KFOG JOURNAL

KERALA FEDERATION OF OBSTETRICS AND GYNAECOLOGY

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CONTENTS

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Editorial

No duty is more urgent than that of returning thanks and expressing gratitude.

This being the last bulletin under my editorship , I take this opportunity to thank each and everyone who whole heartedly supported me for the past 3 years in doing my duty as the journal editor of the KFOG.

Before handing over the responsibilities to the new editor, let me specially thank all my presidents - Dr.N.S.Sreedevi, Dr.T.Narayanan ,Dr.V.P.Paily, Secretary General Dr.Jayandhi Raghavan and all Committee chairpersons for their help and guidance. I also thank presidents and secretaries of all societies and clubs and all those who contributed articles to the journal. I express my gratitude to my family, Pharma companies and David of Smritidesign without whose help, I could not have brought out the journals on time.

Let our journal grow from strength to strength in the coming years.

Dr. Fessy Louis T

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KFOG JOURNAL
KERALA FEDERATION OF OBSTETRICS AND GYNAECOLOGY

President's Message

Message from the President

Dear colleagues,

We all are gearing up for the next AKCOG at Kottayam, marking the end of one year of activities of KFOG. It is also the launching pad for the next year. Last year was really hectic but we could complete all the activities proposed in the calendar of activities, thanks to the whole hearted support of the KFOG managing council members especially the secretary general Dr.Jayandhi Raghavan and the office bearers of the various member societies and clubs.

The year 2012 is going to see a change of functionaries at the KFOG hierarchy. Since I have been asked to hold the Presidentship for a second year, I will take this opportunity to thank the outgoing team and welcome, in advance, the new members who will be elected at Kottayam on 10th February.

I feel that as a state body we need to bring more cohesion in the structure and function of the federation. We should have a healthy competitive spirit among the member bodies. The Best Society award is for inculcating such a spirit. I am glad that this year there is more interest in winning the trophy. Similarly, the undergraduate quiz aims to get young medicos interested in our specialty. The young talent award is to recognize our bright youngsters and encourage them to come forward and lead the organization.

We are working hard to release the next edition of Why Mothers Die, Kerala covering the years 2006 -2009. Similarly the obstetric management protocols also will be released. We hope these two volumes will turn out to be useful reference book in the day to day management of problems in this difficult and challenging specialty.

Talking about challenge , there is no scarcity for it in our specialty. Obstetricians and obstetric practice are always dear to the media, the public and the legal profession. The high cesarean section rate, a labour which ended in a mishap or a maternal or neonatal death will always be of high news value. Rather than dismissing the criticisms as unjust and unkind attacks by some vested interests, our tradition had been to introspect and see whether we can do any better and bring about improvement in the care of our patients. This demands updating our knowledge, supporting our

Cont. page-3

Secretary's Message

Very best wishes from KFOG secretariat!

Dear colleagues and friends,

Best wishes for all the members and a very warm and peaceful 2012!

The year 2011 had its magical spin very swiftly amongst the varied activities of KFOG and our own personal, busy schedules and engagements. Hope to have an active and successful 2012 too!

We the KFOG team were able to present a dynamic and gratifying show throughout the year under the leadership of Prof.Paily and thanks to the untiring efforts and supports by our esteemed members from Thiruvanthapuram to Kasargode. We could effectively pursue a lot of important activities like Nursing Assistant Training for staff from KHS; Why Mothers die workshops, vaginal surgery workshops, and workshops on CTG and Doppler. These workshops definitely have created much enthusiasm and desire to improve the quality of care in OBG management throughout the state.

One of the important miles stone in the KFOG activities is the formation of EMOCALS trainers for the state. Now we have enough 'EMOCAL TRAINERS' for this important programme. The proposed training sessions for the all General OBG practioners throughout the state will definitely help to improve our approach to the emergency care and thus will help to reduce maternal mortality. Once again thanks to Prof.Paily and Team for their untired effort and work to make this possible. I request all the societies in the state to take up this programme in the current year and make this programme a great success. Let this be another feather to the hat of KFOG in the coming years.

As you are aware, 34rd AKCOG will be held at Changanacherry, Kottayam under the joint auspices of KFOG and Kottayam society. , which we hope and pray, should be a mammoth success. During this AKCOG 2012 I have to hand over the responsibilities to the new secretary general after completing my 3 years of secretary ship. I take this opportunity to thank all my presidents - Dr.N.S.Sreedevi, Dr.T.Narayanan and Dr.V.P.Paily, for their guidance and help during this period. I also thank all Committee chairpersons, all presidents and secretaries of societies and clubs, all members and friends, and my family for all the help rendered to me to complete the period successfully.

Further this being the last bulletin of the present team it is my duty to cordially thank all those who rallied behind KFOG in all its activities. My special thanks to Dr.V.P. Paily our president and President elect,

Cont. page-3

KFOG JOURNAL
KERALA FEDERATION OF OBSTETRICS AND GYNAECOLOGY

Caesarean section- evaluation, guidelines and recommendations

Dr Gita Arjun, FACOG, Chennai

Caesarean sections are life-saving procedures which are firmly ensconced in obstetric practice. With the immense advances in anaesthetic services and improved surgical techniques, the morbidity and mortality of this procedure has come down considerably. This has, albeit wrongly, emboldened obstetricians to perform more and more caesarean sections. The universal upswing in caesarean rates has hit both developing and developed countries. Unfortunately, given our economic constraints, India is hardly equipped to handle the repercussions of such an unprecedented increase in surgical interventions.

Over the last 20 years, there has been a disturbing increase in the rate of caesarean sections in India. It used to be a matter of pride to have low caesarean section rates, especially in teaching hospitals. A collaborative study done by the ICMR in the 1980s showed a caesarean section rate of 13.8 % in teaching hospitals. This rate has risen significantly. A study to examine the escalating rates of caesarean sections in teaching hospitals in India compared the rates between 1993-1994 and 1998-1999. The data was from 30 medical colleges/teaching hospitals. The overall rate of cesarean section increased from 21.8% in 1993–1994 to 25.4% in 1998–1999. What was alarming was that 42.4% were primigravidas and 31% had come from rural areas. Because of the rise in primary caesarean sections, there is a proportionate rise in repeat sections. Between 1990 and 1992, the repeat caesarean section was between 30-45% in teaching hospitals in Madurai and Chennai, India.

