PRACTICAL OBSTETRICS AND GYNAECOLOGY HANDBOOK

for the General Practitioner

Tan Thiam Chye
Tan Kim Teng
Tay Eng Hseon

Practical Obstetrics and Gynaecology Handbook

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Tan Thiam Chye
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PRACTICAL OBSTETRICS AND GYNAECOLOGY HANDBOOK FOR THE GENERAL PRACTITIONER

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To friendship and to our loved ones,
who add meaning to our lives

To all our patients,
whom we owe the duty of care

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Foreword

It has been 82 years since the opening of Kandang Kerbau Hospital in 1924. Since then, we have trained countless doctors, medical students, midwives, nurses, nursing students and paramedics.

1997 saw the birth of KK Women's & Children's Hospital. Housed in the new premises of 100 Bukit Timah Road, the hospital includes Singapore's first and only purpose-built Children's Hospital.

KK Women's & Children's Hospital further expanded its services to include Aesthetics, Plastic Surgery, Orthopaedic Surgery, Colorectal Surgery and Breast Health since 2005.

As training for medical students, house-officers and medical officers becomes more structured, the Department of General Obstetrics & Gynaecology, under the auspices of the Division of Obstetrics & Gynaecology, set out to produce a handbook on "Common Investigations in O&G." It was felt that such a handbook would help new medical officers and house-officers in the ordering and interpretation of O&G investigations so that they could make correct and cost-effective decisions in the care of our patients.

The handbook was met with great enthusiasm. More ideas and information were incorporated and it has since developed into this publication *Practical Obstetrics and Gynaecology Handbook for the General Practitioner*. This book provides up-to-date, concise and evidence-based information on many obstetric and gynaecological conditions. We have endeavoured to keep the handbook to its original

simple, easy to understand format as much as possible, incorporating flow-charts as aids.

We feel that this book will particularly be useful for doctors in the primary healthcare setting. The book also contains guidelines for referral to OBGYN doctors.

We hope that the benefit you derive from the book will equal, if not exceed, the joy we had in producing it.

Happy reading!

Dr John Tee Chee Seng
Chairman
Division of Obstetrics & Gynaecology
KK Women's & Children's Hospital

Preface

In obstetrics and gynaecology, it has always been our practice to place the interests of our patients first. With the advent of evidence-based medicine, we have the greater challenge of providing the most cost-effective services to meet the healthcare needs of our patients based on current evidence in management.

Practical Obstetrics and Gynaecology Handbook for the General Practitioner aims to provide simple, practical and yet cost-effective guidelines on the management of common O&G problems. The latest research on the various topics has been incorporated.

We hope that the information in this book will help our colleagues in the primary healthcare setting make right and cost-effective decisions for their patients. Guidelines for referral to a tertiary centre have also been included. We believe that this book will also be useful for medical students and nursing staff. It is certainly a concise summary for our fellow O&G colleagues.

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Dr TAN, Kim Teng (commonly known as KT Tan to her patients) is a senior consultant in KK Women's and Children's Hospital. She is the Head of the Department of General Obstetrics and Gynaecology since 2005. She runs a busy clinical practice in both obstetrics and gynaecology. She is also the co-author of the Handbook for Common O&G Conditions (2005) and Handbook on Common Investigations in O&G (2005).

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Contents

PART I

OBSTETRICS

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CHAPTER 1

Preconception Preparation

Screening for Vaccine — Preventable Diseases

- Rubella
- Hepatitis B
- Varicella

> Vaccinate the patient if she is non-immune

Preconceptional Folic Acid Supplementation

- Folic acid 5 mg daily reduces the risk of neural tube defects
- Advise the patient to start at least 2 months before conception

Optimisation of Medical Conditions

- Optimising medical condition such as diabetes mellitus and hypertension improves the prognosis for both mother and baby
- **Refer to OBGYN** early as pregnancy could be complicated with such medical conditions
- For woman with diabetes mellitus, refer to the dietician and convert oral medication such as metformin to subcutaneous insulin injections with titration to glucose hypocount levels

- For hypertensive woman, convert the oral antihypertensive medication to methyldopa, starting at 250 mg tds daily and titrate the dose to her blood pressure (maintain below 140/90 mm Hg)

Avoidance of High-Risk Activities

- Advise the patient to stop smoking and using recreational drugs such as heroine, cocaine, opiates and marijuana
- Substance abuse and smoking are associated with miscarriage, intrauterine growth restriction, preterm labour, abruptio placenta and neurobehaviour abnormalities
- Educate the patient about healthy diet and lifestyle

Sexual Position for Conception

- Many experts believe that the missionary position (man on top) affords the best opportunity for baby-making. This position allows for the deepest penetration and as a result, places the sperms closer to the cervix
- For additional effectiveness, the woman can try elevating her hips with a pillow so that her cervix is exposed to the maximum amount of semen

  Other effective positions:
- Rear-entry, when the man enters the woman from behind, either lying down or kneeling, can also deposit the sperms close to the cervix and aid conception
- Lying side-by-side — this can be a relaxing position and easier on a partner who is overweight or has chronic back problem
- A woman can further increase the likelihood of conception by remaining in bed for up to half an hour following intercourse, preferably on her back and with a pillow under her pelvic region. In theory, this provides the sperms with additional travel time up to the fallopian tube along with the aid of the forces of gravity
- Avoid having sex while sitting, standing or with female partner on top. These positions defy gravity and may discourage the upward mobility of the sperms
- The contractions that accompany the female orgasm may help carry the sperms further into the cervix

CHAPTER 2

Antenatal Follow-Up

Objectives of the Antenatal Visit

1. Ensure accurate dating, foetal viability and location of pregnancy.
   - Expected date of delivery is most accurate from **first trimester** dating scan
   - Exclude ectopic pregnancy in initial assessment
2. Assess maternal and foetal well-being.
3. Identify risk factors and **refer to OBGYN** if there are significant risk factors.
4. Offer Down syndrome screening for all women at **any** maternal age.
   - Nuchal translucency ultrasound scan at 11–14 weeks of gestation
   - Maternal serum screening at 15–20 weeks of gestation
   - Diagnostic tests (chorionic villus sampling, amniocentesis) if screening test is abnormal or woman is in an advanced maternal age, i.e. ≥ 35 years old
5. Review all the investigation results promptly to ensure normality or act appropriately if the results are abnormal.
6. Provide advice, reassurance, educational facts and support for the woman and her family.
7. **Refer to OBGYN** from 34 weeks' gestation in shared-care programme for low-risk patients.

Table 1: Potential Risk Factors in Pregnancy

Risk Factors	Remarks
Maternal age $\geq$ 35 years old	• Increased risk of pre-eclampsia, gestational diabetes mellitus • Increased risk of Down syndrome
Maternal weight $\geq$ 80 kg	• Increased risk of pre-eclampsia, gestational diabetes mellitus • Difficulty in clinical assessment of presentation and foetal growth
Maternal under-weight (Body mass index $< 18.5\,kg/m^2$)	• Increased risk of small-for-gestational age baby
Nulliparity	• Increased risk of pre-eclampsia
Cigarette smoking	• Increased risk of preterm labour, preterm rupture of membranes, intrauterine growth restriction and placental abruption • Advise to stop smoking
Previous still-birth	• **REFER to OBGYN** early for closer monitoring of foetal growth and well-being
Previous preterm labour	• **REFER to OBGYN** early for cervical length measurement in second trimester • Cervical cerclage may be necessary in cases of cervical incompetence
Family history of Down syndrome	• **REFER to OBGYN** for genetic counselling and Down syndrome screening
Family history of diabetes mellitus	• Perform oral glucose tolerance test at 24–28 weeks of gestation

Table 2: Warning Symptoms in Pregnancy

Symptoms	Action
Abdominal contractions	• Exclude labour by assessment of cervical dilatation • **REFER to OBGYN** if in labour • Braxton-Hicks contractions are common in the third trimester, but unlike labour pain, they are irregular in intensity, unpredictable, nonrhythmic and usually tapering off and then disappearing totally

(*Continued*)

Table 2: (*Continued*)

Symptoms	Action
Vaginal discharge or leaking liquor	• Use amnicator (Nitrazine test) to exclude leaking liquor • Perform high vaginal swab for Group B streptococcus (GBS) infection if indicated; if GBS infection is present, the patient will need intrapartum antibiotics to prevent neonatal GBS sepsis
Reduced foetal movement (after 24 weeks gestation)	• **REFER to OBGYN** for assessment of foetal well-being • Instruct the patient on Cardiff "Count-to-Ten" foetal movement chart

How to Instruct your Patient on Cardiff "Count-to-Ten" Foetal Movement Chart?

This method uses an 8- to 12-hour period to record 10 of your baby's movements. The time period you choose is preferably your baby's most active period, for example, in the evenings.

When charting, start your timing at around the same time each day. The first time you feel your baby move, record the time and write it down on your graph. Try to count every movement or kick until your baby has moved ten times. When you feel your 10th movement, note the time.

If your baby has at least 10 movements within this 12-hour period, he or she is thought to be well. If your baby has not moved in 12 hours or you are concerned, you should see your doctor immediately.

Table 3: Warning Signs in Pregnancy

General	Action
Blood pressure	• Repeat if $\geq$ 140/90. Check for proteinuria • **Refer to OBGYN** if still elevated • Start methyldopa 250 mg tds
Weight	• Expect a normal weight increase (10–12 kg weight gain in entire pregnancy)

(*Continued*)

Table 3: (*Continued*)

General	Action
Urinalysis	• Urine albumin+: exclude urinary tract infection, vaginal discharge, pre-eclampsia or renal disease • Check blood pressure and perform blood tests to exclude pre-eclampsia • Do 24-hour urinary total protein (abnormal if >0.3g/day) if persistent proteinuria $\geq 2+$ • Glycosuria: exclude diabetes mellitus if persistent (≥ 2 episodes). Do 75 g oral glucose tolerance test • **REFER to OBGYN** if tests are abnormal
Examination	**Action**
Symphyseal fundal height smaller than date	• **REFER to OBGYN** for assessment of small-for-gestation foetus if dating is correct
Malpresentation	• Repeat scan for presentation at 34 weeks • **REFER to OBGYN** if non-cephalic presentation
Doptone (after 12 weeks of gestation)	• **REFER to OBGYN** if Doptone is negative, suggesting intrauterine death

CHAPTER 3

Skin Disorders in Pregnancy

Polymorphic Eruption of Pregnancy

- Also known as pruritic urticarial papules and plaques of pregnancy (PUPPP)
- Mainly occurs in first pregnancy
- Usually presents from 36 weeks of gestation to 1 week postpartum
- Begins in abdominal striae as erythematous edematous papules; often affects the thighs and extensor surfaces of arms. There may be varied types of lesions
- Spares scalp, face, palms, soles and mucous membranes
- Can have vesicles
- No maternal or foetal risks

Management

- Skin biopsy — direct immunofluoresence test usually negative
- Reassure patient
- Prescribe moderate potency topical steroids (e.g. betamethasone valerate cream 0.1%) and antihistamines (e.g. chlorpheniramine 4 mg ON)
- Oral steroids for severe cases

Prurigo of Pregnancy

- Also known as papular dermatitis of pregnancy
- Typically begins at 25–30 weeks of gestation

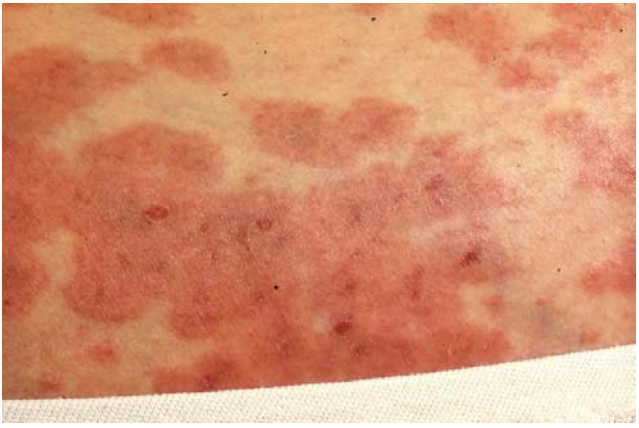


Fig. 1. Pruritic and urticarial papules and plaques of pregnancy.

- Presents as discrete itchy papules; mostly over the extensor aspect of upper arms and thighs
- No urticaria or vesicles
- No maternal or foetal risks

Management

- Skin biopsy shows epidermal thickening, parakeratosis, lymphocytic dermal infiltration; direct immunofluoresence test usually negative
- Reassure patient
- Prescribe moderate potency topical steroids (e.g. betamethasone valerate ointment 0.1%) and antihistamines (e.g. chlorpheniramine 4 mg ON)

Pruritic Folliculitis of Pregnancy

- Begins in second or third trimester
- Pruritic erythematous follicular papules ("acne") which may involve the back and limbs
- Resolves within 2–3 weeks after delivery
- No known risk for mother or baby

Management

- Skin biopsy: Direct immunofluoresence test usually negative
- Reassure patient
- Prescribe mid-potency topical steroids (betamethasone valerate cream 0.1%) and antihistamines (e.g. chlorpheniramine 4 mg ON)

Pemphigoid (Herpes) Gestationis

- **Rare**
- Polymorphic disorder (urticaria-like papules, plaques, vesicles, and bullae)
- Usually begins in second or third trimester with mean gestation at 21 weeks; can have postpartum onset in 20%
- Lesions around the umbilicus (90%) and then widespread on the trunks, buttocks and extremities; palms and soles are commonly involved
- Postpartum exacerbation in 75% within 24–48 hours; may persist for weeks or months
- 5% of infants may develop transient vesiculobullous lesions after birth but these are usually mild and resolve spontaneously within 3 weeks
- Increased incidence of small-for-gestation baby, prematurity and perinatal mortality
- Associate with autoimmune diseases: Graves disease, alopecia areata, vitiligo

Management

- Skin biopsy shows sub-epidermal blistering, oedematous upper dermis with peri-vascular inflammation; direct immunofluoresence test is positive
- Mild disease — use moderate potent topical corticosteroids with antihistamines
- Severe — refer to dermatologist; use oral prednisolone 40 mg/day for acute attack (maintenance 10 mg/day)

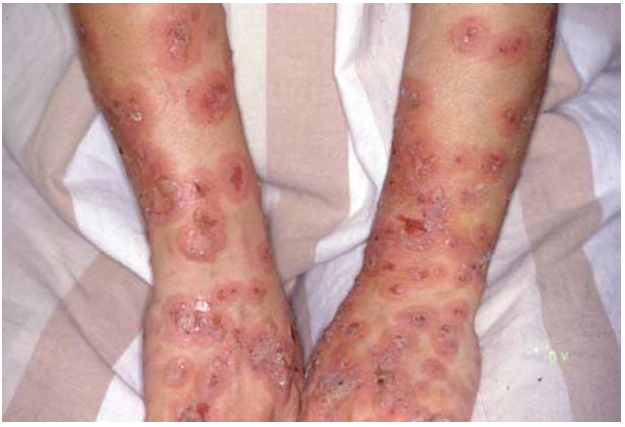


Fig. 2. Pemphigoid (herpes) gestationis.

- **REFER to OBGYN** to monitor foetal growth and well-being
- Avoid oral contraceptive pill postnatally as it may cause flare

Impetigo Herpetiformis

- **Rare**
- Regarded as acute, pustular form of psoriasis precipitated by pregnancy
- Usually begins in third trimester
- Presents as eruption in major flexures and may spread to the trunk and extremities
- Erythematous patch with minute pustules
- Patient often toxic, febrile and hypocalcaemic
- Can lead to renal and cardiac failure with maternal death

Management

- **REFER to OBGYN** urgently
- High risk of intrauterine death or early neonatal death
- Treat with high-dose prednisolone
- Delivery is curative

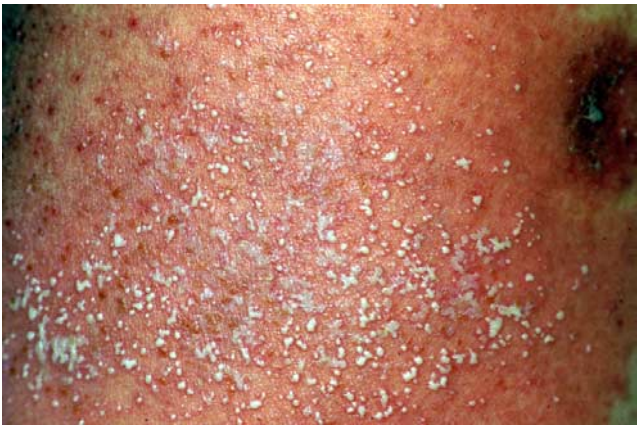


Fig. 3. Impetigo herpetiformis.

Obstetric Cholestasis

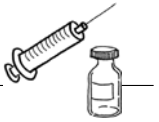
- Genetically-linked; familial in 50%
- Manifests as pruritus in pregnancy without primary skin lesions
- Usually begins in third trimester
- Localisation of pruritus to palms and soles
- Can have tea-coloured urine with light-coloured stools
- Increase in liver transaminases (3-fold increase) consistent with cholestasis
- Resolves 4–6 weeks after delivery
- Associated with high incidence of stillbirth, foetal intracranial haemorrhage, intrapartum foetal distress and postpartum haemorrhage

Management

- **REFER to OBGYN** urgently to assess maternal and foetal condition
- Exclude viral or autoimmune hepatitis or gall-stone disease
- Close foetal surveillance for growth and well-being
- Ursodeoxycholic acid at 15 mg/kg/day to reduce pruritus
- Oral vitamin K 10 mg/day given to mother to reduce risk of maternal and foetal bleeding
- Induction of labour at 37 weeks of gestation

CHAPTER 4

Vaccinations in Pregnancy



Introduction

- There is no evidence of risk to foetus from vaccinating pregnant women with inactivated virus, bacterial vaccine or toxoid
- The benefits of vaccinating pregnant women usually outweigh potential risks when the likelihood of disease exposure is high or when infection would pose a risk to the mother or foetus
- Live-virus vaccines are contraindicated for pregnant women because of the theoretical risk of transmission of the vaccine virus to the foetus
- If a live-virus vaccine is inadvertently given to a pregnant woman, or if a woman becomes pregnant within 4 weeks after vaccination, she should be counseled about the potential effects on the foetus. It is not ordinarily an indication to terminate the pregnancy
- There is no known risk to the foetus from passive immunisation of pregnant women with immune globulin preparations
- Neither inactivated nor live vaccines administered to a lactating woman affect the safety of breastfeeding for mothers or infants
- Breast-feeding does not adversely affect immunisation and is not a contraindication for any vaccine

Vaccinations contraindicated in pregnancy

- Mumps
- Measles
- Rubella
- Varicella
- Bacillus Calmette-Guerin (BCG)
- Poliomyelitis
- Smallpox

Vaccinations safe in pregnancy

Vaccine	Remarks
Hepatitis B	The vaccine contains noninfectious HBsAg particles
Influenza (inactivated)	Because of the increased risk for influenza-related complications, women who will be pregnant during the influenza season should be vaccinated Vaccination is recommended after the first trimester
Pneumococcus	No adverse consequences have been reported among newborns whose mothers were inadvertently vaccinated during pregnancy
Tetanus and diphtheria (Td)	Td toxoid is indicated for pregnant women although it is not routinely given in Singapore Previously vaccinated pregnant women who have not received a Td vaccination within the last 10 years could receive a booster dose Although no evidence exists that tetanus and diphtheria toxoids are teratogenic, waiting until the second trimester of pregnancy to administer Td is a reasonable precaution for minimising any theoretical concerns
Meningococcus (MPSV4) Rabies Typhoid Yellow fever	

CHAPTER 5

First Trimester Bleeding

Definition

Bleeding per vagina in the first 12 weeks of pregnancy

Causes

1. Miscarriage (complete/incomplete/missed abortion)
2. Ectopic pregnancy*
3. Local cause — polyps (common), cervical cancer (rare)
4. Molar pregnancy (rare)
5. Normal pregnancy with unexplained bleeding

Note: *Important not to miss ectopic pregnancy as it is potentially life-threatening.

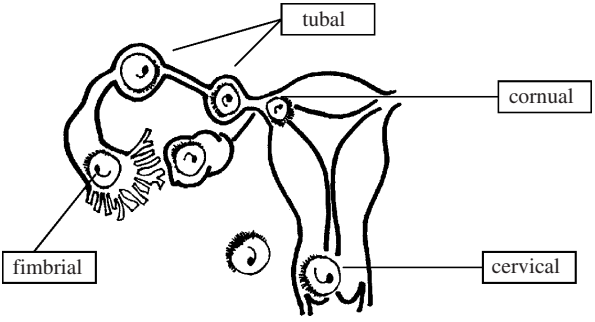
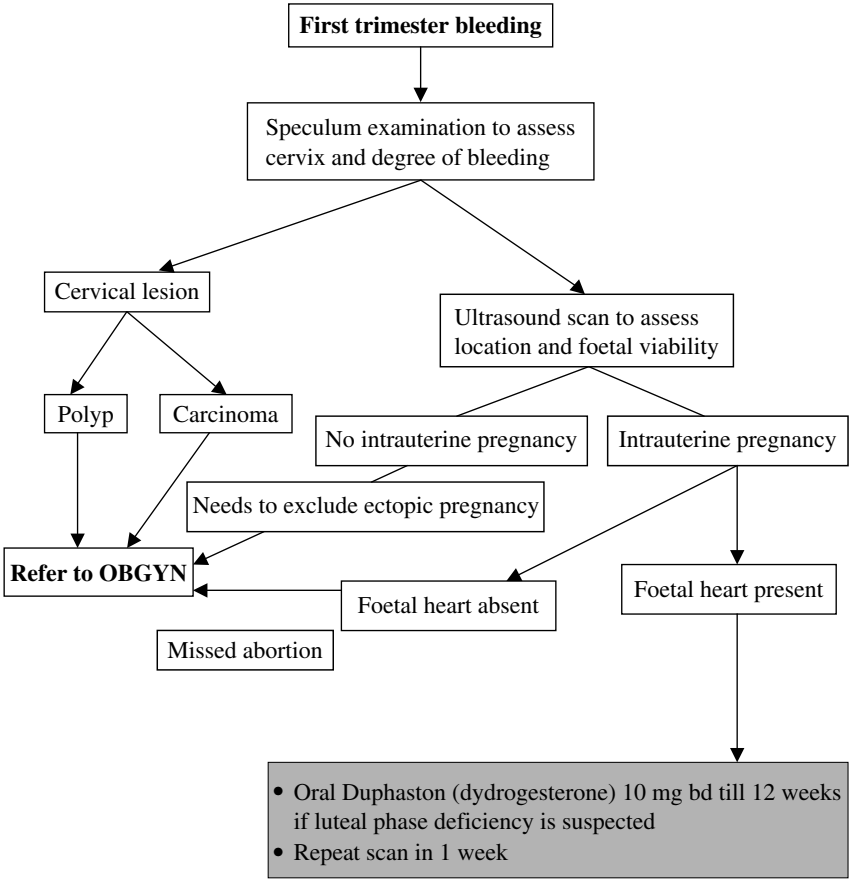


Fig. 1. Possible sites of ectopic pregnancy.

