years for FOGSI. In the early 60's, FOGSI joined hands with Central and State Governments of India to accept the challenges posed by the problems created by population explosion and channelized its activities in the field of Family Planning.

The first International Seminar on Oral Contraceptives was organized in 1965 and recommendations were made to the Government of India to initiate the Pill Project at selected places in India. FOGSI was invited to participate as member of the National Population Commission which was chaired by the Prime Minister of India as also many committees working on women's health issues at the Ministry of Health and Family Welfare. Apart from medical issues, FOGSI used themes to address social issues affecting the health of young girls and women such as promotion of breast feeding practice, young talent promotion, education and empowerment of the adolescent girl, etc. It was resolved in AICOG 1975, that the family planning programme including mother and child care in all states be entrusted to the heads of the departments of ObGyn at all hospitals attached to medical colleges and district hospitals for effective implementation and execution.

FOGSI alliance with the GOI and NGOs like UNICEF and UNFPA grew stronger as FOGSI had steadily gained credibility for doing good work. The Govt had already floated in the idea of RCH Workshops and FOGSI joined hands to conduct 22 workshops all over India to propagate knowledge to doctors and paramedical personnel in rural areas. The President of FOGSI was invited to important policy making decisions of the National Population Commission which was headed by the Prime Minister of India. Since 1997, FOGSI Presidents started having a theme related to an important problem in their year with an intention of giving a sense of direction and perspective. Apart from medical issues, FOGSI also started addressing social issues that affected the health of young girls and women in the reproductive and post-menopausal ages.

It was during **Dr Sadhana Desai's** term that **Emergency Contraception** gained importance. FOGSI played an important role in Emergency Contraception Introduction :

- serving as an important source of information regarding emergency contraception through an emergency contraception helpline
- setting guidelines for appropriate delivery
- increasing awareness by conducting CME Programs, Training Programs and Orientation Programs
- publicizing the available methods of contraception through meetings, workshops and group discussions
- using the media of radio and television to create awareness and ensure wide and appropriate use of EC
- inducing pharmaceutical companies to share the responsibility of increasing awareness among potential users and providers
- continued education of all health workers at the grass root and FRU levels on contraceptive choices
- coordinating with ANMs for arranging health education programs
- organizing CME programs and workshops in the District General Hospitals and Taluk Hospitals
- updating knowledge, skills and practices of all health functionaries for effective delivery of contraceptive services
- maintaining information on performance and providing feedback
- involving private doctors to complement the existing services in government hospitals

Prof Mittal conducted a study which showed that EC use increased the subsequent use of oral contraceptives. When a woman in need gets timely help, she will stick to pills later on and will not complain for minor problems of nausea and vomiting. EC cannot be advertised like biscuits or coffee, but certainly in centres where people seek help, like in post-partum or family planning centres, posters could be put up and EC provided as part of their services.

Dr P.C Mahapatra, President FOGSI 2011, said "We look forward to having each and every FOGSI member participating and trying to get 100% knowledge on EC, so that he/she will be able to help the patients and society and help undergraduate and postgraduate learning to spread the message of EC".

FOGSI established **Helplines for Emergency Contraception**, **Post Exposure Prophylaxis** and **Medicolegal** issues.

The family planning initiative taken up by FOGSI and the Population Services International (PSI) is called **'Pehel'**. It is run mostly in urban slums. PEHEL is an initiative of PSI/India to empower women in the reproductive age. It covers 30 districts in Rajasthan, Uttar Pradesh and Delhi. Ten additional districts in these three states would be covered in the next phase.

PSI and FOGSI's continuing efforts to improve the health, status and quality of life among vulnerable and poor women entered a new phase with Pehel Phase-II, which was launched by Dr Kiran Ambawani, Deputy Commissioner, Ministry of Health and Family Welfare, Dr PC Mahapatra, President, FOGSI, Dr Jyoti Vajpayee, Senior Technical Advisor, PSI, Dr P K Shah, Secretary General, FOGSI, Dr Nozer Sheriar, Deputy Secretary General, FOGSI and Sanjeev Dham, Programme Director, PSI.

