Chapter 15

Obstetrics and Gynaecology

NORMAL PREGNANCY

Pregnancy is a transient physiological state during a woman's reproductive years, and it requires important considerations regarding diet, lifestyle and drug therapies to achieve a good maternal and foetal outcome with minimal morbidity and mortality.

The woman should be instructed regarding:

1. Diet: Pre-pregnancy caloric requirements depend on the physical work done by the woman. The increased requirement of 300 Kcals for the pregnant state is to be made available by diet. An ideal pregnancy diet should be light, nutritious, easily digestible and rich in proteins, vitamins and minerals. The diet should consist of at least half-a-liter (if not one liter) of milk, plenty of green leafy vegetables (one katori serving in each meal) and fruits as available, in addition to the normal Indian diet consisting of a balanced cereals and pulses combination. Foods rich in iron like green vegetables and jaggery, and protein rich foods like nuts should be stressed upon. Fat consumption can be predominantly of animal source so as to take care of vitamins A and D.
2. Exercise: Any exercise the woman is accustomed to prior to pregnancy can be continued, but not to the point of fatigue. Antenatal exercises done under medical supervision are useful in pregnancy. No new exercise should be initiated during pregnancy. Sedentary women should be allowed only walking. Women with multiple pregnancy and complications like heart disease, pregnancy-induced hypertension (PIH), intrauterine growth restriction (IUGR), history of preterm labour, antepartum haemorrhage (APH) and threatened abortion should not exercise.
3. Clothing: Should be non-constricting.
4. Travel: Road travel is allowed with safety belt. Travelling in a pressurized aircraft is of no risk, but should walk about after every 2 hours.
5. Employment: Jobs requiring prolonged standing (>8 hours/day) are associated with risk of preterm delivery.
6. Clinical workup during each antenatal visit – Per vaginum examination should be done in first visit in first trimester or early second trimester. Blood pressure (BP), weight-gain, oedema feet, pallor, cardiovascular, respiratory and breast examinations are done in every visit. Symphyseal-fundal height, presentation, foetal heart rate(s), amniotic fluid volume, inquiry about daily foetal movement charting, and pelvic assessment at 38 weeks.

Rh-ve women (with Rh+ve husband) need to be monitored on similar lines with additional testing using indirect Coomb's test (ICT) at first visit, 28 weeks and 34-36 weeks. Antenatal anti-D immunoglobulin 300 mcg IM is recommended in ICT negative patients at 28 weeks of pregnancy and postpartum 300 mcg IM, if baby is Rh+ve. ICT +ve patients are to be managed only at centres with facilities for amniocentesis and/or cordocentesis, amniotic fluid optical density estimation and intrauterine foetal transfusions.

7. Women with history of neural tube defects should receive Tab. Folic acid 5 mg/d, at least 3 months before conception, and continue till 12 weeks of gestation. All other women should receive 0.5-1 mg/d in the first trimester.
8. Dose of Iron (60-100 mg elemental iron) and Folic acid (Tab. Iron folic acid) once daily from 16 weeks onwards.
9. Immunization: 2 doses of tetanus toxoid 4-6 weeks apart. Vaccines NOT containing live virus can be administered, if indicated as in nonpregnant state. ***Mumps, measles and rubella vaccines are contraindicated***. All vaccines are Category C drugs, according to FDA categorization of drugs in pregnancy.
10. Lab workup during pregnancy as follows:

Gestational age	Lab assessment
Initial (as early as possible)	– Blood group and Rh typing
	– Haemoglobin
	– Urine (routine and microscopy)
	– Screen for syphilis
	– Hepatitis B infection screening
	– HIV screening after counselling (see pre- and Post-HIV Testing Counselling Section)
	– Cervical cytology
16-18 weeks	– Ultrasound for foetal anomalies, if indicated
26-28 weeks	– Haemoglobin
	– Diabetes screening
	– Urine for albumin and sugar
32-36 weeks	– Ultrasound, if indicated*
	– Haemoglobin
	– Urine for albumin and sugar

Ultrasound to be conducted by registered persons only in places registered under the Preconception and Pre-natal Diagnostic Techniques (Prohibition of Sex-selection) Act after filling Form 'F'. (for details see Appendix XIV)

Patient education

- Determine if there are important taboos about foods which are nutritionally important for good health. Advise the woman against these taboos.

- Advise the woman on how to prepare for delivery, when to go, what to bring and where to go in emergency.
- Explain the danger signals when she should report to the health centre **immediately,** day or night, without waiting such as vaginal bleeding, convulsions, severe headaches with blurred vision, severe abdominal pain, fast or difficult breathing, escape of fluid from vagina or change in frequency or intensity of foetal movements, persistent vomiting or decreased urine output. She should go to the health centre **as soon as** possible, if any of the following symptoms appears: swelling on face or hands, abdominal pain, fever, dysuria, and feels ill.
- Explain about black staining of stools due to oral iron, therefore, not to worry about it.
- Iron and calcium supplements should be taken at different times of the day or at least 2 hours apart.
- Discuss birth spacing after delivery and counsel on the importance of family planning. Give advice on correct and consistent use of condoms for dual protection from sexually transmitted infections or HIV and pregnancy (for details on methods of contraception see section on Contraceptives).
- Sexual intercourse should be avoided when abortion/preterm labour threatens, and during the last 4 weeks of pregnancy.
- Bowel: Constipation, fissures and haemorrhoids are common during pregnancy and should be treated with fluids, bulk laxatives and stool softeners.
- Smoking, alcoholism and drugs of abuse are contraindicated. Caffeine is best avoided.
- Daily foetal movement charting (DFMC): After 28 weeks, the woman should keep foetal movement count.
- Follow-up visits: Every 4 weeks till 28 weeks, every 2 weeks till 36 weeks and weekly thereafter.

Reference

1. Prenatal Care. In: Williams Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD, (Eds), 21st Edition, McGrawhill Publication, International edition, 2001; pp. 221-248.

NORMAL LABOUR

Normal labour is defined as labour which starts spontaneously at term, with the foetus in vertex position, and terminates naturally without artificial aid or complications. It is a retrospective diagnosis.

Diagnosis of labour

- Painful uterine contractions at regular intervals with increasing intensity and frequency and stages of labour (Table 15.1).
- Cervical dilatation and effacement
- Formation of bag of membranes
- Show

Table 15.1. Stages of labour

Stages of labour		Definition	Duration	
			Nullipara	Multipara
First stage	Latent phase	Cervical dilatation less than 4 cm	12 h	8 h
	Active phase	Cervical dilatation more than 4 cm	6-8 h or rate of Cx dilatation 1 cm/hr	4-6 h or rate of Cx dilatation 1.5 cm/h
Second stage		Full dilatation of cervix to expulsion of foetus	1 h	30 min
Third stage		From expulsion of foetus to the delivery of placenta	30 min	15 min

MANAGEMENT OF LABOUR

When the patient reports to the hospital with labour pains, examination should be conducted by a doctor on duty and risk category to be assigned (Table 15.2).

Table 15.2. Common risk factors

Maternal factors	Past reproductive history	Present pregnancy	Associated medical/surgical problems
Age <16, >35	>1 abortion	Bleeding in pregnancy	Heart disease
Parity – 0, >5	Previous stillbirth	Prematurity, PROM	Diabetes
Obesity	Previous caesarean section	Postmaturity	Anaemia
Height <145 cm	Previous PPH/MRP	PIH	Jaundice
	PIH	IUGR	Hypertension
	IUGR	Multiple pregnancy	Renal disease
	Congenial anomaly in baby	Malpresentation	Thyroid disease
	Previous early neonatal death	Malposition	Epilepsy, asthma

Indications for caesarean section are shown in Table 15.3.

General examination

- Record height and weight
- Check pulse rate (PR), blood pressure (BP), respiratory rate (RR), temperature

- Look for pallor, pedal oedema, jaundice and cyanosis
- Auscultate cardiovascular and respiratory system

Table 15.3. Indications for caesarean section

Absolute indications	Elective indications	Non-elective indications
1. Severe pelvic contraction 2. Soft tissue tumours—large fibroid of cervix or lower uterine incarcerated in the pelvis, extensive CA cervix 3. Tumours of pelvic bones 4. Undilatable and indivisible strictures of the cervix and vagina 5. Some cases of extreme sacculation of uterus	1. Major degree placenta previa 2. Major degree of pelvic contraction 3. Bad obstetrics history (BOD)—recurrent unexplained stillbirth 4. Recurrent/persistent malpresentation like oblique or transverse lie 5. Pelvic tumour, especially posterior 6. Breech presentation with disproportion 7. Breech presentation not fit for vaginal delivery due to type of breech, complicated breech or patient preference 8. Cervical stenosis 9. Previous successful urinary incontinence repair 10. Uterine scar with history of sepsis 11. Gross foetal anomaly like conjoint twins or sacrococcygeal tumours 12. Combination of factors: previous caesarean with breech, elderly primi with mild disproportion, severe IUGR with Doppler changes 13. Previous 2 or more lower segment caesarean sections, previous 1 classical caesarean sections 14. Previous myomectomy with entry into uterine cavity 15. Foetal macrosomia (>4 kg) 16. HIV positive mother 17. Multiple pregnancy—triplets, or twins with 1st twin non-cephalic 18. Active genital herpes infection	1. Foetal distress 2. Abnormal uterine action 3. Failed trial of labour 4. Failed induction of labour 5. Failed trial forceps 6. APH 7. Fulminating pre-eclampsia 8. Cord prolapse in 1st stage 9. Obstructed labour 10. Cephalopelvic disproportion (CPD) 11. Persistent mentoposterior or brow, persistent occipitoposterior with CPD

Per abdomen examination

Note:

- Height of the uterus versus period of gestation (POG)
- Presentation, attitude, palpable foetal head (rule of fifths).
- Size of the baby/estimated baby weight.
- Amount of liquor.
- Foetal heart rate.
- Uterine contractions – present or not, intensity, duration and frequency per 10 minutes.
- Look for overriding of foetal head over symphysis pubis.
- Features of obstructed labour and contour of the uterus, tone of uterus

Per vaginum examination

Observe aseptic precautions – hand washing and sterile gloves.

Note:

- Cervical dilatation and effacement.
- Presentation and station of presenting part.
- Position and degree of flexion (sutures and fontanelle).
- Status of membranes and (if leaking present) then colour of liquor.
- Cord prolapse or presentation to be ruled out.
- Pelvic adequacy and rule out cephalopelvic disproportion (CPD).

Investigations

Minimum investigations required during labour are:

- Hb, urine albumin and sugar, blood grouping.
- Urine acetone in prolonged/obstructed labour.

Risk category

Should be assigned to the patient (low risk or high risk) and mentioned on top of partograph (Fig. 15.1). Start partograph only when the woman is in active phase of labour. Table 15.2 shows common risk factors. Trained midwife or doctor in primary health centre after ensuring adequate back up of transport facility and communication with referral centre may deliver low risk patient. All primigravidas and patients with any of the risk factor should be delivered in hospital with facilities for emergency caesarean section and blood transfusion.

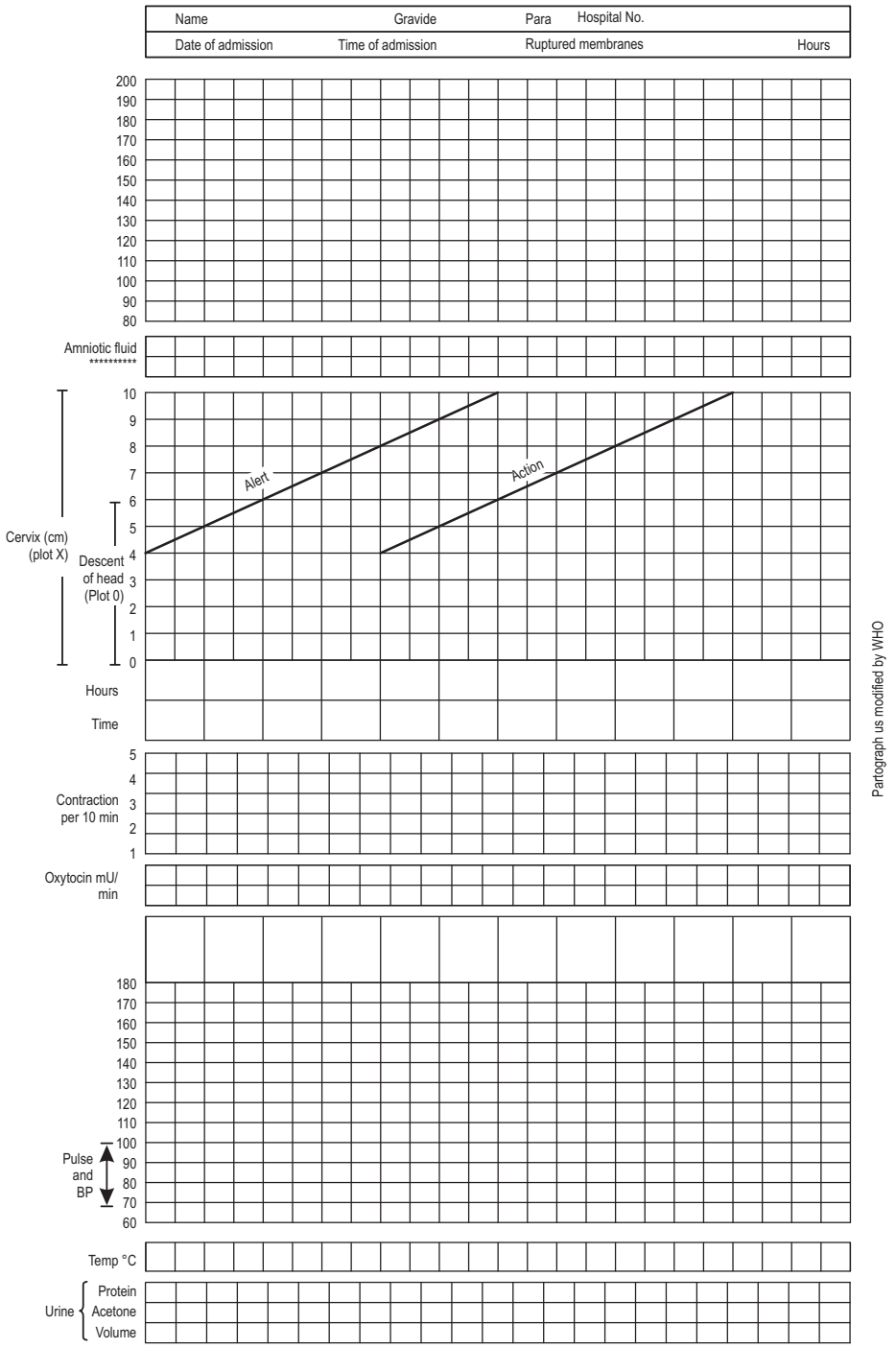

Fig. 15.1. Partograph.

USING THE PARTOGRAPH

- Start the partograph only when the woman is in labour and does not have complication which needs immediate delivery.
- Record observations in all sections of partograph.
- The dilatation of cervix is plotted with 'X'.
- The level of head (5th of head felt above brim by abdominal palpation) is plotted with 'O'.
- When the patient is admitted in active phase of labour, the dilatation of cervix is plotted on alert line and the clock time written directly under the 'X' in space for time (as shown in the Partograph)
- When admission is in latent phase of labour, the dilatation is plotted at '0' time and shifted to alert line when the patient enters active phase of labour.
- Vaginal examination should be done every 4 h after admission in active phase unless specifically indicated, e.g. at ROM.
- If cervicogram moves to the right of alert line, it indicates prolonged labour and the patient should be reassessed by doctor and referral considered.
- At action line, the woman must be carefully reassessed for reason of lack of progress and decision made on further management, referral considered.
- The time of foetal heart abnormality and rupture membranes and its colour should be highlighted, using the following abbreviations:
  Amniotic fluid
  I – Intact membranes
  C – Membranes ruptured; clear fluid
  M – Meconium-stained liquor
  B – Blood-stained liquor
- Complete all the columns of partograph

FIRST STAGE OF LABOUR

Supportive care: Sympathetic attitude towards the patient. Inform the patient about her status.