Management


First trimester bleeding
Speculum examination to assess cervix and degree of bleeding
Cervical lesion
Ultrasound scan to assess location and foetal viability
Polyp
Carcinoma
No intrauterine pregnancy
Intrauterine pregnancy
Needs to exclude ectopic pregnancy
Refer to OBGYN
Foetal heart absent
Foetal heart present
Missed abortion
• Oral Duphaston (dydrogesterone) 10 mg bd till 12 weeks if luteal phase deficiency is suspected
• Repeat scan in 1 week

CHAPTER 6

Termination of Pregnancy

Fulfil either Criteria under the Termination of Pregnancy (TOP) Act in Singapore

- Citizen of Singapore or wife of citizen of Singapore, or
- Holder or wife of holder of work permit or employment pass, or
- Person who has resided in Singapore for at least 4 months

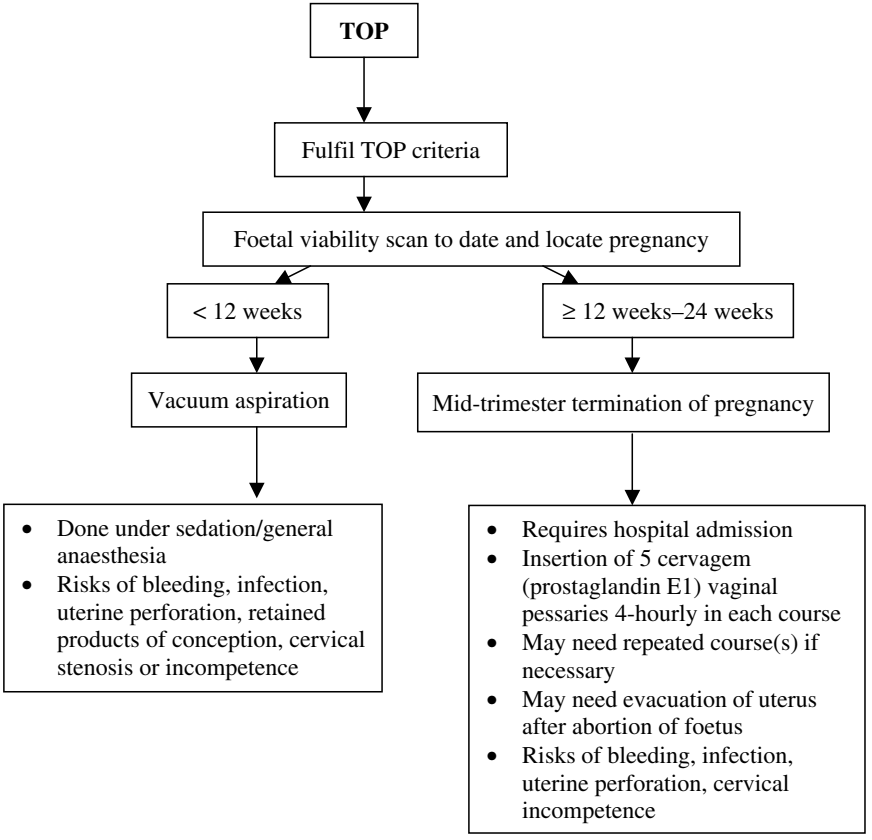
Legal Limits of Termination of Pregnancy Act in Singapore

- 24 weeks of gestation based on last menstrual period

Mandatory Pre-abortion Counselling

- All women with two or fewer children who have some secondary education (regardless of marital status) must be given pre-abortion counselling
- At least 48 hours must elapse after counselling before TOP

Management


TOP
Fulfil TOP criteria
Foetal viability scan to date and locate pregnancy
< 12 weeks
≥ 12 weeks–24 weeks
Vacuum aspiration
Mid-trimester termination of pregnancy
• Done under sedation/general anaesthesia
• Risks of bleeding, infection, uterine perforation, retained products of conception, cervical stenosis or incompetence
• Requires hospital admission
• Insertion of 5 cervagem (prostaglandin E1) vaginal pessaries 4-hourly in each course
• May need repeated course(s) if necessary
• May need evacuation of uterus after abortion of foetus
• Risks of bleeding, infection, uterine perforation, cervical incompetence

CHAPTER 7

Post-Abortion Care

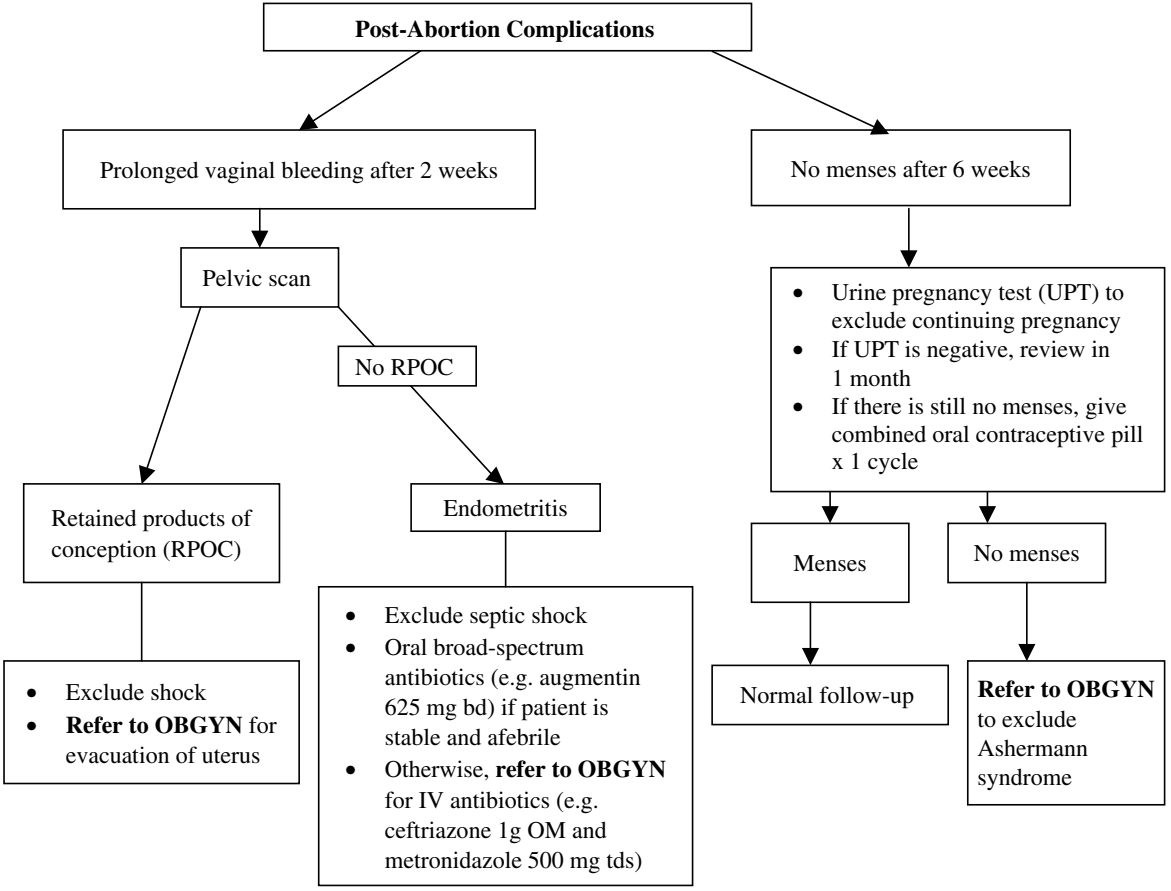
Introduction

Post-abortion care (PAC) of spontaneous abortion and termination of pregnancy is the strategy to reduce maternal death and suffering from the complications of termination of pregnancy and spontaneous abortion.

The elements of PAC are:

- Emergency management of incomplete abortion and potentially life-threatening complications
- Post-abortion family planning counselling and contraception

Management of Post-Abortion Complications



CHAPTER 8

Postnatal Care

Postnatal Blues

- Postnatal blues ("baby blues") is common following childbirth, in which new mothers experience lability of mood and tearfulness with the newborn
- Usually peaks on fourth to fifth postnatal day and resolves by the 10th day of delivery
- Postnatal blues is mild and self-limiting
- Usually resolves within 2 weeks after delivery

Management

- Reassurance
- Encourage support from partner, family and friends to cope with the newborn
- **Refer to psychiatrist** for evaluation if symptoms persist for more than 2 weeks

Postnatal Depression (PND)

- Is a major depressive episode associated with childbirth
- Typically occurs at first month to first year after delivery
- May resolve within several months if the woman is not treated but can linger into the second year postpartum

- Common symptoms include depressed mood, insomnia, loss of weight and appetite, apathy and lethargy
- PND is often overlooked in primary care clinics
- Can be treated in primary care settings and is highly treatable

Management

- **Refer to psychiatrist**
- Psychotherapy intervention is highly acceptable and effective
- New mothers need not discontinue breastfeeding if they initiate antidepressants
- Common antidepressants used: fluoxetine (20 mg PO/day); sertraline (50 mg PO/day); paroxetine (20 mg PO/day); and venlafaxine (75 mg PO/day)
- Fluoxetine is linked with irritability, sleep disturbance and poor feeding in some infants exposed to it in breast milk
- No adverse effects are reported with sertraline, paroxetine and venlafaxine in nursing mothers

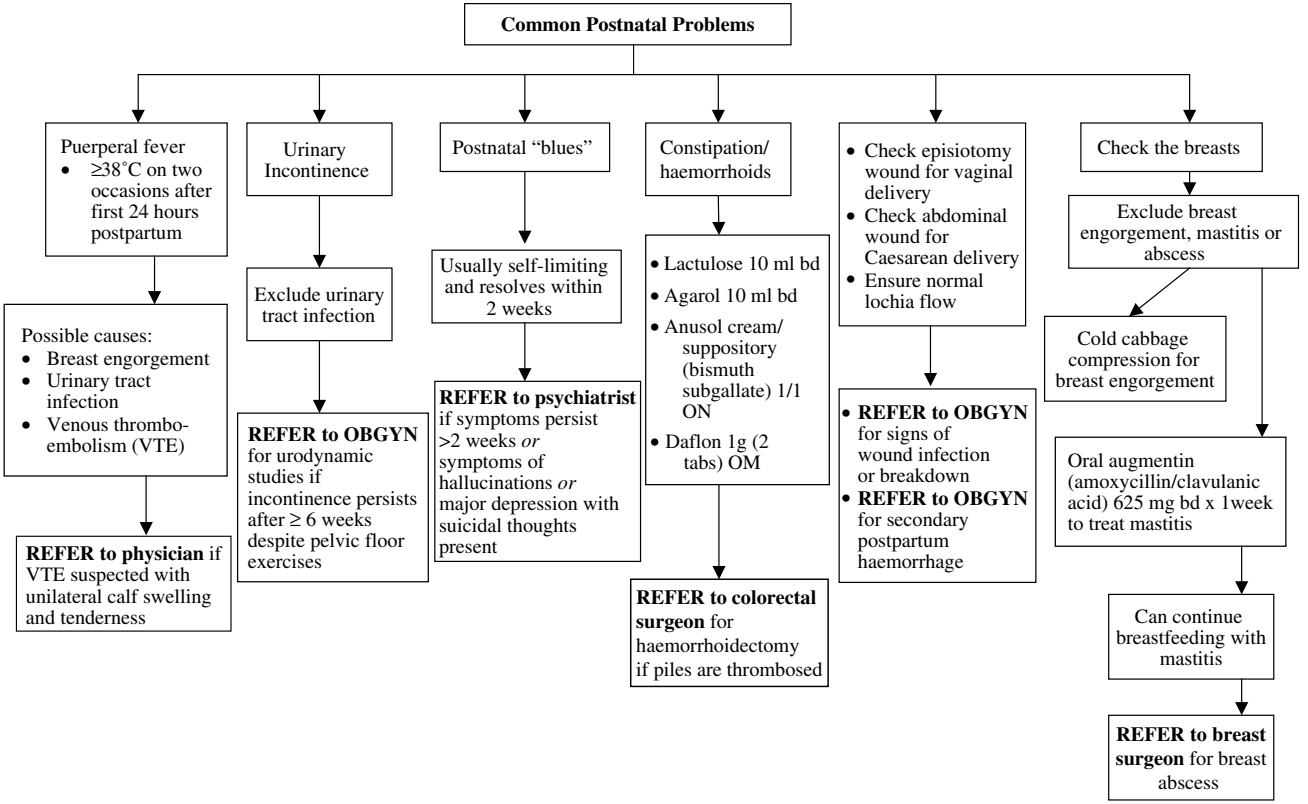
Puerperal Psychosis

- Is a medical emergency with risk of self-harm (suicide) and infanticide
- Usually occurs within first month after delivery
- Maniac in nature with increased irritability, agitation and insomnia
- The woman may have hallucinations or delusions

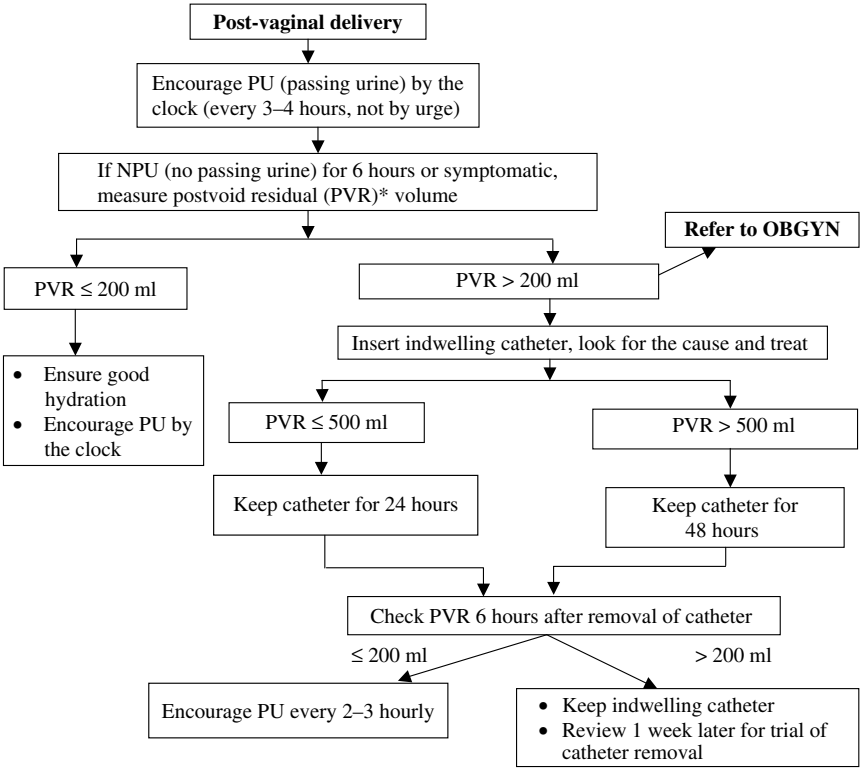
Management

- **Urgent referral to psychiatrist**
- Requires in-patient admission with mood stabilizers, antipsychotic medications and benzodiazepines

Common Postnatal Problems



Bladder Care After Vaginal Delivery



*The significance of PVR varies with the total volume of urine voided.
*Do not use bladder scan for postnatal patient.

CHAPTER 9

Lactation and Breastfeeding

Introduction

- The World Health Organization recommends that infants should be breastfed for the first six months for optimal health and development and thereafter with other foods.

Benefits of Breastfeeding

Benefits for infant

- Decreases the incidence and the severity of infectious disease, diarrhoea, respiratory tract infection, necrotizing enterocolitis, otitis media and urinary tract infection
- Decreases the incidence of late-onset sepsis in preterm infants
- Infants with family history of allergy who were exclusively breastfed had significantly lower incidence of atopic disease

Benefits for mother

- Premenopausal breast cancer was lower in women who had previously breastfed
- The protective effect increased with longer duration of breastfeeding
- 20% decrease in the risk of developing ovarian cancer
- More rapid postpartum weight loss

Contraindications of Breastfeeding

- Maternal human immunodeficiency virus (HIV) infection
- Mother with active and untreated tuberculosis infection
- Mother undergoing treatment for cancer
- Mother who is a recreational drug user or with alcohol abuse
- Baby with galactosemia

Antenatal Preparation

- Breastfeeding education should be initiated as part of the prenatal care during the antenatal period
- Physician's recommendation on breastfeeding often makes a positive impact on the woman's decision to breastfeed
- Breast examination should be performed to determine if there is any structural problem or concern
- If the mother's nipples appear to be inverted or non-protractile, reassure and refer to a lactation specialist for further advice

Management of Breastfeeding related Problems

Latching difficulties

- The newborn should take a large amount of the breast into his or her mouth, with more of the areola and with the nipple pointing towards the soft palate. The mother should hold her breast during the attachment initially and draw the baby to the breast for a good latch
- Different feeding positions such as the football hold or modified cradle hold can be used by those encountering difficulties to facilitate latching onto the breast
- Mother with truly inverted nipples often encounter difficulties latching their babies to the breast. The use of niplette as a nonsurgical correction of inverted nipples may be recommended from the second trimester

Sore nipples

- Sore nipples are usually the result of poor positioning or poor latch-on
- Correct positioning and attachment is the key to prevent sore nipples
- Hind milk treatment or purified lanolin cream may be applied to promote healing
- Breast shell may be worn in between feeding to protect the sore nipples from rubbing against the clothing so as to facilitate healing

Engorgement

- Engorgement occurs when there is a decrease in the frequency of feeding causing excessive accumulation of milk in the breast
- Engorgement often occurs during the first week after delivery with the onset of copious milk and if there is a delay in starting breastfeeding or infrequent feeding
- Engorgement usually affects both breasts, involving the areola and the peripheral area of the breast, which becomes full, hard and tender
- Early initiation of breastfeeding, unrestricted feeding day and night and ensuring proper latching for effective emptying will help to prevent or reduce the severity of engorgement
- If engorgement is not relieved, it may impact on milk production

- ***Treatment of engorgement*** includes:
  1. Massaging the breast, nipple and areola area to clear any blockage and enhance milk flow
  2. Allowing the baby to breastfeed frequently round the clock as the infant's suckling is the most effective mechanism for removal of milk
  3. Apply cold pack or cold cabbage on the breast in between feeding to reduce swelling, warmth and pain
  4. Apply warm packs only if the breasts are leaking after the breast massage as heat may aggravate the swelling if the ducts are blocked

5. Use Danzen (serratiopeptidase) 5 mg tds PO to reduce swelling and inflammation
6. Administer analgesia to alleviate the pain

Plugged ducts

- A plugged duct is a localized blockage of milk from milk stasis
- It usually presents as a painful palpable lump with well-defined margins
- It may be caused by inadequate drainage in one area of the breast or by tight or restrictive clothing
- Plugged ducts can develop into mastitis if not treated adequately
- Massaging the breast is an effective way to help dislodge the blocked milk
- Antibiotic is not indicated unless mastitis has developed

Milk blister

- Milk blister is a whitish, tender area and often found at the tip of the nipple
- It seals a nipple pore, preventing the duct system from draining and thus causing milk buildup
- An effective treatment is to break the epithelial tissue using a sterile needle
- Breast massage should be done to clear the milk buildup and breastfeeding continued to clear the blocked milk duct

Candidiasis

- Treatment of candidiasis involves treating both mother and infant simultaneously
- The infant should be treated with oral nystatin
- Treatment of the mother includes topical nystatin, miconazole or ketoconazole cream applied on the nipple after each feeding

- For persistent candidiasis, oral fluconazole (diflucan) may be prescribed for the mother if the baby is at least 6 months of age
- In addition, pacifiers, teats, teethers, breast pump parts, bras or reusable breast pads should be washed and boiled daily as spores are heat-resistant

Mastitis

- Mastitis is defined as a unilateral bacterial infection of the breast.
- The diagnosis of mastitis is clinical
- Common organism is *Staphyloccus aureus*

Management

1 Breast massage and clearing of plugged ducts if present
2 Application of moist heat
3 Increased fluids and bed rest
4 Prescribe antipyretic to reduce fever
5 Antibiotic therapy (cloxacillin or augmentin) for 7 to 10 days
6 Use trimethoprim-sulfamethoxazole (bactrim), erythromycin or clindamycin if the mother is allergic to penicillin
7 Continue breastfeeding

Breast abscess

- Fine needle aspiration or incision and drainage is necessary
- The mother can continue breastfeeding on the unaffected breast
- The mother can hand-express or pump the milk from the affected breast to prevent engorgement and maintain milk supply

Increasing milk supply

- Ensure a good latch so that there is effective milk removal by the baby
- Offer the breasts more frequently

- Using breast compression during feeding to help increase the intake of milk by the baby
- Expressing of milk after a feed to increase the milk supply

Pharmacological treatment to increase milk supply

1. *Metoclopramide*

- Metoclopramide increases prolactin level and thus improves milk supply
- Dosage: 10 mg tds orally for 7–14 days
- Effective for the initiation and maintenance of lactation
- Side-effects: Fatigue, irritability, depression and extrapyramidal side effects which may include tremor, bradykinesia (slow movements) and other dystonic reactions

2. *Domperidone*

- Domperidone is a peripheral dopamine antagonist which is effective in increasing milk supply
- It has been used as an alternative to metoclopramide therapy as it does not readily cross the blood brain barrier and therefore has fewer side effects
- Dosage: 10 mg tds orally for 7–14 days
- Side effects: Headache, abdominal cramps and dry mouth
- Once full lactation is achieved, domperidone can be weaned gradually by decreasing 10 mg over 3–4 days

Maintaining milk supply

- Regular breastfeeding usually ensures adequate milk supply
- The milk supply increases with the baby's demand
- It is important for mothers to understand that substituting or delaying breastfeeding may reduce milk supply because of the reduction in stimulation of milk production which depends on the infant's suckling

- Frequent regular feeding of 8–10 feeds a day is normal during the initial 4–8 weeks after birth
- Separation of mother and infant should be avoided whenever possible. However during separation, regular pumping of the breasts (every 3 hourly) should be sufficient to maintain milk supply. The expressed milk can be stored and given to the baby
- Expressed milk can be safely stored for up to 4 hours at room temperature, 48 hours in a fridge (at 4°C), 3–6 months in a freezer (at −5 to −15°C), 6–12 months in a deep freezer (at −20°C)
- Avoid excessive accumulation of milk in the breasts as this can affect milk supply

CHAPTER 10

Medications in Pregnancy and Lactation

Antipyrexia/Analgesia

Medication	Dose	Comments
Paracetamol	1 g qds PO	

Antihistamines (for common cold, rash or itch)

Medication	Dose	Comments
Chlorpheniramine	4 mg tds PO	Can cause drowsiness

Cough (antitussive)

Dry cough

Medication	Dose	Comments
Dextromorphan (DMP)	10 mls tds PO	Recommended for pregnant and diabetic individuals as it does not contain alcohol
Procodin	10 mls tds PO	

Productive cough

Medication	Dose	Comments
Diphenhydramine	10 mls tds PO	Expectorant

Mucolytic

Medication	Dose	Comments
Bromhexine (Bisolvon)	1 tablet tds PO	

Sore throat

Medication	Dose	Comments
Lozenges	1 tablet tds PO	

Antenatal Supplementation

Medication	Dose	Comments
Folic acid	5 mg om PO	For periconception and first trimester; to reduce the risk of neural tube defects
Obimin	1 tablet om PO	Antenatal vitamin supplementation Each tablet contains vitamin A 3,000 USP units, vitamin D 400 USP units, vitamin C 100 mg, vitamin B_1 10 mg, vitamin B_2 2.5 mg, vitamin B_6 15 mg, vitamin B_{12} 4 mcg, niacinamide 20 mg, calcium panothenate 7.5 mg, folic acid 1 mg, ferrous fumarate 90 mg, calcium lactate 250 mg, copper 100 mcg, iodine 100 mcg