In a study over a two-year period in an urban area of India, the total caesarean section rates even in the public and charitable sectors were 20% and 38% respectively. In the private sectors, the rate was an unbelievable 47%. A similar study from an affluent part of Chennai showed that 1 out of 2 women (45%) had a caesarean section . These rates cannot be justified.

The rate of caesarean section is relatively higher in Kerala and Goa . A 1995 study in Tiruvananthapuram City, India found a three times higher rates of caesarean in the private sector (30%) compared with the public sector (10%) . Apart from these states, in Andhra Pradesh, Bihar, Gujarat, Karnataka, Punjab and Uttar Pradesh, the chance of having a caesarean is four or more times in private institutions as compared to public institutions. This raises the question of whether this life-saving surgical intervention is being motivated by monetary profit in several states .

Public perception of caesarean sections has seen a swing from a 'failure of obstetric care' to being 'safe for mother and child'. There have been occasions where an obstetrician has been manhandled for a poor obstetric outcome and is blamed needlessly for not having done a caesarean section. At the same time media glare has fallen

Cont. from page-2

members in their practice and in upholding moral values. No doubt, it needs concerted efforts from each and every one of us. Let us dedicate ourselves to this task ahead.

I use this opportunity to congratulate Dr. Fessy Louis for working steadfast and bringing out this fourth number of KFOG journal this year, keeping his promise made earlier.

Jai KFOG
Dr. V P Paily

Cont. from page-2

Dr. Ambujam ,Chairman, Maternal and Foetal Medicine committee, Dr.V.Rajasekharan Nair, Laison Officer to Govt, Dr. T. Narayanan, immediate past president, Dr. Neetha George and Dr.Bindhu, coordinators for EMOCALS training programme and all other committee chair persons for their timely help, coordination, guidance , co-operation and selfless involvement.

Hats off to Dr.Fessy Louis and his team for the wonderful work behind the KFOG journal.

Wishing all of you a happy reading and once again a successful NEW YEAR of vigorous and healthy activities.

Jai KFOG
Dr.T.Jayandhi Raghavan
Secretary General, KFOG

unfavourably on the rise in rates of caesarean sections. Why have the rates increased and what are the strategies to reduce the rates of caesarean sections?

Rising rates of caesarean sections- why?

It is difficult to pinpoint an exact cause for the rising rates of caesarean sections. It is also not easy to fix an optimal caesarean section rate. In the United States, a 15% caesarean section rate is seen as the goal to achieve . The World Health Organization (WHO) too recommends 15% as the optimal caesarean section rate. It is interesting to note that even a decade ago, only three countries had rates lower than 15 % . India has not established guidelines for acceptable caesarean section rates. Taking into account the usual obstetric indications, the acceptable rate seems to be 10-15 % .

The caesarean section rates are definitely influenced by several factors: teaching vs. non-teaching hospitals, private vs. public hospitals, solo vs. group practice, socioeconomic status of the patient, and the round-the-clock availability of ancillary support like anaesthetic, paediatric and blood bank services.

High risk patients do not show a large variation in caesarean rates, regardless of where they deliver. The largest variation occurs in the low risk patient, specifically the nulliparous patient with term singleton foetuses with vertex presentation without other complications. It has been shown that in this group perinatal morbidity and mortality rates are not improved by the performance of a caesarean section . In another study, perinatal mortality increased despite doubling of the caesarean section rate. These findings suggested that the increase in caesarean sections did not improve perinatal deaths . A study from a hospital in Mumbai showed that though the caesarean section rate increased from 1.9% to 16% in 40 years, but without any improvement
in overall perinatal outcome beyond a caesarean section rate of 10% .

In fact, an unindicated caesarean section may do more harm than good. In a low risk, uncomplicated pregnancy, caesarean section has an eightfold higher mortality than vaginal delivery , 8–12 times higher morbidity and a higher incidence of complications in subsequent pregnancies.

In India, one of the problems that may escalate caesarean section rates is the high prevalence of solo practices as opposed to group practice. For a busy obstetrician, the practical realities, such as a waiting room full of patients or a desire to deliver the patient before going away or during daytime hours, could be a major incentive to proceed with a caesarean section.

Patient demand has complicated this already complex issue. In the United Kingdom, patient demand was the third commonest indication for elective caesarean section in 1992 . Fear of the pain of labour, and avoiding injury to the perineum which may lead to sexual dysfunction, are some of the reasons quoted. In India, there is a great emphasis placed on the astrological calendar. The demand for the baby to be born in an auspicious time has placed great pressure on obstetricians and when they acquiesce to this demand, the rate will naturally go up .

Evidence based practice guidelines for India

Since caesarean sections are one of the most frequently performed operations in women, any attempt to reduce morbidity, even with relatively modest differences for a particular outcome, is likely to have significant benefits in terms of costs and health benefits for women.

In an under resourced country like India, it is important to look at the interventions which would make a difference. The following are evidence based strategies and interventions which have been shown to reduce morbidity, the cost of the operation and benefit the patient.

Antibiotic usage in caesarean section

The single most important risk factor for postpartum febrile morbidity is a caesarean section. In developing countries, other factors including malnutrition and poor social conditions are likely to exacerbate the already higher risk of infectious morbidity and mortality associated with caesarean section. The high prevalence of poor social and economic conditions, anaemia, blood loss, vaginal examinations, prelabour rupture of membranes and other pathological conditions could account for a stronger protective effect of antibiotic prophylaxis .

A systematic review of published data has shown that use of prophylactic antibiotics in women undergoing caesarean section substantially reduced the incidence of episodes of fever, endometritis, wound infection, urinary tract infection and serious infection after caesarean section .

In India, where in some areas 1 out of 2 women are delivering by an abdominal route, deciding which antibiotic is most suitable as a prophylactic for caesarean section is very important. The systematic review of The Cochrane Database recommends the use of ampicillin or first generation cephalosporin (cefazolin). A single dose given just at the start of surgery with a possible 1 or 2 doses after the procedure is the recommendation .

The alarming abuse of antibiotics, with women getting expensive antibiotics in multiple doses over several days, should be abandoned.

Closure of peritoneum

Unfortunately it continues to be a practice to close the visceral and parietal peritoneum after a caesarean section. A systematic review has shown that there is improved short-term postoperative outcome if the peritoneum is not

closed. Long-term studies following caesarean section are limited, but data from other surgical procedures are reassuring. There is at present no evidence to justify the time taken and the cost of peritoneal closure .