- Clip long pubic hair.
- No routine enema unless rectum is loaded or the patient requests.
- The patient is instructed to wear loose clothes.
- Allow mobility and let her choose position during labour.
- Encourage her to empty bladder frequently.

Nutrition

- Low-risk patient: Bland diet like fat-free dalia and khichri, glucose biscuits. Encourage her to drink plenty of fluids.
- Patients likely to need caesarean section: Clear fluids only
  - IV line not mandatory
  - IV line indicated for – fluid infusion in dehydration, vomiting.
- Fluid requirement during labour is 60-120 ml/h.

Pain relief: To be given only in active labour, if required.

- Inj. Tramadol 100 mg IM may be used, causes less respiratory depression, can be repeated after 4-8 h.

Antibiotics: No routine antibiotics.

Monitoring during labour recommended for all patients (Partograph; Fig. 15.1).

Record of the patient should be meticulously maintained.

- Complete details of the patient on the partograph.
- Chart PR every half hourly, BP 4 hourly and temperature 12 hourly (more frequently, if abnormal).
- Contractions are recorded every half hourly – frequency (contractions per 10 min), intensity and duration.
- Assess descent in terms of fifths of foetal head above pubic symphysis.
- PV exam: It should be done – at admission, every four hourly in active labour, at ROM or earlier, if indicated.

Artificial rupture of membrane (ARM) if done, indication should be mentioned – note colour of liquor, and exclude cord prolapse.

- Partograph passes to the right of alert line—reassess and consider criteria for referral; cal senior person if available.
- Partograph passes to the right of action line—refer urgently to hospital unless birth is imminent.
- Foetal heart monitoring should be done by intermittent auscultation with help of stethoscope or foetoscope.
- Foetal heart rate (FHR) should be counted for 60 seconds following contraction (Normal FHR is 110-160 beats per minute).
- Frequency of FHR recording – every 30 minutes in first stage and every 15 minutes in second stage and after every contraction.
- Oxytocin if used, record amount of oxytocin in mU/min
- Drugs and IV fluids, if administered, are recorded.
- Maintain intake output chart.

SECOND STAGE OF LABOUR

- Shift the patient to delivery table.
- Inform the paediatrician. Ensure all delivery equipment and supplies, including newborn resuscitation equipment, are available, and place of delivery is clean and warm (25°C).
- Put her in dorsal position.
- Observe universal precautions.
- Clean and drape the parts.
- Infiltrate the perineum with local anaesthetic agent, if episiotomy is planned.
- Woman is encouraged to bear down.
- Episiotomy is given, if required (See Episiotomy)
- To control birth of the head, keep the baby's head flexed and gently support the perineum as the head delivers. Suction of the nose and mouth.

- Administration of oxytocin 10 units IM at the delivery of anterior shoulder to prevent PPH.
- After external rotation, deliver the shoulders one at a time followed by rest of the foetus.
- Clamp and cut the umbilical cord.
- Ensure establishment of respiration in baby or institute resuscitation, if required.

THIRD STAGE OF LABOUR

- Recognize signs of placental separation: Uterus becomes globular and firmer, suprapubic bulge appears, sudden gush of blood and permanent lengthening of cord.
- Deliver the placenta by controlled cord traction. As the placenta passes through the introitus, care is taken to prevent the membranes from being torn off and left behind.
- Examine the placenta for its completeness and anomalies.
- Administer Inj. Oxytocin 10 U IM soon after delivery.
- Controlled cord traction and uterine message. Active management of third stage should be done unless contraindicated.
- Examine the woman for any tears and repair, if any. Stitch the episiotomy.

Observe the woman closely for one hour after delivery, record her PR and BP. Evaluate the uterus frequently, and inspect the perineum to detect excessive bleeding and haematoma formation.

Transfer from labour room

Observe for 2 hours.

Check the following before transfer: pulse rate, BP, uterus well contracted, bleeding per vaginum within normal limits, inspect external genitalia for condition of stitches and any haematoma and after the patient has passed urine.

Episiotomy (Incision of the perineum)

Not to be performed routinely.

Applied selectively for: breech, forceps or vacuum delivery, occiput posterior positions, rigid perineum, scarred perineum, and shoulder dystocia.

Timing of episiotomy: At crowning of head, during a contraction.

Procedure

- Clean the area with antiseptic solution.
- Infiltrate beneath the vaginal mucosa, beneath the skin and deeply into the perineal muscle using 10 ml of 0.5–1% lignocaine.
- Check at the incision site for effect of local anaesthetics by pinching with a forceps before giving incision.

- Perform episiotomy at crowning. Place two fingers between the baby's head and the perineum and cut 3-4 cm of perineum in mediolateral direction.
- After delivery of the baby and placenta, carefully examine for extensions of tears.
- Repair the episiotomy with vicryl rapide 2-0 suture (chromic catgut, if vicryl is not available). Close the vaginal mucosa with continuous suture starting 1 cm above the apex. Perineal muscles are approximated using interrupted sutures. Skin is closed with subcuticular (or interrupted) sutures.

Care of episiotomy

- Perineal hygiene: Clean the area with antiseptic solution after urination and defaecation.
- Analgesics are prescribed for allaying pain.

Respond to following problems during labour and delivery—assess facilities and expertise available and appropriate timely referral

- If foetal heart rate <120 or >160 beats per minute
- Prolapsed cord
- Breech presentation
- Stuck shoulders
- Multiple births

Advice on postpartum care

- To always have someone near her for the first 24 hours to respond to any change in her condition.
- Not to insert anything into the vagina.
- To have adequate rest and sleep.
- The importance of washing to prevent infection of the mother and her baby.
- To wash perineum daily and after urination and defaecation.
- To avoid sexual intercourse until the perineal wound heals, preferably for 4-6 weeks.
- Counsel for birth spacing and family planning (for details see section on Contraception).
- Advise on routine postpartum care visits—within the first week, preferably within 2-3 days and second visit after 4-6 weeks. Earlier if problems—fever, UTI, perineal infection, hypertension, urinary incontinence, severe anaemia, postpartum blues or HIV positive.

Counsel on exclusive breastfeeding

- Babies should start breastfeeding within half an hour of birth and as early as possible after caesarean section. Do not give any other food or drink before starting breastfeed.
- Babies should be exclusively breastfed for the first 6 months of life.

- Breast milk contains exactly the nutrients a baby needs, is easily digested and protects the baby against infection.

(for care of the newborn and control of infection see Chapters 13 and 19).

For prevention of parent to child transmission on HIV (PPTCT) see below and Chapter 7 and see Chapter 19 for other details.

References

1. In: William's Obstetrics. Cunningham FG, Grant NF, Leveno KJ, Gilstrap LC, Health JC, Wanstrom KD (Eds.) 21st Edition. McGraw Hill Publishers. USA; pp. 309-330.
2. Childbirth. In: A Guide to Effective Care in Pregnancy and Childbirth. Enkin MW, Keirse MNC, Neilson JP, Corther CA, Duley L, Hodnett ED, Hofmeyr GJ (Eds), 3rd Edition. Oxford Medical Publications, UK; 2000; pp. 247-312.
3. Normal Labour. In: Holland and Brew's Manual of Obstetrics. Perceival R (Ed.), 14th Edition ELBS and Churchill Livingstone, Edinburgh; 1980; pp. 287-569.
4. RCOG: Clinical Greentop Guidelines No. 29, 2001. Management of third and fourth degree perineal tears following vaginal delivery on website www.rcog.org.uk.
5. RCOG National Evidence Based Guidelines No. 29 on Electronic Foetal Monitoring on Website www.rcog.org.uk.
6. Normal Labour, Episiotomy, Perineal tears. In: Obstetric Protocols for Labour Ward Management. Rathore, Sachdeva, Batra (Eds), Jaypee Brothers, Delhi, 2004; pp. 3-13.
7. Integrated Management of Pregnancy and Childbirth. Pregnancy, Childbirth, Postpartum and Newborn Care. Department of Reproductive Health and Research, Family and Community Health, World Health Organization, Geneva, 2003.
9. NICE Guideline No. 13. Cesarean section. Available from URL: www.nice.org.uk

PREVENTION OF PARENT TO CHILD TRANSMISSION OF HIV (PPTCT)

The transmission rate of HIV is 25-35% without intervention, of which 65-75% occurs during intrapartum phase.

Methods to lower the maternal to child transmission of HIV are:

- Universal screening of antenatal women
- Antiretroviral therapy (ART) in pregnancy – NACO recommends oral 200 mg Nevirapine (NVP) prophylaxis to the mother 4 hours before delivery
- Elective caesarean section before labour sets in or rupture of membranes, cord should be clamped early
- If mother is on ART, exclusive breastfeeding, for at least 6 months of age, thereafter, mixed feeding.
- Neonatal ART – NACO recommends 2 mg/kg NVP syrup to the baby, within 72 hours of delivery. This decreases the transmission rate by 50%.

The patients can be managed during pregnancy according to the following table alternatively:

ART is available at the site			ART not available at the site	
	Maternal ART indicated	Maternal ART not yet indicated	Site can deliver combination ARV Prophylactic regimens	Site cannot deliver combination ARV Prophylactic regimens
MOTHER Antenatal	• AZT +3TC+NVP (if CD4 cell count<250) • AZT + 3TC + EFV if CD: 250–350– Delay initiation of treatment to 2nd trimester*	AZT+3TC from 36 weeks	AZT + 3 TC from 36 weeks	
Intrapartum	Continue ART	AZT plus 3TC	AZT + 3TC SD NVP	
Postpartum	Continue ART	AZT + 3TC for 4 week	AZT + 3TC for 4 weeks	
INFANT	AZT for 4 weeks*	AZT for 4 weeks	AZT for 4 weeks SD NVP	

* EFV in the first trimester may lead to central nervous system birth defects. In the postpartum, EFV should be avoided, if effective contraception cannot be ensured.

In women who opt for vaginal delivery, the following precautions should be taken:

- Universal precautions
- ARM to be avoided
- Spontaneous rupture of membranes should not exceed 4 hours.
- Invasive procedures like forceps and episiotomy should be avoided.
- Foetal blood sampling or foetal scalp electrode application should be avoided.

To reduce HIV epidemic, prevent infection in young, prevent pregnancy, or terminate pregnancy in HIV positive and if pregnancy is desired, ART should be given.

Women presenting around delivery and having received no ARV for PPTCT		
MOTHER	Site can deliver combination ARV prophylactic regimens	Site cannot deliver combination ARV prophylactic regimens
Intrapartum	SD NVP + AZT/3TC	SD NVP
Postpartum	AZT + 3TC for 4 weeks	
INFANT	SD NVP AZT for 4 weeks	SD NVP

Reference

1. Antiretroviral Drugs for treating pregnant women and Prevention of Parent to Child Transmission of HIV. Guidance and Recommendations. WHO, UNICEF, NFPA, UNAIDS, CDC, EGPAF Joint Technical Mission, India. January 2006.

CONTRACEPTION

A method or a system, which allows intercourse and yet prevents conception, is called a contraceptive method. This contraception may be temporary when the effect lasts only till the couple uses the method but the fertility returns after the use is discontinued. The permanent contraceptive methods are surgical and are aimed to achieve sterility after the surgical procedure.

A couple in the reproductive age group, who desires contraception should be provided information about all the available methods of contraception and should be counselled and helped so as to choose a method most suitable for that couple. Various contraceptive methods available are:

I. Temporary methods

A. Hormonal contraceptives
   - Combined oral contraceptive pills.
   - Injectable hormonal contraceptives (DMPA and NET-EN)
   - Progesterone only pill [ketodesogestrel]

B. Non-hormonal contraceptive pills
   - Centchroman.

C. Intrauterine contraceptive device
   - Multiload 280 and Multiload 375.
   - CuT 380A
   - LNG IUCD [mirena]

D. Barrier methods
   - Male condoms.
   - Vaginal diaphragms with spermicidal jelly.
   - Contraceptive sponge.

II. Permanent methods

A. Female sterilization
   - Postpartum sterilization.
   - Interval ligation (laparoscopic or minilap ligation).
   - Ligation concurrent with MTP.

B. Male sterilization
   - Vasectomy (traditional or non-scalpel).

I. Temporary contraceptive methods

A. (i) Combined oral contraceptive pills

Any of the low dose combined oral contraceptive pill containing 30 mcg Ethinyl oestradiol and a Progestin (0.3 mg Norgestrel or 0.15 mg Levonorgestrel or 0.15 mg

Desogestrel) can be prescribed. One tablet is to be taken daily with meals at a consistent time. It should be started during first 7 days of the menstrual cycle or at any other time when it is reasonably certain that she is not pregnant. If started after first day of menstrual cycle, back up method (abstinence or barrier method) should be used for 7 days. Pills should be taken for 3 weeks followed by 1 week of pill-free interval during which placebo tablets are to be taken, if pack contains 28 tablets.

In women >40 years of age, very low dose pills containing Ethinyl oestradiol 20 mcg and desogestrel 0.15 mg can be used. After age 50 years, if woman on oral pills, check FSH during 5-7 days of pill free interval. If FSH >30 IU/l change to HRT regimens.

Contraindications

Combined oral contraceptive pills are contraindicated in cases with current or history of:

- Thromboembolic disease, cerebrovascular disease, coronary artery disease.
- Complicated valvular heart disease.
- Active liver disease.
- Current or past breast cancer.
- Undiagnosed vaginal bleeding.
- Pregnancy.
- Heavy smokers over 35 years of age.
- Migraine with neurological symptoms.
- Diabetes >20 years or with vascular disease.
- Current gallbladder disease.
- Uncontrolled hypertension (BP >160/100).

Oral contraceptives should not be taken during first 6 months postpartum, if breastfeeding and first 3 weeks postpartum in non-breastfeeding females. Pills can be started immediately after spontaneous or induced abortion. Can be used with caution in cases with controlled hypertension, diabetes, migraine without neurological symptoms, non-smokers with age more than 35 years without any other medical illness.

Follow-up. First follow-up should be within 3 months and then annually. Follow-up involves history, blood pressure, urinalysis, breast examination, liver palpation and pelvic examination.

Patient education

Common side effects are nausea, vomiting, GI upset, breast changes, weight gain, acne, breakthrough bleeding, amenorrhoea, rash, vaginal candidiasis. Side effects decrease usually after 2-3 months of use.

- Report immediately to the clinician in case of symptoms like chest pain, leg pain, severe headache, severe stomach ache, swelling of one or both legs, visual impairment.
- It is one of the most effective contraceptive methods with failure rate about 0.1%.
- It has non-contraceptive health benefits like regular periods with less pain and

bleeding, improves premenstrual symptoms, and decreases functional ovarian cysts, pelvic inflammatory disease, ovarian and endometrial cancer, endometriosis.

- Forgotten pill—if one pill is forgotten, take as soon as remembered and next day take next pill and continue the schedule. Use back up method for 7 days.
- If 2 pills are forgotten take 2 pills and next day again take 2 pills, and then continue as per schedule. Use back up method for 7 days.
- If 3 pills are forgotten, this cycle is not protected, use back up method till next cycle and then restart with new pack.
- Should be discontinued at least 4 weeks prior to any planned major surgery.
- Medicines like rifampicin, barbiturates, phenytoin, carbamazepine, primidone, griseofulvin interfere with the effects of oral pills. So use additional method during their intake.

A. (ii) Injectable hormonal contraceptives

Highly effective oestrogen free long-acting contraceptive not linked to coitus; can be given in women where oestrogens are contraindicated like sickle cell disease, seizure disorders, age >35 years who smoke; can be given in breastfeeding females after first 6 weeks. In non-breastfeeding females, injections can be safely given immediately postpartum.

Depot Medroxy Progesterone Acetate-150 mg injection to be given deep IM every three months. Next injection may be delayed up to 2 weeks.

Or

Norethisterone enanthate-200 mg injection to be given deep IM every 2 months. Next injection may be delayed up to 1 week.