(*Continued*)

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Medication	Dose	Comments
Ferrous Fumarate	200 mg bd PO	Iron supplemention especially for patients with iron deficiency anemia
Ascorbic Acid	100–200 mg tds PO	To increase absorption of iron
Sangobion	1 tablet om PO	Each capsule contains copper sulfate 200 mcg, ferrous gluconate 250 mg, folic acid 1 mg, manganese sulfate 200 mcg, sorbitol 25 mg, vitamin B_{12} 7.5 mcg, vitamin C 50 mg

Threatened Miscarriage

Medication	Dose	Comments
Duphaston (dydrogesterone)	10 mg bd PO	Till 12 weeks of gestation if luteal phase deficiency is suspected

Antiemetics

Medication	Dose	Comments
Pyridoxine	50 mg om PO	Vitamin B_6 Helps to alleviate hyperemesis gravidarum
Maxolon (Metoclopramide)	10 mg tds PO	Can give 10 mg intravenous or intramuscular injection

(*Continued*)

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Medication	Dose	Comments
Avomine (Promethazine Theoclate)	25 mg tds PO	

Constipation

Medication	Dose	Comments
Fybogel	1 sachet OM PO	Bulk laxative
Agarol (Liquid paraffin)	10 mls bd PO	Stool softener
Lactulose	10 mls bd PO	Stool softener

Anti-diarrhoea Medication

Medication	Dose	Comments
Kaolin	10 mls tds PO	Absorbs toxins
Charcoal	2 tabs (500 mg) tds PO	Absorbs toxins

Lactation Suppression

Medication	Dose	Comments
Dostinex (Cabergoline) 0.5 mg/tab	2 tabs stat	If lactation not initiated
Dostinex (Cabergoline) 0.5 mg/tab	1/2 tab bd × 2 days	If lactation initiated

Antibiotics

Medication	Dose	Comments
Amoxycillin	500 mg tds PO	For urinary tract infection, respiratory tract infection and Group B streptococcus infection
Erythromycin	500 mg tds PO	For those with penicillin allergy
Cephalexin	500 mg tds PO	For urinary tract infection
Amoxycillin-clavulanate (Augmentin)	625 mg bd PO	For urinary tract infection and respiratory tract infection

Vulvovaginal Candidiasis

Medication	Dose	Comments
Nystatin pessary	1/1 ON × 7 days	Each pessary contains 100,000 units nystatin
Gynotravogen pessary	1/1 ON × 1 day	Each pessary contains 600 mg isoconazole nitrate
Gynotrosyd pessary	1/1 ON × 3 days	Each pessary contains 100 mg tioconazole
Flagystatin pessary	1/1 ON × 7 days	Each pessary contains 500 mg metronidazole and 100,000 units nystatin Useful in treating bacterial vaginosis as well

Rash/Itch

Medication	Dose	Comments
Chlorpheniramine	4 mg tds PO	Can cause drowsiness
Calamine lotion	PRN	Topical use
Hydrocortisone cream 1%		Topical use
Betnovate cream (Betamethasone valerate)		Topical use
Travocort cream	Contains isoconazole and diflucortolone valerate	Broad-spectrum antifungal with a steroid additive
Daktarin cream	Contains miconazole	Antifungal cream
Daktacort cream	Contains miconazole and hydrocortisone	Broad-spectrum antifungal with a steroid additive
Neoderm cream	Contains neomycin and hydrocortisone	Corticosteroid cream with anti-infective agent

CHAPTER 11

Frequently Asked Questions on Pregnancy

A) Food, Smoking and Alcohol during Pregnancy

Dos:

i. Folic acid supplementation
Folic acid is a type of vitamin B that is needed for the formation of blood cells and the development of baby's nervous system. It has been shown to reduce the chances of a baby having neural tube defect. A simple way is to take a folate supplement (one 5 mg tablet daily) for the first 12 weeks of pregnancy.

ii. Eat a variety of healthy food, including food rich in iron, calcium and folate.

Don'ts:

i. *Smoking*
Smoking is associated with adverse effects on both the pregnant mother and her foetus. It can cause an increased risk of miscarriage, abruption placenta, premature birth and low birth-weight baby. There is also a long term relationship with decreased intellectual development of the infant and increased risk of Sudden Infant Death syndrome.

ii. *Alcohol consumption*
Alcohol consumption in pregnancy is linked to infants showing behavioural and learning difficulties. Excessive alcohol consumption is associated with foetal alcohol syndrome (FAS), where the infant may have varying effects, including multiple fetal malformations and decreased intellectual development.

iii. *Diet*
Do not encourage weight loss regime during pregnancy.

iv. *Caffeine*
Any drinks containing caffeine, including coffee, tea and cola should be limited to a maximum of two cups per day.

v. *Raw, uncooked or undercooked Food*
Avoid raw or uncooked food to reduce the risk of food-borne infections such as listeriosis, toxoplasmosis, campylobacteria or salmonella infection.

B) Sex during Pregnancy

- Sex is safe during pregnancy as long as the woman adopts a position in which she is comfortable
- Sex is best avoided if there are signs of threatened abortion or if there is the presence of low lying placenta or premature contractions

C) Exercise during Pregnancy

- Pregnant women should exercise moderately for 20 minutes thrice a week unless there are medical reasons
- Exercise helps the pregnant woman to feel better and the calories burned help to prevent too much weight gain during pregnancy. They can consider brisk walking, dancing and swimming. Aerobics or yoga sessions designed specifically for pregnant women can also be explored
- Activities should be conducted at a sub-threshold level before the woman becomes exhausted
- Avoid activities that are at high risk for injury/contact sports, e.g. horseback riding, downhill skating, ice hockey, kickboxing, soccer or scuba diving

D) Air Travel during Pregnancy

- Flying is not contraindicated in an uncomplicated pregnancy. Domestic travel is usually permitted until 36 weeks of gestation, whereas international travel may be curtailed after 32 weeks of pregnancy. This is due to the risk of preterm labour
- Traveling should be done mostly in the second trimester when the pregnant woman feels more comfortable and the risks of miscarriage and preterm labour are lower
- It is important to take deep vein thrombosis (DVT) precautions, such as getting a seat with more leg room, interval walking along the aisles or toilet breaks, leg massages or wearing thrombosis deterrent stockings. Prevent dehydration in the plane by taking enough fluids orally and avoiding alcohol
- Avoid travel to countries that would require immunisation in pregnancy

E) Clothing during Pregnancy

- As long as the pregnant women are comfortable in their clothing and provided the clothings are not too restrictive or tight, it would not impede the development of the foetus
- Exposing the belly has no known adverse effects on the foetus

F) Hair-Dyeing, Hair-Rebonding and Perming during Pregnancy

- The concern about exposure to hair dye and hair straightening agents is that there may be absorption of chemicals into the bloodstream at the time of use. However, most chemicals are cleared from the bloodstream fairly quickly. Unfortunately, there have been only very few studies on the use of such products during pregnancy to quantify the risk of hair dye to a developing foetus
- While no one can provide data about timing and safety, avoid dyeing or rebonding the hair once a woman has conceived

- Perming hair during the second and third trimesters of pregnancy is a safe procedure and can make caring for hair less time consuming and easier. There are no studies to indicate that perming hair during pregnancy is detrimental to the foetus

G) Dental Health Concerns during Pregnancy

Periodontal disease (gum disease)

- Pregnancy increases the risk for developing gingivitis and periodontitis
- Gingivitis is an inflammation of the gingiva (gums). The gingiva becomes erythematous, swollen and loses its normal shape. Bleeding also occurs easily, such as during toothbrushing
- Periodontitis is a more severe oral condition than gingivitis, involving destruction of the supporting attachment fibres and bone structure surrounding the teeth, resulting in mobility and eventually, loss of the affected teeth
- The increased susceptibility is due to the increase in estrogen and progesterone during pregnancy. An increase in gingivitis frequently appears between the second and eighth months of pregnancy
- Studies have shown a correlation between periodontal disease and preterm labour
- Good dental hygiene is recommended in pregnancy

Management

- Maintain good oral hygiene: Brush after each meal, floss at least once a day and use an anti-plaque mouth rinse
- Visit the dentist regularly at least every 6 monthly for cleaning

Caries (dental decay)

- Morning sickness and general malaise in the first trimester can result in poor oral health, increasing the susceptibility of the woman to caries

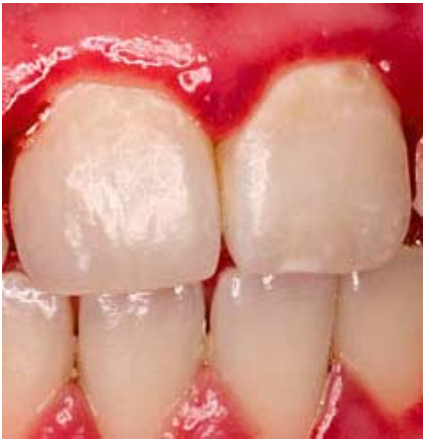

Fig. 1. Gingivitis.

- Food cravings during pregnancy may result in higher or more frequent sugar intake, thus increasing the risk of developing caries

Dental procedures

- While regular check-ups and cleaning are highly recommended during pregnancy, major dental procedures (e.g. wisdom tooth removal, bleaching) that are not urgent should be postponed till after delivery of the baby
- As the first trimester is the most critical period of the baby's development, dental treatment, if necessary, is best performed in the second trimester to minimize any potential risks
- Treatment in the third trimester is not recommended due to the unfavourable supine position of the pregnant woman that may impede cardiac venous return

Amalgam fillings (silver-coloured fillings)

- There has been a concern of mercury toxicity during the placement or removal of amalgam fillings in the pregnant woman, although there has been no evidence to prove this relationship

- It is thus recommended that unnecessary procedures involving amalgam should be avoided
- Alternative filling materials such as tooth-coloured restorations may be used

Radiographs

- Dental X-rays are of very low dosage and pose little harm, if any
- However, to be cautious, dental radiographs should only be taken during pregnancy if there is an emergency
- Examples of dental emergencies include infections that can cause toothache and that may spread systemically, as well as dental trauma
- A lead apron over the abdomen should be worn to protect the foetus from radiation when dental radiographs are taken

Pregnancy tumour

- Pregnancy tumour is also known as pyogenic granuloma
- This is a benign growth at the gingival margin that may enlarge substantially and bleed easily upon trauma
- It is the result of an extreme inflammatory response to local irritation such as plaque and is most common in the second trimester
- Large pregnancy tumour may be uncomfortable and makes speech and eating difficult

Management

- Pregnancy tumours usually resolve without intervention after delivery
- If it causes discomfort or affects speech or eating, the pregnancy tumour may be excised surgically, under local anaesthesia by a periodontist
- Maintaining good oral hygiene and regularly receiving professional cleaning reduce the risk of pregnancy tumour

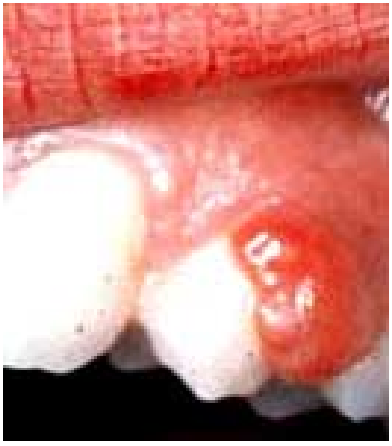

Fig. 2. Pregnancy tumour.

H) X-rays during Pregnancy

- X-rays or computed tomography scans are to be avoided during pregnancy unless the benefits outweigh the risks, due to the risks of radiation to the fetus (developmental malformations and childhood cancers)
- The amount of radiation used during a CT scan is considered minimal and therefore, the risk for radiation exposure is low
- Inadvertent exposure to X-ray during pregnancy may not necessarily be an indication to terminate the pregnancy

I) Carrying Heavy Loads during Pregnancy

- It is common to hear that it is unsafe to lift heavy things during pregnancy. However, the risk of injury is usually directed at the mother and not the baby. The increase in the level of hormones during pregnancy causes the ligaments to soften, which leads to joints that may be less stable
- Also, the centre of gravity of a pregnant mother has shifted, which puts more stress on her back. These two factors make the mother more susceptible to injury when lifting heavy things

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PART II

INVESTIGATIONS IN OBSTETRICS

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CHAPTER 12

Routine Antenatal Blood Investigations and Screening for Thalassaemia

Routine Antenatal Blood Investigations

Test	Purpose	Normal Range	Interpretation and Management Guidelines
Full Blood Count Haemoglobin (Hb)	Check for anaemia	12–16 g/dL	• Prescribe oral hematinics if <11 g/dL • **Refer to OBGYN** for assessment and may need transfusion if Hb < 8 g/dL
Mean Corpuscular Volume (MCV)	Thalassaemia screen	>80 fl	• If both patient and partner MCV ≤ 80 fl, **refer to OBGYN** • Do Hb electrophoresis for beta-thalassaemia and DNA probe for alpha thalassaemia
Total White (TW) Cell Count	Infection screen	4.0–10× 10^9/L	• In pregnancy, TW can be normal up to 18 × 10^9/L

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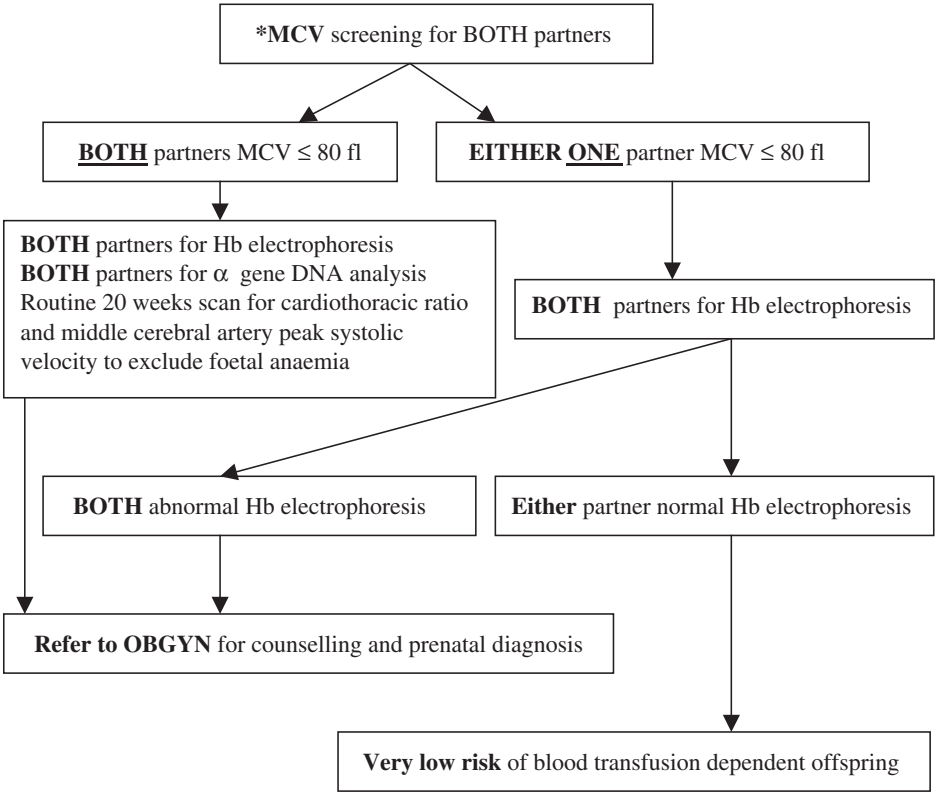
Test	Purpose	Normal Range	Interpretation and Management Guidelines
Platelet	Check for thrombocytopaenia Check for pre-eclampsia	150–450× 10^9/L	• **Refer to OBGYN** if platelet $<150 \times 10^9$/L • Watch out for spontaneous bleeding if $< 50 \times 10^9$/L • Alert for HELLP syndrome (Hemolysis, Elevated Liver enzymes, Low Platelets) • Refer to investigations for pre-eclampsia
ABO Blood Group and Rhesus (Rh) Status	Screening		• If Rh status is negative, **refer to OBGYN** • For prophylactic antenatal anti-D immunoglobulin at 28 and 34 weeks, as well as postnatally if mother is not iso-immunised (i.e. Rh antibody negative) • To give anti-D immunoglobulin for sensitizing events such as antepartum haemorrhage, abdominal trauma or post-procedure such as amniocentesis if partner is Rh positive

Antenatal Screening for Thalassaemia



*MCV = mean corpuscular volume.

CHAPTER 13

Routine Antenatal Infective Screening and TORCH Screening

Routine Antenatal Infective Screening

Test	Purpose	Normal	Interpretation and Management Guidelines
HepBsAg	Screen	Negative	• If test is negative, advise hepatitis B vaccination post-natally
HepBeAg		Negative	• If test is positive, baby will also need immunoglobulin (0.5 ml) passive immunisation at birth
HIV (human immuno-deficiency virus)	Screen	Negative	• If woman is HIV positive, practise universal precautions • Notify (Infectious Diseases Act) • **Referral to OBGYN** and Communicable Disease Centre

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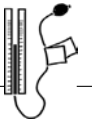
Test	Purpose	Normal	Interpretation and Management Guidelines
VDRL (venereal disease research laboratory test)	Screen for syphilis	Negative	If positive, to confirm syphilis with TPHA test Causes of false positive VDRL test: • Systemic lupus erythematosus • Anti-phospholipid syndrome • HIV infection • Myoplasma pneumonia • Malaria
TPHA (treponema pallidum haemagglutination assay)	Confirmatory test for syphilis	Negative	• If positive, **urgent referral to OBGYN** and Communicable Disease Centre for assessment and treatment • Notify (Infectious Diseases Act) • TPHA positive but VDRL negative suggests serological scar of previous syphilitic infection
Rubella	Screen for rubella antibodies		• If Ig G is positive, it suggests previous vaccination • If Ig G is negative, give rubella vaccination at least 3 months before pregnancy

TORCH Screening

- Includes toxoplasmosis, rubella, cytomegalovirus and herpes simplex
- If serology Ig M is positive, it denotes recent infection
- Repeat paired Ig G titre 2–3 weeks later. If it is increased, it denotes recent infection

CHAPTER 14

Miscellaneous Antenatal Blood Investigations



Miscellaneous Antenatal Blood Tests

Test	Purpose	Normal Range	Interpretation and Management Guidelines
Oral glucose tolerance test (75 g)	Exclude gestational diabetes (GDM)		If risk factors are present, to perform OGTT at 24–28 weeks of gestation Risk factors include: • ≥ 35 years old • Family history of diabetes • Previous history of GDM • Previous stillbirth • Previous/current macrosomia • Maternal weight ≥ 80 kg • ≥ 2 episodes of glycosuria
Fasting glucose level		<5.5 mmol/L	If raised, **refer to OBGYN** for diabetic control
2-hour glucose level		<7.8 mmol/L	If raised, **refer to OBGYN** for diabetic control
Blood sugar profile		4.4–5.5 mmol/L 5.5–7.0 mmol/L	Preprandial Postprandial

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Test	Purpose	Normal Range	Interpretation and Management Guidelines
Thyroid function test	To assess thyroid function		
Free T4 (FT4)		10–26 pmol/L	• Can start either propyl-thiouracil or carbimazole if hyperthyroidism • Can start thyroxine if hypo-thyroidism • Titrate dose of medication with FT4 level
Thyroid stimulating hormone (TSH)		0.5–4.5 mIU/L	• Can be low in pregnancy; no treatment is needed as long as free T4 is normal

Pre-eclampsia Blood Investigations

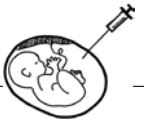
Test	Purpose	Normal Range	Interpretation and Management Guidelines
Pre-eclampsia blood tests	Assess evidence of end-organ damage		
Creatinine	Assess renal function	44–80 µmol/L	• Raised in renal impairment • In pregnancy, renal impairment if $>$ 80 µmol/L • **Refer to OBGYN**
Uric acid	Suggest pre-eclampsia	139–341 µmol/L	• Raised in pre-eclampsia • Rough estimate of upper limit = Duration of gestation (in weeks) $\times$10
AST (aspartate aminotrans-ferase)	Assess liver dysfunction	15–33 U/L	• Watch for HELLP syndrome

(***Continued***)

Test	Purpose	Normal Range	Interpretation and Management Guidelines
Bilirubin (direct)		2–7 μmol/L	• Raised in jaundice
Bilirubin (total)		3–24 μmol/L	• Raised in jaundice
Platelets	Assess coagulopathy	150–450 $\times 10^9$/L	• If $< 150 \times 10^9$/L, suggests consumptive coagulopathy • **Refer to OBGYN**

CHAPTER 15

Down Syndrome Screening and Diagnostic Tests



Down Syndrome Screening Tests

- Screening tests are **NOT** diagnostic tests
- Most women with a positive screening test have a normal baby
- The risk for abnormalities is just increased over the background risk

Type of Screening	Gestational Age for Screening	Abnormalities Screened
Nuchal translucency scan	11–14 weeks	• Trisomy 21 • Less reliable for Trisomy 13 and 18
Maternal serum screening (MSS)	15–20 weeks	• Increased alpha foeto-protein level suggests an increased risk of open neural tube defects, omphalocoele and some other structural foetal anomalies • Trisomy 21 • Less reliable for Trisomy 13 and 18

Cut-off for high risk is 1: 300. If the woman is at high risk, **refer to OBGYN** to counsel for chorionic villus sampling or amniocentesis depending on the gestation.

Down Syndrome Diagnostic Tests

Diagnostic Test	Gestational Age for Test (weeks)	Risk of Procedure-related Miscarriage in KK Hospital
Chorionic villus sampling	11–13	1–2%
Amniocentesis	15–20	0.3–0.5%
Foetal blood sampling*	20–22	2%

*Foetal blood sampling or cordocentesis may be done after 20 weeks' gestation in special circumstances.

CHAPTER 16

Antenatal Ultrasound Scans and Doppler Studies

Antenatal Ultrasound Scans and Doppler Studies

Dating scan	Most accurate in first trimester (± 3–5 days) Check for location of pregnancy to exclude ectopic pregnancy May only see thickened endometrium or empty intrauterine gestational sac in very early pregnancy. Subsequently, yolk sac, foetal pole and then foetal heart would be visible Assess foetal size, viability, number of foetuses and gestational sac size No need to change expected date of delivery from last menstrual period if patient has regular menstrual cycles and error < 1 week
Screening scan	Usually done at 18–22 weeks of gestation to exclude structural anomalies in the foetus Check correct dating for meaningful foetal biometry Check that the organs are visualized and normal Take note of placental location Can determine sex of foetus

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Growth scan	Usually done at 28–34 weeks of gestation Ensure that foetal biometry and amniotic fluid index (AFI) are within normal range Check presentation and placental location **Refer to OBGYN** if abnormal growth biometry or placental previa is suspected Suspect oligohydramnios if AFI $\leq$ 5 cm Suspect polyhydramnios if AFI $\geq$ 25 cm Estimated foetal weight (EFW) at 28 weeks = 1 kg EFW at 32 weeks = 2 kg **Refer to OBGYN** if abnormal parameters or foetal anomalies noted
Doppler studies	Indicated if intrauterine growth restriction is suspected Check if umbilical arterial flow studies are normal **Refer to OBGYN** if umbilical artery pulsatility index $>$ 97th percentile Needs admission for close foetal monitoring if absent/reversed end-diastolic flow of umbilical artery as the risk of foetal asphyxia is increased **Abnormal venous doppler study** implies high risk of foetal hypoxia

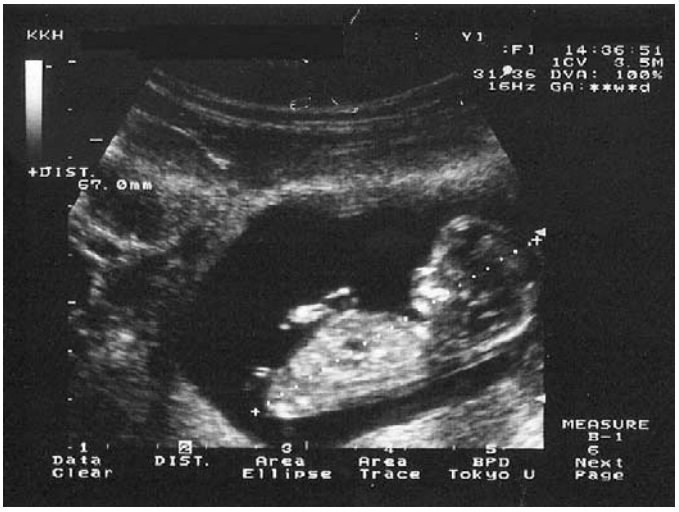

Fig. 1. Crown-rump length measurement.