1 or 2 layer closure of the uterine incision

First introduced by Hauth and colleagues in 1992 , a continuous locking single layer closure of the uterine incision seemed to reduce the operative time. Subsequently, Bujold and associates have published data showing a 4-fold increase in uterine rupture in a subsequent labour following single layer closure . In an under resourced setting like India where a uterine rupture can be a catastrophic if not fatal complication, a traditional 2-layer closure seems to be safer.

Interval between caesarean sections

The rupture rate for women who delivered their second babies within 24 months of the caesarean section is 3 times compared to births more than 24 months beyond the caesarean . It is therefore very important to implement reliable birth control methods for two to three years after a caesarean section.

Early feeding after an uncomplicated caesarean section

Early initiation of feeding was associated with reduced time to return of bowel sounds, reduced postoperative hospital stay and with suggestion of reduced abdominal distention. There is no evidence to justify a policy of restricting oral fluids or food after uncomplicated caesarean section .

Curbing rising caesarean section rates: practical strategies

Audit and feedback

Obstetricians in institutional or private practice must accept an audit of their practice norms. An audit must be perceived as necessary and must be a part of clinical processes and protocols. Where the baseline of adherence to recommended practices is low, which is often the case in under-resourced settings, there is a greater likelihood of success with audit and feedback .

Educating physicians and patients alike on acceptable caesarean rates will have a positive effect. In institutions, both public and private, periodic peer review will help bring down the caesarean section rate .

There are several indices that should be looked at: total caesarean section, primary caesarean section rate, and repeat caesarean section. To eliminate confounding factors, it seems better to focus on nulliparous women at 37 weeks of gestation or greater with singleton foetuses with vertex presentation. The caesarean section rate in this group should be between 15 and 17% .

Solo versus group practice

It has been shown that if a practitioner is present around the clock in an institution, the caesarean section rate will come down . Obstetricians in private practice should make an effort to structure formal or informal practice groups which will provide 24-hour in-house obstetric coverage.

Fear of litigation

Brain damage in a newborn has been traditionally blamed on the obstetrician. There has been evidence for decades that intrapartum factors or birth injury does not result in brain damage. Education of obstetricians, paediatricians and lawyers regarding this might bring down caesarean section rates.

Vaginal birth after caesarean section (VBAC)

There is consensus that a trial of labour is appropriate for most women who have a single previous low-transverse caesarean delivery though VBAC may have a small degree of risk for both mother and foetus . This used to be accepted practice in India but repeat caesarean sections seem to be on the ascendancy. In properly selected cases allocated to undergo VBAC, 60-80% will have a vaginal delivery. It is important to have an in house obstetrician, 24 hour anaesthetic, paediatric and blood bank services to safely handle VBAC.

External cephalic version

Hannah et al in a multicentric study showed that compared with planned vaginal birth, planned caesarean section reduced perinatal or neonatal death or serious neonatal morbidity for the singleton breech baby at term, at the expense of somewhat increased maternal morbidity .

It has also been shown that external cephalic version will decrease the rate of primary caesarean section for breech presentation. In both developing and developed countries a planned caesarean section should only be considered only after external cephalic version has failed .

Conclusion and recommendations:

With a multitude of health care delivery systems in India, implementing universal protocols becomes an onerous task. To actively battle the unhealthy trend of increasing caesarean section rates, the impetus for change has to come from both the individual practitioner and from the institutional care givers. The public has to be well educated on their basic right to have a vaginal delivery. They must also be actively informed that a caesarean section does not automatically protect maternal and foetal health.

KFOG JOURNAL
KERALA FEDERATION OF OBSTETRICS AND GYNAECOLOGY

FETAL ECHOCARDIOGRAPHY

Dr.Jeena Baburaj, Badagara

The main objective of fetal echocardiography is the prenatal diagnosis of the congenital heart diseases. The feasibility of the prenatal diagnosis of congenital heart disease was first established by Kleinman et al., in 1980. Alien et al. described systemic approach to the bidimensional examination of the fetal heart. A number of reports have since been published on prenatal diagnosis of cardiac anomalies. The incidence of cardiac anomalies is 7-10 per 1000 live birth. The incidence is higher in abortions and still births (24/ 1000) and in fetus with chromosomal anomalies. A significant proportion of the cardiac anomalies detected in-utero is associated with chromosomal defects. Between 1950ad 1994 42%of infant deaths reported to the world health organization were attributable to cardiac defects. Detection of fetal cardiac malformations has always been a challenge to the sonologist. Over the years better understanding of fetal cardiac anatomy and hemodynamics has made it possible to detect a number of fetal cardiac malformations during a screening ultrasound done between 18-20 weeks. Introduction of the cine image memory in ultrasound scanners and tissue harmonic imaging has improved the detection of fetal cardiac anomalies. A thorough understanding of the cardiac anatomy, equipment with good resolution and cine image memory and operator expertise are essential prerequisites for achieving a reasonably good detection rate for fetal cardiac anomalies

Etiology of cardiac malformations

1. multifactorial mode of inheritance—common cause for CVS anomalies
2. single gene disorders –autosomal recessive syndromes e.g.: hypo plastic left heart syndromes
3. associated with syndromes – Noonan' syndrome and pulmonary stenosis
4. with chromosomal abnormalities

Risk factors for cardiac defects

1. maternal –diabetes, collagen vascular diseases, phenylketonuria, alcohol abuse, drugs
2. fetal – non immune hydrops, IUGR, polyhydramnios, detection of anomalies involving other systems, increased nuchal translucency
3. familial risk factors—sibling history of cardiac disease, cardiac defects in parents, family history of cardiac defects

in spite of these risk factors 40—45% of the cardiac anomalies are seen in the low risk pregnancies where an abnormal four chamber view leads to a more detailed examination of the heart and the subsequent diagnosis of a cardiac anomaly

Step by step approach to the fetal heart

During ultrasound examination we perform a two dimensional study of a three dimensional organ. The fetal heart occupies one third of the thoracic cavity. In the fetal life, heart is seen in the mid position of thorax with the apex to the left and is more horizontally placed. The base of the heart is close to the spine and the apex is close to the chest wall. Optimal position of the fetus for cardiac evaluation is when the fetal spine is posterior or postero-lateral. If the spine is anterior imaging should be attempted after the fetus changes its position. Fetal cardiac evaluation can be divided in to seven main steps.