Absolute contraindications

- Pregnancy.
- Unexplained genital bleeding.
- Severe coagulation disorder.
- Previous sex steroid-induced liver adenoma, active liver disease.
- Breastfeeding during initial 6 weeks.
- Current or history of thromboembolic disease, cerebrovascular disease, coronary artery disease.
- Current or past breast cancer
- Diabetes >20 years or with vascular disease
- Uncontrolled hypertension (BP >180/110).

Patient education

- Common side effects are irregular bleeding, breast tenderness, weight gain, depression, headache, dizziness and abdominal pain.
- Beneficial effect and efficacy are same as that of oral contraceptive pills.
- Fertility return is slightly delayed after discontinuation of use.
- Drug interactions are same as with oral hormonal pills.

B. Non-hormonal oral contraceptive pills

Centchroman

30 mg tablet started on first day of periods. Take twice weekly for three months and then continue once weekly.

Contraindications

Polycystic ovarian disease, cervical intraepithelial neoplasia, severe allergy, recent history of liver disease, and first 6 months of lactation.

Patient education

- It is a non-steroidal contraceptive pill. It has no hormonal effects.
- Failure rate is 1-2%.
- Delayed periods can occur in 6% cases. If delay is >15 days, perform urine pregnancy test.
- If one tablet is missed take as soon as possible and resume scheduled intake. Add back up method till next period. If tablet missed for >7 days, start fresh regimen.

C. Intrauterine contraceptive devices (IUCD)

Any of the following devices can be inserted inside uterus by trained health personnel. IUCD should be inserted during or shortly after menstruation during the follicular phase of menstruation. After spontaneous or induced abortion, IUCD can be inserted immediately. It can be inserted immediately after delivery of the placenta, but risks of expulsion are higher; therefore, it is best to insert after 6 weeks postpartum. It can be inserted within 5 days of unprotected coitus. These devices need to be changed after the duration of their lifespan (Table 15.4).

Table 15.4. Lifespan of intrauterine contraceptive devices (IUCD)

Multiload 250	3 years
Multiload 375	5 years
CuT 380 A	10 years
Levonorgestrel-releasing intrauterine system (Mirena)	5 years

Follow-up: First follow-up should be after next period to check for complications and to rule out expulsion. After that, follow-up annually.

Contraindications

Pregnancy, postpartum >4 weeks, septic abortion, distorted uterine cavity, uterine fibroids, current or past history (within 3 months) of PID or STD, increased risk of STD, HIV positive, AIDS, pelvic tuberculosis, unexplained vaginal bleeding, trophoblastic disease, genital tract malignancy, complicated valvular heart disease.

Patient education

- Common side effects are increased menstrual bleeding and dysmenorrhoea. These decrease after initial 2-3 months.
- No protection from HIV or other STDs, so report if abnormal vaginal discharge
- Failure rates are 0.5-3%. Ectopic pregnancy can still occur. Report if missed period or persistent irregular or heavy bleeding accompanied by severe pain abdomen.
- IUCD can be spontaneously expelled. Therefore, monthly palpation of IUCD string is important. If not palpable, report immediately.

D. Barrier methods

These are inexpensive, available over the counter and coitus dependant methods. Male condoms, vaginal diaphragm, spermicidal jellies, vaginal sponge can be used.

Male condoms

Any of the available condoms can be used. For each act of coitus, a new condom is to be used. If during intercourse, condom breaks or if there is spillage or leakage, woman should contact a clinician within 72 hours and emergency contraception should be provided to her.

Contraindication. Only contraindication is in cases with severe allergy to latex rubber.

Vaginal diaphragm

Available in different sizes. Proper size should be checked by a clinician by pelvic examination. It should be inserted only two hours before intercourse. About a tablespoonful of spermicidal cream or jelly should be placed in the dome of diaphragm prior to insertion. Should be left in place for approximately 6 hours (but not >24 hours) after coitus. Additional spermicide should be placed in vagina before each additional episode of sexual intercourse, without removing the diaphragm. After removal, wash with soap and water, rinse and dry.

Follow-up. Annually to assess proper fitting of diaphragm.

Contraceptive sponge

Contains spermicidal agent Nonoxynol 9. It should be removed at least 6 hours after sexual intercourse. Maximal wear time is 30 hours.

Patient education

- Barrier methods provide protection against STDs and PID. Only condom has been proven to prevent HIV infection.
- Other advantages are prevention of diseases like pelvic inflammatory disease and carcinoma cervix.
- It can be used soon after delivery.
- No hormonal side effects.

- Side effects like vaginal dryness, itching, irritation, allergic reactions can occur.
- Failure rates are very high. Typical failure rates are with condoms 14%, diaphragm with spermicidal jelly 20%, highest with sponge 28%.

II. Permanent contraceptive methods

Permanent contraception is provided by sterilization operation in male or female partners.

- Male client should be <60 years of age.
- Female client should be >22 years and <45 years of age.
- Client must make informed decision voluntarily and must give consent on the consent form for sterilization.

A. Female sterilization

Sterilization can be done by laparoscopic ligation for interval ligation and by minilaparotomy for first trimester abortions, or tubectomy.

Timing

- Interval sterilization—within 7 days after menstrual period is over, or after 6 weeks postpartum.
- Postpartum sterilization—after delivery till 7 days but preferably within 48 hours.
- MTP - concurrently.
- Spontaneous abortion—concurrently but under antibiotic cover and in the absence of infection and anaemia.

Contraindications

There are no absolute contraindications. Relative contraindications are psychiatric disorder, acute febrile illness, jaundice, Hb <8 g%, chronic systemic disease, malignancy, bleeding disorder, severe nutritional deficiency. Postpartum sterilization is contraindicated in puerperal sepsis or fever, severe pre-eclampsia/eclampsia, premature rupture of membrane >24 hours, severe APH or PPH, genital tract trauma.

Post-abortal sterilization is contraindicated in sepsis, fever, haemorrhage, severe trauma, uterine perforation, acute haematometra.

Follow-up. First follow up should be done 7 days after the surgery for wound examination, and stitch removal, if required. Second follow-up is recommended after one month or after next menstrual period whichever is earlier. Subsequent follow ups, if client develops any complication or has query.

B. Male sterilization

Contraindications

There are no absolute contraindications. Relative contraindications include psychiatric and physical illness, local genital conditions, including large varicocele, hydrocele, inguinal hernia, filariasis, cryptorchidism, previous scrotal surgery, intrascrotal mass.

Follow-up. First follow-up after 7 days of surgery for wound examination and stitch removal. Second follow-up after 3 months with semen analysis.

Subsequent follow ups required in cases of any complication or queries.

Patient education

- It is a safe and simple procedure.
- It is a permanent method to prevent future pregnancies.
- It does not affect sexual pleasure, ability or performance.
- It has a small chance of failure even if performed under optimum circumstances.
- After vasectomy, it is necessary to use a back up contraceptive method either for 20 ejaculations or for a period of 3 months.
- Sterilization does not provide protection against reproductive tract infections/STDs or HIV/AIDS.
- Failure rates with female sterilization are < 0.5% and male sterilization < 0.1%.

Emergency contraception

Method used to prevent pregnancy after a likely fertile unprotected act of sexual intercourse; can be used in cases of condom rupture, rape or other circumstances of unprotected sex.

1. First dose should be taken within 72 hours following unprotected sex and second dose 12 hours after the first dose. Any of the following can be used:
   Levonorgestrel 0.75 mg 1 tablet 12 hourly for 2 doses, or 1.5 mg single dose.
   Or
   Combined oral contraceptive pills containing 50 mcg Ethinyl oestradiol with 0.3 mg Norgestrel 4 tablets 12 hourly for 2 doses.
   Or
   Low dose combined oral contraceptive pills containing 30 mcg Ethinyl oestradiol with 0.3 mg Norgestrel 4 tablets 12 hourly for 2 doses.
2. IUCD insertion within 5 days of unprotected act provided there is no evidence of pelvic infection or rape.

Patient education

- Side effects are nausea, vomiting, dizziness, fatigue, headache, lower abdominal pain, breast tenderness, vaginal bleeding.
- It must be used under medical supervision.
- It decreases risk of pregnancy by 70-90%. Earlier it is taken, better is the success rate. Emergency contraception does not protect against subsequent acts of coitus (except IUCD).
- If vomiting occurs within 2 hours of the dose, it must be repeated.
- There are no contraindications for emergency contraception.
- After this, use a barrier method for each act of intercourse until next menstrual period.
- If period delayed by >5 days, rule out pregnancy.
- Use regular contraceptive method.

References

1. Improving Access to Quality Care in Family Planning Medical Eligibility Criteria for Contraceptive Use, 2nd Edition, World Health Organization, Geneva, 2000.
2. Standards for Female and Male Sterilization, Ministry of Health and Family Welfare, Government of India, October 1999.
3. Clinical Gynaecologic Endocrinology and Infertility. Leon Speroff, Robert H. Glass, Nathan G. Kase (eds), 1994.
4. Chaudhari SK. Practice of fertility control A comprehensive manual, 6th Edition. Reed Elsevier, India, 2004.

NAUSEA AND VOMITING IN PREGNANCY

Nausea and vomiting of mild to moderate intensity are especially common complaints from early pregnancy until about 16 weeks. In few cases, it may progress to hyperemesis.

SALIENT FEATURES

- Common complaint on rising in the morning but sometimes occurs at other times of the day; vomitus is usually small and clear and does not produce any impairment of health or restrict the normal activities of the pregnant woman.
- Severe nausea and persistent vomiting progress to hyperemesis leading to weight loss, ketosis and there may be muscle wasting. There are usually signs of dehydration with postural hypotension and tachycardia.
- Diagnosis is by exclusion of medical and surgical causes of vomiting like liver or GIT disorders, pyelonephritis, diabetes mellitus, etc. and molar (and multiple) pregnancy should be ruled out in all cases of hyperemesis by ultrasound.

Treatment

Nonpharmacological

Reassurance and advice to take frequent small, dry carbohydrate rich meals and avoid fatty or spicy foods, especially avoid large volume of drinks in the morning.

A. Mild to moderate cases

Pharmacological

1. Tab. Doxylamine succinate 10 mg + Pyridoxine HCl 10 mg 1-2 tablets at bedtime. If required one more tablet can be added in the morning and afternoon.
   Or
   Tab. Metoclopramide 10 mg 2-4 times a day in moderately severe cases.

B. Hyperemesis gravidarum

Nonpharmacological

1. Admit all cases in the hospital away from a stressful home environment.
2. Stop oral intake of fluids and nutrition.

3. Serum electrolytes and urinary ketones to be checked at admission and 6 hourly.
4. Emotional support, psychiatric referral if required.
5. Rule out multiple or molar pregnancy and liver disorders.

Pharmacological

Adequate and appropriate fluid and electrolyte replacement. Normal saline or Ringer's lactate solutions are appropriate solutions and KCl is added as required. If urinary ketones are present, then 1 liter of 10% dextrose is transfused over 3-4 hours.

Table 15.5. Evaluation of patients presenting with bleeding in the first trimester of pregnancy

Diagnosis	Clinical findings	USG/ hCG
Threatened abortion	Uterine size = period of gestation (POG) Internal os closed	Consistent with live foetus
Inevitable abortion	Uterine size = POG Internal os open, excessive bleeding and pain	Cardiac activity + Internal os dilated
Incomplete abortion	History of passing products of conception (POC) Uterine size < POG Internal os open/closed	POC in uterine cavity
Complete abortion	History of passing products of conception (POC) Uterine size < POG Internal os closed	Cavity empty
Missed abortion	Uterine size < POG Internal os closed Brownish discharge +	Cardiac activity absent
Molar pregnancy	History of passing vesicles ± Uterine size > or = or < than POG Internal os open/closed	Honeycomb appearance ß hCG levels very high
Ectopic pregnancy	Cervical excitation + Unilateral tender fornix, adnexal mass	Pseudogestational sac empty uterine cavity adenexal mass, hCG rise <66% in 48 hours

In prolonged vomiting

1. Tab. Thiamine 25-50 mg 3 times a day (if orally tolerated). If vomiting are not controlled with fluid and electrolytes replacement in 6-8 hours.
2. Inj. Metoclopramide 10 mg IV or IM 8 hourly.
3. Inj. Ranitidine 50-100 mg 6 hourly.
4. If not controlled, Inj. Promethazine chloride 25-50 mg IM or IV 8 hourly.
   Or
   Inj. Chlorpromazine 25-50 mg IM 4-6 hourly.

Once vomiting is controlled for 24 hours, oral intake is gradually started.

If well tolerated then only IV fluids are omitted. At first, dry carbohydrate foods are given in the form of small meals at frequent intervals. Gradually full diet is introduced. In prolonged and severe disease, parenteral nutrition may be necessary. Give Tab. Metoclopramide 10 mg 3 times a day and Tab. Ranitidine 150 mg 2 times a day.

If well tolerated for 48 hours, patient can be discharged from the hospital with dietary advice, reassurance and continue Tab. Metoclopramide for 5-7 days or longer depending on the response.

Patient education

- Adjust timing of medication in relation to the time of sickness.
- This is a benign disorder and gets relieved by 14-16 weeks of pregnancy.

References

1. Gastrointestinal Disorders. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hoth JC, Wenstrom KD, (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 1273-1306.
2. Disorders of Gastrointestinal Tract. In: Medical Disorders in Obstetric Practice, Michael de Swiet (Ed), 1991; pp. 521-583.

BLEEDING IN FIRST TRIMESTER OF PREGNANCY (ABORTION)

SALIENT FEATURES

- Bleeding in first trimester of pregnancy can be due to pregnancy-related complications such as abortion (threatened/inevitable/incomplete/complete/missed), ectopic pregnancy and molar pregnancy or due to local causes such as trauma, erosion, polyp, infection, premalignant or malignant lesions.
- Diagnosis is based on the findings of clinical examination, sonography and serum hCG levels as shown in Table 15.5.
- Local lesions are diagnosed on per speculum examination.

Treatment

- Abortion can be treated at a primary care level.
- Molar and ectopic pregnancies should be treated at a secondary/tertiary care level.
- Hospitalize all patients of bleeding in the first trimester.
- Assess for blood loss and take immediate measures to combat hypovolaemia as indicated.
- Check BT, CT, CRT in missed abortion.

Surgical therapy

Manul vacuum aspiration or suction evacuation, dilatation and evacuation or only evacuation in all cases of abortion and molar pregnancy except threatened abortion.

Laparotomy/laparoscopic removal of ectopic pregnancy except a few selected cases of unruptured ectopic pregnancy (for details see respective section).

Patient education

- Exact aetiology of abortions is not always apparent.
- Very early abortions are often nature's selection to abort a nonviable, chromosomally abnormal conceptus.
- Increased abortions are seen with increasing parity and maternal age.
- Recurrent abortions 3 or more consecutive abortions should be investigated before planning the next pregnancy.
- Effective contraception should be initiated soon after abortion as ovulation can occur as early as 2-3 weeks after an abortion.

THREATENED ABORTION

Nonpharmacological

Bed rest.

Pharmacological

1. Tab. Folic acid 5 mg daily.
2. Monitor for the continuation of pregnancy after confirming cardiac activity by USG. Discharge the patient 48 hours after bleeding stops.
3. Progesterone supplementation, if serum progesterone < 15 ng/ml only after confirming cardiac activity in cases of spontaneous conception.

Patient education

- To report immediately, if bleeding recurs or it is more than normal periods.
- Continue bed rest for at least 2 weeks.
- Abstinence till at least two follow-up visits in the next 4 weeks when normal continuation of pregnancy is documented.
- High fibre diet to avoid constipation.
- Need of follow up after 2 weeks for foetal growth by clinical and/or USG parameters.
- After suction evacuation for abortion:
  - Reassurance, if no living child.
  - Need for contraceptive—can be started immediately after evacuation.
  - When to resume coitus—after 4 weeks, if no complications.
  - When to attempt conception—after at least 6 months

References

1. Abortion. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hoth JC, Wenstrom KD, (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 855-882.