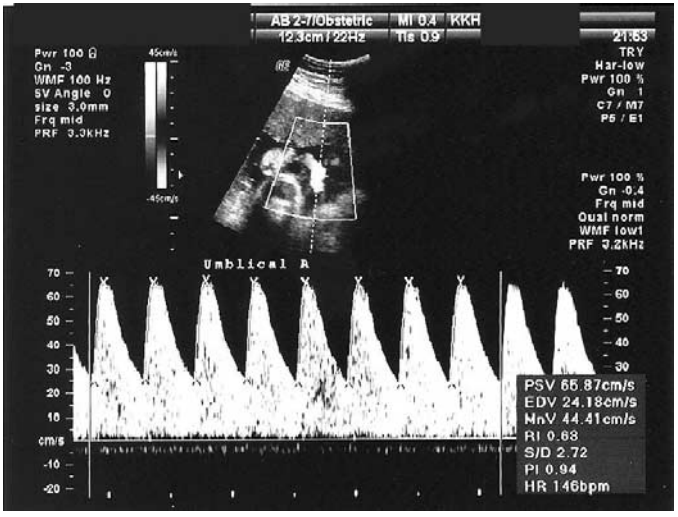

Fig. 2. Umbilical artery doppler study.

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PART III

GYNAECOLOGY

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CHAPTER 17

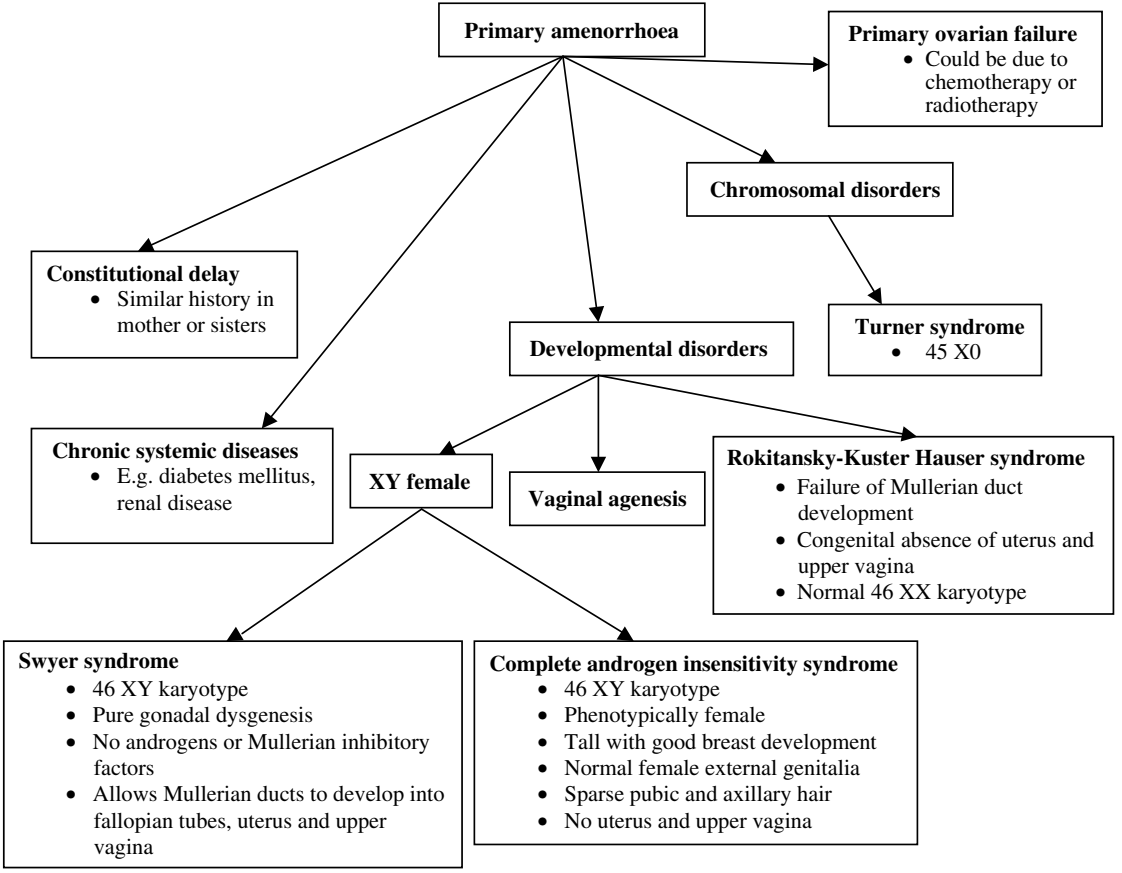
Amenorrhoea

Primary Amenorrhoea

Definition

- Absence of a menstrual period in a woman by **age 16**

Causes of Primary Amenorrhoea



Management of primary amenorrhoea

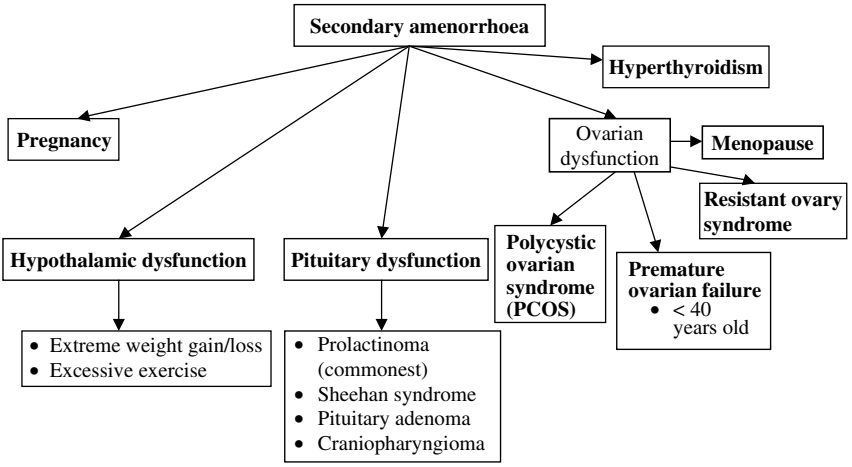
- **Refer to OBGYN** for investigations and management of primary amenorrhoea
- For constitutional delay, no treatment is needed except reassurance
- For chromosomal disorders and primary ovarian failure, small dose of ethinyl oestradiol 1 μg daily can be started for 6 months, increasing to 2, 5, 10 and eventually 20μg with increments at six monthly intervals. This is then followed by combined oral contraceptive pills
- For vaginal and mullerian agenesis, vaginal reconstruction is necessary. This could be achieved by vaginal dilators or surgical procedures like William's vulvo-vaginoplasty, McIndoe's procedure or skin graft
- For the XY female, counselling for the woman and family is important to discuss the psychological issues of gender of rearing and gender identity. Management includes gonadectomy as the dysgenetic testes have a high lifetime risk of malignancy (30%)

Secondary Amenorrhoea

Definition

Cessation of menses for at least 6 months.

Causes of Secondary Amenorrhoea



Investigations of Secondary Amenorrhoea

1. Urine pregnancy test to exclude pregnancy
2. Follicular stimulating hormone (FSH)/Luteinising hormone (LH)
   (a) Suggests ovarian failure or menopause if > 30 IU/L
   (b) Low level suggests hypothalamic or pituitary dysfunction
   (c) Reversal of LH/FSH ratio > 3:1 suggests PCOS
3. Serum prolactin level:
   (a) Hyperprolactinaemia can cause secondary amenorrhoea
4. Thyroid function test:
   (a) Hyperthyroidism can cause secondary amenorrhoea
5. Progestogen challenge test:
   (a) Give 5 mg oral norethisterone bd for 5 days

(b) If there is withdrawal bleeding, there is presence of oestrogen and the patient would need cyclical progestogen for withdrawal bleeding to protect the endometrium from endometrial hyperplasia and carcinoma

(c) If there is no withdrawal bleeding, then combined oral contraceptive pill would be needed to induce menses

- **Refer to OBGYN** for investigations and management of secondary amenorrhoea after excluding pregnancy
- Further treatment depends on the cause of the secondary amenorrhoea

CHAPTER 18

Dysfunctional Uterine Bleeding

Definition

The normal menstrual cycle lasts between 21 and 35 days with menstrual flow lasting 2–7 days

Any disturbance in the menstrual cycle or flow pattern is termed dysfunctional uterine bleeding (DUB) after excluding systemic and pelvic pathological causes

Steps in Workup of DUB

(1) Look for pallor. If pale, check haemoglobin level
(2) Ensure that the patient is haemodynamically stable. Quantify severity of bleeding, e.g. number of pads used per day and presence of blood clots or episodes of flooding
(3) Clinical examination to exclude cervical lesion and do a PAP smear if last PAP smear >1 year ago

Investigation and Diagnosis

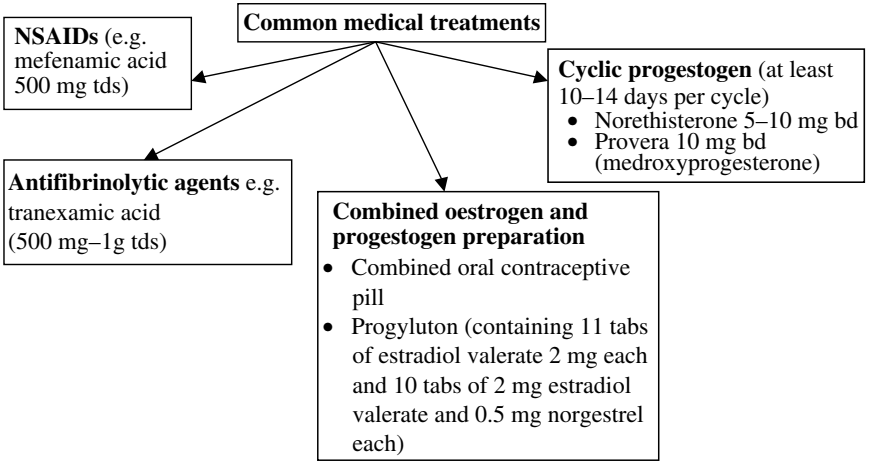
- Perform urine pregnancy test to exclude pregnancy-related problems (threatened miscarriage, inevitable miscarriage or ectopic pregnancy)
- If there are bleeding tendencies, exclude blood dyscrasias for adolescents (13–18 years old)

- If there are symptoms of thyroid disorder or galactorrhoea, check thyroid function test or prolactin level
- Perform pelvic ultrasound scan to exclude pelvic pathology (fibroids or adenomyosis)
- Perform endometrial assessment (if the patient is ≥ 40 years old or has failed conventional medical treatment) to exclude endometrial hyperplasia or carcinoma

Goals of Treatment

- Alleviate acute bleeding. Give intramuscular injection of progesterone 100 mg stat
- Prevent future episodes of non-cyclic bleeding — aim to give a bleed which is predictable in terms of timing and amount
- Decrease the risk of long term complications (e.g. development of endometrial cancer)

Common Medical Treatments



Refer to OBGYN for endometrial assessment and further treatment if patient has failed conventional initial treatment or is age ≥ 40 years old

Other Hormonal Medical Treatments

MIRENA/Levonorgestrel (LNG)-releasing Intrauterine system

- Releases 20 µg of LNG daily which affects the endometrium locally
- Lasts 5 years
- Low local hormonal effect in the endometrium which provides shorter and lighter menses and reduces dysmenorrhoea
- 20% amenorrhoea after 1 year
- 20% intermittent per-vaginal spotting in first 6 months
- Lower risks of pelvic inflammatory disease and ectopic pregnancy compared with copper-IUCD

Fig. 1. Mirena intrauterine system.

Progyluton

- Cyclical sequential combined hormonal replacement therapy with 2 mg estradiol valerate for first 11 days and 2 mg estradiol valerate with 0.5 mg norgestrel for next 10 days
- Regulates menstrual cycle and does not affect endogenous hormone production
- Does not interfere with ovulation
- Can be used by pre-menopausal and perimenopausal patients

Fig. 2. Progyluton package.

Depot-Provera (Medroxy-Progesterone acetate)

- Intramuscular Depot Provera 150 mg every 3 monthly
- Induce endometrial atrophy and amenorrhoea
- Irregular bleeding in first 3–6 months
- Side-effects: abdominal bloating, breast tenderness, weight gain, depression and water retention

Gonadotrophin releasing hormone analogue (GnRHa)

- Continuous treatment with GnRHa causes down-regulation of pituitary gland and subsequent decrease in gonadotrophins and ovarian steroids
- Causes amenorrhoea (90%)
- Side-effects are related to hypo-oestrogenism and postmenopausal in type (hot flushes, insomnia, mood swings)
- Not recommended for more than 6 months of continuous usage due to the risk of osteoporosis unless used with hormonal add-back therapy
- Subcutaneous injection of Zoladex (goserelin) 3.6 mg monthly; subcutaneous injection of Lucrin (leuprorelin) 3.75 mg monthly or

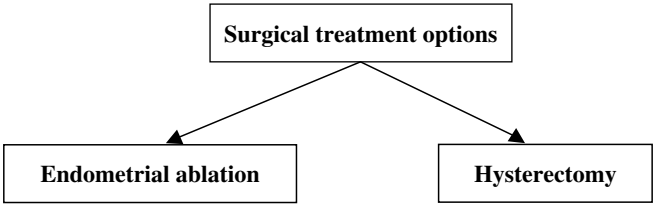
11.25 mg every 3-monthly; intramuscular injection of Decapetyl (triptorelin) 3.75 mg monthly

Danazol

- Induce amenorrhoea in majority if taken in moderate or high dose (> 400 mg daily)
- If taken at low dose (200 – 400 mg daily), it will induce amenorrhoea in some while others may experience light but often unpredictable bleed
- Masculinising side-effects such as hirsutism, acne, voice change (irreversible)

Surgical management

- As a last resort for patients with failed medical treatments



CHAPTER 19

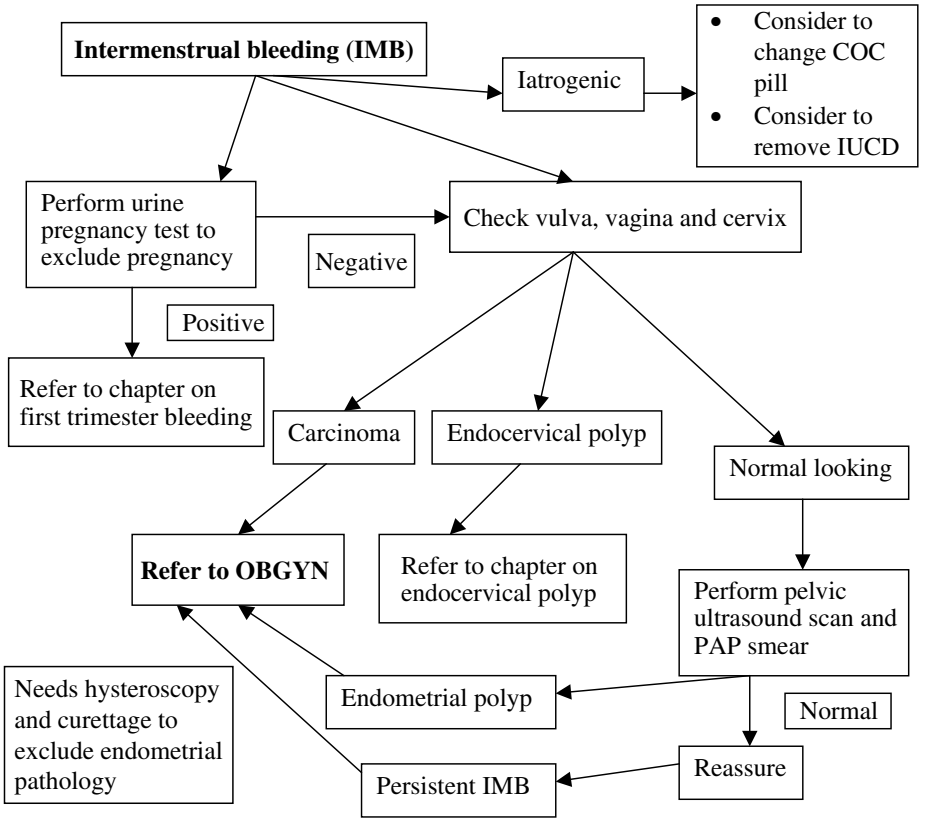
Abnormal Per-Vaginal Bleeding

Intermenstrual Bleeding

Common causes

- Physiologic (ovulation causes mid-cycle bleeding)
- Pregnancy complications (threatened or spontaneous miscarriage, molar pregnancy or ectopic pregnancy)
- Polyps (endometrial/endocervical)
- Carcinoma (cervical/endometrial/vaginal/vulval)
- Iatrogenic (combined oral contraceptive pills/intrauterine contraceptive device)

Management of intermenstrual bleeding

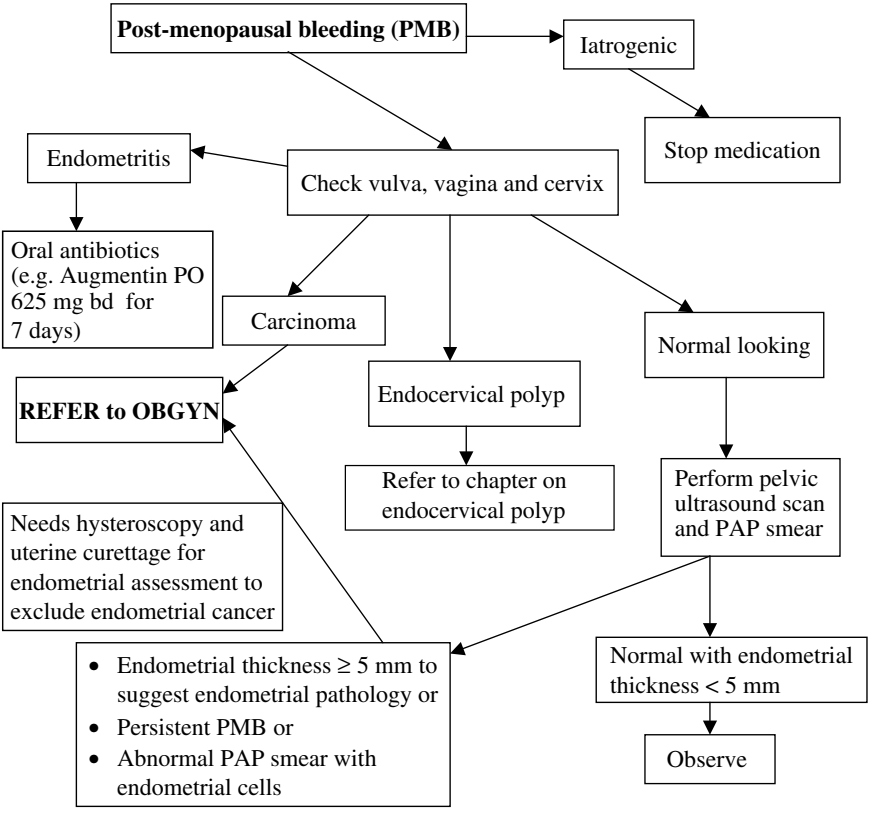


Post-menopausal Bleeding

Common causes

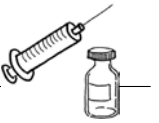
- Atrophic vaginitis
- Polyps (endometrial/endocervical)
- Endometritis
- Carcinoma (endometrial/cervical/vaginal/vulval)
- Iatrogenic (drug-induced)
  - hormonal treatment
  - anti-coagulants

Management of Post-menopausal bleeding

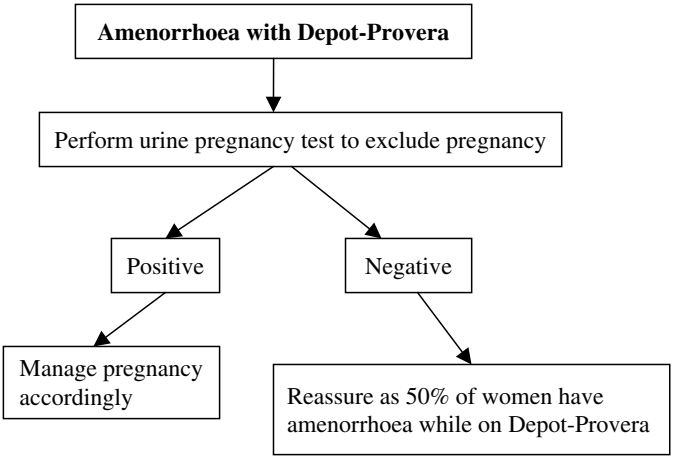


CHAPTER 20

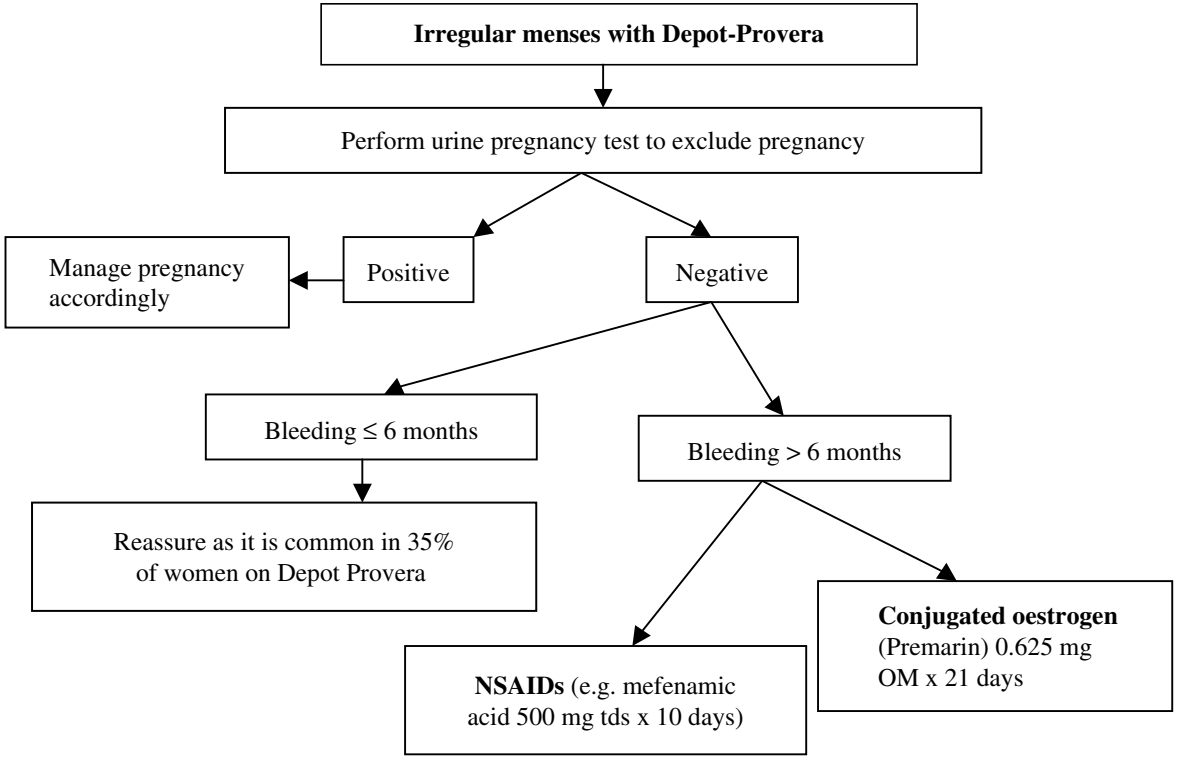
Depot-Provera Related Menstrual Problems