Pehel is an initiative of PSI/India to empower women in the reproductive age group to make informed choices for addressing their needs of family planning and safe abortion. The partnership aims to reduce maternal mortality and morbidity, by increasing demand for and access to temporary and long acting family planning methods.

Outlining the key objectives of Pehel Phase-II, Dr Vajpayee said, "Pehel Phase- II will continue to focus and create an enabling environment for increasing access to IUD and MA in the private sector and improving quality of care practices for IUD and MA among private providers. We will undertake key strategic research and the findings can create a lasting impact on IUD, PPIUD and MMA."

According to NHFS 2005-2006, there is a great need for safe family planning techniques in the country as every year 1, 17,000 maternal deaths occur in the country out of which eight per cent deaths are due to

unsafe abortions. There is a great unmet need in urban poor at 14.1 per cent, which is as high as the rural unmet need at 14.6 per cent.

The Pehel project was launched in July 2008 and initially implemented in 10 states across the country providing free services for IUD insertion. Based on the learning from Phase-I it has been strategized to concentrate the project activities to 19 districts across three states, namely, Rajasthan (Jaipur, Alwar, Jodhpur, Ajmer, Kota, Bharatpur, Sriganga Nagar, Pali), Delhi and Uttar Pradesh (Lucknow, Kanpur, Agra, Varanasi, Gorakhpur, Ghaziabad, Bareilly, Firozabad, Barabanka and Mirzapur). Pehel will also come out with important lessons for effectively involving the private sector in family planning efforts and subsequent reduction in maternal mortality, thereby maximizing the health impact.

"Pehel Phase 3 will continue to complement the government's efforts to reduce maternal mortality and increase the contraceptive prevalence rate," said Pritpal Marjara, director of PSI. According to government data, every year about 78,000 women die during pregnancy, child birth or within 43 days of delivery in India.

Public Health Foundation of INDIA (PHFI) and FOGSI announced that they will be launching courses on "Contraception" and "GDM" at 50 centers pan India in 2013.

Certificate Course on Contraception In clinical Practice : is a joint certification course designed and delivered from June 2013 by United Nations Population Fund (UNFPA), Federation of Obstetric and Gynecological Societies of India (FOGSI) and Public Health Foundation of India (PHFI).A national Launch of the course after having consensuses from UNFPA and FOGSI senior officials was done on 25th of August'13 at PAN India level. CCCCP is ideal for both Specialists as well as Primary Care Physicians to enhance their knowledge and core competencies on evidence based contraception practices.

FOGSI and Postplacental IUCD

Hema Diwakar, President of FOGSI 2013, said that women are now given a choice of post-placental IUD as soon as they give birth. Cu380A is supplied free by the Government to all health care practitioners to encourage Long Acting Reversible Contraception.

FOGSI and Adolescent Empowerment

It was during Dr Mehroo Hansotia's term as President of FOGSI that education and empowerment of the Girl Child was taken up as a theme. She believed that women in our country should be empowered by education and by spreading awareness among the girls as today's girl is tomorrow's mother.

Adolescent school and college programmes on reproductive health and HIV were undertaken throughout the country. An **Adolescent Empowerment project – Kishori set up during Dr Duru Shah's term,** was conducted in partnership with **Sneha, UNICEF and LTMG Hospital** for the adolescent girls of the urban slums of Dharavi to help them to become more self-reliant. Adolescent Friendly centres in collaboration with WHO and FIGO were set up all over the country when Dr Roza Olya was the Chairperson of the Adolescent committee of FOGSI.

Prevention of Adolescent anemia was taken up during Dr Pankaj Desai's term in 2007. Dr Narendra Malhotra in 2008 firmly believed that "Every day is an eradicate anemia day". Weekly Iron and Folic acid substitution in Schools and to Sabalas (WIFS) was started by the NRHM ably supported by NGOs and FOGSI to help eradicate Adolescent Anemia.