2. Haemorrhage in Early Pregnancy. In: Textbook of Obstetrics, 4th Edition, New Central Book Agency (P) Ltd., 1998; pp. 170-215.

SEPTIC ABORTION

Any abortion associated with fever and signs of pelvic or generalized sepsis is considered septic abortion. Most septic abortions result from illegal abortions but sepsis may follow spontaneous and elective abortions.

SALIENT FEATURES

- Fever, tachycardia, abdominal distension and tenderness, pelvic tenderness, and purulent vaginal discharge. In severe cases, there may be endotoxic shock and end organ failure.
- Complications like injury to viscera like uterus and bowel, internal or external haemorrhage, peritonitis, disseminated intravascular coagulation, renal failure, hepatic failure, endotoxic shock and tetanus can occur.

Treatment (to be managed at a tertiary care level)

Before starting antibiotic therapy, high vaginal or cervical swab and blood culture should be obtained.

Pharmacological

1. IV fluids for correction of electrolyte imbalance (see section on Shock in Chapter 2).
2. Oxygen by facemask in severe cases. In cases of adult respiratory distress syndrome, intubation and ventilatory support is required, and hydrotherapy, if required.
3. If blood pressure is not controlled with fluid replacement, Inj. Dopamine infusion in 5% Dextrose 2-5 mcg/kg/min and dose titrated according to clinical and haemodynamic response (for details see section on Shock).
4. In case of shock, acidosis is corrected by IV Sodium bicarbonate 50-100 mEq in normal saline.
5. Inj. Ampicillin 2 g stat followed by 500 mg IV 6 hourly (after test dose).
   Or
   Inj. Cefuroxime or Ceftazidime 1-2 g IV 2 times a day (after test dose).
6. Inj. Gentamicin 1.5 mg/kg then 1 mg/kg IV 8 hourly.
   Or
   Inj. Amikacin 250-500 mg IV 8 hourly.
7. Inj. Metronidazole 500 mg IV 8 hourly.
   Or
   Inj. Clindamycin 600 mg IV 6 hourly.
   Continue antibiotic therapy for 48-72 hours until culture sensitivity results provide an indication for changing the initial antibiotic regimens or patient does not

respond to therapy. Monitor pulse, temperature, blood pressure, respiratory rate, urine output, and serum electrolytes. In severe cases, CVP and ABG monitoring is required. Therapeutic goals are to maintain systolic BP >90 mmHg, urine output >30 ml/min, arterial PO_2 >60 mmHg, and CVP 6-12 cm H_2O.

8. (A) Uterine curettage: If patient's condition is stable, within 1 hour of antibiotic therapy, evacuation of the uterus by gentle curettage to remove infected products. If general condition is low at admission, curettage after 6-8 hours of antibiotic therapy and treat hypovolaemia.
   (B) Laparotomy in case of injury to the uterus, suspected injury to the gut, presence of foreign body in the abdomen as evidenced by X-ray or felt through the fornix, peritonitis.
   Or
   Colpotomy in cases of pelvic abscess.

References

1. Abortion. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hoth JC, Wenstrom KD, (Eds), 21st Edition McGrawhill Publication, International Edition, 2001; pp. 855-882.
2. Septic Shock in Obstetrics. In: Critical Care Obstetrics. Steven L Clark, David B Cotton, Gary DV Hankins, et al (Eds), 1991; pp. 289-305.
3. The Abortion Problem. In: Postgraduate Obstetrics and Gynaecology. Krishna Menon MK, Devi PK, Bhaskar Rao K (Eds), 1989; pp. 89-105.

ECTOPIC PREGNANCY

Treatment of ectopic pregnancy should be undertaken at a secondary/tertiary care level set up. Laparoscopic surgery or laparotomy is done in all cases of ectopic pregnancy except in a few selected cases that are highly compliant and reliable and fulfill the following criteria:

- Unruptured ectopic pregnancy in haemodynamically stable patient.
- Gestational sac size <3.5 cm in greatest diameter.
- Serum hCG titer <10,000 mIU/ml.
- Gestation <6 weeks.
- Absence of foetal cardiac activity.

Treatment

Pharmacological (for unruptured ectopic pregnancy)

1. Obtain pretreatment hCG titers, haemogram, liver and renal function tests.
2. Inj. Methotrexate 50 mg/sq meter body surface area IM given on day 1.
3. Repeat hCG titers on day 4 and 7.
4. If day 7, hCG titers reflect a drop of at least 15% from maximum levels then weekly hCG titers till negative.
5. If fall <15% or there is rise then repeat Inj. Methotrexate.

Patient education

- Resolution of ectopic pregnancy may take up to 6 weeks.
- 5-10% cases require surgery despite medical therapy.
- Signs and symptoms of tubal rupture such as vaginal bleeding, abdominal pain, weakness, dizziness or syncope must be reported promptly.
- Patient should refrain from alcohol and folic acid containing vitamins during this period.
- Sexual intercourse should be avoided during therapy.

Reference

1. Ectopic Pregnancy. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hoth JC, Wenstrom KD, (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 883-910.

MEDICAL TERMINATION OF PREGNANCY

The government of India has legalized medical termination of pregnancy up to 20 weeks of gestation by MTP Act 1971. Under this act, pregnancy can be terminated under following clauses by registered persons in registered places only.

Clauses and requirements

1. Damage to the life of the pregnant woman.
2. Grave injury to the physical or mental health of the pregnant woman.
3. Pregnancy caused by rape.
4. Substantial risk, that if the child was born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.
5. Failure of any contraceptive method or device.

Necessary consent form as laid down in the Act should be duly filled and signed. Opinion of two registered medical practitioners is mandatory for second trimester MTP (>12 weeks).

First trimester MTP methods

Medical method. It can be done up to 49 days amenorrhoea after proper counselling and excluding contraindications. Oral Mifepristone 200-600 mg given on day 1. On day 3, Misoprostol 400 mcg orally/sublingual or inserted vaginally in the hospital for pregnancy up to 7 weeks of duration and 800 mcg for more than 7 weeks of pregnancy is indicated. Woman generally aborts in next 4-8 hours and USG to be done on day 14 to confirm complete abortion. Woman is asked to report, if there is excessive bleeding anytime in between. The procedure should be done only in centres approved under MTP Act.

Surgical method. Suction and evacuation can be done in all centres approved under MTP Act. Manual Vacuum Aspiration (MVA) can be done in all PHCs.

Patient education

- Details of the method and small risk of complications should be explained.
- Medical method fails in around 5% cases and these will require surgical curettage.
- Patient should be motivated for concurrent contraception and option of all available methods both temporary and permanent should be discussed.

Second trimester MTP methods

To be conducted in secondary and tertiary care level. None of the second trimester methods is 100% safe and effective. That is why many methods, both surgical and medical, are available and being used. For second trimester MTP, medical methods are preferred.

- Methods are usually combined so as to increase the success rate and to shorten induction-abortion interval. Most commonly extra amniotic ethacridine is combined with oxytocin or prostaglandins by various routes.
- Better results, if some method for cervical ripening is used 6-12 hours before. 400 mcg of Misoprostol may be used for mechanical priming before surgical abortion.
- Use of vaginal Misoprostol shortens the induction-abortion interval (from average 15.8 hrs to 6.8 hrs) and lowers the total dose of prostaglandin required.
- Evidence-based medicine shows that 200 mg of Mifepristone may be administered followed by 400 mcg oral/sublingual/vaginal Misoprostol 36-48 hrs later every 6-8 hrs (up to 5 doses) (WHO and RCOG recommendations).
- If some method fails, switch over to other method or surgical method.

Table 15.6. MTP methods for second trimester

Method	Drug	Mean induction-abortion interval	Success rate	Side effects
Extra-amniotic instillation	0.1% Ethacridine lactate 10 ml/week of gestation maximum 150 ml with IV Oxytocin drip after 6-24 hours Or	32-36 hours	75-80% 97%	
Intramuscular	Mifepristone 200 mg followed after 36-48 hours by 400 mcg of oral, sublingual, or vaginal misoprostol every 3-6 hours up to 5 doses.	15-17 hours	95%	Nausea, vomiting, diarrhoea, broncho-spasm

References

1. FOGSI Guidelines on MTP (FOGSI focus – Medical Abortion Sept. 5, 2011).
2. The Royal College of Obstetricians and Gynaecologists (RCOG) Revised Guidelines on Terminations of Pregnancy. 2011.

ANAEMIA IN PREGNANCY

Prevalence of anaemia in pregnancy in India is 80% and severe anaemia is 10-15%. Causes of anaemia in pregnancy are the same as those encountered in the non-pregnant state. However, iron deficiency anaemia is the commonest cause in pregnancy. In about 40-50% of cases, there is associated folic acid deficiency.

Anaemia in pregnancy is defined as haemoglobin concentration of less than 11 g/dl and haematocrit of less than 33%. It is further classified depending on Hb levels as mild 9-11 g%, moderate 7-9 g% and severe <7 g% as per WHO.

SALIENT FEATURES

- In mild to moderate cases, symptoms are weakness, exhaustion, lassitude, anorexia, glossitis, and stomatitis, while severe cases present with palpitation, dyspnoea, oedema and cardiac failure.
- Important basic investigations required are haemoglobin, haematocrit, total RBC counts, peripheral smear for type of anaemia and haematological indices, plasma proteins and stool for ova and cyst.

Treatment (iron deficiency anaemia)

All cases of severe anaemia to be admitted especially those with features of anoxia or cardiac failure.

Nonpharmacological

1. Diet rich in iron—jaggery, green leafy vegetable, sprouted pulses, meat, cooking food in iron utensils.
2. Diet rich in protein—pulses, lentils, milk and milk products, nuts.

Pharmacological

1. Oral iron therapy: Ferrous sulphate and Ferrous fumarate. Recommended dose is 200 mg elemental iron daily in divided doses. Not to be taken with meals, milk, coffee or tea. Continue therapy till blood picture returns to normal and then continue with 100 mg elemental iron daily for 3 months to build up the stores. Government of India recommends minimum of 100 mg of elemental iron and 5 mg folic acid for 100 days starting at 20 weeks (Common side effects are epigastric pain, nausea, vomiting, constipation, and diarrhoea).
2. Deworming to be done after first trimester, if necessary. Tab. Mebendazole 100 mg 2 times a day for 3 days.
   Or
   Tab. Albendazole 400 mg single dose.

Monitoring of response to therapy

Subjective improvement of feeling better, weight gain and improved appetite after 1-2 weeks. Reticulocyte response observed in 5-10 days (increases to 5-6%) and rise in

Hb/haematocrit in 2-3 weeks. The concentration is expected to rise at the rate of 0.1-0.25 g/dl/day or 0.8-1 g/dl/week.

If no improvement in 3 weeks, re-evaluate for: incorrect diagnosis, non-compliance, defective absorption, continuing loss, associated deficiencies and thalassaemia.

Role of parenteral therapy is limited as rate of rise of haemoglobin with parenteral iron is similar to oral iron preparation.

Specific indications. Severe intolerance to oral iron, malabsorption, non-compliance and moderate to severe anaemia in advanced pregnancy.

Total dose of iron to be given is calculated using following formulae:

2.4 × Weight (in kg) × deficit Hb (target Hb – actual Hb) + 500 mg

(**Caution:** Oral iron is suspended at least 24 hours prior to therapy to avoid reaction).

Inj. Iron Sucrose infusion 100 mg in 100 ml in Normal saline IV infusion. Total 200 mg in single dose on alternate day (max 600 mg/week) Or Inj. Iron dextran or Iron sorbitol complex (available as 50 mg/ml) IM after an initial test dose of 0.5 ml intramuscularly, the injections are given daily or on alternate days in doses of 2 ml IM using Z technique. To prevent staining of skin, one can pass small amount of saline/air down the needle before withdrawing it.

(**Caution:** Emergency drugs to be kept ready for resuscitation in case of anaphylactic reaction).

Intravenous route is rarely used, to be given as inpatient only.

- Total Dose Infusion (TDI) after test dose-
  Inj. Iron Dextran is diluted in 5% dextrose. Initial infusion is given slowly at 8 drops per min for half an hour to watch for reaction, and then increase gradually to 40 drops/min. Total iron dose is administered in a single sitting. If >2000 mg then only half dose is given in one day.
- IV without dilution to be administered over 20 minutes time slowly in fractional doses.
- Monitor for adverse reactions like rigours, chest pain, and hypotension. If present, stop the infusion, and give antihistaminic and hydrocortisone intravenously.

Indications for blood transfusion

Severe blood loss, severe anaemia beyond 36 weeks of pregnancy or anaemia refractory to oral and parental therapy or anaemic patient with anoxia or cardiac failure.

Management of anaemic patients during labour:

1. Propped up position, oxygen therapy.
2. Sedation and pain relief.
3. Digitalization may be required in cardiac failure due to severe anaemia.
4. Cut short 2nd stage by forceps.
5. Active management of 3rd stage of labour with Inj. Methylergometrine maleate 0.2 mg IV at the delivery of anterior shoulder. Inj. Methylergometrine to be avoided in patients of anaemia with cardiac failure.
6. Packed cell transfusion, if necessary and if Hb < 5 g after giving diuretics.

MEGALOBLASTIC ANAEMIA IN PREGNANCY

SALIENT FEATURES

- Patients may be asymptomatic or may have vomiting, diarrhoea, pallor, hepatosplenomegaly, and polyneuropathy.
- Diagnosis: is by MCV > 96fl, MCH > 33 pg and MCHC normal.
- Peripheral smear macrocytic anaemia with hypersegmentation of neutrophils, neutropenia and thrombocytopenia.

Folic acid deficiency

Treatment

Tab. Folic acid 5 mg daily to be continued for at least 4 weeks in puerperium.

Vitamin B_{12} deficiency

Treatment

Inj. Cyanocobalamin 250 mcg IM every month.

Dimorphic anaemia

Both iron and folic acid in therapeutic doses.

Patient education

- Dietary advice as mentioned earlier.
- Common side effects of therapy should be explained to the patient.
- Explain to the patient that stools turn black after oral iron therapy, so no need for concern.
- Iron supplementation should continue for at least 3 months in postpartum period.
- Adequate spacing of at least 3 years between two pregnancies.

References

1. Haematological Disorders. In: William's Obstetrics. Cunnungham HG, Gant NF, Leveno KJ et al (Eds), 21st Edition, McGraw Hill Company Inc., 2001; pp. 1307-1323.
2. Haematological Problems during Pregnancy. In: Practical Guide to High Risk Pregnancy and Delivery. Fernando Arias (ed), 2nd Edition, Harcourt Asia Pvt Ltd., 1992; pp. 245-262.
3. Anaemia and Pulmonary Tuberculosis. In: Practical Obstetric Problems. Ian Donald (ed), 5th Edition, BI Publications, 1998; pp. 198-226.
4. Medical and Surgical Illness Complicating Pregnancy. In: Textbook of Obstetrics, Dutta DC (Ed), 4th Edition, New Central Book Agency (P) Ltd., 1998; pp. 277-292.
5. Haematinics and Erythropoietin. In: Essential of Medical Pharmacology, Tripathi KD (ed), 4th Edition, Jaypee Brothers Medical Publisher Pvt Ltd., 1999; pp. 580-595.

PRE-ECLAMPSIA

Pre-eclampsia is one of the commonest causes of maternal and perinatal morbidity and mortality. It affects around 5-8% of all pregnancies.

Pre-eclampsia is principally a syndrome of signs, occurring more frequently in primigravida. When superimposed with convulsions it is termed as eclampsia. Other high-risk factors are—multiple pregnancy, hydramnios, and molar pregnancy.

SALIENT FEATURES

- Hypertension (blood pressure >140/90 mmHg recorded at 4-6 hours interval) with proteinuria and/or non-dependant oedema, developing after 20 weeks of gestation in a previously normotensive nonproteinuric patient.
- Pre-eclampsia is considered mild, if diastolic BP <100 mmHg, proteinuria trace to 1+ with minimal elevation of liver enzymes.
- Signs of severe pre-eclampsia are: BP >160/110, 24 hour's urinary proteins > 2 g, elevated serum uric acid, thrombocytopenia (platelet count <50,000/mm^3), microangiopathic haemolysis, raised liver enzymes, has diastolic BP >110 mmHg and foetal growth retardation.