Management of Amenorrhoea with Depot-Provera



Management of Irregular Menses with Depot-Provera



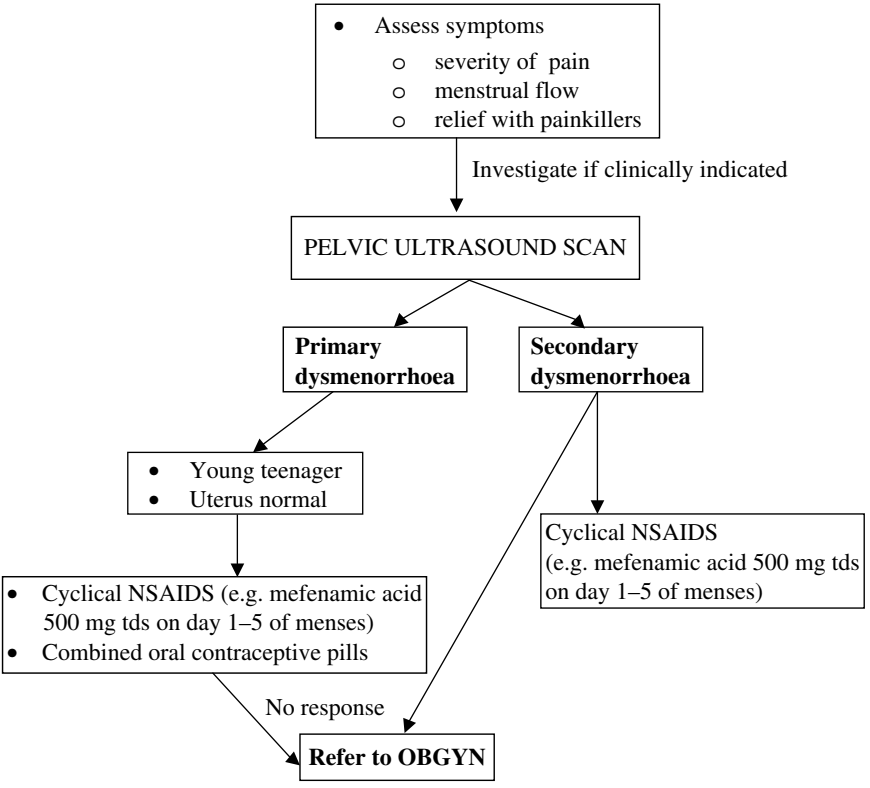
CHAPTER 21

Dysmenorrhoea

Causes

1. Primary — no pelvic pathology, usually in peri-menarche
2. Secondary
   a. Endometriosis
   b. Adenomyosis

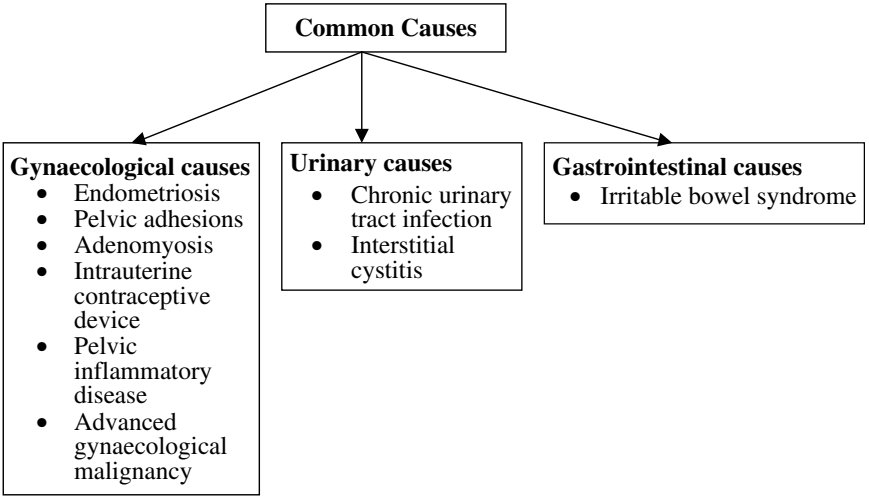
Management of Dysmenorrhoea



CHAPTER 22

Chronic Pelvic Pain

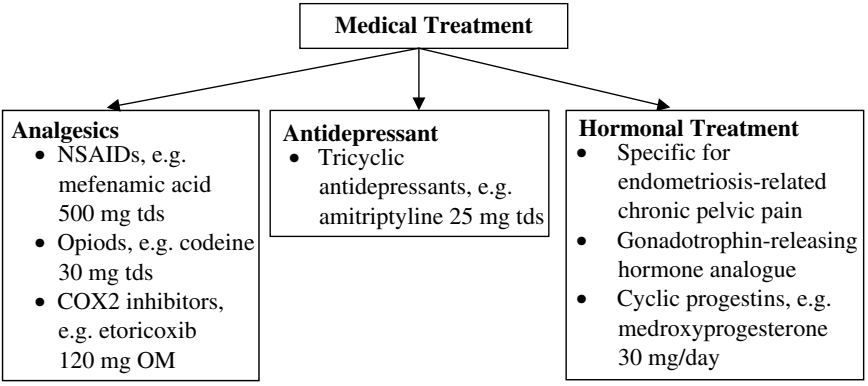
Causes



Investigations

- Pelvic ultrasound scan to exclude pelvic pathology like endometriotic cyst or adenomyosis
- Urine FEME and culture to exclude chronic urinary tract infection

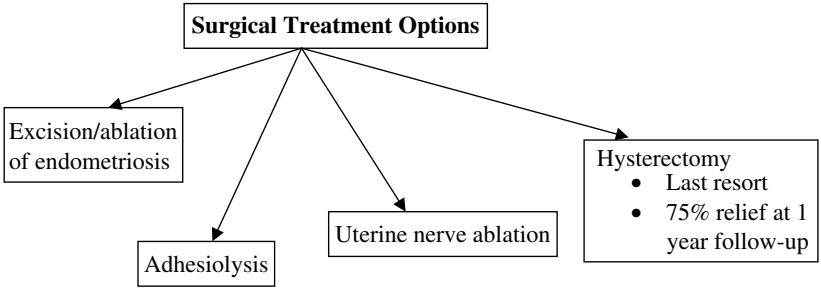
Management of Chronic Pelvic Pain due to Gynaecological Causes



Refer to OBGYN if

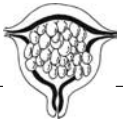
- Evidence of pelvic pathology like endometriotic cyst or adenomyosis
- Failed first-line medical treatment*
- Chronic pelvic pain related to menstrual cycle*

*Diagnostic laparoscopy is the gold standard to diagnose endometriosis



CHAPTER 23

The Symptoms and Signs of Gynaecological Malignancies



Cervical Cancer

Symptoms

1. Postcoital bleeding
2. Postmenopausal bleeding
3. Abnormal PAP smear

Signs

1. Irregular looking, hard and friable cervical tumour
2. Rectovaginal examination to assess parametrial and posterior spread
3. Enlarged lymph nodes in the supraclavicular fossa and groins

Endometrial Cancer

Symptoms

1. Postmenopausal bleeding/discharge
2. Inter-menstrual bleeding
3. Prolonged menstrual flow
4. Abnormal PAP smear showing glandular abnormalities or endometrial cells (in women $\geq$ 40 years old)

Signs

1. Enlarged bulky uterus
2. Look for metastatic deposits in the vagina
3. Enlarged lymph nodes in the supraclavicular fossa and groins

Ovarian Cancer

- Symptoms and signs usually present in late stage of disease

Symptoms

1. Abdominal distension/pain/discomfort
2. Loss of weight/appetite

Signs

(1) Ascites
(2) Hard, pelviabdominal mass
(3) Enlarged lymph nodes in the supraclavicular fossa and groins

Fallopian Tube Cancer

- Rare

Symptoms

1. Postmenopausal bleeding/discharge
2. Abnormal vaginal discharge
3. PAP smear showing glandular abnormality

Signs

- Uncommon; usually diagnosed at histopathology

Vulvar Cancer

Symptoms

1. Vulvar mass or ulcer
2. Vulvar itch or irritation

Signs

1. Vulvar tumour
2. Rectovaginal examination to assess vaginal and posterior spread
3. Enlarged lymph nodes in the groins

CHAPTER 24

PAP Smear Screening and Management of the Abnormal PAP Smear

Cervical Screening Singapore Programme

- Who to be screened — all women who have ever had sex are advised to have their first Pap smear by age 25
- Frequency of screening — once every 3 years if no risk factors
- Screen at more frequent intervals (1–2 years) if high risks factors are present
- Discharge from screening — a woman can be discharged from screening at 65 years of age if the PAP smear taken at age 65 is negative and there was a previous negative smear within the last 3 years

High Risk Factors

- Early onset of sexual intercourse
- Multiple sexual partners
- Human papilloma virus infection
- Human immunodeficiency virus infection
- History of sexually transmitted disease
- Immunosuppression such as on long-term steroids

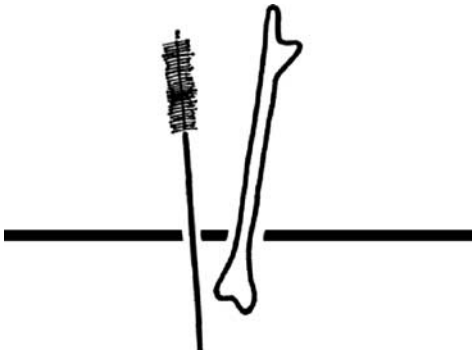


Fig. 1. Ayre Spatula (*right*) and cytobrush for PAP smear.

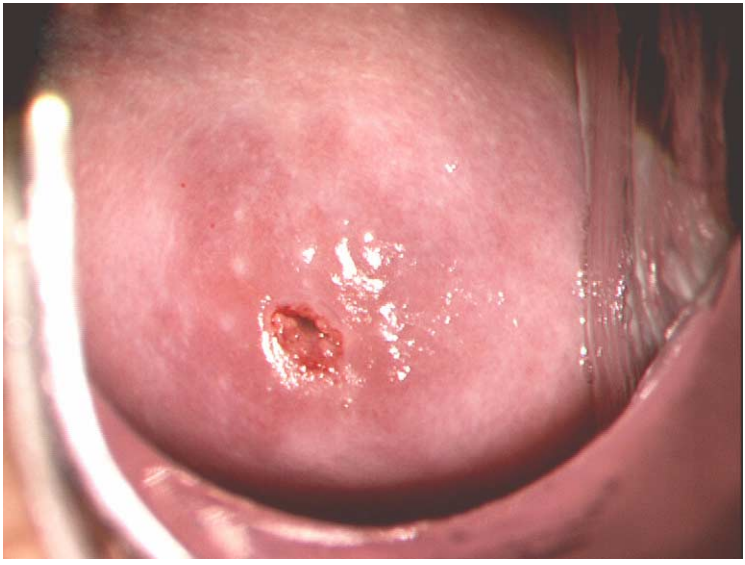


Fig. 2. Nulliparous cervix.

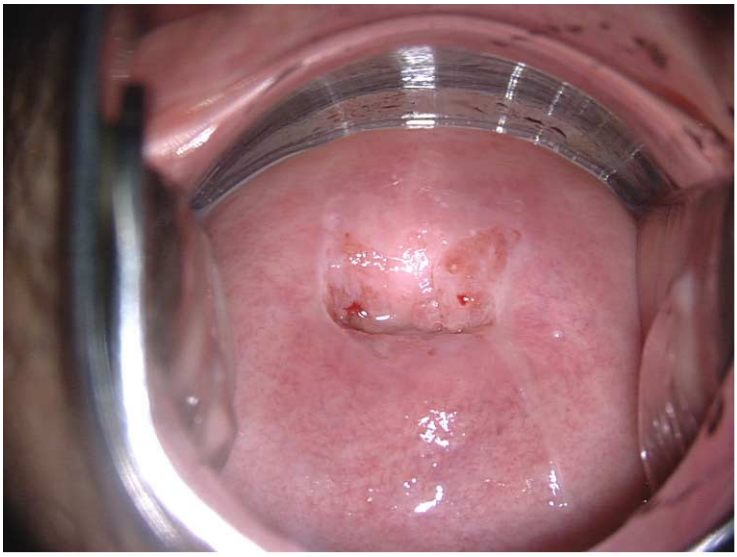


Fig. 3. Parous cervix with slit shaped os.

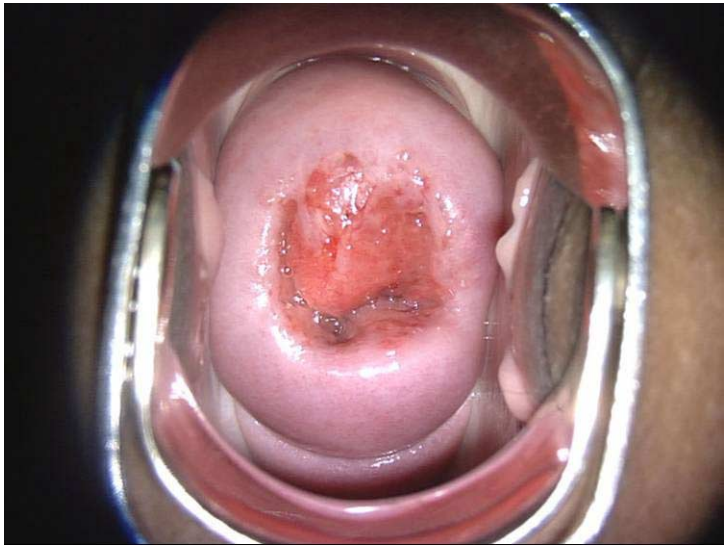


Fig. 4. Cervical ectropion.

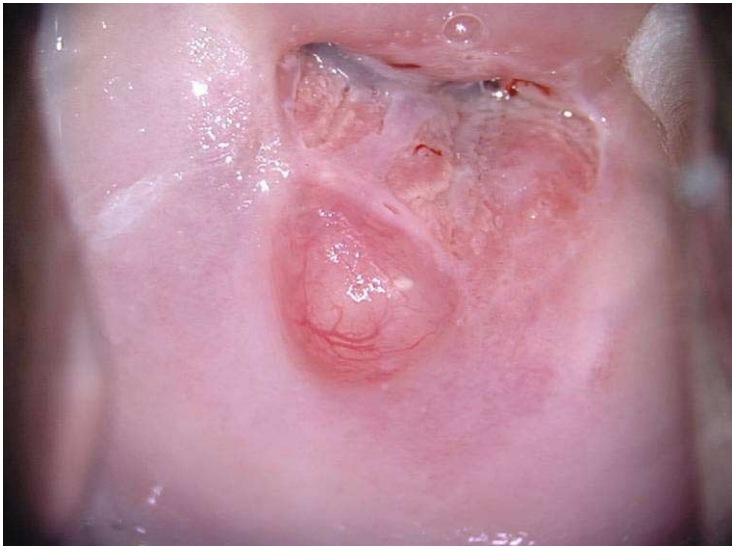


Fig. 5. Nabothian follicle. Note the prominent blood vessels on the surface showing a normal regular branching pattern.

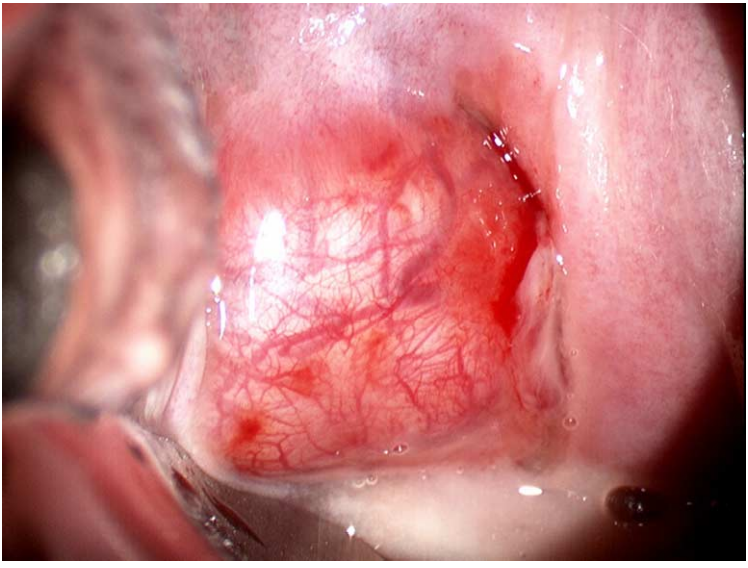
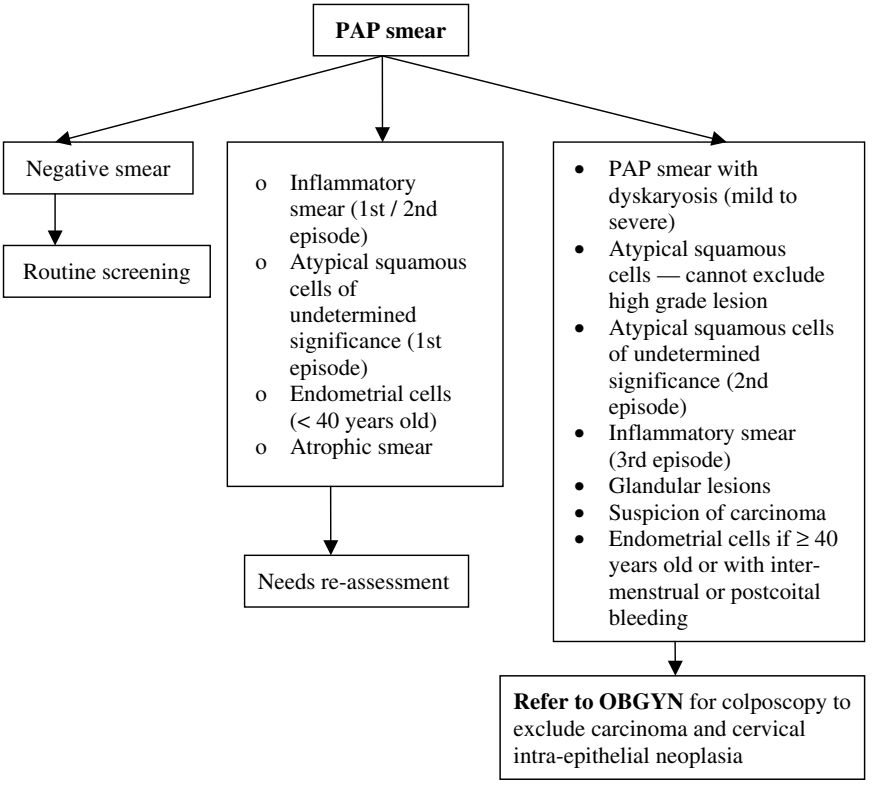
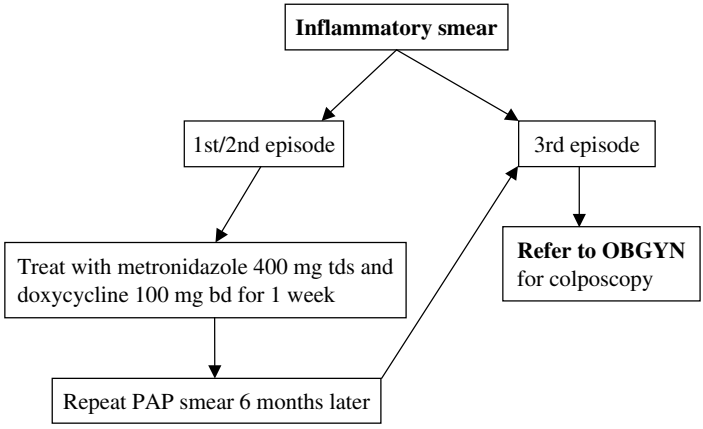


Fig. 6. Cluster of nabothian follicles distorting the cervix.

Management of PAP Smear



Simple Guidelines for Inflammatory PAP Smear



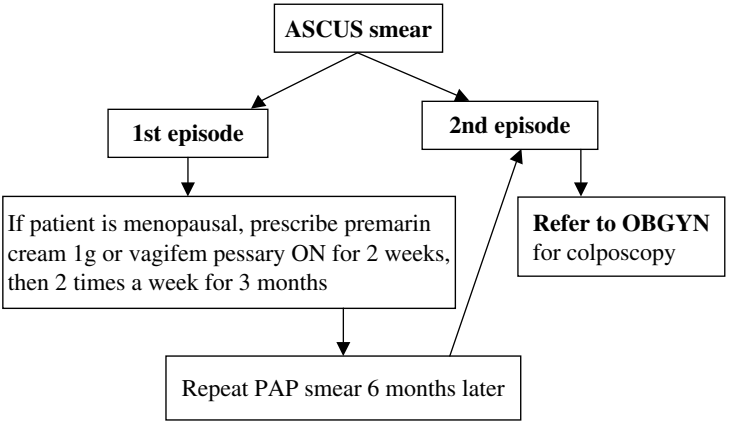
How to explain to your patient about colposcopy?

A colposcopy examination is a procedure in which a special magnifying device with a light, called a colposcope is used to examine the genitals, vagina and cervix (neck of womb) closely.

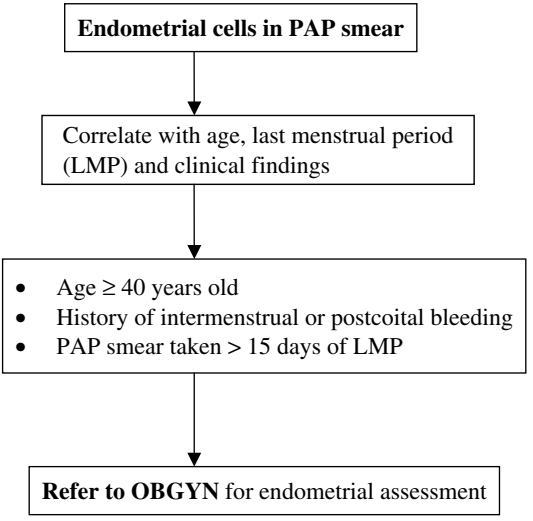
A colposcope is an instrument that shines a light on the cervix and magnifies the view. At the beginning of the examination, you lie back and position your legs such that the vagina opens slightly and the doctor can see your cervix. Then the doctor applies a vinegar solution (acetic acid) to the cervix and vagina with a cotton ball. The vinegar makes abnormal tissue turn white so that the doctor can identify abnormal areas that may need further evaluation.