"Leadership is action, not position" Donald McGannon

FOGSI's alliances with the GOI, WHO, UNICEF and UNFPA grew stronger with FOGSI taking a leadership role in issues related to women's health and acquiring credibility for the work done. FOGSI joined hands with member societies to conduct 22 RCH workshops with the GOI to propagate knowledge to doctors and paramedical personnel in rural areas.

FOGSI has gradually moved on from being just an academic body conducting educational programmes for its members, to achieving higher goals in

promoting social change and improving the status of women in India. FOGSI is now party to consultations and involvement in all important policy matters related to women's health issues by the Central and State Governments. Liaison with the **GOI, WHO, Medical colleges and NGO's** have increased and many more activities and programs are undertaken.

FOGSI and Reduction of Maternal Mortality

The first International Seminar on Maternal Mortality, Perinatal Mortality and Reproductive Biology was held in Bombay in 1969. In 1975, It was resolved that the family planning programme including mother and child care in all states be entrusted to the heads of the departments of Obstetrics and Gynecology at all hospitals attached to medical colleges and district hospitals for effective implementation and execution.

Averting Maternal Deaths and Disabilities project (AMDD) was undertaken in collaboration with **Columbia University and Gates Foundation** where peripheral health centre doctors and paramedical personnel were trained to give basic emergency obstetric services during Dr Usha Saraiya's term as President FOGSI.

FOGSI and Astra-Zeneca conducted **RED ALERT Consensus Workshops** all over the country towards Hemorrhage and Eclampsia free India during the tenure of Dr Pankaj Desai in 2007

EMOC SKILL TRAINING Workshops were conducted all over the country to train Gynecologists and Primary care Physicians to reduce Maternal Morbidity and Mortality during Dr Sanjay Gupte's term in 2011.

Emergency Obstetric Care project of FOGSI and **GOI (National Rural Health Mission)** has established many centers in India for imparting training to medical officers in the peripheral health centers. This is an important step in reducing maternal deaths and mortalities in peripheral hospitals and has since progressed into extension and partnership with individual state governments.

Dr Shyam Desai, President of FOGSI, 2005, brought labour management into sharp focus with his theme,"**Öptimizing labour and delivery for safe motherhood"**

Saving the Mother project aims at reducing maternal mortality through a public private partnership of Health Ministry, GOI and practicing gynecologists who are members of FOGSI.

A maternal mortality registry has been set up in 2008 by FOGSI to aid the Govt and FOGSI in understanding the leading causes and to institute preventive strategies.

Saving Mothers, a MoU signed between FOGSI and Program for Appropriate Technology in Health (PATH) is an effort to reduce MMR across the state, especially in rural areas. The initiative will be funded by Bill & Melinda Gates Foundation. The pan-India project was initiated earlier in 2013 and is presently progressing in Karnataka, Uttar Pradesh and Maharashtra.

The MoU facilitates FOGSI to advocate safe and appropriate use of Uterotonics (drugs used to augment labour) through obstetricians, gynecologists, medical officers and ANMs/staff nurse. Said Dr Hema Divakar, president, FOGSI: "In India, the direct cause of MMR are haemorrhage (38%), sepsis (11%), hypertensive disorders (55), obstructed labour (5%), abortion (8%) and other conditions (34%). This MoU will enable us to sensitize the people concerned on all aspects of child birth."

Emphasizing the need for such initiatives, Dr Divakar said: "India registers about 30 million deliveries every year and MMR is very high compared to western countries. Many women die in labour due to malnourishment, iron deficiency and low hemoglobin. Under this project, we will train gynecologists, nurses, mid-wives, Asha workers at primary health centres and National Rural Health Mission programme levels. We need to reach out to the rural population to bring down MMR. This is a fast-track initiative as we urgently need to save mothers."

Over the next six months, 'Saving Mothers' campaign will be extended to 19 districts-especially the

backward districts of North Karnataka, she said. Young gynecologists, along with experienced doctors will be trained under this programme all over India. The programme, which will also see participation from the state governments and medical colleges, will be audited by a private agency every six months.

FOGSI has joined hands with International Federation of Gynecology and Obstetrics (FIGO) to launch "maternal death review" programme in economically-backward areas of India.