1. Determination of the cardiac situs,
2. Estimate the cardiac size and the axis,
3. Four chamber view,
4. Out flow tracts,
5. Real time evaluation of the valves, septae and contractility of ventricles,
6. M-mode studies,
7. Colour flow and Doppler studies

Determination of the situs

Evaluation of the fetal heart starts with assessing the abdominal situs. Position of the stomach and relationship of the IVC to the right atrium will help to determine the right and left side of the baby and the cardiac situs.

1. Situs solitus – abdominal and cardiac situs are normal. stomach is on the left side and apex of the heart points towards the left
2. Situs inversus totalis — fetal stomach is on the right side and liver on the left side of the abdomen, heart is on the right side of the chest (dextrocardia) with the apex point to the right.
3. situs ambiguous – liver is in mid poison, usually associated with polysplenia / asplenia syndrome with high incidence of cardiac abnormalities
4. pseudo - dextrocardia – heart is pushed to the right chest with the apex pointing to the left due to the presence of an intrathoracic SOL, or abdominal contents as in a diaphragmatic hernia, or heart is pulled to the right due to the lung agenesis

Estimation of cardiac size and axis

The four chamber view of the heart is seen in a transverse section of the fetal thorax. The heart lies horizontally in the anterior half of the thorax with the apex pointing to the left. It occupies approximately one third of the thorax. If the cardiac circumference is more than 50% of the thoracic circumference, a diagnosis of cardiomegaly can be made. The apex of the heart is at an angle of 30—45 degree to a line drawn from the spine to the anterior thoracic wall

Four chamber view

Three deferent angles for imaging the four chamber view are

1. Apical view, 2. Basal view, 3. Lateral view.

Imaging should be done in at least two of the views

Apical four chamber view — is obtained when the spine is posterior and the beam traverse from the apex to the base of the heart and is parallel to the interventricular septum. This is the best view to visualize the cardiac axis, ventricular and atrial sizes, flap of the foramen ovale, the atrioventricular valves. Pulmonary veins can be seen entering the left atrium.

Basal four chamber view — when the spine is in an antero-lateral position, the sound beam enters through the right posterior chest wall and traverse from the base to the apex of the heart.

Lateral view – the fetal spine is to the right or left of the mother. In this view the sound beam is perpendicular to the interventricular system

Identification of the chambers, valves, arteries, veins and septae in the heart

Veno-atrial connections – IVC and SVC drain in to the right atrium. Pulmonary veins drain in to the left atrium

Atria—both atria are of equal size, the chamber nearest to the thoracic spine is the left atrium in which the flap of the foramen ovale is seen. The left atrium forms the base of the heart. Cross section of the descending thoracic aorta is seen between the left atrium and vertebral body. Right atrium is anterior to the left atrium and forms the right boarder of the heart.

Inter atrial septum — the atrial septum has two components. Septum primum that develops first is attached is seen attached to the crux of the heart. The septum secundum is seen to the right of primum septum and is attached to the roof of atrium. Between the two septae is the foramen ovale. The flap of the foramen ovale is formed by the septum primum and is seen within the left atrium

Foramen ovale is best visualized in the apical and lateral four chamber views

Ventricles

The right ventricle is closest to the anterior chest wall. The apical portion of the ventricle has trabeculations and is formed by the septopatietal muscle bundle other wise called the moderator band which is well visualized in the basal and apical four chamber views. The left ventricle is seen posterior to the right ventricle and has a smooth walls the left ventricle forms the left boarder and apex of the heart. An echogenic spot often seen within the ventricular cavity represents the chordae tendinae or papillary muscle. Both ventricles are of almost equal size the right ventricular cavity is larger than the left ventricle especially with advancing gestational age

Interventricular septum – has two portions namely the membranes portion which is thin and is close to the crux of the heart and muscular portion which is thick and near the apex the septal thickness is best assessed in the lateral four chamber view

Atrioventricular valves – the tricuspid valves opened from right atrium to right ventricle and have three leaflets namely anterior, posterior, and septal. The tricuspid valve inserted more epically in to the interventricular septum than the mitral valve only the septal and anterior leaflets of the tricuspid valve are visualized in the four chamber view. The anterior leaflet is larger than the other two leaflets. The mitral valve opens from the left atrium to left ventricle and has anterior and posterior leaflets. Anterior leaflet is larger than the posterior leaflet. The atrio-ventricular valves are imaged well in both basal and apical four chamber views. The valve motions to be evaluated in real time. The crux of the heart is formed by the atrioventricular valves, membranes portion of the IVS and septum primum and is best visualized in the lateral view

Out flow tract imaging — the out flow tracts can be imaged both in the long axis and short axis views.

LVOT—the LVOT and aorta are posterior to the RVOT and pulmonary artery. The LVOT is narrow and is called the aortic isthmus. The anterior mitral leaflet is continuous with the posterior aortic wall and the interventricular septum is continuous with the anterior aortic wall.

RVOT—the RVOT is conical in shape and is called the infundibulum. The infundibulum, otherwise called the subpulmonic conus separates the tricuspid valve and the pulmonary valve in contrast to the mitral valve and the aorta, which have a fibrous continuity. At the root the aorta and pulmonary artery are placed in a Criss-cross manner the aorta being posterior and the pulmonary artery anterior for a short distance beyond the root the ascending aorta and the main pulmonary artery are parallel to each other.

Semi lunar valves— the movement of the pulmonary and aortic valves is well appreciated in real time and appears as bright streaks when the valves are in closed position. The diameter of pulmonary artery is slightly larger than the aorta after 32 weeks of gestation. The root of the pulmonary artery compared with the aorta has a constant relation of 1.09to1 with SD of +/-0.75-1.45 through out pregnancy.

The aortic arch is left sided the aortic arch gives rise to the brachiocephalic, left common carotid and left subclavian arteries. The ductus arteriosus is present only in fetal life which is conduit between the left pulmonary artery and the descending thoracic aorta just beyond the origin of the left subclavian artery. The pulmonary artery, ductus arteriosus and descending aorta together form the ductal arch and should not be mistaken for the arch of aorta. The differentiating feature is the origin of great arteries from the arch of aorta

M-MODE

Real time directed M-mode examination of heart is useful for evaluating

1. cardiac chamber measurements
2. wall thickness
3. contractility of ventricles
4. valve movements
5. heart rate and rhythm

Doppler echocardiography

Doppler echocardiography is used to study blood flow within the heart especially in pathological states like shunts and incompetent valves.

Colour Doppler

Colour Doppler is essential for studying the hemodynamics as it increases the diagnostic accuracy of cardiac defects.