If the doctor sees areas of abnormal tissue, he or she may perform a biopsy. A specialist doctor called a pathologist will examine these samples.

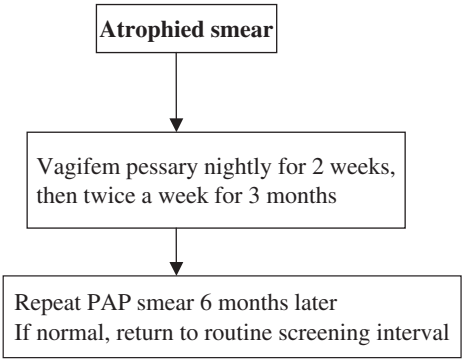
Simple Guidelines for Atypical Squamous Cells of Undetermined Significance (ASCUS) PAP Smear



Simple Guidelines for PAP Smear with Endometrial Cells



Simple Guidelines for Atrophied PAP Smear



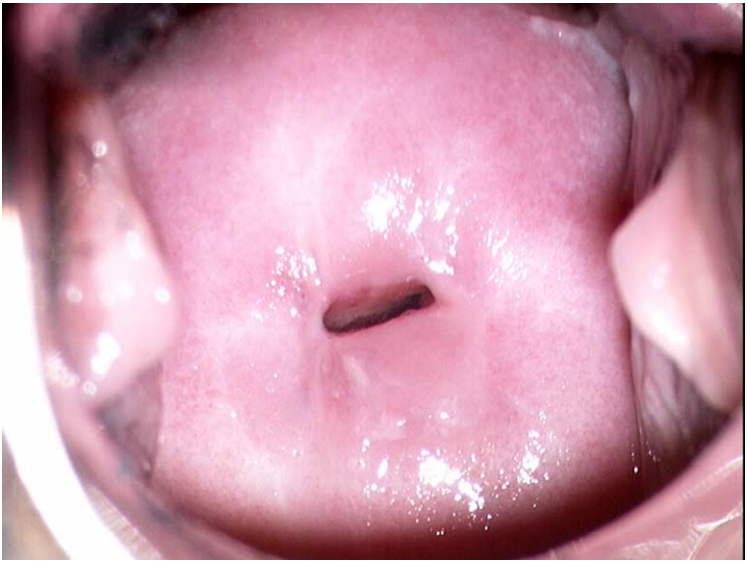
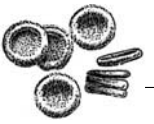


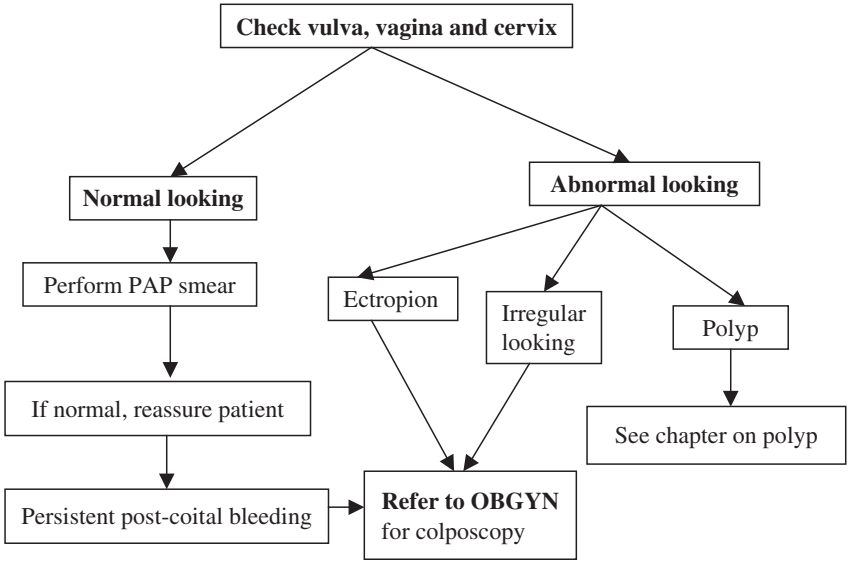
Fig. 7. Atrophic cervix, showing the squamocolumnar junction retracted into the endocervix.

CHAPTER 25

Postcoital Bleeding



Management of Postcoital Bleeding



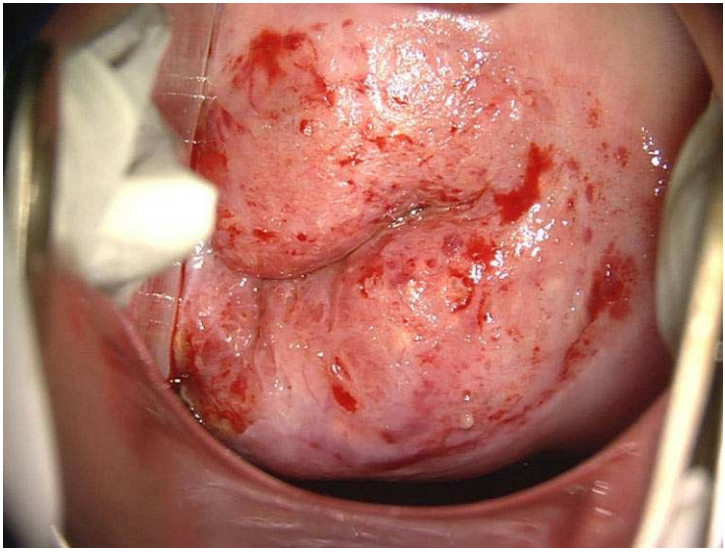


Fig. 1. Atrophic cervicitis, showing petechial haemorrhages and contact bleeding.

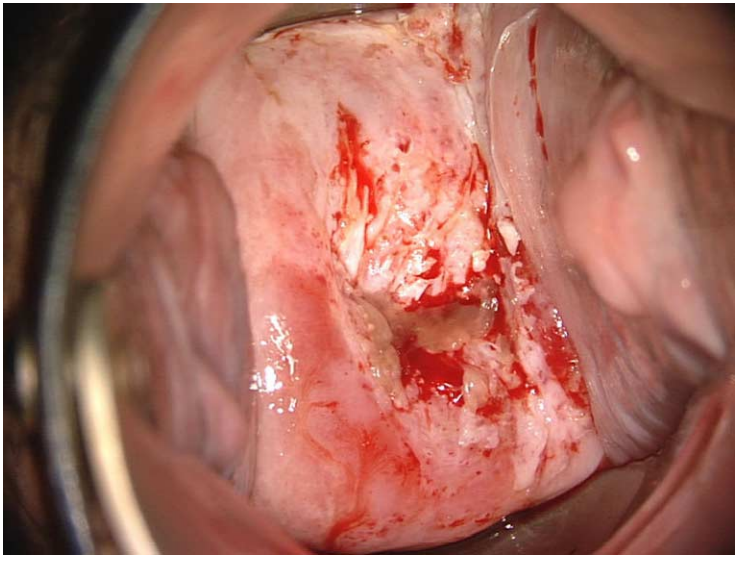


Fig. 2. Early cancer of the cervix. Note the eroded surface and contact bleeding.

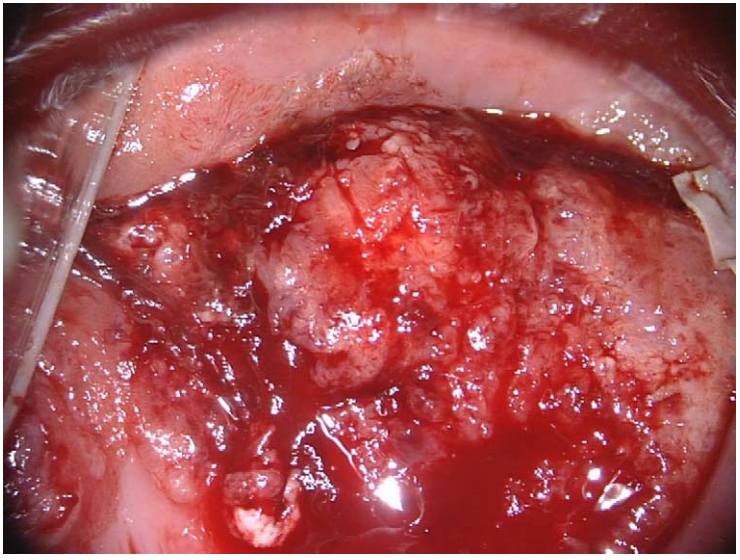
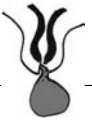


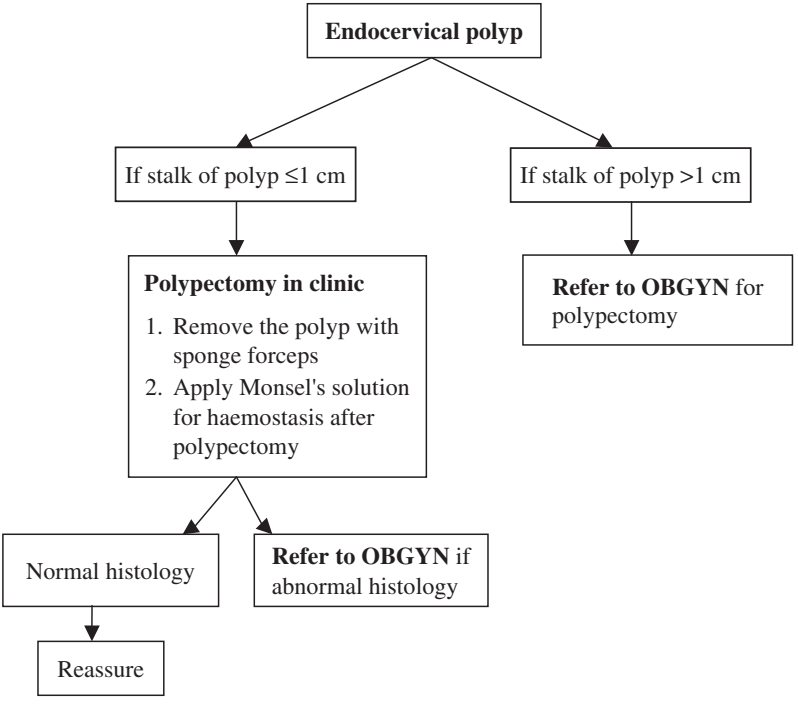
Fig. 3. Advanced cancer of the cervix occupying the entire cervix and extending to the vagina.

CHAPTER 26

Endocervical Polyp



Management of Endocervical Polyp



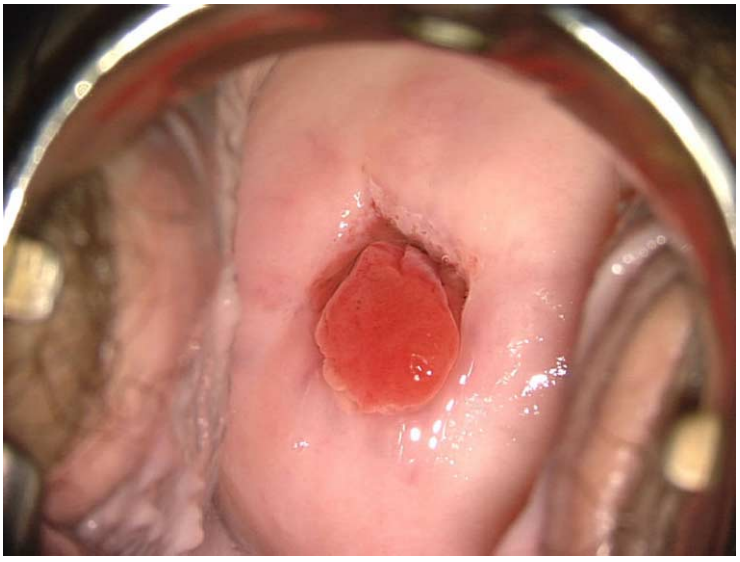


Fig. 1. Pedunculated cervical polyp.

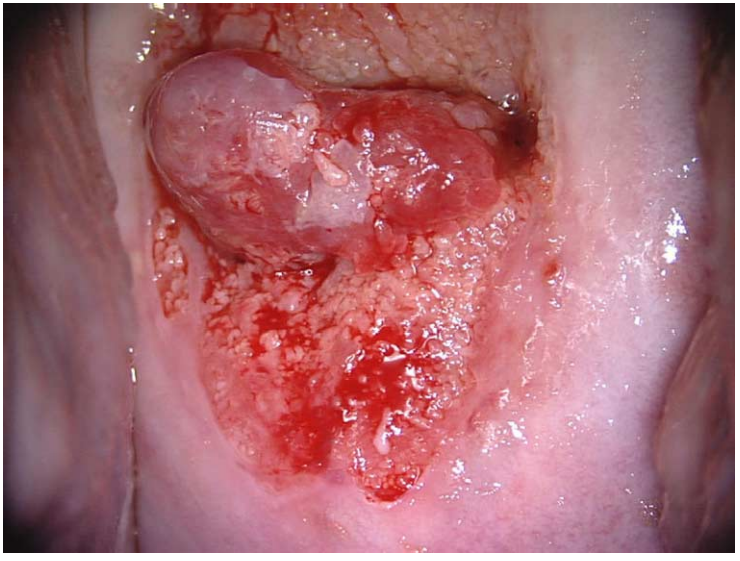


Fig. 2. Broad-based polyp.

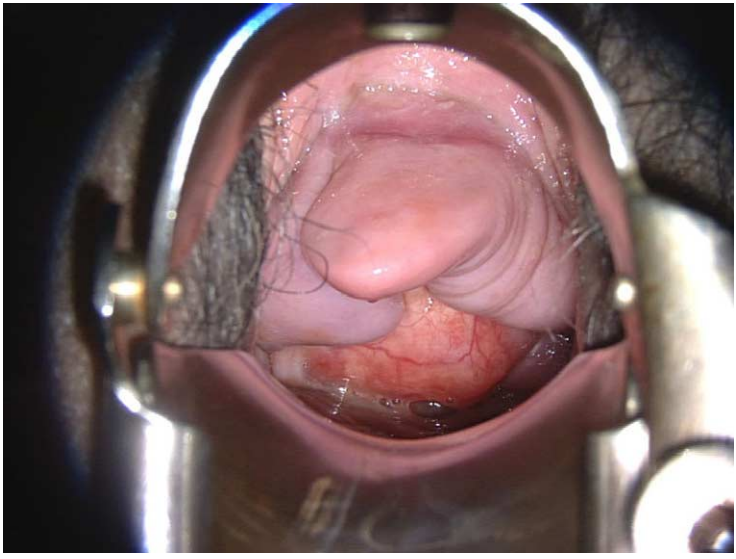
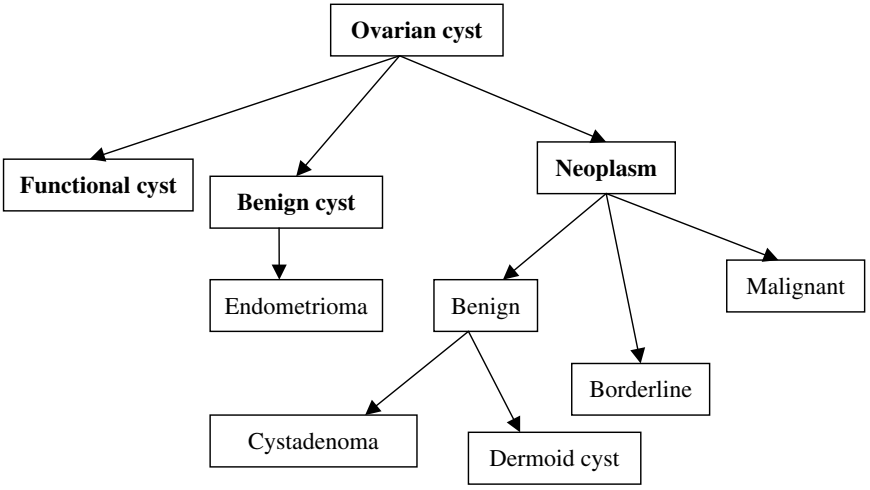


Fig. 3. Large fibroid on the posterior lip. Patient has a flap of cervical tissue on the anterior lip probably from trauma at childbirth.

CHAPTER 27

Ovarian Cyst

Classification of Ovarian Cyst

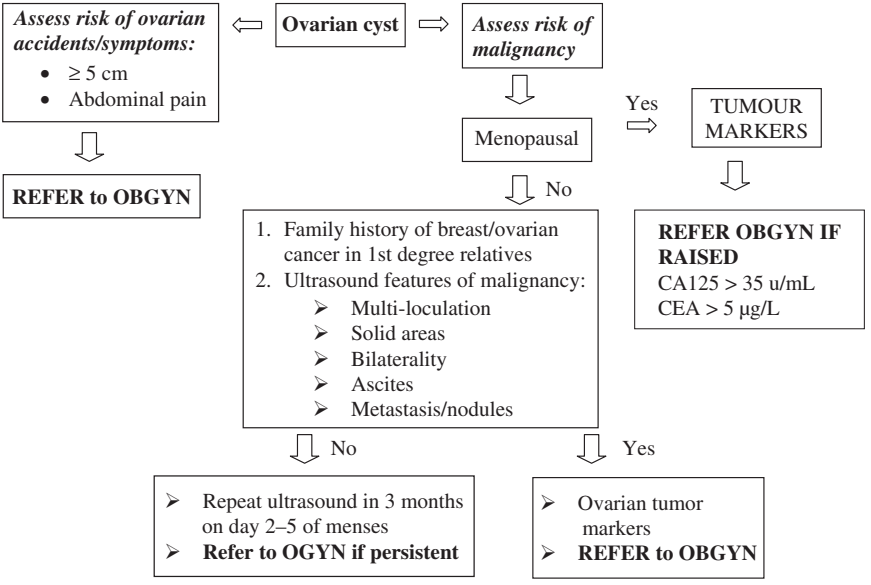


Management

Refer to OBGYN if there is

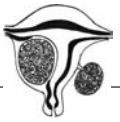
- Risk of malignancy
- Risk of ovarian accident
- Symptomatic endometriotic cyst such as pain or subfertility

Management of Ovarian Cyst



CHAPTER 28

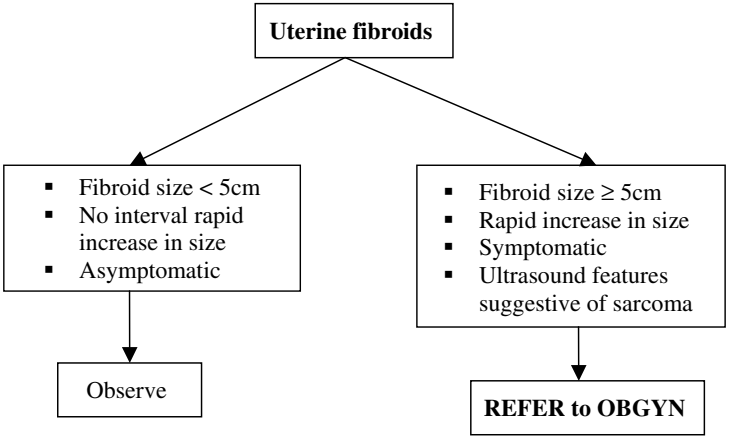
Uterine Fibroids



Symptoms of Uterine Fibroids

- Heavy menstrual bleeding
- Low back pain
- Feeling of fullness in the lower abdomen
- Frequent urination
- Recurrent urinary tract infection
- Constipation
- Infertility
- Miscarriage