FOGSI President 2013, Dr Hema Divakar said that this exercise would help strengthen maternal healthcare services delivery and contribute to the reduction of Maternal Mortality Rate (MMR) in India. Under the programme, the organisation will probe the circumstances leading to the death of the pregnant woman and share the findings with the district and state authorities. FOGSI implemented maternal death review programme on a pilot basis in Sikar and Jhunjhunu districts of Rajasthan.

"The programme revealed that women die because of delay in seeking care. Deaths also occur during transfer to a health facility with better facilities and inability of the health facility to provide services due to lack of blood storage, skilled health professionals and/or availability of drugs," she said. FOGSI plans to undertake a similar programme in Karnataka.

Fathalla said,"Mothers are not dying of diseases we cannot treat. They are dying because society has to decide whether their lives are worth saving".

FOGSI and MDGs

Let us look at the Millennium Development Goals, especially MDG 5 and the Targets fixed.

MDG 5 : Improve Maternal Health

Target 6 : Reduce by three quarters, between 1990 and 2015, the Maternal Mortality Rate. At the historical pace of decrease, India will reach MMR of 139 per 100,000 live births by 2015, against the target of 109. However, the bright line in the trend is the sharper decline, ie. 17% during 2006-09 and 16% during 2003-06 compared to 8% decline during 2001-2003.

Source : NFHS, DLHS, M/o Health and Family Welfare With the existing rate of increase in deliveries by skilled personnel, the achievement for 2015 is likely to be 62% only, which is far short of the targeted universal coverage of 100% FOGSI is now involved in many social projects ranging from anemia eradication to village adoption.

Landmark Yatras as social outreach initiatives were undertaken. These included the **Ganga Yatra** and the **Bharat Jagruti Yatra** which reached out to rural populations to create health awareness.

"Investment in Knowledge pays the best interest" Benjamin Franklin.

The successful implementation of any project depends on the orientation and technical skills provided to the medical and paramedical staff. FOGSI standardized training modules which have been pre-tested and with the help of these modules, FOGSI assists in the planning and implementation of training, as well as in encouraging community participation.

FOGSI and HIV

Dr Narendra Malhotra initiated the following HIV-AIDs programmes to tackle the HIV scourge (2008)

- FOGSI-UNICEF NACO project
- FOGSI-National HIV PEP Hotline-09997177999

  As of now only 10-15% of the total HIV +ve pregnant women are receiving PPTCT services, the reasons being low institutional deliveries (40%), lack of follow up and deliveries in the private sector where no guidelines are followed.
- FOGSI with NACO, WHO and NGOs like Avni Health Foundation are approaching the remotest parts of our country for managing HIV +ve women and to educate adolescents for prevention of HIV infection and for prevention of PPTCT.
- Update the knowledge of all FOGSI members with FOGSI Focus, etc

FOGSI and empowerment of women

With the increase in the number of incidents of

atrocities against women in the nation, FOGSI launched a new CSR initiative – Social Innovation – to create Value, Safety & Respect (VSR) for women by ushering in synergy among all stakeholders concerned.

Dr. Hema Divakar, President, FOGSI, said, "The awareness on issues relating to women is high these days. However, at the same time, atrocities against women, be it domestic violence, rape, sexual harassment, dowry harassment, gender-based discrimination and violence have increased. FOGSI, as a socially-conscious organization, intends to tackle these issues through long-term plans with the support of stakeholders."

The Social Innovation CSR initiative is an extension of FOGSI's 'Innovation to Implementation' theme for 2013 under which several path-breaking innovations aimed at improving women's healthcare services were successfully implemented "According to the National Crime Records Bureau (NCRB), in India, a child goes missing every eight minutes. Almost 40% of them are never found and incidentally a majority of them are girls. Similarly, violence against women continues to remain high. A survey conducted by Trust Law reveals that all kinds of violence against women are on the rise. Why are we seeing this trend despite the nation making rapid economic progress? It is time that we created consensus in favour of long-term solutions to curb this menace," Dr. Hema added.