Treatment

Hospitalize all cases. Definitive therapy is to terminate pregnancy. The choice between immediate delivery and expectant management depends on:

1. Severity of disease.
2. Condition of mother and foetus and
3. Period of gestation (POG).

A. Mild pre-eclampsia

Expectant management—in cases of mild pre-eclampsia without foetal and maternal compromise, with gestational age <37 weeks.

Nonpharmacological

Complete bed rest preferably in left lateral position and regular diet adequate in proteins and calories with omission of extra table salt.

Pharmacological

Antihypertensive treatment is started, if there is persistent diastolic blood pressure over 100 mmHg. Aim of treatment is to achieve a systolic BP about 130 mmHg and diastolic BP around 90 mmHg.

Tab. Methyldopa 250 mg 8 hourly or 6 hourly (maximum dose 2 g/day).

Or
Tab. Atenolol 50-100 mg once a day.
If BP is not controlled in 72 hours with the above, add any of the following:
Cap. Nifedipine 10 mg 8 hourly.
Or
Tab. Nifedipine retard 10 mg 12 hourly (maximum 30 mg 12 hourly).
Or
Tab. Labetalol 100-200 mg 8 hourly (maximum 600 mg 6 hourly).

Monitoring

- Daily monitoring of weight gain, BP, urine albumin, urine output.
- Weekly lab investigations—haemogram with platelet count, liver and kidney function tests specially serum uric acid, fundoscopy.
- Foetal monitoring by clinical and USG growth assessment, daily foetal movement count, non-stress test twice weekly and biophysical score weekly, Doppler studies in IUGR.
- In case of mild pregnancy-induced hypertension without proteinuria, if after hospitalization BP is controlled with rest without any antihypertensive drug, patient can be discharged after initial evaluation, if no maternal/foetal compromise is detected. It can be practiced only in reliable patients who will follow instructions for monitoring as above, and also will report ominous symptoms immediately (Ominous symptoms are persistent severe headache, visual disturbances such as dimness of vision, double vision or blindness, epigastric pain, nausea, vomiting and oliguria).

Definitive management

Termination of pregnancy by labour induction/caesarean section in the following conditions:

- Gestational age 37 weeks, foetal compromise like severe growth retardation, oligohydramnios, abnormal non-stress test or biophysical score, maternal compromise like development of features of severe pre-eclampsia, onset of labour, rupture of membrane or bleeding.

B. Severe pre-eclampsia

Treatment is preferably done in a tertiary care centre.

Nonpharmacological

- Observation in intensive care unit for 24 hours.
- Assessment of maternal and foetal conditions. BP monitoring 2-4 hourly, hourly urine output monitoring, watch for sign and symptoms of impending eclampsia and foetal distress.
- Lab Investigations: Haemogram with platelet count, liver and kidney function tests, urinary proteins, coagulation profile, fundus examination, obstetric ultrasound with BPS.

- Patient kept nil orally and in impending eclampsia cases intravenous fluids like Ringer's lactate at rate of 60 ml/h (maximum 125 ml/h) can be given.

Pharmacological

The aim of the treatment is gradual lowering of blood pressure so that diastolic BP is maintained between 90-100 mmHg.

1. Immediate management.

Tab. Nifedipine 10 mg orally can be repeated after 30-60 min. (maximum dose 20 mg 4 hourly).

(**Caution:** Side effects—tachycardia, headache, flushing, and aggravation of angina. Rapid fall in BP can cause foetal distress).

If BP is not controlled with oral treatment then IV drugs are started with intensive monitoring.

Inj. Labetalol initial dose is 20 mg IV over 5 minutes, followed by 20-40 mg every 10 minutes till BP is controlled (≤ 160/110) or a maximum of 220 mg is reached. Continue with 200 mg 8 hourly orally.

2. Maintenance therapy. After initial control of acute hypertension, patient is started on maintenance therapy with antihypertensives as described in management of mild pre-eclampsia.

3. Prophylactic anticonvulsants in women with severe pre-eclampsia especially in cases with signs and symptoms of impending eclampsia. Dose is same as for eclampsia. Loading dose is Magnesium sulphate-4g IV as 20% solution over 20 minutes and 10 g intramuscular as (50%) solution, 10 ml (5 g) in each buttock (total of 14 g) followed by second dose 5 g in alternate buttocks every 4 hours for maintenance. Before each dose monitor for presence of patellar reflex, respiratory rate >16/min and urine output > 25 ml/h. It should be discontinued after 24 hours after BP is lowered, if expectant management is planned**.**

After initial evaluation and stabilization of the patient, further management is decided depending on foetal maturity and maternal response:

Expectant management. Considered, if pregnancy is between 24-34 weeks and hypertension controlled with maximum of two drugs, urine output is normal, lab investigations are normal and no foetal compromise. Patient should be hospitalized till delivery.

Managed as mentioned in the mild pre-eclampsia with antihypertensives, bed rest and more frequent maternal and foetal monitoring.

Definitive management is termination of pregnancy:

- Pregnancy beyond 34 weeks—stabilize maternal condition and terminate pregnancy.
- Pregnancy less than 24 weeks—stabilize maternal condition and terminate pregnancy.

- Patient on expectant management develops following features: Uncontrolled hypertension despite maximum dose of 2 antihypertensive drugs, eclampsia, raised liver enzyme >2 time with right upper quadrant pain and tenderness, pulmonary oedema, platelet < 1 lac/mm^3, creatinine > 1 mg/dl over baseline, persistent headache, vomiting and visual disturbance suggestive of impending eclampsia, papilloedema and fetal compromise.

After delivery, intensive monitoring should be continued for 72 hours with prophylactic anticonvulsant continued till 24 hours postpartum. Dose of anti-hypertensives should be gradually reduced.

ECLAMPSIA

SALIENT FEATURES

- Occurrence of generalized convulsions associated with signs of pre-eclampsia during pregnancy, labour or within 7 days of delivery and not caused by epilepsy or other convulsive disorders.
- Eclampsia occurs antepartum in 46%, intrapartum in 16% and postpartum in 36% cases.
- Patient may develop acute left ventricular failure, cerebral haemorrhage, renal cortical necrosis, DIC, foetal distress, abruptio placentae, foetal death and even maternal death can occur.

Treatment (to be managed at a tertiary care level)

Principles of management are control and prevention of recurrence of convulsion and control of hypertension. Treat any complication that arises and deliver safely as soon as possible. Continue anticonvulsant therapy 24 h after delivery or last fit whichever is latest.

Nonpharmacological

Place the patient in left lateral position in a separate, quiet room. Secure and maintain airway. Use mouth gag or airway to prevent tongue biting/tongue falling back. Intubate, if patient is deeply unconscious, poor arterial blood gases, extensive laryngeal oedema, and extreme restlessness.

- Suction to remove oropharyngeal secretions.
- Oxygen by facemask.
- Set up IV access.
- Monitor heart rate and respiration, BP, urine output.
- Lab. Investigations: Haemogram with platelet count, liver and kidney function tests, urinary proteins, coagulation profile, serum electrolytes, fundus examination.

Pharmacological

1. Inj. Magnesium sulphate loading dose of 14 g of which, 4 g as 20% solution given slowly IV over 5-10 minutes and 5 g as 50% solution given deep IM in each buttock (total 10 g IM). If fits are not controlled in 15 min, give 2 g Magnesium sulphate as 20% solution slow IV.
   Maintenance dose 5 g magnesium sulphate as 50% solution deep IM every 4 hours in alternate buttock or continuous IV regimen 4 g loading dose over 20 minutes followed by 1 g/h slow continuous IV infusion.
   (**Caution**: Side effects are respiratory depression and neuromuscular depression in mothers. Neonatal respiratory and neuromuscular depression).
   If respiratory depression occurs, give calcium gluconate 1 g IV as 10% sol. If respiratory arrest occurs, immediate endotracheal intubation and ventilation is to be done.
   Monitoring: Check for respiratory rate to be more than 16/min, patellar reflex to be present and urine output >25 ml/h before giving magnesium sulphate.
   Or
   Inj. Phenytoin loading dose of 15-25 mg/kg slow IV not exceeding 25 mg/min diluted in normal saline for first 750 mg and then 12.5 mg/min followed by 100 mg IV 8 hourly.
   ECG tracing to be taken every minute for 10 min during infusion of first 750 mg.
2. Fluid management should be closely monitored to prevent complications such as pulmonary oedema, left ventricular failure and adult respiratory distress syndrome.
3. Antihypertensives: As described in pre-eclampsia. Aim is to gradually lower the BP to 140-150/90-100 mm Hg.

Definitive management is termination of pregnancy irrespective of the foetal maturity. Termination is by labour induction and vaginal delivery or caesarean section.

Indications of caesarean section are: All deeply unconscious patients unless delivery is imminent, uncooperative patient due to restlessness, if vaginal delivery is unlikely to occur within 6-8 hours from the onset of 1st eclamptic seizure or eclamptic seizures are not controlled in 6-8 hours, and other obstetric indications.

Care after delivery

- Patients of eclampsia and severe pre-eclampsia need intensive monitoring for at least initial 72 hours.
- Continue anticonvulsant till 24 hours after delivery or fit, whichever occurs later.
- Gradually decrease the dose of antihypertensives.
- Patient is discharged after 10-14 days of delivery or earlier, if BP controlled without antihypertensives.
- Follow up after 6 weeks for re-evaluation.

Patient education

- Delivery is the only definitive treatment. Underlying disease remains till delivery and complications can arise despite control of BP on treatment.
- Symptoms of severe pre-eclampsia like headache, vomiting, epigastric pain, decreased urine output, blurring of vision should be immediately reported.
- Need for prolonged hospitalization.
- Early booking in next pregnancy as there is 25-30% risk of recurrence.
- Prophylactic measures like low-dose aspirin can be started in early pregnancy.
- Need for re-evaluation at 6 weeks postpartum for reclassification and investigations of hypertension and need for long-term antihypertensives.
- High risk of development of chronic hypertension in later life.

References

1. Pre-eclampsia and Eclampsia. In: Practical Guide to High Risk Pregnancy and Delivery. Fernando Arias (ed), 2nd Edition Mosby, 1998; pp. 183-212.
2. Hypertensive Disorders in Pregnancy. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 567-618.
3. Advances in Management of Severe Pre-eclampsia and Antihypertensive Therapy. In: Recent Advances in Obstetrics and Gynaecological. No. 20, John Bonnar (Ed), Churchill Livingstone, 1998; pp. 111-124.
4. Treatment of Severe Pre-eclampsia/Eclampsia Syndrome. In: Progress in Obstetric and Gynaecological. Studd (Ed), Vol. 14, Churchill Livingstone, 2000; pp. 102-119.
5. Severe pre-eclampsia and eclampsia. In: Obstetric Protocols for Labour Ward Management. Rathore, Sachdeva, Batra (Eds), Jaypee Brothers, Delhi 2004; pp. 47-53.

PREGNANCY WITH HEART DISEASE

Organic heart disease in pregnancy is commonly due to rheumatic heart disease or congenital heart disease. Pregnancy with its increased cardiovascular stress is a potential cause for worsening of the existing heart disease.

SALIENT FEATURES

- Severe or progressive dyspnoea, progressive orthopnoea, paroxysmal nocturnal dyspnoea, haemoptysis, syncope with exertion or chest pain related to effort or emotions.
- Echocardiography is diagnostic.

Treatment

All pregnant women with heart disease should be managed at a tertiary level centre with multidisciplinary approach. Depending on the limitation of physical activity, patient is classified into class I to IV of New York Heart Association (NYHA). Much of the clinical approach to the pregnant women with heart disease is according to NYHA class irrespective of the aetiology of the heart disease.

Nonpharmacological

- NYHA class III and IV patients are to be hospitalized throughout the pregnancy while class I and II can be managed as outdoor patients with more frequent antenatal visits and admission at 38 weeks. NYHA II should be admitted at 28 weeks, but they can be discharged at 32 weeks, if all maternal and foetal parameters are within normal limits.
- Rest for 10 hours each night and 1 to 2 hour after each meal. Light housework and walking without climbing stairs is permitted. No heavy work is allowed.
- Avoid high salt intake.
- Screen and treat at the earliest for excessive weight gain, abnormal fluid retention, anaemia, pregnancy-induced hypertension, infections.

Pharmacological (in consultation with the cardiologist)

(For details see section on CHF in Chapter 3)

In case of rheumatic heart disease,

1. Inj. Benzathine penicillin 1.2 mega units IM 3 weekly.
2. Treat any infection with appropriate antibiotics.
3. In patients with mechanical prosthetic valves:
   Inj. Heparin throughout pregnancy to maintain PTT at 1.5 to 2.5 times the normal control. It should be stopped at the onset of labour and restarted after 6-12 hours, if there is no PPH.
   (**Caution:** Oral anticoagulants are not safe during pregnancy because of risk of congenital anomalies in the foetus. But if required, can be given after first trimester and continued till 36 weeks gestation, when it is replaced by heparin. However, oral anticoagulants are safe during lactation).

Labour management

1. Caesarean is performed for only obstetrical indications.
2. Pain relief is important during labour. Best option is to give continuous epidural analgesia. It is contraindicated in women with intracardiac shunts, aortic stenosis, pulmonary hypertension, and hypertrophic cardiomyopathy. Inj. Morphine can also be given for pain relief.
3. Fluids should be restricted to 75 ml/h. Bolus Oxytocin and Methyl ergometrine should be avoided.
4. Antimicrobial prophylaxis for infective endocarditis required in all patients with cardiac lesions undergoing any operative procedure or in labour.

Inj. Ampicillin 2 g + Inj. Gentamicin 1.5 mg/kg (maximum 120 mg) IV or IM 30 min before procedure followed by Inj. Ampicillin 1 g IM or IV; or Cap. Amoxycillin 1 g orally 6 hours after initial dose.

If patient is allergic to penicillin, Inj. Vancomycin 1 g IV (over 1-2 hours) plus Inj. Gentamicin 1.5 g/kg (maximum 120 mg). Infusion to be completed within 30 min before procedure.

Patient education

- Depending on the type and severity of cardiac lesion, maternal risk of pregnancy should be discussed with the patient ideally before pregnancy.
- Option of corrective surgery preferably before pregnancy.
- 2-5% risk of congenital heart disease in foetus, if mother has congenital heart disease.
- Contraceptive advice: Sterilization after 2 weeks, progestogen only method or barrier method. Counsel husband for male sterilization preferably by non-scalpel vasectomy.
- In severe cases, option of medical termination of pregnancy, if pregnancy <12 weeks.

References

1. Cardiovascular Disease. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 1181-1208.
2. Heart Disease in Pregnancy. In: Medical Disorders in Obstetric Practice. Michael de Swiet (Ed), 4th Edition, Blackwell Publishing, 2002; pp. 125-158.

DIABETES IN PREGNANCY

Pregnancy can be complicated by pre-existing insulin dependent or noninsulin-dependent diabetes or gestational diabetes. Gestational diabetes (GDM) is defined as the carbohydrate intolerance of variable severity with onset or first recognition during pregnancy.

Risk assessment for GDM should be undertaken at first pre-natal visit. Patients with glycosuria, age over 30 years, obesity, family history of diabetes, past history of GDM or glucose intolerance and previous adverse pregnancy outcome should undergo glucose testing as soon as feasible. If they are found not to have GDM at initial screening, should be retested between 24-28 weeks of gestation and positive results are: Fasting sugar > 95 mg/dl; 180 mg/dl at 1 hour and 155 mg/dl at 2-h after 75 mg oral glucose load. A fasting plasma glucose levels > 126 mg/dl or a casual glucose > 200 mg/dl meets the threshold for the diagnosis of diabetes, if confirmed on a subsequent day, precludes the need for any glucose challenge.

Treatment

All pregnancies in diabetic females should be managed at a tertiary care centre.