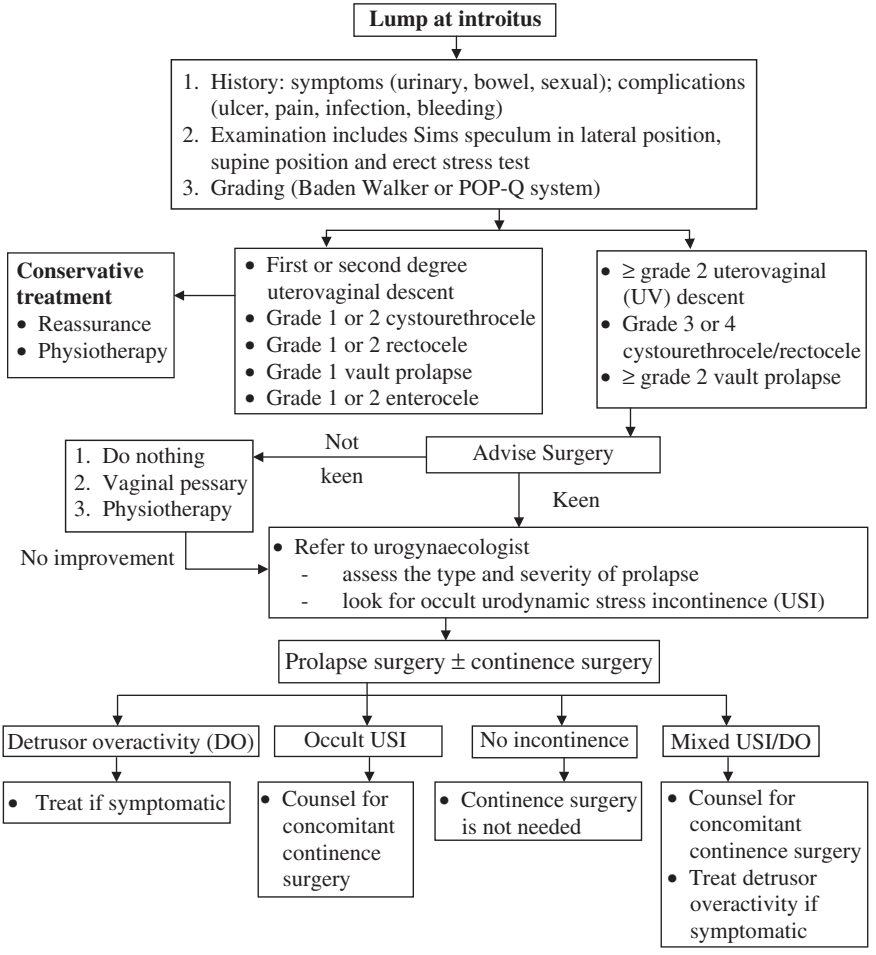
Management of Uterine Fibroids



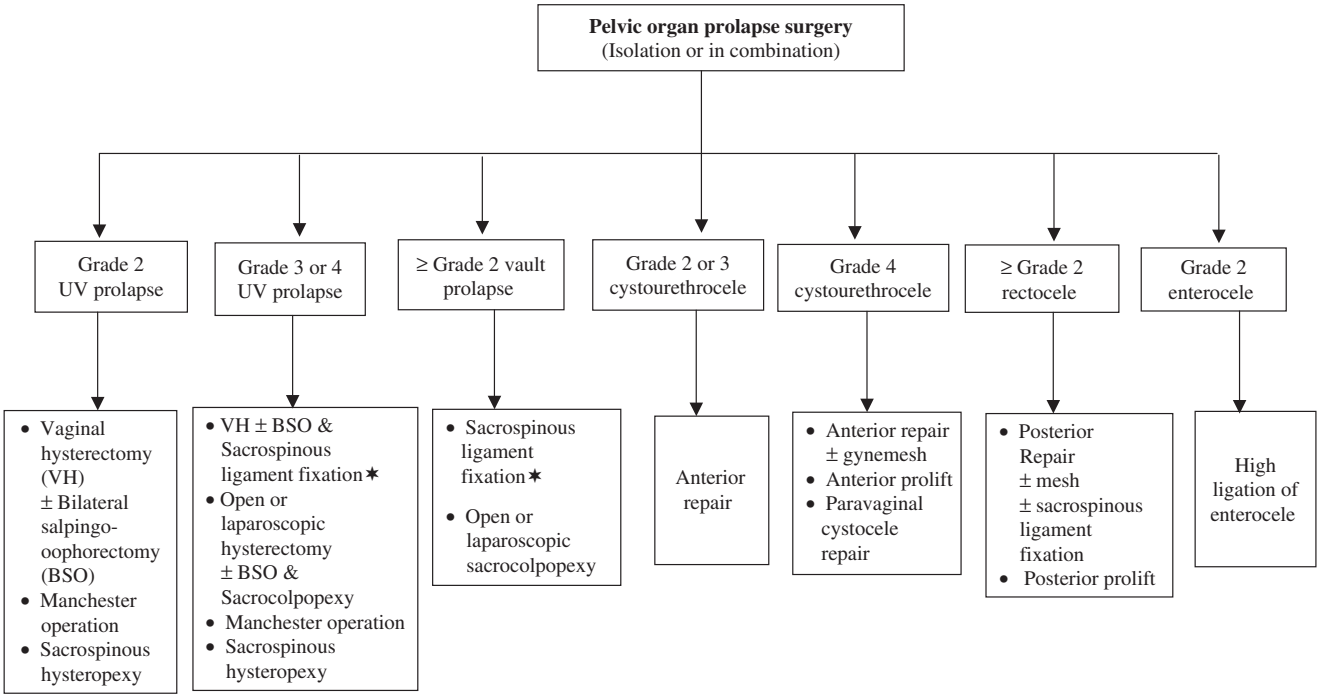
CHAPTER 29

Pelvic Organ Prolapse

Management of Pelvic Organ Prolapse



Types of Pelvic Organ Prolapse Surgery

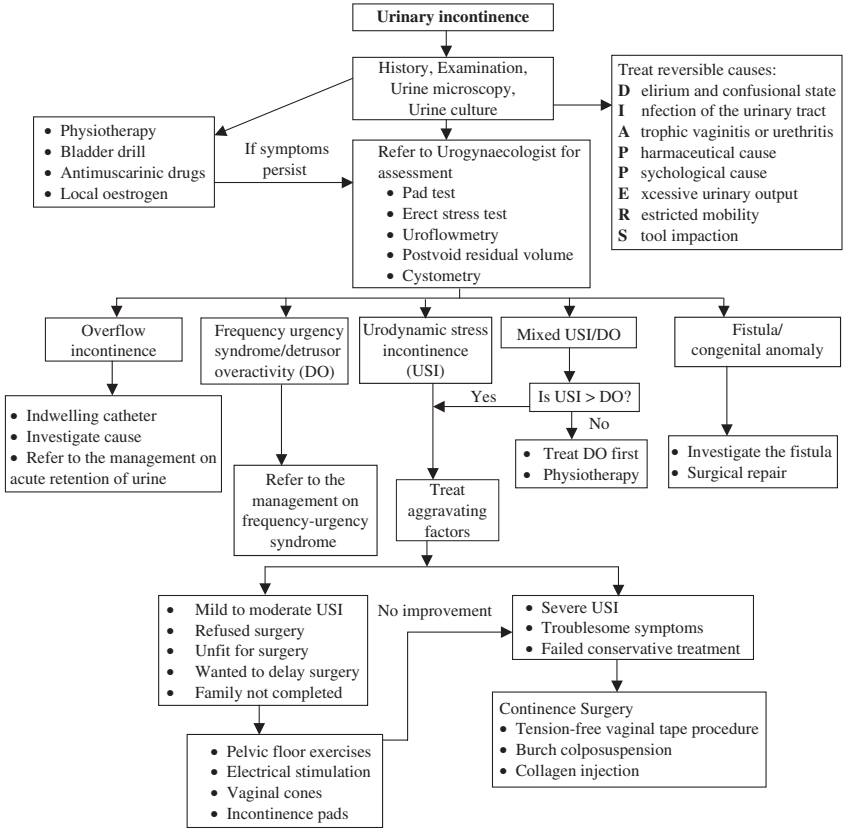


✶ Vaginal route is preferred to abdominal and laparoscopic routes.

CHAPTER 30

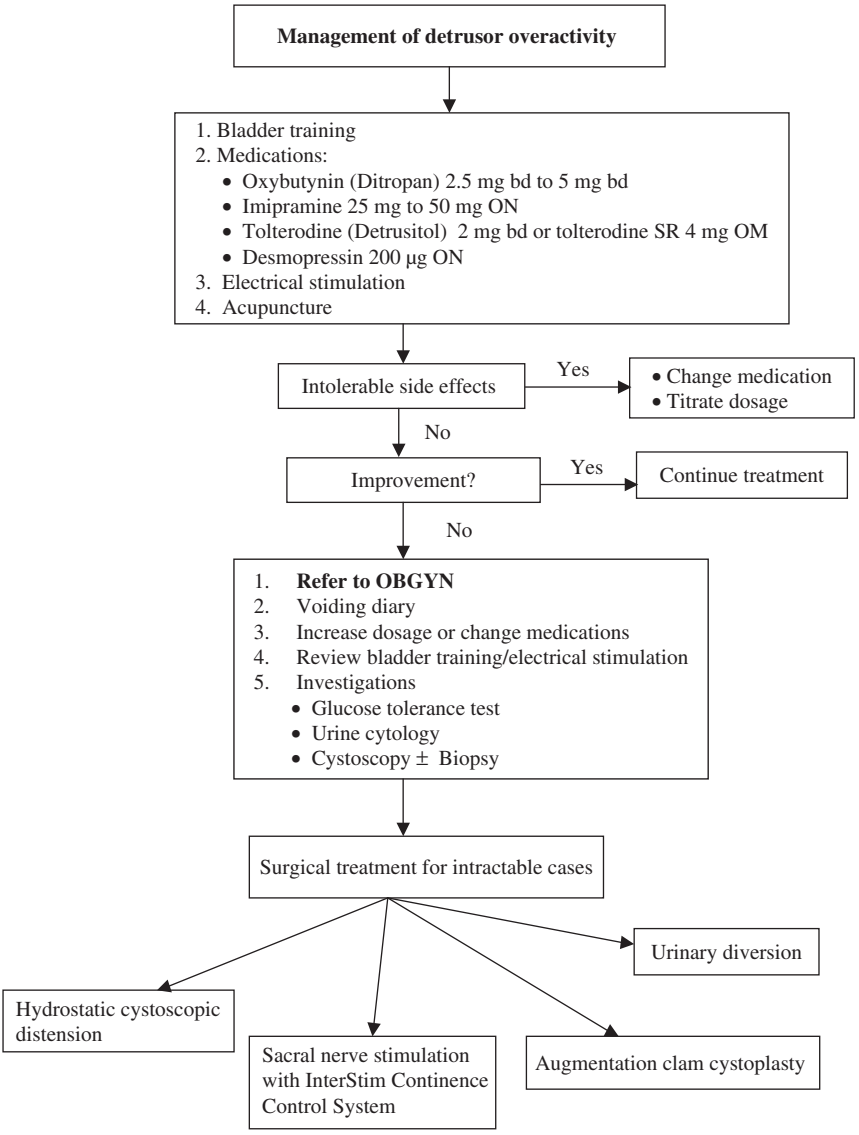
Voiding and Urinary Disorders

Urinary Incontinence

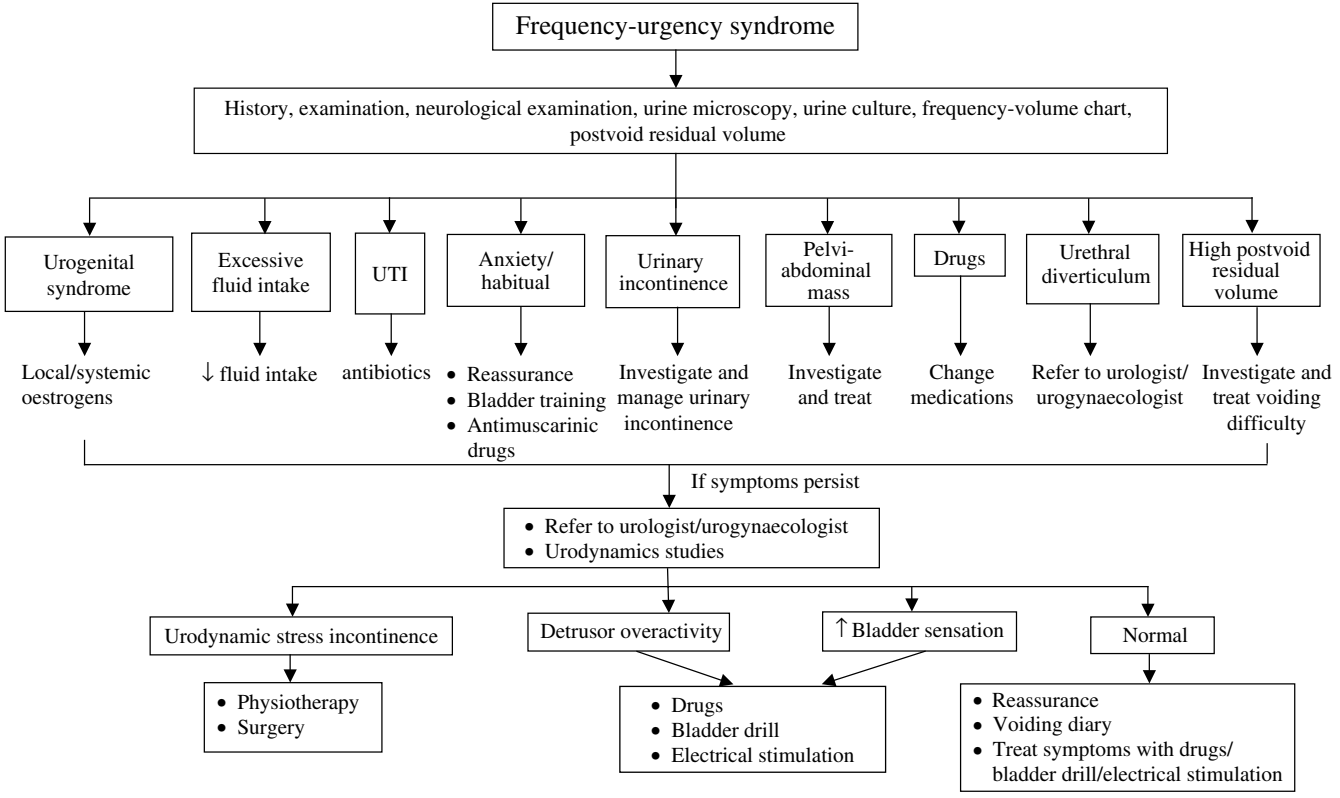


Note 1. If a patient has secondary uterovaginal prolapse and requires Burch colposuspension, counsel for hysterectomy as well.
2. Route of hysterectomy and continence surgery preferably to be the same.

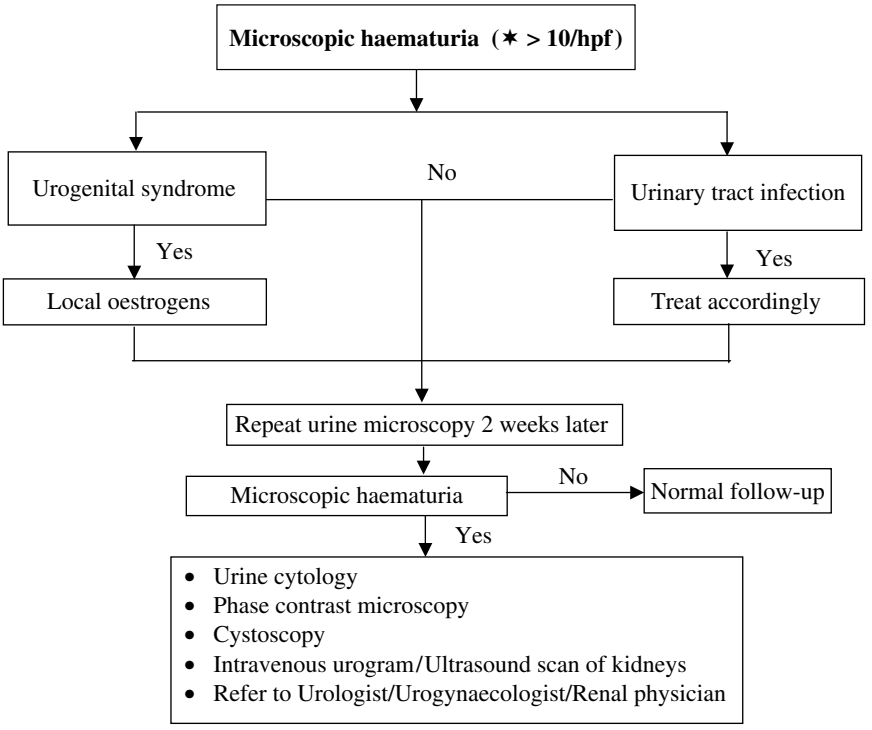
Detrusor Overactivity



Frequency-Urgency Syndrome

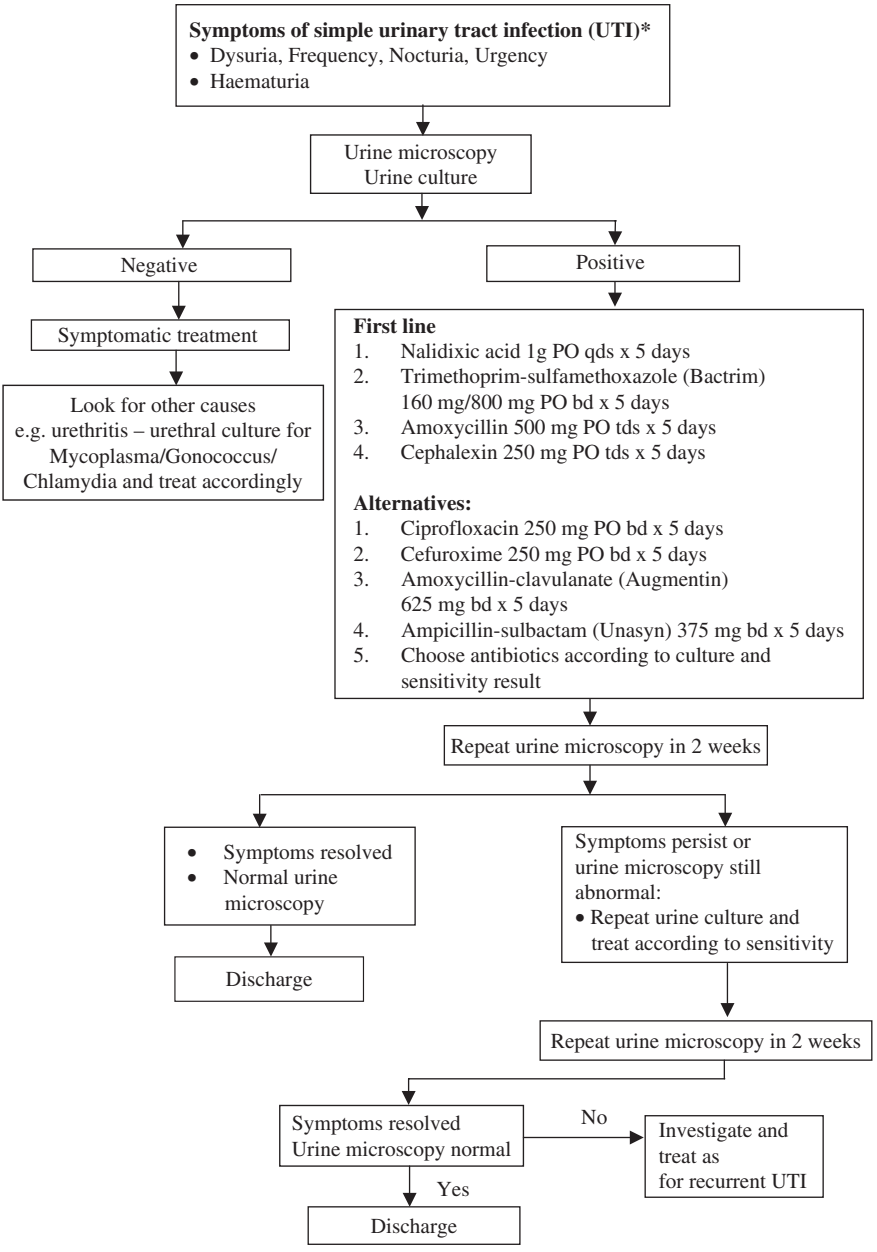


Microscopic Haematuria



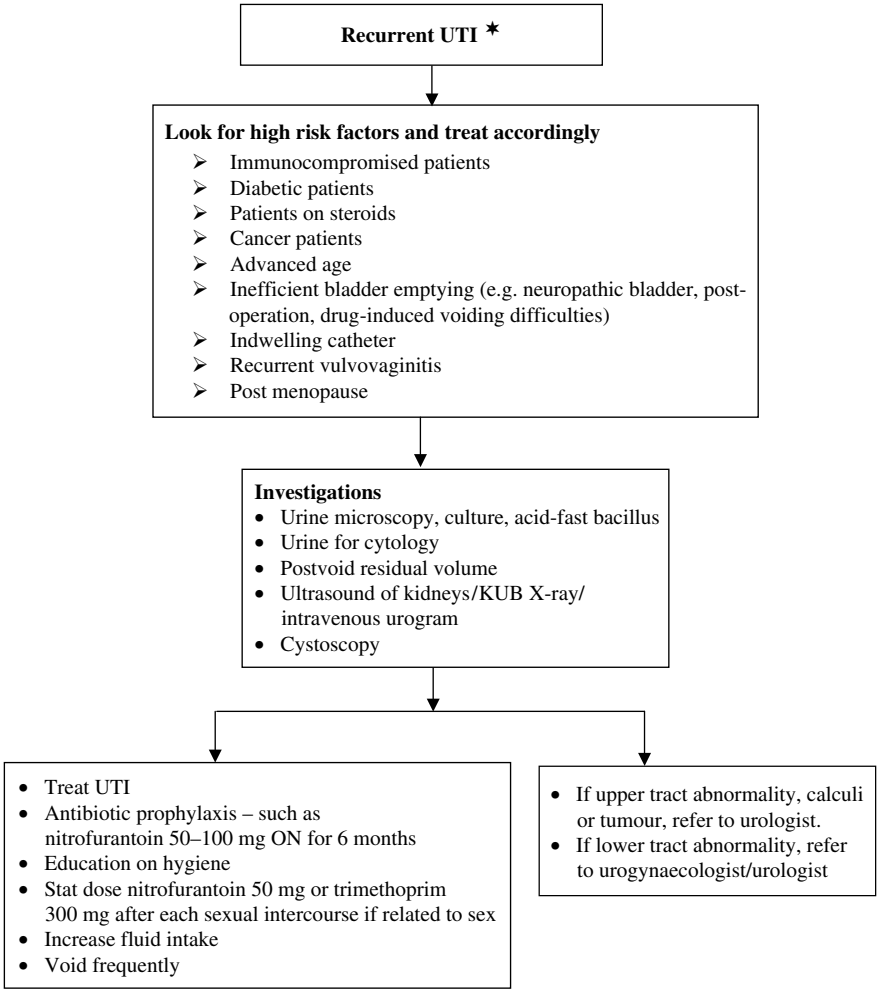
✶ Different laboratories may have different definitions for haematuria.

Simple Urinary Tract Infection



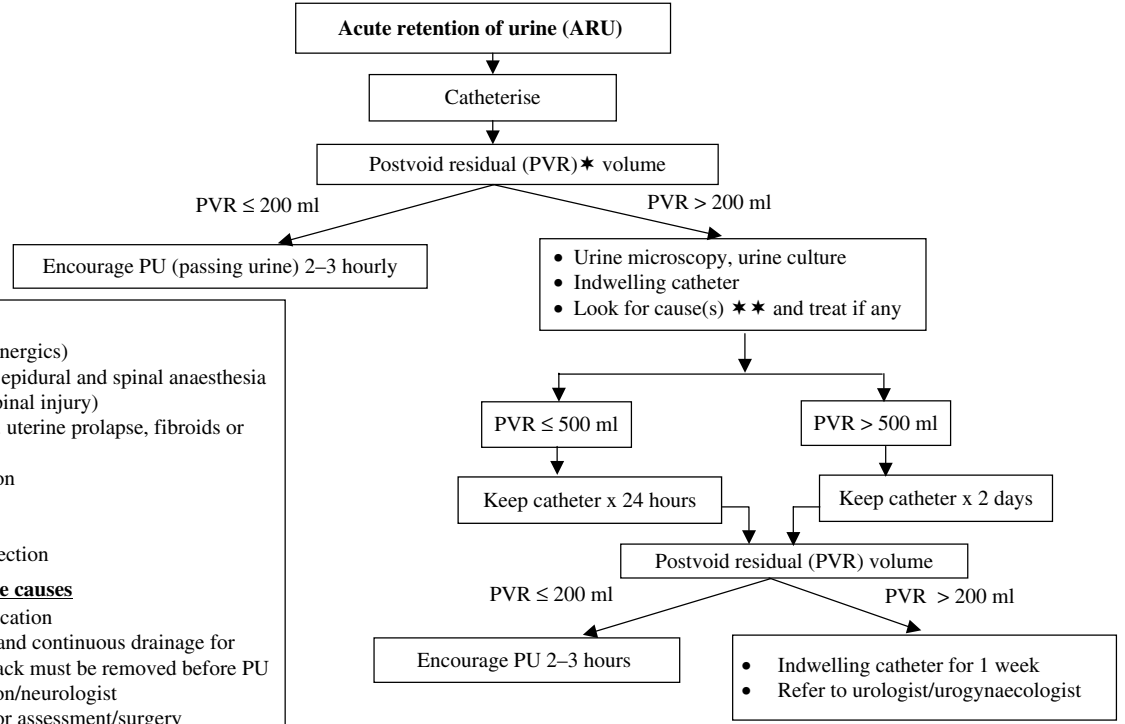
*Simple UTI is defined as an isolated UTI or UTIs occurring less than 3 times a year.

Recurrent Urinary Tract Infection (UTI)



✶Recurrent UTI is defined as UTI occurring 3 or more times in a year, which can be caused by same or different organisms.

Acute Retention of Urine



✶✶ **Causes of ARU**

1. Drugs (e.g. anticholinergics)
2. Postoperative ARU, epidural and spinal anaesthesia
3. Neurological (e.g. spinal injury)
4. Gynaecological (e.g. uterine prolapse, fibroids or cystocele)
5. Urinary tract infection
6. Constipation
7. Urethral stricture
8. Urethritis/herpes infection

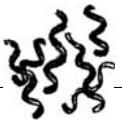
Treatment for the above causes

1. Stop or change medication
2. Adequate analgesia and continuous drainage for 1–2 days. Vaginal pack must be removed before PU
3. Refer to neurosurgeon/neurologist
4. **Refer to OBGYN** for assessment/surgery
5. Treat with antibiotics
6. Laxatives
7. Refer to urologist for urethral dilatation
8. Antibiotics, analgesics, acyclovir

✶ The significance of PVR varies with the total volume voided volume.