KFOG Images

CME on CTG, Doppler and Post op complications at **Alleppey**

Dr.Kanthi Bansal , FOGSI Endometriosis committee chairperson inaugurating the workshop at **Calicut**

Inauguration of ''Work Shop On Critical Care In Obstetrics'' at **Kannur**

Distribution of Labour room equipments to District Hospital by **Cochin** society

Onam celebrations by **Kottayam S**ociety

Installation of New Office Bearers at **Thrissur** Society

Cochin society receiving Best society Award and Dr.Durushah award from FOGSI President during AICOG 2012 ,Varanasi

Inauguration of PG training Programme 'Force 'at **Thiruvanathapuram**

Saluting to the Professional Excellence of Kerala Gynaecologists Community...

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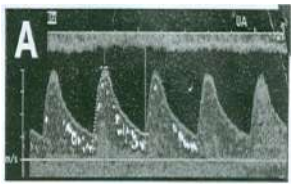
DOPPLER IN OBSTETRICS OBSTETRICIANS PERSPECTIVE

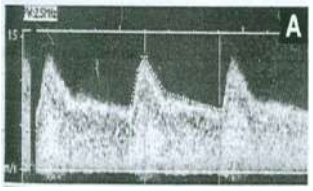
Dr Mini Isac
Professor, MOSC Medical college Kolenchery

Introduction : Primary objective of ante partum surveillance is to identify fetal compromise and improve fetal survival and wellbeing by timely intervention. NST & BPP has become an integral part of high risk prenatal care . Doppler ultrasound gives non invasive assessment of umbilical and fetal circulation .Doppler evaluation is the only fetal surveillance modality supported by evidence that improve perinatal outcome.

For the fetus to achieve maximal growth potential the uterine – placental – fetal circulation must be normal. In normal pregnancy there is dramatic decrease in vascular resistance , increase in blood flow through placenta via progressive loss of musculoelastic media of spiral arterioles due to trophoblastic invasion of vessels. End result is increase in end diastolic velocity.



Umblical artery flow



Uterine artery flow

In abnormal placentation as in IUGR and PE there is villous obliteration and placental infarcts and elevated umbilical artery resistance. Umbilical artery is chosen for evaluation since it extend from fetus to placenta and reflect the resistance pattern downstream within the placenta. Severity of placental function is clinically assessed in fetal and maternal compartment with Doppler ultrasound. Fetal vessels which are studied are arterial - umblical artery , middle cerebral artery , venous – ductus venosus , inferior vena cava.

Resistance to blood flow in a vessel is obtained from index of resistance.

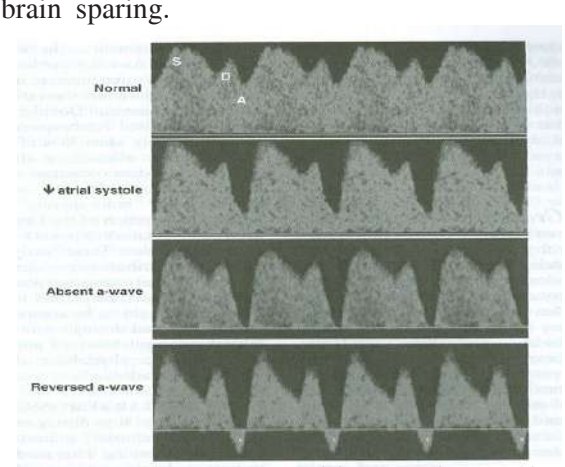
S/ D Ratio

P I = S – D / Mean velocity

R I = S – D / S

S / D d" 3 , R d" .6 is considered normal after 27 weeks of pregnancy.

Early vascular response in placental insufficiency is increase in umblical artery S / D ratio. When 30 % of villous blood flow is affected there is an increase in S/D ratio. Redistribution of blood flow occurs in fetus in an attempt to deliver more oxygen to vital organs. There is cerebro vascular auto regulation and decrease in resistance to blood flow. MCA PI decreases which convey the message that fetus is adapting appropriately to hypoxia by brain sparing.



Ductus venosus play a critical role in shunting most oxygenated and nutrient rich blood from hepatic part of umbilical vein to the right atrium which is directed through foramen ovale to left atrium and then to left ventricle. Myocardium and brain get most oxygenated blood. Decline in velocity of nutrient blood directed to left atrium reflected as reduced flow through ductus venosus. D V is only vessel which has forward flow in all phases of cycle.

S wave denotes flow during systole. D wave denotes flow during diastole . A wave denotes flow during atrial contraction . Reversal of 'a' wave predict fetal pH < 7.2 with 65% sensitivity and specificity of 95% .

When hypoxia continues late vascular response occurs leading to decompensation.

Fetal response to chronic deprivation

Flow redistribution
Reduced amniotic fluid
AEDV in umbilical artery
Loss of fetal movement
Loss of FHR variability
Reversal of end diastole flow in umbilical artery
DV a wave reversal
Fetal circulatory collapse and death
Doppler and BPP are synergestic in predicting acid base status of fetus.

Indication for umbilical artery Doppler monitoring

Primary	**IUGR**	
	PE	**Primary**
		Super imposed
Multiple gestation		**Discordancy**
		Growth restriction
		TTTS
Extended		**Autoimmune SLE / APLA**
		Pre gestational diabetes with vasculopathy
		Sickle cell disease

In low risk pregnancy umbilical artery doppler did not show any improvement in perinatal outcome. Routine doppler should be discouraged in clinical practice.

Management of high risk pregnancy with normal U A Doppler

Pregnancy is followed up with weekly Doppler. NST or BPP is used as back up test weekly. If there is worsening of clinical situation fetal monitoring is intensified.If fetal and maternal condition is reassuring pregnancy is continued upto maturity.

Management of high risk pregnancy with elevated UA Doppler indices

Obstetrical management depends on severity of doppler abnormality , duration and maternal complications. It is followed up with weekly Doppler , thrice per week NST / BPP . Betamethasone is given if less than 34 weeks of pregnancy. During the monitoring period end diastole flow might improve which may be transient. Pregnancy is continued upto maturity . If fetal compromise occur during waiting period such as non reassuring NST pregnancy should terminated.