Nonpharmacological

Dietary advice. Total daily calorie intake should be 30 Kcal/kg current pregnancy body weight, if her current weight is 80-120% of ideal pre-pregnancy weight. In case current weight is <80% or >120% of ideal pre-pregnancy weight, then calorie intake is 36-40 Kcal/kg current pregnancy weight or 24 Kcal/kg current pregnancy weight respectively.

Total daily calorie intake should be 30-35 Kcal/kg current pregnancy weight. Complex carbohydrates should provide about 50% of the total calories, which should be well distributed throughout the day. High fibre diet is beneficial with 30-50 g fibres daily. Total diet should be distributed in 3 major meals and 3 mid-meal snacks.

General measures. Ultrasound assessment of foetal gestational age is to be done as early as possible. Foetal congenital anomalies should be ruled out by Level II USG scan at 16-18 weeks, foetal echo at 22 weeks. Serial USG for foetal growth monitoring and biophysical scoring for assessment of foetal well being after 32 weeks of gestation.

Pharmacological

A. Antenatal management. Initial evaluation should include blood sugar, KFT and fundoscopy.

(a) Pre-existing diabetes. Oral hypoglycaemic agents are contraindicated during pregnancy. If patient is on oral hypoglycaemics, switch over to insulin therapy as soon as pregnancy is diagnosed.

1. Inj Insulin: 0.6-0.8 U/kg in 1st trimester, 0.7-0.9 U/kg in 2nd trimester and 0.8-1.2 U/kg in 3rd trimester.
   Usually a combination of intermediate acting and regular insulin in proportion of 2:1 is given. Two-thirds of the total requirement is given in the morning before breakfast and one-third is given at night with regular insulin before dinner and intermediate at bedtime. Dose adjustment is done to maintain blood sugar level between fasting <95 mg% and postprandial between 70 and 120 mg%. Sampling of blood should be done initially fasting, pre- and post-breakfast, pre- and post-lunch, pre- and post-dinner and 2 AM regularly till controlled and then daily monitoring by fasting and postmeal sugars.
2. Hospitalization is required in cases of excessive vomiting, infections, maternal complications like hypertension, retinopathy, nephropathy, foetal compromise like macrosomia or intrauterine growth retardation (IUGR) or poor diabetic control.

(b) Gestational diabetes.

1. General management is same as outlined above.
2. Diet control. Patient is reassessed after 1 week. If control not achieved insulin therapy is started. Confirmation of blood sugar and regular insulin if required may be given before breakfast, before lunch and before dinner or combination of regular and long acting can be given before breakfast and dinner. Hypoglycaemia should be avoided.
3. If fasting plasma sugar is >105 mg% insulin is usually required for control. Regular insulin is adjusted to normalize post breakfast glucose and intermediate for post-lunch glucose control. If evening or fasting glucose is elevated, 2nd daily injection is added. If both are elevated, mixture of intermediate and regular insulin before dinner is added. If only fasting is elevated, add intermediate acting insulin at bedtime.
   Or

Inj. Regular Insulin 3 times a day before each main meal which can be combined with one dose of intermediate acting insulin at bedtime in case there is fasting hyperglycaemia.

Apart from routine antenatal monitoring, blood sugar monitoring is required throughout pregnancy. Therapeutic goal is to achieve plasma blood sugar levels fasting <95 mg% and 2 hour postprandial <120 mg%. When levels are high daily monitoring with insulin dose adjustment is required.

Once control is achieved, patient can be managed at home with weekly blood sugar profile.

4. Glycosylated Hb (HbA_{1C}) to be done in 1st trimester. Value of 9% or above indicates poor glycemic control, carries higher risk of congenital malformation; MTP may be offered after proper evaluation.
5. Urine glucose monitoring is not useful in GDM.
6. Maternal survillance include blood pressure and urine protein monitoring to detect hypertensive disorders.
7. Assessment of asymmetric foetal growth by ultrasonography, particulary in early third trimester.

B. Management during labour. In uncomplicated case with good glycaemic control pregnancy can be continued till expected date of delivery. In presence of complications or foetal compromise pregnancy is terminated at 38 weeks or earlier if required. If estimated foetal weight is >4 kg, caesarean section is performed. Labour is managed with intensive monitoring. Blood sugars are monitored 3-4 hourly aim is to keep blood sugars between 100-120 mg%, using the sliding scale method using regular insulin.

In the postpartum period, the requirement of insulin is decreased.

(For other details see section on Diabetes in Chapter 11)

Patient education

- In known diabetics, good blood sugar control should be achieved in preconception period to avoid high risk of congenital anomalies.
- Strict adherence to the dietary advice and insulin therapy is essential throughout pregnancy. As insulin requirements change throughout pregnancy therefore, frequent blood sugar monitoring is required throughout pregnancy.
- Patient on insulin therapy should be told about symptoms of hypoglycaemia like palpitations, sweating, dizziness, and its management.
- In cases of gestational diabetes, there is risk of recurrence in subsequent pregnancies and later on risk of frank diabetes is there.
- Contraceptive advice—Combined oral contraceptive pills and intrauterine devices are preferably avoided. Barrier methods, progestogen only pills/implants/injectables or sterilization can be offered.

References

1. Diabetes. In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 1359-1382.

2. Insulin Management of Type I and Type II Diabetes in Pregnancy. In: Clinical Obstet Gynaecology, John W. Hare, 1991; pp. 494-504.
3. Management of Gestational Diabetes. In: Clinical Obstet Gynaecology, Donald R. Coustan (Ed), 1991; pp. 558-564.
4. Diabetes. In: Medical Disorders in Obstetrics Practice, Michael De Swiet (Eds), 4th edition, Blackwell Science, 2002; pp. 386-414.
5. Executive Summary: Standards of Medical Care in Diabetes—2012. Diabetes Care 2012; 35 2001; (Suppl. 1).

PRETERM LABOUR

Onset of labour pains in pregnant women after 20 weeks and before 37 weeks of gestation associated with progressive dilatation and effacement of the cervix is known as preterm labour.

SALIENT FEATURES

- Uterine contraction of duration of 30 sec or more, with 2-3 contractions per 10 minutes accompanied by cervical dilatation (> 2 cm) and effacement (>80%) with or without leaking or bleeding per vaginum.
- Risk factors include: low socioeconomic status, heavy manual labour, extremes of age (<20 years and >40 years), previous history of abortion or preterm delivery, cervical or vaginal infection, multiple gestation or over distended uterus, hypoxic conditions like anaemia, heart disease, pre-eclampsia, IUGR, foetal congenital malformations and antepartum haemorrhage in present pregnancy

Treatment

Nonpharmacological

Hospitalization with complete bed rest, preferably in a centre with neonatal intensive care unit.

Laboratory investigations: Haemogram, urine culture, and endocervical swab for culture and sensitivity.

Pharmacological

1. Immediate tocolysis in pregnancies <34 weeks, if membranes are intact and labour is not advanced (cervical dilatation <4 cm), there is no indication for immediate delivery and no contraindication for tocolysis.
   Cap. Nifedipine 30 mg loading dose followed by 10-20 mg every 4-6 hours.

(**Caution**: Do not administer along with magnesium sulphate; contraindicated in maternal hypotension (< 90/50 mmHg), cardiac disease. Use with caution in renal disease; maternal side effects, flushing, headache, nausea, dizziness, hypotension). Monitor pulse, BP, and cessation of the uterine contractions. If pulse rate >120/min and BP < 90/50 mmHg stop tocolysis. Monitoring in magnesium sulphate therapy is as

outlined in eclampsia. Monitor for onset of chorioamnionitis (fever, tachycardia with uterine tenderness).

Maintenance therapy

Tocolysis has no role in long-term therapy, it is needed for first 48 hours only to allow for action of steroids.

1. Tab. Isoxsuprine orally 10 mg 6 hourly or 20 mg 12 hourly (maximum daily dose is 40 to 80 mg/day).
2. In pregnancies at 28-34 weeks of maturity, steroids are given for foetal lung maturity.
   Inj. Betamethasone 12 mg IM 2 doses 24 hours apart.
   Or
   Inj. Dexamethasone 6 mg IM four doses 12 hours apart or 12 mg IM two doses 12 hours apart.
   (**Caution**: Contraindicated if clinical or laboratory evidence of chorioamnionitis is present).
3. Cap. Ampicillin 500 mg or Erythromycin 500 mg 4 times a day for 5-7 days, only if PROM is present.
   Patient may be discharged after 1 week of tocolysis followed by regular antenatal surveillance.

Delivery

In cases of ineffective tocolysis or with contraindications for tocolysis, labour is allowed to progress and mode of delivery is decided as per obstetric indications. Careful foetal monitoring required throughout labour.

If any sign of hypoxia, caesarean section is better but foetus should have a fairly good chance of survival depending on neonatal care facility.

Patient education

- Restricted physical activity after discharge.
- Sexual abstinence till at least 34 weeks of gestation.
- Explain the risk of recurrence in subsequent pregnancy. Therefore, need for early booking and prophylactic measures in next pregnancy.

References

1. Clinical Problems of Preterm Labour. In: Clinical Obstetrics and Gynaecology, 2000; 43, pp. 713-818.
2. Preterm Birth. In: Williams Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 689-728.
3. Preterm Labour. In: Practical Guide to High Risk Pregnancy and Delivery. Fernando Arias (Ed), 2nd Edition, Mosby, 1998; pp. 71-100.
4. Recent Advances in Preterm Labour. In: Recent Advances in Obstetrics and Gynaecology No 20, H John Bonnar (Ed), Churchill Livingstone, pp. 97-110.

5. Preterm Labour. In: Obstetric Protocols for Labour Ward Management. Rathore, Sachdeva, Batra (Eds), Jaypee Brothers, Delhi, 2004; pp. 57-60.
6. Cochrane Database of Systematic Reviews. 2004; and 2002.

ANTEPARTUM HAEMORRHAGE (APH)

Antepartum haemorrhage is defined as bleeding from genital tract after 20 weeks of pregnancy and before completion of second stage of labour. It is a major cause of maternal morbidity, mortality and perinatal loss. APH is due to placental cause in as high as 70% cases and in 25-30% of cases cause may remain undetermined.

SALIENT FEATURES

- Clinical presentation varies depending on the severity of blood loss (Table 15.7) and cause of bleeding (Table 15.8). In mild haemorrhage, there may be no maternal or foetal compromise, while massive haemorrhage can lead to hypovolaemic shock, coagulation failure, renal failure, foetal distress and may result in maternal and foetal death.
- Ultrasound is confirmatory for placenta praevia.

Table 15.7. Clinical presentation and severity of blood loss

Acute blood loss	Clinical findings
1000 ml	None
1000-1500 ml	Orthostatic blood pressure changes, positive tilt test,
	Pulse Pressure = 30 mmHg, reduced peripheral perfusion, prolonged capillary refill time
1500-2000 ml	Cold clammy skin, tachycardia, tachypnoea, hypotension
> 2000 ml	Profound shock, non-palpable pulse, intrauterine death of the foetus

Table 15.8. Causes of bleeding

Placenta previa	
Abruptio placentae	
Unclassified bleeding	
Associated conditions–cervical erosion, malignancy	
Placenta praevia	**Abruptio placentae**
Pallor usually proportionate to blood loss	Pallor may be disproportionate to apparent blood loss
Painless recurrent bleeding	Associated pain abdomen
Relaxed non-tender uterus	Tense tender uterus
Free-floating presenting part	Foetal parts not easily palpable
Abnormal lie	Foetal heart irregular or absent
	Pregnancy induced hypertension

Treatment

All patients of APH should be hospitalized in a well-equipped centre with facilities for blood transfusion, emergency caesarean section and neonatal care unit.

A. Massive haemorrhage

Following resuscitative measures are started immediately in massive haemorrhage. Simultaneously prepare the patient for termination of pregnancy by vaginal/caesarean section depending on the cause of bleeding.

Nonpharmacological

1. Establish intravenous line (one or two 14/16 gauge cannula)
   a. Draw 20 ml blood for cross-match, haemogram, coagulation profile.
   b. Start fluid therapy rapidly as described below.
2. Head down tilt, keep the patient warm.
3. Oxygen by mask at 8 liters/minute.
4. Empty bladder (Foley's catheter for urine output).

Pharmacological

1. IV fluids and blood replacement therapy (for details see section on Shock in Chapter 2).
2. Definitive treatment is termination of pregnancy by caesarean section in cases of placenta previa Type IIb, Type III and Type IV, and by vaginal delivery/caesarian section in cases of abruptio placentae and placenta previa Type I and Type IIa.

B. Mild APH

Expectant management

In a case of placenta previa without maternal and foetal compromise, expectant management is planned, if pregnancy is less than 37 weeks and patient is not having active bleeding and labour pains, and there is no congenital anomaly in the foetus.

1. Hospitalize and bed rest with foetal and maternal monitoring.
2. Inj. Dexamethasone 12 mg IM 12 hourly for 2 doses should be given for foetal lung maturity if, POG < 35 weeks.
3. Definitive treatment is termination of pregnancy in case of following: occurrence of life-threatening bleeding, pregnancy > 37 weeks, patient is in labour, in all cases of abruptio placentae, baby is dead, congenitally malformed baby and bleeding recurring or premature rupture of membranes on expectant management leading to maternal or foetal compromise.
   a. Indications for caesarean section are: Major degree placenta praevia, non-vertex presentation, in case of abruptio placentae with live foetus, if cervix is unfavourable (labour is likely to be longer than 6 hours), failure to progress after amniotomy and oxytocin infusion and other obstetrical indications for caesarean section.

b. Indications for vaginal delivery in APH are: Minor degree placenta praevia with vertex presentation and slight bleeding with favourable cervix and abruptio placentae with mild bleeding and no increased uterine tone, foetus is dead or has major congenital malformation incompatible with life.

For induction artificial rupture of membranes followed by oxytocin infusion is done. Oxytocin infusion is continued in the postpartum period to prevent postpartum haemorrhage. In abruptio placentae, monitoring is done to detect maternal complication early (pulse, BP, uterine height girth chart, vaginal bleeding, urinary output, BT, CT, clot retraction time).

Patient education

- APH irrespective of type and cause results in increased perinatal morbidity and mortality.
- Incidence of placental abruption and placenta praevia are both increased with increasing age and parity.
- Hypertension, cigarette smoking, cocaine abuse, etc. predispose to placental abruption.

References

1. Antepartum Haemorrhage. In: Anesthetic and Obstetric Management of High Risk Pregnancy, Datta S (Ed), 2nd Edition, Mosby, 1996.
2. Obstetric Haemorrhage. In: Intrapartum Obstetrics. Reptke JP (Ed), Churchill Livingstone, 1996; pp. 203-222.
3. Obstetric Haemorrhage. In: William's Obstetrics. FG Cunningham, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 619-670.

POSTPARTUM HAEMORRHAGE (PPH)

Postpartum haemorrhage is excessive blood loss from the genital tract after delivery of the foetus exceeding 500 ml or affecting the general condition of the mother.

SALIENT FEATURES

- Primary PPH, i.e. bleeding within 24 hours of delivery is commonly due to atonic uterus (90% cases) or cervical/vaginal tears (traumatic PPH). It can also be due to occult uterine inversion, rupture uterus or coagulation defect.
- Abnormal bleeding can also occur between 24 hours and 6 weeks of delivery (secondary PPH) due to sepsis, retained placental bits, or placental polyp, choriocarcinoma.
- PPH requires prompt and effective management, failing which it may result in complications like hypovolaemic shock resulting in multi-organ failure like coagulation failure, renal failure, hepatic failure, adult respiratory distress syndrome and may also result in maternal death.
- Monitor pulse rate, blood pressure, respiratory rate and urine output. While resuscitative measures are underway, a thorough clinical examination is made to ascertain the cause of PPH and definitive treatment is planned accordingly.

Pharmacological

Same as in APH (for details see section on Shock in Chapter 2).

Atonic PPH

Prevention

Identify risk factors and anticipate the problem.

Active management (oxytocin 5 units intramuscularly at the birth of anterior shoulder or after delivery of placenta) should be done in all cases unless contraindicated.