There are several issues affecting women today and they can be broadly classified into social and criminal, but both are interlinked. Be it female feticide, child trafficking, dowry deaths, domestic violence, sexual violence, rape or gender-based discrimination and missing girls, all need the active support of the legal fraternity, policy-makers, and medical communities.

For instance, Haryana has the worst male-female ratio in India and it is below the national average (943 female against 1000 males). In Haryana, it is 879 females followed by Jammu & Kashmir (889 females); Uttar Pradesh (912 females) and Bihar (918 females) and Rajasthan (926 females) for every 1000 males. Several cases of domestic violence, especially in rural areas are going unreported. While in cities, including shanty towns, domestic violence is 40 per cent; the same in rural areas is as high as 56 per cent. According to NCRB data, 244,270 cases of crime against women were reported in 2012. While 38,262 cases related to kidnapping and abduction of women/girls; 45,351 cases were related to assault on women with intent to outrage her modesty. A whopping 106,527 cases were on cruelty by husband or his relatives while there were 8,233 cases relating to dowry death.

A survey conducted by Oxfam India and Social & Rural Research Institute has revealed that 17 per cent of working women experienced sexual harassment. The maximum number of sexual harassment cases was reported among labourers (29 per cent); domestic helps (23 per cent) and small scale units (16 per cent), which reflect the vulnerability of the underprivileged sections of society. A report released by Ministry of Women & Child Development a few years ago has revealed that an estimated 150 million girls under the age of 18 years have been subjected to sexual harassment at home and at educational institutions.

"These are disturbing facts. Sex-selective abortion and infanticide have led to lopsided sex ratios in several North Indian states; crimes against women continue to rise and late awareness has led to increase in the number of incidents. However, we need a paradigm shift to change the attitude of society towards the girl child and women," Dr. Hema pointed out.

In an effort to monitor and sensitize communities, FOGSI has set up Anti-Violence against Women Cell. Dr. Ashwini Bhalerao Gandhi, Convener/Coordinator of the Cell & Vice President, FOGSI, said, "Crimes are perpetrated against women from the womb to the tomb. FOGSI is making concerted efforts to tackle them in a systematic manner by way of creating awareness and educating the people concerned. FOGSI has a strong network of obstetricians and gynaecologists across the country and we will leverage them to tackle these societal inconsistencies."

In an effort to highlight the problems across all levels, the conclave deliberated extensively on successful campaigns, such as 'Beti Bachao', 'Arth' and 'Bitiya'. These are in line with FOGSI's Vision 2022, which is aimed at changing the way society and people perceive women in the next decade in the country. "Through this platform, it has been our endeavour to convert our FOGSI innovations into implementation. As a society we have already spent adequate time on the need for upholding the rights and dignity of women. What we now need is action that can deliver results. We hope that Naari Samman is the first stepping stone towards achieving a fair and equitable society, which is devoid of any bias against women," said Dr. Mandakini Megh, Chief Convenor, Naari Samman & Past Vice President, FOGSI

Doctors opposing sex selected termination of pregnancy (DOSST) : An organisation called **DOSST** was formed during **Dr. P.K. Shah's** time to express solidarity against female feticide.

- To spread awareness about PNDT act among members doing USG
- To spread awareness about ill effects of female sex selection techniques and female feticide in the general public
- Create a media image of FOGSI as strongly condemning the female sex selection techniques and female feticide
- To review the effectiveness of the implementation of the act

FOGSI's initiative to **Save the girl child :**

a. Holding workshops for doctors, nursing staff, medical students and public organizations

b. Reaching out to the public through public forums, women activists, religious heads, film and TV personalities, to spread the message of "say NO to female feticide"

The Women's Health Forum (WHF) – India was launched. The WHF endeavours to ensure that this mission is completed successfully.

Dr. Duru Shah, as President FOGSI, had initiated many social programs such as the "Growing Up" project which educated approximately 5 million urban girls on reproductive and sexual health in India, the urban slum based (Dharavi) Adolescent Empowerment program "Kishori" and a Rural Maternal Health program "Saving the Mother project".