When pregnancy is less than 28 weeks optimal timing of delivery remains uncertain . Clinical trails

When it is absent diastole flow

< 28 weeks	e ”28 to < 34 weeks	e”34 weeks
Delivery	Steroids Fetal surveillance daily NST, BPP, Doppler	Conservative
3 4 weeks	Reassuring	UA reversal DA absent ‘a’ wave Non reassuring CTG BPP<4
		Delivery

failed to show any difference in mortality or developmental delay at 2 years in the immediate or delayed delivery group. There is high rate of disability in the very preterm babies . So conservative approach is advised until pregnancy advances beyond 28 completed weeks. Reversal of flow at any time beyond 28 weeks is an indication for termination of pregnancy.

Mode of delivery depend on fetal status , gestationl age , obstetric factors and associated complications . If there is reversal or non reactive NST better to do ceasarian section.

Doppler study in complicated twin pregnancy

Uneven sharing of blood volume as a result of unbalanced anastomosis can result in TTTS or selective IUGR .Diagnosis of TTTS is by USS features of discordancy in size , amniotic fluid volume difference, and haematocrit differance.A rterial and venous flow can be included in the management of these cases. Amniotic fluid volume and bladder filling assess functional blood volume. Umblical artery flow gives us an idea about placental function.

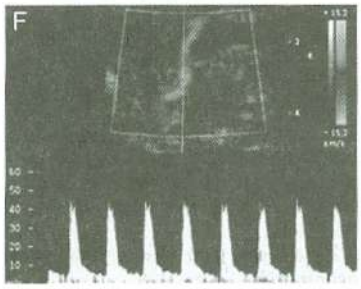
DV flow evaluates myocardial performance. Absence of ‘a’ wave in DV in a previable stage is an indication for fetal therapy. In selective IUGR with elevated S/D ratio clinical deterioration may be slow. If there is AEDF progression can be rapid. DV PI will help us in timing of delivery. Intermittent absent or reversal flow in UA carries the worst prognosis.

Middle cerebral artery Doppler

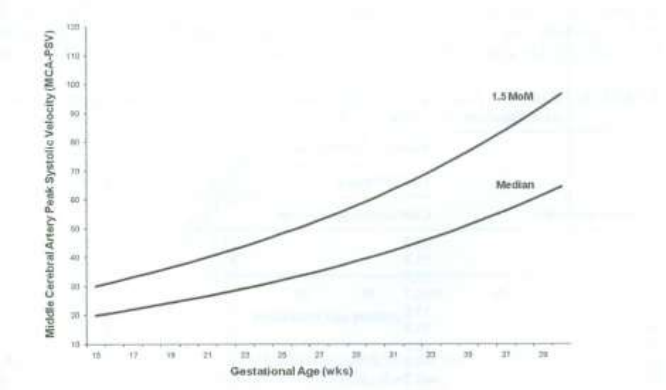
MCA Peak systolic velocity a noninvasive method has become the standard of care for the diagnosis of fetal anaemia. Fetal anaemia could be due to Rh isoimmunisation , fetomaternal haemorhage , parvovirus infection or TTTS. Commonest being Rh isoimmunisation. Once ICT has crossed the critical value

serial measurement is not required as ICT is only one factor which will decide about degree of anaemia .Invasive technique of amniocentesis and measuring bilirubin by spectrophotometric analysisis is being replaced by MCA PSV. With fetal anaemia peak systolic velocity in MCA increases. Largest peak obtained is taken.

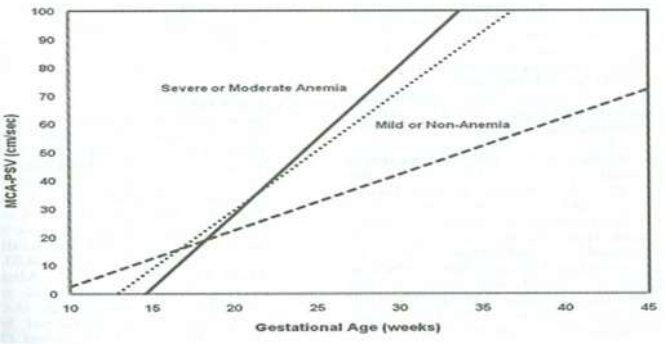
MCA PSV identify fetuses with moderate to severe anaemia if the PSV is greater than 1.5 times the median velocity in general population.



1.5 MoM is taken as the cut of value. Clinical decision is made on the basis of trend in PSV - not on single value.



If the PSV is to right of mild anaemia and level is less than 1.5 MoM pregnancy is followed up with 2- 3

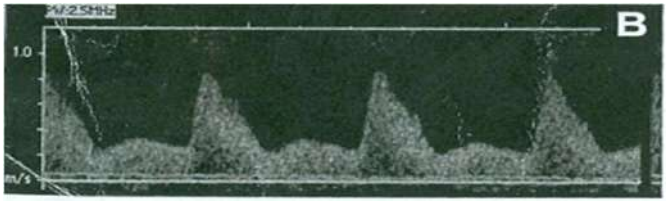


weekly interval with MCA PSV till 34 weeks of pregnancy. After that if PSV is below 1.5 MoM, pregnancy is continued till 38weeks of pregnancy then deliver. If PSV is above 1.5 MoM and pregnancy has reached 34 weeks of pregnancy terminate the pregnancy. If PSV is above 1.5 MoM with previable pregnancy repeat the test after 2-3 days later and if remaining high do cordocentesis and intra uterine therapy.

Uterine artery Doppler in predicting PE

Identifying patients at risk for PE / IUGR would allow us to intensify surveillance modality and decrease mortality and morbidity both fetal and maternal. Abnormal placental development result in high resistance pattern – low end diastole flow and early diastolic knotching.

First trimester uterine artery PI AT 11 -13 weeks if elevated predict early onset PE . It can be combined



with biochemical markers like PP3 , PlGF , Inhibin A in prediction of early onset PE.

Uterine artery Doppler PI has no relation in predicting late onset PE or IUGR

High risk cases can be given low dose aspirin from 12 weeks of pregnancy to prevent development of PE **.**

Second trimester uterine artery Doppler

Abnormal RI at 24 weeks predict PE with sensitivity of 63% and 100 % specificity.It can be combined with biochemical markers like Activin ,PP3 in predicting early onset PE .**Second trimester UA Doppler most effective for identifying patients at risk for severe pregnancy out come with abnormal umbilical artery Doppler. Not a sensitive screening for detecting mild PE / growth restriction.**With abnormal Doppler at 24 WEEKS what we should do is monitoring patients for hypertension rather than serially measuring uterine artery flow.