Nonpharmacological

Placental removal with controlled cord traction if already separated uterine massage and bimanual compression.

Pharmacological

1. Oxytocin infusion (10-40 units in 500 ml Ringer's lactate/normal saline at 125 ml/ min).
2. Inj. Methyl ergometrine maleate 0.2 mg IV may be repeated IM after 5-10 min.
   (**Caution**: Contraindicated in heart disease, hypertension).
3. If bleeding is not controlled 15-Methyl $PGF2_{\alpha}$ 0.25 mg IM/ intramyometrial, may be repeated every 15-90 min up to a maximum of 2 mg.
   (**Caution**: Contraindicated in bronchial asthma, epilepsy).
4. In patients with bronchial asthma and epilepsy, administer with caution Tab. Misopristol 600 mcg per rectum.

Indication for referral

If patient is still bleeding despite medical therapy and if facilities for transfusion and further management are not available, arrange for transfer to a higher centre. Intrauterine packing may be done in the mean time under anaesthesia or sedation.

Surgical treatment (Table 15.9)

Table 15.9. Surgical treatment

Retained placenta	Manual removal of placenta under general anaesthesia (GA)
Cervical/ vaginal tears	Exploration and repair
Rupture uterus	Laparotomy with repair/hysterectomy
Uterine inversion	Reposition under GA
Atonic PPH not controlled	Laparotomy with uterine artery ligation with medical measures
	Internal artery ligation/hysterectomy

Patient education

- Higher parity and previous atonic PPH predispose to PPH.
- Hospital delivery is mandatory in women with PPH in a previous pregnancy, grand multipara, multiple pregnancy, polyhydramnios, APH and severe anaemia.

References

1. Postpartum Haemorrhage. In: American College of Obstetricians and Gynaecologists, ACOG Technical Bulletin no. 243. Washington, DC, 1998.
2. The Management of Postpartum Haemorrhage. In: Scottish Obstetrics Guidelines and Audit Project, 1998.
3. Obstetrical Haemorrhage In: William's Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC, Hoth JC, Wenstrom KD (Eds), 21st Edition, McGrawhill Publication, International Edition, 2001; pp. 619-670.

VAGINAL DISCHARGE

It is discussed in section on Sexually Transmitted Diseases in Chapter 14 (p. 368).

PELVIC INFLAMMATORY DISEASE (PID)

PID is a spectrum of infections involving female upper genital tract, i.e. cervix, uterus, tubes, ovaries and pelvic peritoneum. The disease may have acute or chronic presentation. Most cases of acute PID are the result of polymicrobial infection. The commonest cause is sexually transmitted diseases and other causes are post-abortal and puerperal sepsis, operative procedures like dilatation and curettage, endometrial biopsy, and insertion of intrauterine device.

SALIENT FEATURES

- Lower abdominal pain, cervical motion tenderness and adnexal tenderness, tubo-ovarian mass, fever, cervical discharge and leucocytosis.
- In severe cases, patient may be toxic with high-grade fever, vomiting, dehydration, and abdominal distension.
- Long-term sequelae can be infertility, ectopic pregnancy, chronic pelvic pain and even mortality can occur in case of ruptured tubo-ovarian abscess.
- Failure of acute PID to resolve completely results in chronic PID with features of severe, persistent and progressive pelvic pain, repeated acute exacerbation of PID, tubo-ovarian inflammatory mass, dyspareunia or bilateral ureteral obstruction from ligamentous cellulitis.

Treatment (Acute PID)

The patient can be treated as an outpatient or inpatient depending on the severity of clinical features.

I. Outpatient treatment

Patient of mild to moderately severe PID with slight pain and tenderness, without toxic features like high-grade fever, vomiting, and abdominal distension can be managed as outdoor patients with the following drug kits

Kit No	Syndrome	Colour	Contents
Kit 1	Urethral discharge, anorectal discharge, cervical discharge	Grey	Tab. Azithromycin 1 g (1) and Tab. Cefixime 400 mg (1)
Kit 2	Vaginal discharge	Green	Tab. Secnidazole 2 g (1) and Tab. Fluconazole 150 mg (1)
Kit 3	Genital ulcer disease–non-herpetic	White	Inj. Benzathine penicillin 2.4 MU (1) and Tab. Azithromycin 1 g (1) and Disposable syringe 10 ml with 21 gauge needle (1) and Sterile water 10 ml (1)
Kit 4	Genital ulcer disease–non-herpetic, for patients allergic to penicillin	Blue	Tab. Doxycycline 100 mg (30) and Tab. Azithromycin 1 g (1)
Kit 5	Genital ulcer disease–herpetic	Red	Tab. Acyclovir 400 mg (21)
Kit 6	Lower abdominal pain	Yellow	Tab. Cefixime 400 mg (1) and tab. Metronidazole 400 mg (28) and Cap. Doxycycline 100 mg (28)
Kit 7	Inguinal Bubo	Black	Tab. Doxycycline 100 mg (42) and Tab. Azithromycin 1 g (1)

Follow up after 2-3 days of initiation of therapy; patient is re-evaluated for clinical response. If poor response, patient is to be admitted for intravenous antibiotics.

(See also Sexually Transmitted Disease in chapter 14)

II. Indoor treatment

If diagnosis is uncertain and surgical emergencies such as appendicitis and ectopic pregnancy cannot be ruled out, patient is pregnant, post-abortal or puerperal and if the patient is adolescent (among adolescents, compliance with therapy is unpredictable), severe illness or nausea and vomiting, HIV positive, unable to follow or tolerate an out patient regimen and outpatient therapy failed. Bed rest, hydrotherapy, if febrile. IV fluids in cases of vomiting and dehydration and correction of electrolyte imbalance.

Investigate and obtain haemogram with ESR, LFT, KFT, serum electrolytes, blood culture, endocervical swab culture, ultrasonography, if adnexal mass. Monitoring by clinical condition, vital monitoring, signs and symptoms of pelvic abscess and peritonitis.

Pharmacological

Either of the following regimens may be instituted at the earliest without waiting for culture reports.

A. Regimen A

1. Inj. Cefoxitin 2 g IV every 6 hours for 2-4 days.
   Or
   Inj. Cefotetan 2 g IV every 12 hours.
2. Inj. Doxycycline 100 mg IV or orally every 12 hours.
3. Inj. Metronidazole 500 mg IV 8 hourly.

B. Regimen B

1. Inj. Clindamycin 900 mg IV every 8 hours.
2. Inj. Gentamicin 2 mg/kg IV followed by 1.5 mg/kg every 8 hours.
3. Inj. Metronidazole 500 mg IV 8 hourly.
4. In case of severe pain, Inj. Diclofenac sodium 75 mg deep IM 8 hourly.
   Or
   Inj. Paracetamol 500 mg IM SOS.

Injectable regimen should be continued for at least 48 hours after the patient demonstrates clinical improvement (becomes afebrile, decrease in lower abdomen and pelvic tenderness, improvement in constitutional symptoms). After this, Doxycycline 100 mg 2 times a day orally or Clindamycin 450 mg oral 4 times a day should be continued for total of 14 days.

Clinical improvement should occur within 3 days of initiation of therapy.

Consider further diagnostic tests/laparoscopy, if symptoms do not improve or worsen.

Different procedures may be required in the following situations:

- Colpotomy for drainage of midline pelvic abscess
- Dilatation and evacuation of septic products of conception in post-abortal sepsis.
- Laparotomy in cases of pyoperitoneum, resistant peritonitis, intestinal obstruction, ruptured tubo-ovarian abscess, enlarging pelvic mass despite medical therapy.
- Laparoscopy: if diagnosis is uncertain, in cases of no response to treatment, to reconfirm the diagnosis, obtain cultures from cul-de-sac and fallopian tubes and drain pus, if necessary.

Treatment of the sexual male partner

Asymptomatic male partner:

Inj. Ceftriaxone 125 mg IM followed by oral Doxycycline 100 mg 2 times a day for 14 days or Azithromycin 1gm orally as a single dose.

Treatment (Chronic PID)

Chronic PID can also be caused by pelvic tuberculosis which requires medical treatment first. Treatment of chronic PID is surgical. Type of surgery is decided considering pathological lesion, patient's age, and desire for child bearing. Definitive surgery is total abdominal hysterectomy with bilateral salpingo-oophorectomy, but in young females conservative surgery is preferred. Injection placentrex and pelvic diathermy may help.

Treatment (Pelvic tuberculosis)

Primary treatment is medical therapy with antitubercular drugs for 6 months (treatment as under see new treatment category under tuberculosis chapter 1). Daily dose of the drugs is:

1. Tab. Isoniazid 10 mg/kg (maximum 300 mg).
2. Cap. Rifampicin 10 mg/kg (maximum 600 mg).
3. Tab. Pyrazinamide 15-30 mg/kg (maximum 2 g).
4. Cap. Ethambutol 15-25 mg/kg (maximum 2.5 g).
   (for details see section on Tuberculosis in Chapter 1).

All these 4 drugs are given in the initial phase for 2 months followed by INH and rifampicin for 4 months. Indications of surgery are: primary unresponsiveness, persistence or enlargement of adenexal mass after 4-6 months of treatment, persistence or recurrence of pelvic pain on treatment. Definitive surgery is total abdominal hysterectomy with bilateral salpingo-oophorectomy.

Patient education

- Emphasize behavioural and contraceptive methods to prevent the acquisition of STDs.
- Patients must be encouraged to complete the recommended antibiotic treatment for the full course, i.e. 14 days.
- Sexual abstinence until complete treatment. Sexual partner of patient diagnosed with PID must be treated to prevent reinfection.

References

1. Guidelines for Treatment of Sexually Transmitted Diseases. Centers for Disease Control and Prevention. In: MMWR Morb Mortal Weekly Rep 1998 Jan 23; 47(RR-1): 1-111.
2. Pelvic Inflammatory Disease. In: Te Linde's Operative Gynaecology, John A Rock, John D Thompson (eds), 1997, pp. 657-686.
3. Sexually Transmitted Disease. Treatment Guidelines 2006. Centers for Disease Control and Prevention (CDC) and updated regimen April 2007.

PREMENSTRUAL SYNDROME (PMS)

It is a cyclic recurrence of physical, psychological or behavioural symptoms that appear after ovulation and resolve after the onset of menstruation. PMS requires treatment when the symptoms are severe enough to interfere with the woman's lifestyle, relationships and occupational functioning.

SALIENT FEATURES

- Common somatic symptoms include feeling of bloating, body aches, breast tenderness, headache, food cravings and poor concentration. Emotional symptoms include emotional hypersensitivity, depression, irritability, mood swings, anxiety, tension, fear of loss of control and confusion.
- Diagnosis is confirmed by excluding the concomitant medical or psychiatric disorders with which it may be confused (depending on the symptoms).

Treatment

Nonpharmacological

Lifestyle advice should be offered to all women as first line of treatment.

1. Daily charting of symptoms for two months.
2. Dietary modifications like: increase complex carbohydrate meals, reduce or eliminate, especially in the luteal phase–salts, chocolate, caffeine and alcohol; and several small meals per day.
3. Moderate regular aerobic exercise like brisk walk 1-2 miles per day for 4-5 days/ week.
4. Stress management courses/counselling.

Pharmacological

1. Tab. Pyridoxine 100 mg/day for 10-14 days (during luteal phase) (maximum daily dose is 150 mg).
   Or
   Tab. Evening primrose oil 500 mg 3 times a day.
2. In case of headache or premenstrual dysmenorrhoea, non-steroidal anti-inflammatory drugs—like mefenamic acid 500 mg 3 times a day for duration of symptoms till onset of menstruation.
3. In case of predominantly physical symptoms (bloatedness, irritability swelling, weight gain, breast tenderness),
   Tab. Spironolactone 100 mg/day for
   Or
   Tab. Bromocriptine 1.25-5 mg/day in the luteal phase for mastalgia.
   Common side effects are nausea and vomiting. Tablet can be given vaginally if side effects are very severe.
   If no relief in symptoms with above measures in 2-3 cycles and symptoms are predominantly emotional, then the following drugs are used preferably in consultation with a psychiatrist:
   Tab. Fluoxetine 5-20 mg/day
   In non-responders to the above therapy, ovulation suppression may be beneficial; any of the following can be used:
   Low dose combined oral contraceptive pills, 1 pill daily from 5th to 25th day of the cycle.
   Or
   Progestins: Medroxyprogesterone acetate (MPA) 15-30 mg/day (10 mg 3 times a day) or Depot MPA 150 mg IM 3 monthly. Irregular bleeding is very common.
   Or
   Tab. Danazol 200-800 mg/day. Side effects like weight gain, facial hair, acne are the usual limiting factors.
   Treatment may be stopped after 3-6 cycles and look for return of the symptoms. If symptoms return, treatment is required till menopause. If no response to the above treatment refer to a higher centre.

Patient education

- Explain the importance of the lifestyle modification.

References

1. Clinician's Approach to the Diagnosis and Management of Premenstrual Syndrome. In: Clinical Obstet Gynaecology, 1992; pp. 637-657.
2. Hormonal Manipulations in the Treatment of Premenstrual Syndrome. In: Clinical Obstet Gynaecology, 1992; pp. 658-666.
3. Premenstrual Therapy. In: Clinical Obstet Gynaecology, 1998; pp. 405-421.
4. Premenstrual Syndrome. In: Gynaecology. Robert Shaw, W Patrik Soutter, Stuart L Stanton (Eds), 2003; pp. 401-414.

DYSFUNCTIONAL UTERINE BLEEDING (DUB)

It is abnormal uterine bleeding in the absence of organic disease of the genital tract.

SALIENT FEATURES

- Disturbances of the menstrual cycle, regular and irregular uterine bleeding and alteration in the amount or duration of the menstrual blood loss.
- Commonly due to anovulatory cycles but can occur in the ovulatory cycles also. Anovulatory cycles are usual in postmenarche and premenopausal age groups and are usually irregular, variable in duration and amount of bleeding.
- Coagulation defects are to be excluded in puberty menorrhagia.

Treatment (acute bleeding–first episode)

A. Severe bleeding (haemodynamically unstable patient)

1. Usual steps taken for any serious haemorrhage should be instituted immediately like IV line, fluid replacement, blood transfusion, oxygen inhalation and monitoring of vitals.
2. Dilatation and curettage is the quickest way to arrest bleeding except in cases of puberty menorrhagia where medical management is preferred.
3. Antifibrinolytic agents like Tranexamic Acid, Ethamsylate and Epslon Amino Caproic Acid (EACA) may be used in conjugation with hormonal treatment.
4. Prostaglandin Synthetase Inhibitors like Fenamates(Mefenemic Acid) are also used as a mode of medical management.

B. Less severe bleeding (haemodynamically stable patient)

High dose Progestogen: Tab. Norethisterone 10 mg 3 times a day until bleeding stops (not >3 days) followed by Norethisterone 5-10 mg.

Or

Tab. Medroxyprogesterone acetate 10 mg per day for 21 days. Withdrawal bleeding occurs after 2-4 days of stopping the drug and stops in 4-5 days.

Or

Combined oral contraceptive pills (OCs) containing 50 mcg ethinyl oestradiol 1 pill 2 times a day till bleeding stops, followed by 1 tablet daily for 21 days.

C. If bleeding is not controlled with progestogens

Patient is having heavy bleeding for many days, endometrial curettage yields minimal tissue, or when the patient has been on progestogen medication (OC's or Depot MPA) and the endometrium is shallow and atrophic.

Treatment schedules of high dose oestrogens, depending on the severity of the bleeding the following can be used:

1. Conjugated oestrogen 25 mg IV every 4 h till bleeding abates or for 12 h. Progestin treatment is started at the same time.
2. Oral treatment conjugated oestrogen 1.25 mg or 2 mg oestradiol valerate given orally every 4 h for maximum of 24 h followed by single daily dose for 7-10 days.

All treatments must be followed by progestin coverage (10 mg MPA daily) along with oestrogen for 7 days.

Monitoring

Clinical monitoring by vital charting and observation of blood loss per vaginum.