Dr Hema Divakar stated," Everyone in the world today recognizes that India's progress over the last 20 years has been quite phenomenal. The country has witnessed advancements in all fields but India remains "The Perpetual Paradox." Bias against a girl child is still prevailing in the country. She faces vulnerability to violence at every stage of her life-cycle. We, at FOGSI, now recognize our responsibilities beyond healthcare—encompassing not only medical, but also the social, legal, and economic ramifications. Sex-selective abortion still prevails and the "save the Girl child" initiatives work toward ensuring that "SHE is born." But, that's just the beginning..... We have to educate her, ensure safe delivery, and empower her to age gracefully. The FOGSI partnership with EmOC/PCPNDT/ANTI VIOLENCE CELL/DOSST cells are examples of the several efforts toward offering equal opportunities and ensuring safety for girls and women.

The most pressing need of the hour is to save the mothers. Every 90 seconds, around the world, a woman dies from complications of pregnancy or childbirth, yet the vast majority of maternal deaths globally are preventable. According to the United Nations, "maternal mortality is not just a personal tragedy. It is not just a developmental, humanitarian and health issue. Maternal mortality is a human rights issue." An emphasis on making emergency obstetric care available to all women who develop complications is central to reducing maternal mortality. According to Mahmoud Fathalla, past president of FIGO, "In the 21st century world, there are still millions of women who have access only to fools to catch their babies." Post-partum hemorrhage (PPH) and pre-eclampsia/eclampsia (PE/E) continue

to remain the two major causes of maternal mortality.

FOGSI Jhpiego - Emcure fast track initiative to Help Mothers Survive was launched. The program is a low dose, high intensity, focused training and capacity building of Frontline Health care Providers to handle PPH and PE/E. The mission is to train all the Frontline Healthcare Providers to prevent, recognize and treat Postpartum Haemorrhage and Pre-eclampsia/Eclampsia...The HMS fast track initiative uses the Innovative module of Mammanataalle for the training programs. The FOGSI fast track teams (led by Vice-presidents Dr. Alpesh Gandhi and Dr. Jayanth Rath), lead the project through master trainers who have received technical training by Jhpiego. This is run with the teams in 100 medical colleges pan India and also in all the Ob Gyn Societies. Every post graduate will be sensitized to protocol-based practices for AMSTL, PPH, and PE/E. Help Mothers Survive. This will make an impact on reducing MMR.

"We can't help everyone—but everyone can help someone" Ronald Regan. The following programs have been instituted in 2013 under the capable stewardship of Dr Hema Divakar.

KEY—Keep Educating Yourself : Each one teach one (CMEs in every society)

FOGSI MSD KEY PROGRAM-Cancer cervix—Kill it before it kills you

FOGSI MSD KEY PROGRAM—Building contraceptive choices

FOGSI HLL KEY PROGRAM—Building contraceptive choices

FOGSI CIPLA KEY PROGRAM—Building contraceptive choices

FOGSI BAYERS KEY PROGRAM—Building contraceptive choices

FOGSI EMCURE KEY PROGRAM—Save the Mothers

FOGSI Uth Health KEY PROGRAM—Single Step to stop Diabetes

FOGSI TORRENT KEY PROGRAM—Save the Uterus

FOGSI WELLESIA KEY PROGRAM—PCOS UPDATE

FOGSI ACKUMENTIS KEY PROGRAM—PROGESTERONE UPDATE

FOGSI GSK KEY PROGRAM—ADOLESCENCE—ACT NOW!

FOGSI WANBURY KEY PROGRAM—9 months 9 challenges

Dr Hema Divakar has taken a herculean task not only to educate doctors, but also to educate the masses about the path to good health in her vision of an Anemia free, Diabetes free, Obesity free, economically independent, happy and confident Bharatiya Naari.

Conclusion

FOGSI has awakened the soul of the Indian woman to the fact that reproductive health is a basic human right and that she needs to look after her health for the glory of the nation and for future generations and in this, FOGSI has been ably supported by stalwarts at its helm who will continue to inspire the generations to come.