Conclusion: Abnormal Doppler predict low apgar score , nonreassuring fetal status, low fetal pH in high risk pregnancy. With routine Doppler in low risk pregnancy there is no improvement in perinatal outcome .Middle cerebral artery Doppler PSV is standard of care in Rh iso immunized pregnancy. Uterine artery PI in first trimester predict early onset PE and PE related IUGR. Aspirin prophylaxis can be started to prevent occurrence of PE. Uterine artery Doppler not a sensitive screening for detecting mild PE or growth restriction in general.

Ethical Issues while offering INFERTILITY TREATMENT

Dr. Fessy Louis.T,
CIMAR , COCHIN& EDAPPAL

Infertility treatment, even IVF is now clearly accepted by the majority of the population. The main break through in the infertility treatment was the birth of first IVF baby Lousie Brown in 1978. Looking back on the history, IVF has always been controversial. Patrick Steptoe and Robert Edwards were faced with scores of people claiming things like ' they were playing God' and that 'any babies produced would not have a soul'. Fortunately when Louise Brown was born and people saw a healthy baby, many of these issues were forgotten. However, as infertility and IVF technology develops, more and more ethical questions are raised.

Moral Status: At what point should embryos be considered to have human rights? Is "creating", discarding, freezing, or manipulating them right? Some believe that full human status for embryo must be accorded from the moment fertilization occurs. The arguments in favor of this are that new genotype has been established at the point of fertilization and some of these zygotes will develop into full-term babies and adult humans whose autonomy requires protection throughout life.

Is IVF ethical? : Most of the major bodies like the FIGO (Federation of International Obstetrics & Gynecology) ethical committee, the ASRM (American Society for Reproductive Medicine), the HFEA (Human Fertilisation and Embryology Act - UK) and majority of religions consider that IVF and embryo transfer are ethically acceptable. But major religions find third party involvement in infertility therapy is objectionable. I do not intend to touch upon any theosophical arguments here. Infertility is definitely a social problem which the couple faces and can be solved by either *genetic, biological* or *social* parentage, according to their infertility problem.

IVF for older women? : The most important determinant of infertility treatment outcome is the patients age. This is true even for IVF. IVF becomes less efficacious as woman ages, with take home baby rate of less than 5% in women over the age of 40 years. The excellent results of oocytes donation in these patients have encouraged clinicians and patients to believe that there need be no upper age limit to pregnancies achieved this way. It is rarely right to withhold fertility treatment on the grounds that the interests of the potential child would have served better if born to a younger couple.

Foetal Reduction: It is usually performed in the first trimester, with a pregnancy loss of about 10% even in experienced centers. It clearly improves the perinatal outcome for women carrying four or more fetuses. Controversy exists about the value of the procedure in triplet pregnancies.

PGD: Even though PGD (Preimplantation Genetic Diagnosis) involves destruction of totipotent cells, it aims at preventing birth of a child with genetic or chromosomal disorder.

Sex Selection: There are about 300 genetic diseases linked with X chromosome. Some of them like Fragile X syndrome is associated with causing mental retardation. Sex selection can be done by PGD or by Prenatal diagnosis. Sex selection for non medical reason must not be entertained. In India it is a punishable offence by PNDTA(Prenatal Diagnosis and Treatment Act).

Experiments on Embryos: Does an embryo have a right to life. The debate still continues. Those who are favouring research argue that embryo have only potential lives. Left to themselves they cannot grow into a human being and embryos have no rights till the development of central nervous system. Almost every country that has passed legislation on assisted reproduction has banned human reproductive cloning. But creation of cloned embryos for therapeutic purposes like stem cells is allowed.

Cont. page-14

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ROLE OF BLOOD COMPONENTS IN OBSTETRIC EMERGENCIES

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Obstetric hemorrhage is a leading cause of maternal mortality and morbidity. Use of whole blood and blood components is quite common in Obstetric ICU.The Obstetrician must know which product is most appropriate in a given situation. In modern obstetric practice, transfusion of whole blood is uncommon. The whole blood is separated into its components and stored. After 24 hours of extra-vascular storage, the platelets and granulocytes in the whole blood are completely lost and 2, 3-diphosphoglycerate is depleted. Without this important component, the oxygen carrying capacity of the red blood cell is significantly compromised. After one week of storage, the labile clotting factors (factors V and VIII) are also lost. One unit of whole blood contains roughly 500 ml of fluid and poses a significant risk of circulatory overload when many units are used. Other changes which occur include an increase in the plasma level of potassium and ammonia.

The blood component therapy allows the physician to treat specific derangements in the patients' blood and it is a better use of resources. One unit of blood can be separated into different components like red blood cells, platelets, fibrinogen and other clotting factors and may be used for different patients. The decision to transfuse a blood product must be individualized to the clinical scenario. The potential benefit of improved oxygen carrying capacity and improved clotting must be weighed against the potential

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Gamete Donation and Surrogacy: Sperm, oocytes or embryo donation indication goes beyond those with gonadal insufficiency. It includes genetic and inherited diseases, habitual abortions and various causes of infertility. In some countries such treatment to a single woman is forbidden. An important issue concerning third party involvement in infertility treatment is the payment to donors or surrogates. Because of the scarcity of availability of eggs and the increasing demand, the concept of *egg sharing* is propagated and accepted widely now. Here woman obtains free and subsidized IVF treatment in return for donating her surplus eggs.

Other ethical issues: In infertility practice since IVF is not offered as a public service, it falls in the domain of private services which are profit motivated. So the couple must be counseled and discussed with them in detail the cost, success rate and offered other cheaper options if they have a good chance, before offering IVF. How should infertility clinics report their success rate and promote their services? How and who to monitor their claims? The patients must not be carried away by these.

ART Bill : Many countries including India have established bodies to frame guidelines for ART. Some countries have strict law and bodies to monitor ART centers. In India we have ICMR (Indian Council for Medical Research) guidelines, which is available in the web site www.icmr.nic.in . Government is planning to place the same with certain amendments in the parliament to make into a law and constitute state wise bodies to monitor ART centers known as THE ASSISTED REPRODUCTIVE TECHNOLOGY(REGULATION) BILL.

Conclusion: The points points outlined here will provide a framework for considering numerous ethical judgments that face us in everyday infertility practice. I feel to a great extend these things has to be left to the conscious of persons conducting and working in such centers and Professional ethics and self regulation play a great role

risks, particularly infectious complications. The exact threshold for transfusion in a hemodynamically stable patient without evidence of active bleeding remains to be defined.