Treatment (Chronic DUB—not actively bleeding)

1. Iron therapy: elemental iron maximum 60 mg 3 times a day depending on the degree of anaemia.
2. Histopathological diagnosis is must before starting hormonal therapy in all cases except puberty menorrhagia.

A. Anovulatory DUB

1. If contraception is desired: OCPs for 3-6 cycles Or Norethisterone 5-10 mg.
2. Medroxyprogesterone acetate (MPA) 10 mg 16-25th day of the cycle for 3-6 cycles.
3. In cases of endometrial hyperplasia without atypia on histology, Norethisterone acetate 5 mg three times a day or MPA 10 mg twice a day 5-25th day of cycle for 3-9 cycles followed by repeat endometrial biopsy.
4. If fertility desired: ovulation induction is advised.
5. Levonorgestrel IUCD can be offered after counselling and is beneficial in DUB.

B. Ovulatory DUB

1. Tab. Mefenamic acid, or Tranexamic acid 500 mg 3 times a day for 3-5 days during periods

   Or

   Oral combined contraceptive pills, if contraception is desired.

If the above treatment is not effective in first cycle, patient should be referred for tertiary care by a gynaecologist. Following treatment can be considered as an alternative to surgery:

Tab. Danazol 200 mg daily for 3 months. Levonorgestrel IUCD can be offered after counselling and is beneficial in DUB.

Follow-up

Follow-up is done after 1, 3, 6 months of therapy. Treatment is stopped after 3-6 months. If symptoms recur, medical treatment is to be continued or surgery can be offered.

Role of surgery—endometrial curettage

- Acute bleeding in haemodynamically unstable patient to quickly control the bleeding.
- In acute episode, if bleeding does not decrease significantly in 12-24 hours with medical treatment, then re-evaluation is mandatory and surgical curettage should be done.
- If age is >35 years, premenstrual dilatation and curettage for endometrial histology is a must to rule out endometrial pathology.

Definitive therapy

If medical therapy is not effective, then endometrial ablation or hysterectomy is to be performed.

Patient education

- In majority of patients, medical management cures the problem.
- Common side effects of high dose oestrogens are: nausea, vomiting, headache, depression, and fluid retention. Contraindicated in liver disease, history of thromboembolic disorder, cardiovascular disease, and oestrogen dependant neoplasm.
- Common side effects of progestogens are depression, fluid retention, fatigue, insomnia, dizziness, nausea, and breast tenderness.
- Common side effects are acne, weight gain, fluid retention, hoarseness of voice.

References

1. Dysfunctional Uterine Bleeding, In: Clinical Gynecologic Endocrinology and Infertility, Leon Speroff, Robert H Glass, Nathan G Kase (eds), 1994, pp. 531-546.
2. Menstruation and Menstrual Disorders. In: Gynaecology, Shaw Robert, Soutter PW, Stanton SL (eds), 2003, pp. 459-476.

MENOPAUSE

Permanent cessation of menses for 1 year is known as menopause. It usually occurs between 40 to 50 years, mean age being 48 years. Long-term consequences due to

decreased oestrogens can increase the risk of ischaemic heart disease due to adverse effects on lipid profile and pathological fractures due to osteoporosis.

SALIENT FEATURES

- Hot flushes, night sweats, palpitations, vaginal dryness, itching, atrophy of the breast and skin, urethral syndrome, stress incontinence, mood changes like anxiety, irritability, depression, insomnia and joint pains.
- Diagnosis is always clinical; however, in doubt endocrine evaluations for serum FSH levels and serum oestradiol levels may be helpful.

Treatment

Nonpharmacological

- Balanced diet with fruits, vegetables, semi-skimmed milk adequate in vitamins and minerals. A reduction or avoidance of smoking and alcohol consumption.
- Exercise: Walking or swimming for 20-30 min every day.

Pharmacological

1. Tab. Calcium 1500 mg daily.
2. Hormone replacement therapy (HRT). Rule out contraindications to HRT namely present endometrial/breast cancer, acute phase myocardial infarction, undiagnosed breast lump/abnormal vaginal bleeding and acute liver disease.

Hypertension and diabetes, if present, should be controlled before HRT is prescribed.

Oestrogen therapy

i. Single therapy with oestrogens in hysterectomized patients.

Conjugated equine oestrogen 0.625 -1.25 mg.

Or

Oestriol 1-2 mg is given daily 1-25th day every month or daily without any break. If symptoms recur during drug free period then give continuous therapy.

Or

Transdermal oestradiol patch 50 or 100 mcg/day applied twice a week away from breast, preferably on the shaved skin of buttock, thigh or legs (Limiting factor is local skin reactions).

Transdermal oestradiol patch is preferred in case of gallbladder disease, hypertriglyceridaemia, history of thromboembolism, poorly-controlled hypertension, recent myocardial infarction, vascular diseases, migraine, chronic hepatic dysfunction, malabsorption syndrome.

ii. Combined therapy with oestrogens and progestin in women with intact uterus.
   a. Oestrogen therapy as above.
   b. Progestogen-Medroxyprogesterone acetate 5-10 mg, Or
      Dihydrogesterone 10-20 mg or Norethisterone 2.5 mg) Or 200 ml micronized Progesterone is added from 13th to 25th days in cyclic sequential regimen and 1st to 12th of every month in continuous sequential regimen.
      If withdrawal bleeding is not acceptable, then give continuous combined treatment (0.625 mg conjugated equine oestrogen + 2.5 mg Medroxy progesterone acetate Or 1 mg micronized oestrogen + 100 mg micronized progesterone).

If conventional HRT is contraindicated

Tab. Tibolone 2.5 mg per day (major side effects are weight gain, oedema, breast tenderness, GIT symptoms and vaginal bleeding).

In symptomatic elderly women with atrophic vaginitis and other urogenital symptoms who do not desire long-term HRT:

Oestriol cream daily application of 0.5 g delivering 0.5 mg of oestriol for 3 weeks followed by twice weekly application for 3-4 weeks.

Key indicator of response to therapy are improvement in symptoms.

Follow-up at 2-3 months then at 6 monthly interval. Yearly mammography, Pap's smear, pelvic USG and serum oestradiol are advisable.

Short-term treatment is advocated for acute symptoms and oestrogen use for long-term benefits is controversial.

Patient education

- Explain the patients that following side effects due to oestrogens can occur: fluid retention, breast tenderness, nipple sensitivity, nausea, headache, leg cramps. Side effects due to progestogens are fluid retention, breast tenderness, oedema, headache, acne, premenstrual syndrome, abdominal cramps, vaginal bleeding.
- Follow-up visits at 2-3 months then at 6 monthly interval are necessary.

References

1. Treatment of the Postmenopausal Woman: Basic and Clinical Aspects. Rogerio A Lobo (Ed), Lippincott Williams and Wilkins, 1999.
2. Menopause and Postmenopausal Hormone Therapy. In: Clinical Gynaecologic Endocrinology and Infertility. Leon Speroff, Robert H Glass, Nathan G Kase (Eds), 1994; pp. 583-650.
3. The Menopause. In: Gynaecology. Shaw Robert, Soutter PW, Stanton L (Eds), Churchil Livingstone London, 2003; pp. 415-432.

POSTMENOPAUSAL BLEEDING

Postmenopausal bleeding (PMB) is bleeding that occurs after menopause has been established for at least one year. It is different from infrequent, irregular periods that occur around the time of menopause.

SALIENT FEATURES

- Obese women and women taking hormone replacement therapy (HRT) are more likely to experience postmenopausal bleeding.
- Vaginal atrophy is the most common cause of bleeding from the lower reproductive tract. Lesions and cracks on the vulva may also bleed. Sometimes bleeding occurs after intercourse. Bleeding can occur with or without an associated infection.
- Bleeding from the upper reproductive system can be caused by hormone replacements, endometrial cancer (5-10%), endometrial polyps, cervical cancer, cervical lesions, uterine tumours, ovarian cancer or oestrogen-secreting tumours in other parts of the body.
- Diagnosis is confirmed by endometrial or cervical biopsy. Non-invasive tests include saline infusion sonography (SIS), a refinement of vaginal probe ultrasound.
- Dilatation and curettage (D and C) is often necessary for definitive diagnosis.

Treatment

Treatment depends on the cause (Table 15.10)

Table 15.10. Treatment of postmenopausal bleeding according to cause

Cause	Treatment
Benign and malignant neoplasm of vulva, uterus or ovaries	Refer to higher centre or treat vagina, cervix, according to cause and facilities available.
Indiscriminate use of oestrogen for HRT	Stop oestrogen therapy
Infections	Antibiotics
Injuries	Repair
Coagulation disorders	Treat accordingly
Endometritis	Antibiotics
Postmenopausal atrophic vaginitis	Vaginal oestrogen cream/ointment

Indication for referral to a higher level of care

Urgent referrals

- Palpable pelvic mass or lesions suspicious of cancer on vulva or vagina or cervix on examination or on ultrasound.
- More than one or a single heavy episode of PMB in women aged >55 years (not on HRT).
- Postcoital bleeding (PCB) in a woman aged >35 years that has persisted for more than 4 weeks.

- Prolonged or unexpected bleeding that persists for more than 4 weeks after stopping HRT.

Early Referral (within 4-6 weeks)

- Any other woman with PMB not on HRT who does not satisfy the criteria for 'urgent referral' of postmenopausal bleeding.
- Unexplained repeated postcoital bleeding.

Note—in women over 45 years with persistent abdominal distension or pain, ovarian cancer should be considered and, therefore, a pelvic examination should be performed.

If excessive bleeding, give haemostatic drugs (oral or intravenous)

Postmenopausal bleeding that is not due to cancer and cannot be controlled by any other treatment usually requires a hysterectomy**.**

Reference

1. Post Menopausal Bleeding. In: Gynaecology. Robert Shaw, W Patrick Soutter, Stuart L Stanton (Eds), Churchill Livingston, 2003; pp. 103-116.

CARCINOMA CERVIX

Invasive cancer of the uterine cervix is either the leading or second leading cause of death from cancer among women worldwide and is the leading cause of death from cancer among women in developing countries. There are two main types of cancer of the cervix: squamous cell carcinoma (about 85%) and adenocarcinoma (15%). Cervical intraepithelial neoplasia and adenocarcinoma in situ are precursor to invasive squamous cell cancers and invasive endocervical adenocarcinoma respectively and if diagnosed can be treated by simple methods with good results.

SALIENT FEATURES

- Abnormal bleeding may present with postcoital, intermenstrual or post-menopausal bleeding; smelly vaginal discharge not responding to treatment may also occur; pain and urinary symptoms occur late in the course of disease.
- Growth or ulcer seen on the cervix, and is friable and bleeds on touch. Diagnosis is confirmed by cervix biopsy.
- Initial work-up of invasive cervical cancer patients includes a history and physical examination, haemogram, urine examination, kidney function tests, chest radiography, intravenous pyelogram (IVP), CT/MRI scan, cystoscopy/ proctosigmoidoscopy, HIV testing (especially for the younger, at risk patient) after counselling and consent.
- Staging of carcinoma cervix—simple per speculum examination of cervix for any abnormality done by medical/paramedical personnel will help in early detection of carcinoma cervix. Staging of carcinoma cervix is done by rectovaginal examination.

- **Screening tests** are performed to detect preinvasive lesions. Various methods used are:
  - Pap smear – is the most effective cancer reduction programme yet devised and has resulted in evaluating incidence of cancer cervix in many countries.
  - VIA (visual inspection after acetic acid) – inspection of cervix after application of 1% acetic acid can also detect pre-invasive lesions and is a more cost-effective method for low resource settings.
  - Colposcopy – needs special equipment and trained personnel; it is reserved for patients with abnormal Pap smear.
  - Schiller test – application of Lugol's iodine demarcates abnormal areas on cervix.

Staging of cancer of the cervix

This is done after thorough clinical examination.

- Stage I tumours: Tumour confined to cervix.
- Stage II tumours: The tumour has spread into surrounding structures—upper part of the vagina or tissues next to the cervix (parametrium).
- Stage III tumours: The tumour has spread to surrounding structures—lower part of the vagina, nearby lymph nodes, or tissues at the sides of the pelvic area. Sometimes a tumour that has spread to the pelvis may press on one of the ureters. There may then be a build up of urine in the kidney.
- Stage IV tumours: The tumour has spread to the bladder or bowel or beyond the pelvic area. This stage includes tumours that have spread into the lungs, liver or bone.

Grading of cervical cancer

Grading is done by a histopathologist. There are three grades: grade 1 (low grade), grade 2 (moderate grade) and grade 3 (high grade). Low grade tumours are usually slowly growing and less likely to spread. In high grade tumours, the cells look very abnormal and grow more quickly and are more likely to spread.

Treatment

All three treatment modalities surgery, radiotherapy and chemotherapy are used in treatment of cancer cervix.

Stage I

The results of surgery and radiotherapy are similar in stage I. The surgical procedure is radical hysterectomy with pelvic lymphadenectomy and is generally preferred in young patients as ovaries can be saved from radiation. Radiotherapy is preferred in older patients who may be at high risk for surgery and may be accompanied or preceded by chemotherapy.

Stage II

Radiotherapy is usually the preferred treatment. It is usually given in combination with chemotherapy. Radiotherapy may also be used after surgery (sometimes with chemotherapy), if there is a high risk of recurrence, for example, if the lymph glands were affected. Bulky tumours do better with chemoradiotherapy.

Stage III and IV

Radiotherapy is the main treatment modality in this stage may be given alone or with chemotherapy.

Invasive cervical carcinoma during pregnancy

Diagnosis of invasive cervical carcinoma with a coexisting pregnancy occurs in about 3% of cases. The treatment and timing of treatment are dependent on stage of the disease, duration of the pregnancy, and the patient's wishes. Patients with carcinoma-in-situ of the cervix diagnosed by cytology and colposcopic-directed biopsies can be followed throughout the pregnancy and definitive treatment can be delayed until after re-evaluation of the cervix 6 weeks postpartum. When there is suspicion of microinvasive or invasive carcinoma, a biopsy should be performed for diagnosis even during pregnancy. Microinvasive carcinomas can be followed throughout the pregnancy.

Early pregnancy up to 20 weeks is ignored for treatment purpose and adequate surgery or radiotherapy can be given depending upon the stage. In late second trimester, pregnancy can be taken up to period of viability, however, chemotherapy can be considered. Foetus delivered after viability and then appropriate surgical treatment at same sitting or radiotherapy/chemo-radiotherapy after 2 weeks can be instituted. In third trimester, patient can be delivered by classical caesarean section followed by surgery in operable cases or radiotherapy/chemo-radiotherapy after 2 weeks can be given.

Follow-up after primary therapy

As the majority of treated patients who develop recurrences do so in the first 2 years following their therapy, physical examination, including nodal assessment (especially supraclavicular), rectovaginal examination, and Pap smears, should be performed at 2- to 3-month intervals during this time. Thereafter, 4- to 6-monthly examinations are appropriate and, beyond 5 years, annual examinations. Symptoms of pain, vaginal bleeding, and gastrointestinal or genitourinary dysfunction must be promptly investigated.

Interval chest films and abdominal-pelvic CT scans should be considered in those patients with high risk of recurrence, especially in the first 2 years. CT scan or IVPs post-treatment may also diagnose ureteral obstruction (pathologic or treatment-related) at potentially early stages.

Patient education

- Awareness in community about risk factors like early age at marriage, multiple sex partners, multiparity and smoking.
- Emphasize importance of screening with Pap smears and visual inspection after acetic acid (VIA).
- Early reporting for suspicious symptoms like postcoital, postmenopausal and intermenstrual bleeding and persistent discharge per vaginum.

References

1. Malignant Disease of Cervix. In: Shaw's Gynaecology. Shaw Robert, Soutter PW, Stanton SL (Eds), Churchill Livingston, London, 3rd Edition, 2003; pp. 58-599.
2. Invasive Cervical Cancer. In: Clinical Gynaecologic Oncology, Disaia, Creasman (Eds), 5th Edition Mosby, 1997; pp. 51-106.