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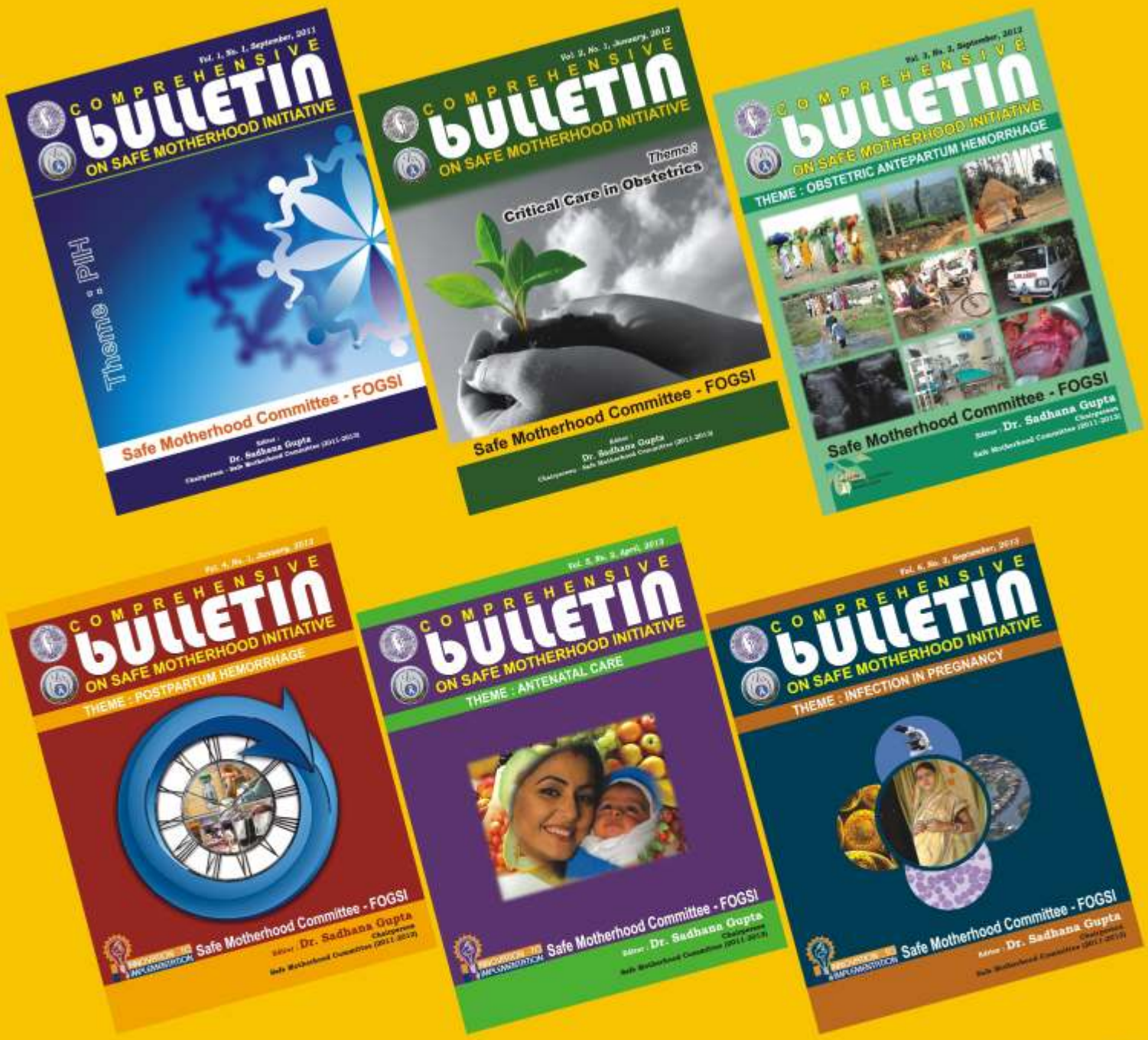

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"Women are not dying because of a disease we cannot treat, they are dying because societies have yet to make the decision that their lives are worth saving"

– Mamoud Fathalla

"Those who would benefit most from a service are least likely to obtain it"

"The test of any civilization is the measure of consideration and care which it gives to its members"