Packed Red Blood Cells (PRBCs)

One unit of PRBCs contains roughly 250 ml of RBCs and 50 ml of plasma. Most patients requiring replacement of red blood cells should receive it. Transfusion of one unit of it will usually increase the Hb level by 1 g/dL.Like whole blood,PRBCs have a shelf life of approximately six weeks when stored at 1 to 6°C.Frozen RBCs can be stored at -70 for years.

Fresh Frozen Plasma (FFP)

FFP is plasma extracted from whole blood within six hours of collection and frozen. A unit of FFP contains 250 ml of plasma and 700 mg of fibrinogen. One unit of FFP will increase the fibrinogen level by 10 to 15 mg/dL.It should be kept in mind that 30 minutes are required to thaw FFP in blood bank.FFP is indicated to correct deficiencies of multiple clotting factors in bleeding patients. (DIC, liver disease, vitamin K deficiency, where rapid reversal of warfarin is indicated).When FFP is indicated, 15 ml/kg is a reasonable guideline for the initiation of FFP therapy.FFP should not be used for volume expansion or as a nutritional supplement. When only Factor VIII, von Willibrand's factor or fibrinogen is needed, cryoprecipitate is a more appropriate therapeutic choice.

Cryoprecipitate

Cryoprecipitate is rich in factor VIII (80 to 120 units), fibrinogen (200mg) and also contains von Willibrand's factor and factor XIII.One unit of it will raise the fibrinogen level by same amount as one unit of FFP (10 to 15 mg/dL).However one unit of cryoprecipitate consists of only 40 ml of fluid, it more efficiently raises the fibrinogen level than does a 250 ml unit of FFP.

Platelet Concentrates

Platelets are separated from whole blood and suspended in small amounts of plasma. They can be collected from single donor or multiple donors. The volume of one unit of platelet concentrate is about 50 ml.Platelet concentrates are used for treatment of hemorrhage due to thrombocytopenia or platelet dysfunction (thrombocytopathia).In the presence of ITP where platelets are destroyed via an antibody mediated process, corticosteroids rather than platelets probably represent the better therapy. In pregnant patient, thrombocytopenia is considered to be present when platelet count falls below 100,000/mm cube. Bleeding from major surgery or trauma rarely occurs when platelet count is 50,000 or greater, assuming normal platelet function. When the platelet count ranges from 20,000 to 50,000, bleeding with major surgery or trauma can occasionally occur. Platelet transfusion may be performed prophylactically in nonbleeding patients with platelet count of 20,000 or less. Spontaneous bleeding can occur once the platelet count drops below 10,000. One unit of platelet is equivalent to the number of platelets found in one unit of whole blood and will increase the platelet count by approximately 7500 platelets per cubic mm.Platelet concentrate contain sufficient numbers of serum bound RBCs to cause alloimmunization to red cell antigens. Therefore the possibility of Rh isoimmunization by red cells should be considered in Rh-negative female recipients. Platelet transfusion is contraindicated in thrombotic thrombocytopenic purpura (TTP)

Massive Transfusion

Massive transfusion is defined as the need to administer 10 units of PRBCs in a 24 hour period. This correlates with massive hemorrhage defined as loss of greater than 50% of patients' blood volume. Anticipation and correction of coagulopathy, acidosis, and hypothermia are essential in the massively hemorrhaging patient. Controversy continues regarding the most appropriate guidelines for massive transfusion, particularly the appropriate ratio of FFP to PRBCs (most recommend FFP: PRBC of 1:1.5 to 1:1.2)

In modern obstetrics we need to use the blood components more effectively to suit the patients' requirement.

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1. Beatty MN, Blumenthal PD.The levonorgestrel-releasing intrauterine system: Safety, efficacy, and patient acceptability. Ther Clin Risk Manag. 2009 Jun; 5(3):561-74. Epub 2009 Aug 3.

2 Andersson K. The levonorgestrel in intrauterine system:more than a contracepative. Eur J Contracept Reprod Health Care. 2001 Jan;6 Suppl 1:15-22.

3. A comparative study of the levonorgestrel-releasing intrauterine system Mirena versus the Copper T380A intrauterine device during lacation: breast-feeding performance, infant growth and infant development. Shaamash AH, Sayed GH, Hussien MM, Shaaban MM. Department of Obsterics and Gynecology, Faculty of Medicine, Assiut University, Assiut, Egypt. Contraception. 2005 Nov;72(5):346-51

L.IN.WH.06.2011.0034

Abridged Prescribing Information Mirena®
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Composition: Levonorgestrel 52 mg. The initial release rate is 20 micrograms m/24 hours. **Indication:** Indicated for contraception, menorrhagia and protection from endometrial hyperplasia during estrogen replacement. **Dosage and Administration:** Mirena is inserted into the uterine cavity and is effective for five years. The in vivo dissolution rate is approximately 20 mg/24 hours initially and is reduced to 10 g/24 hours after five years. The mean dissolution rate of levonorgestrel is about 14mg/24 hours over the time up to five years. In women under hormonal replacement therapy, Mirena can be used in combination with oral or transdermal estrogen preparations without progestogens. Mirena, when inserted according to the insertion instructions, has a failure rate of approximately 0.2% at 1 year and a cumulative failure rate of approximately 0.7% at 5 years. **Contraindications:** Known or suspected pregnancy; Current or recurrent pelvic inflammatory disease; Lower genital tract infection; Postpartum endometritis; Infected abortion during the past three months; Cervicitis; Cervical dysplasia; Uterine or cervical malignancy; Progestogen-dependent tumors; Undiagnosed abnormal uterine bleeding; Acute liver disease or liver tumor and Hypersensitivity to the constituents of the preparation. **Warning and Precautions:** Migraine, focal migraine with asymmetrical visual loss or other symptoms indicating transient cerebral ischemia; exceptionally severe headache; jaundice; marked increase of blood pressure; severe arterial disease such as stroke or myocardial infarction, etc. **Adverse Events:** Common undesirable effects (occurring more than 10% of users) include uterine/vaginal bleeding including increased/decreased uterine bleeding, spotting, oligomenorrhea, amenorrhea, headache & nausea abdominal/pelvic pain, vulvovaginitis, genital discharge, acne/hirsutism, upper genital tract infections, dysmenorrhoea, breast pain, IUCD expelled (complete / partial), back pain, depressed mood/depression, migraine and ovarian cysts, etc. Text Revision: May 2011 as per CCDS Ver-14, 22-Mar-2011.
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