CHAPTER 31

Sexually Transmitted Infection



Genital Ulcers

- Genital ulcers may be due to genital herpes, syphilis or chancroid

Investigations of genital ulcers

Genital herpes

- Virus isolation in cell culture is sensitive and specific; viral typing is possible
- Herpes simplex virus (HSV) antigen detection by direct fluorescent-antibody (DFA) or enzyme immunoassay (EIA) techniques is economical and quick but insensitive; viral typing is not possible
- Polymerase chain reaction (PCR) detection of viral nucleic acid has the highest sensitivity but is expensive and not widely available; viral typing is possible
- Tzanck test demonstrates giant cells from lesions but is not sensitive; provides only presumptive evidence of infection by herpes virus
- Type specific serological tests (TSST) for HSV 1 & 2 that are based on recombinant type-specific glycoproteins G1 and G2 have good sensitivity and specificity; useful in certain clinical situations, e.g. confirming a clinical diagnosis of genital herpes, counselling of sexual partners of infected persons and detection of unrecognized infection

- Older serological tests based on crude antigen extracts are inaccurate, cannot reliably differentiate HSV 1 and 2 and are of very little value in the management of genital herpes

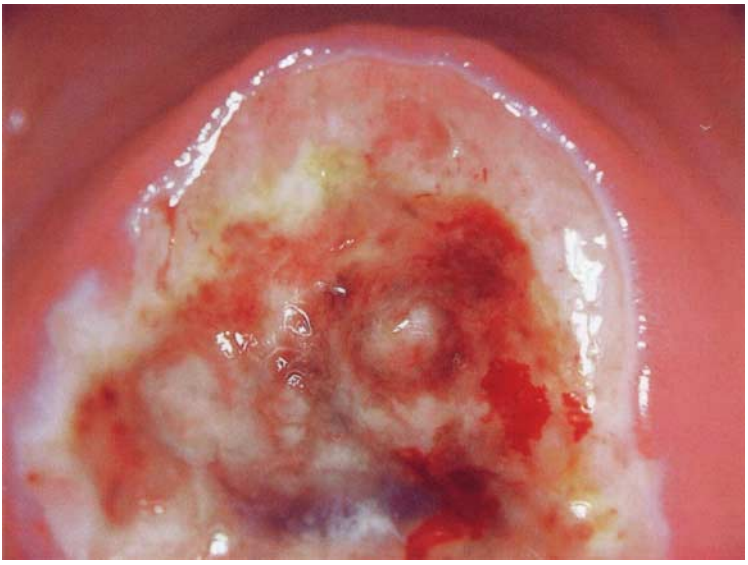


Fig. 1. Herpes simplex ulcer of the cervix.

Investigations for Syphilis

Darkfield microscopy

To demonstrate *Treponema pallidum* in the secretions from a primary chancre or moist lesions of secondary syphilis.

Serological tests

Non-treponemal tests — VDRL or RPR — screening tests; titres are useful for monitoring response to therapy.

Treponemal tests — TPHA, TPPA, FTA-Abs, LIA, EIA and rapid diagnostic tests (e.g. Abbott Determine Syphilis TP) are specific tests.

Investigations for Chancroid

- Culture for *Hemophilus ducreyi* of smear from ulcer or aspirate from buboes
- Diagnosis is often based on typical clinical presentation and after exclusion of syphilis and HSV infection
- PCR detection of Hemophilus ducreyi

Treatment of Sexually Transmitted Infection

Genital herpes

First episode genital herpes

- Acyclovir 200 mg orally 5 times a day x 7 to 10 days, or
- Acyclovir 400 mg orally tds x 7 to 10 days, or
- Valacyclovir 1 g orally bd x 7 to 10 days, or
- Famciclovir 250 mg orally tds x 7 to 10 days
- For optimal benefit, the treatment should be started within 72 hours of onset of lesions, when new lesions continue to form or when symptoms and signs are severe. The duration of treatment depends on the clinical response

Recurrent genital herpes

Episodic treatment

- Initiate during prodrome or within 1 day of attack
- Acyclovir 400 mg orally tds x 5 days, or
- Valacyclovir 500 mg orally bd x 5 days, or
- Famciclovir 125 mg orally bd x 5 days

Suppressive treatment

- Reduces the number of recurrences as well as transmission of HSV
- Acyclovir 400 mg orally bd, or
- Valacyclovir 500 mg orally od, or
- Famciclovir 250 mg orally bd

Genital herpes during pregnancy

- The safety of systemic acyclovir, valacyclovir and famciclovir therapy during pregnancy has not been established
- Current findings do not show an increased risk for major birth defects after acyclovir treatment in the first trimester. First episode or severe recurrent genital herpes in pregnancy may be treated with oral acyclovir
- Routine administration of acyclovir to pregnant women with a history of recurrent herpes is not recommended
- **Refer to OBGYN** for management of pregnant women with current history of genital herpes

Syphilis

Treatment

Primary syphilis, secondary syphilis, latent syphilis of less than 1 year's duration

- Benzathine penicillin G 2.4 million units intramuscularly (i/m) weekly x single dose, or
- Aqueous procaine penicillin G 600,000 units i/m daily x 10–14 days

For penicillin-allergic patients

- Tetracycline 500 mg orally qds x 14 days, or
- Doxycycline 100 mg orally bd x 14 days, or
- Erythromycin 500 mg orally qds x 14 days, or
- Ceftriaxone 500 mg i/m od x 10 days (limited data only), or
- Azithromycin 500 mg od x 10 days (limited data only)

Latent syphilis of more than 1 year's duration, or of unknown duration, late benign syphilis, cardiovascular syphilis

- Benzathine penicillin G 2.4 million units i/m weekly x 3 doses, or
- Aqueous procaine penicillin G 600,000 units i/m daily x 17–21 days

For penicillin-allergic patients

- Tetracycline 500 mg orally qds x 28 days, or
- Doxycycline 100 mg orally bd x 28 days, or
- Ceftriaxone 2 g i/m or i/v od x 14 days, or
- Erythromycin 500 mg orally od x 28 days

Neurosyphilis

- Aqueous procaine penicillin G 2.4 million units i/m daily x 10–14 days with probenecid 500 mg orally qid x 10 days followed by benzathine penicillin G 2.4 million units i/m weekly x 3 doses, or
- Aqueous crystalline benzyl penicillin 3 to 4 million units i/v every 4 hours (total 18 to 24 million units a day) x 10–14 days followed by benzathine penicillin G 2.4 mega units i/m weekly x 3 doses

For penicillin-allergic patients

- RAST tests, skin testing and de-sensitisation should be performed in consultation with an expert
- Penicillin is the drug of choice unless really contraindicated
- Tetracycline 500 mg orally qds x 28 days, or
- Doxycycline 100 mg orally bd x 28 days, or
- Ceftriaxone 2 g i/m or i/v od x 14 days, or
- Erythromycin base or stearate 500 mg orally qds x 28 days (least effective)

Syphilis during pregnancy

- **Refer to OBGYN** and notify the Communicable Disease Centre
- Treatment during pregnancy should consist of the penicillin regimen appropriate for the stage of syphilis

Chancroid

Treatment

- Ceftriaxone 250 mg i/m single dose, or
- Azithromycin 1 g oral single dose, or
- Ciprofloxacin 500 mg bd x 3 days (contraindicated for pregnant and lactating women)

Management of sexual contacts

Genital herpes

- Sex partners of patients with genital herpes are likely to benefit from evaluation and counselling
- They should be questioned on the history of the typical and atypical genital lesions and encouraged to examine themselves for lesions and seek medical attention promptly if lesions appear
- Type-specific serological test (TSST) may be useful in counselling

Syphilis

- At risk partners are those who have been exposed within 3 months of symptoms for primary syphilis, 6 months for secondary syphilis, and 1 year for early latent syphilis
- Treatment should be given to sexual contacts who were exposed 3 months prior to the diagnosis of primary, secondary or early latent syphilis, or if follow-up is uncertain
- Sexual partners of late syphilis should be screened and evaluated for syphilis, and treated on the basis of these findings

Chancroid

- Sex partners should be screened and treated when indicated

Genital Warts

- Genital warts are the commonest causes of growths on the anogenital region

Clinical lesions

- *Condyloma accuminata* — exophytic, filiform, cauliflower-shaped warts, human papilloma virus (HPV) types 6 and 11 in $>90\%$ of cases
- Multifocal — usually 5 to 15, in areas of trauma during sex, about 1–10 mm diameter; may coalesce especially in immunosuppressed or diabetic patients
- May be coinfected with oncogenic "high-risk" HPV, e.g. types 16 and 18
- Oncogenic HPV — mostly giving rise to subclinical lesions, intraepithelial neoplasia (IN) and anogenital cancer

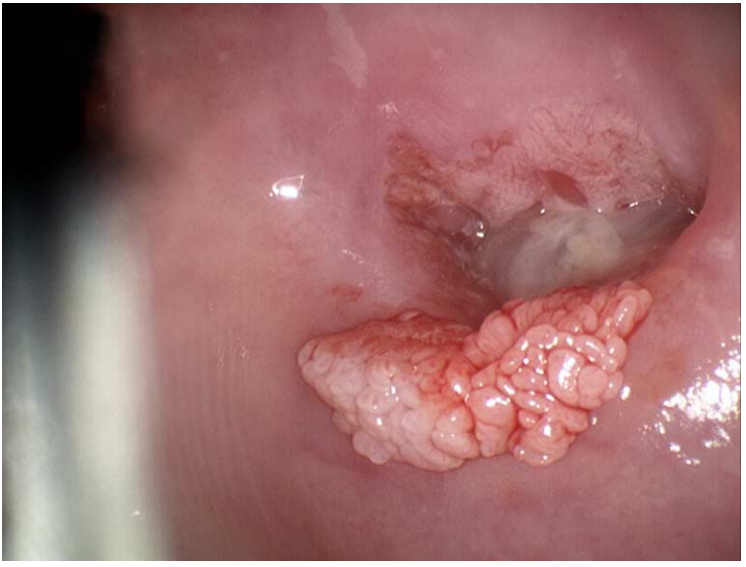


Fig. 2. Wart or condyloma on the cervix.

Investigations of genital warts

- Skin biopsy — for atypical cases, cases not responding to treatment or worsening during treatment
- Subclinical mucosal warts can be identified by turning white (acetowhite) after application of 5% acetic acid for 3 minutes

Treatment of genital warts

For vulval, perineal and perianal warts

Home therapy

(1) Podophyllotoxin (0.15% cream) bd x 3 days a week, rest 4–7 days
   - contraindicated in pregnancy
   - women of childbearing age must use contraception

(2) Imiquimod (5% cream)
   - 3x a week at bedtime, washed off next morning, until clearance or for 16 weeks
   - no studies in pregnant women

Office therapy

1. Cryotherapy — liquid nitrogen weekly
2. Trichloroacetic acid (50%–80%) weekly
3. Electrosurgery
4. CO_2 laser therapy

For vaginal or cervical warts

1. CO_2 laser therapy
2. Electrosurgery
3. Trichloroacetic acid

NOTE:

- Dysplasia must be excluded before starting treatment
- Cervical cytology and colposcopy (if necessary) are advised

Genital warts in pregnancy

Imiquimod, podophyllin and podophyllotoxin should not be used during pregnancy.

Management of sexual contacts

All regular contacts should be examined and clinical warts treated.

Human Immunodeficiency Virus Infection

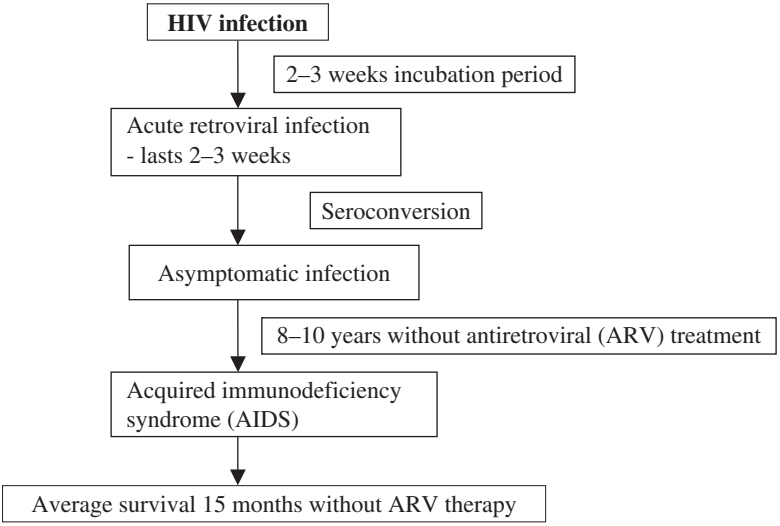
Introduction

Human immunodeficiency virus (HIV) is transmitted through sexual intercourse with an infected person, contaminated syringes and needles, transfusion of infected blood and blood products and from infected mothers to babies.

HIV-1 accounts for almost all global infections except for a small number of infections by HIV-2 that originate in West Africa.

HIV-1 is divided into subtypes A to K (the M subtypes) and O. N is the newest subtype reported.

Clinical Features of HIV Infection



Laboratory Tests for HIV Infection

Screening tests

- Enzyme-linked immunoassay (EIA) technique to detect anti-HIV antibodies
- A positive screening test must be confirmed due to false-positive EIA result
- There is a window period which is the time delay from infection to positive EIA
- This averages 3–4 weeks but practically all will seroconvert by 3 months

Confirmatory test

- Western blot (WB) technique
- Persons who are EIA positive but WB negative are negative for HIV
- When the EIA test is positive but the WB does not fulfil the required number of bands, the test is considered to be indeterminate
- Indeterminate test may be seen during seroconversion, late-stage HIV infection, cross-reacting antibodies, infection with O strain or HIV-2 and HIV vaccine recipients. Repeat testing is recommended after 3 months
- Using both EIA and WB tests, the sensitivity and specificity exceed 99.9%

HIV infection in pregnancy

- All pregnant mothers should be offered HIV counselling and testing as early on during pregnancy as possible
- This is to maintain good health of the mother as well as to commence interventions (antiretroviral and obstetrical) to reduce vertical transmission of HIV
- If HIV test is positive, **refer to OBGYN** and notify the Communicable Disease Centre
- Advocate elective lower segment caesarean section for delivery
- Breastfeeding is contraindicated to minimise mother-to-infant transmission of the disease

CHAPTER 32

Vaginal Discharge and Pelvic Inflammatory Disease

Causes of Vaginal Discharge

1. Physiologic

- Age related
- Cyclical hormones — menstrual cycle
- Pregnancy
- Atrophic vaginitis

2. Pathologic

- Infective cause — bacterial vaginosis, trichomoniasis, candidiasis, chlamydia, neisseria gonorrhoea
- Cancer — endometrial, cervical, vaginal
- Local causes — polyp, fistula, tampon
- Iatrogenic — intrauterine contraceptive device, oral contraceptive pills

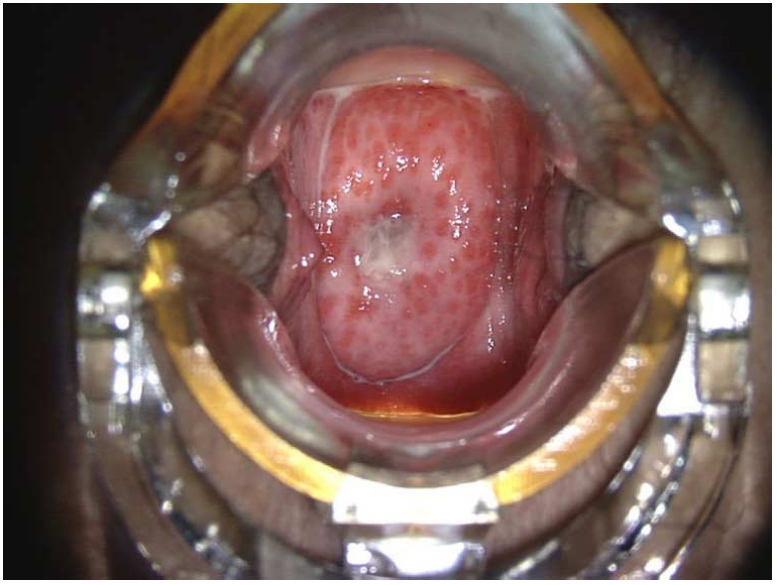
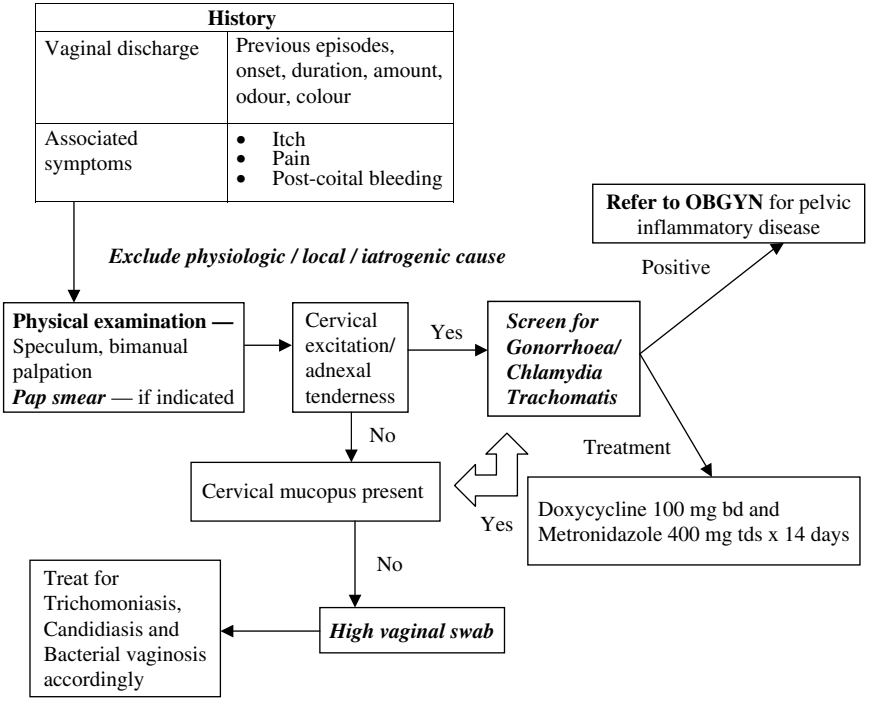


Fig. 1. Strawberry cervix — characteristic of *Trichomonas* cervicitis.

Management of Vaginal Discharge and Pelvic Inflammatory Disease

- Symptoms and clinical appearance of vaginal discharge are variable and do not permit the accurate determination of a specific infective cause in most cases

Management of Vaginal Discharge and Pelvic Inflammatory Disease



Treatment of Vaginal Discharge and Pelvic Inflammatory Disease

General advice

Educate and counsel to reduce anxiety, perineal hygiene and avoidance of triggers and use of soaps

Specific treatment

Trichomoniasis

- Oral metronidazole (400 mg bd × 7 days or 2 g × one single dose)
- Sex partners should be treated on epidemiological grounds

Treatment

Trichomoniasis during pregnancy

- Trichomoniasis has been associated with adverse pregnancy outcomes (premature rupture of membranes, preterm delivery and low birth-weight baby)
- Metronidazole in pregnancy has not been shown to be teratogenic or mutagenic and can be used during all stages of pregnancy or breastfeeding

Vulvovaginal candidiasis (VVC)

- Clotrimazole (canestan) vaginal pessary 100 mg ON × 7 days or 500 mg single dose, or
- Miconazole nitrate vaginal pessary 200 mg ON × 3 days, or
- Econazole nitrate vaginal pessary 150 mg ON × 3 days, or
- Nystatin pessary 100,000 U daily × 7 to 14 days

Vulvovaginal candidiasis (VVC) during pregnancy

Only topical azole therapy should be given

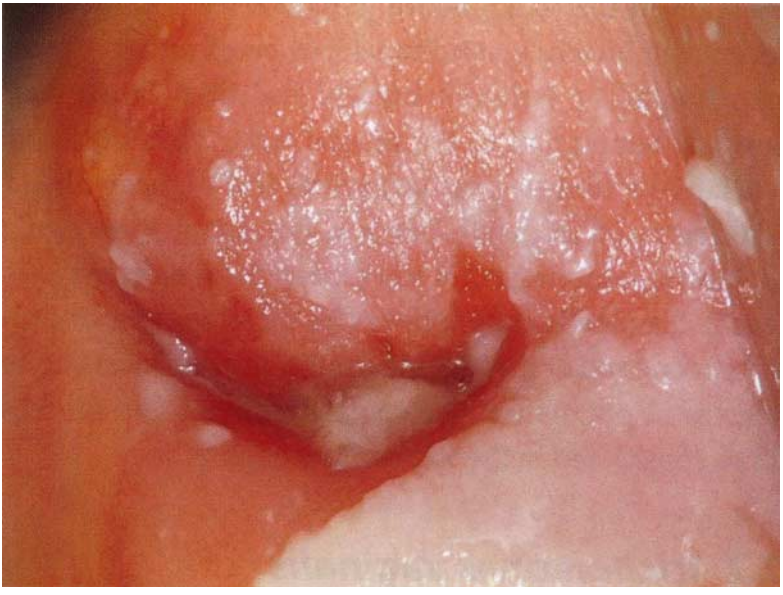


Fig. 2. Cervicovaginal candidiasis.

Treatment

Bacterial vaginosis

- Oral metronidazole (400 mg tds × 7 days or 2 g single dose)
- Oral clindamycin 300 mg bd × 7 days
- Flagystatin vaginal pessary 1/1 ON × 7 days

Bacterial vaginosis in pregnancy

For high risk pregnant woman (previous history of preterm delivery):

- Metronidazole 200 mg orally tds × 7 days
- Clindamycin 300 md bd × 7 days

For low risk symptomatic pregnant woman:

- Metronidazole gel 0.75% one full applicator (5 g) intravaginally bd for 5 days
- No clinical counterpart is recognised in males
- Screening and treatment of male partner has not been shown to be beneficial

Atrophic vaginitis

- Local oestrogen cream (premarin cream 1 g ON × 2 weeks followed by 2 times per week for 3 months)

Treatment

Chlamydia trachomatis

- Doxycycline 100 mg orally bd × 7 days
- Azithromycin 1 g orally single dose
- Tetracycline 500 mg orally qds × 7 days
- Erythromycin base or stearate 500 mg orally qds × 7 days

Chlamydia trachomatis infection in pregnancy

- Erythromycin base or stearate 500 mg orally qds × 7 days
- Erythromycin ethylsuccinate 800 mg orally bd × 7 days
- Amoxycillin 500 mg orally tds × 7 days
- Azithromycin 1 g orally single dose

Neisseria gonorrhoea

- Ceftriaxone 250 mg intramuscular injection single dose
- Spectinomycin 2 g intramuscular injection single dose
- Cefuroxime 1 g orally single dose with probenecid 1 g orally single dose

  With co-treatment for chlamydial infection.

Gonococcal infection during pregnancy

- Cephalosporins are safe and effective in pregnancy
- Spectinomycin can be administered to pregnant women who are unable to tolerate cephalosporins

Co-treatment for chlamydial infection with erythromycin stearate or base 500 mg orally qds × 7 days

NOTE:

Follow-up Management

- Culture for test-of-cure 14 days after treatment for *N. gonorrhoea* or *C. trachomatis*
- All male sex partners within 60 days should be evaluated and treated for *N. gonorrhoea* or *C. trachomatis*

CHAPTER 33

Recurrent Vulvovaginal Candidiasis

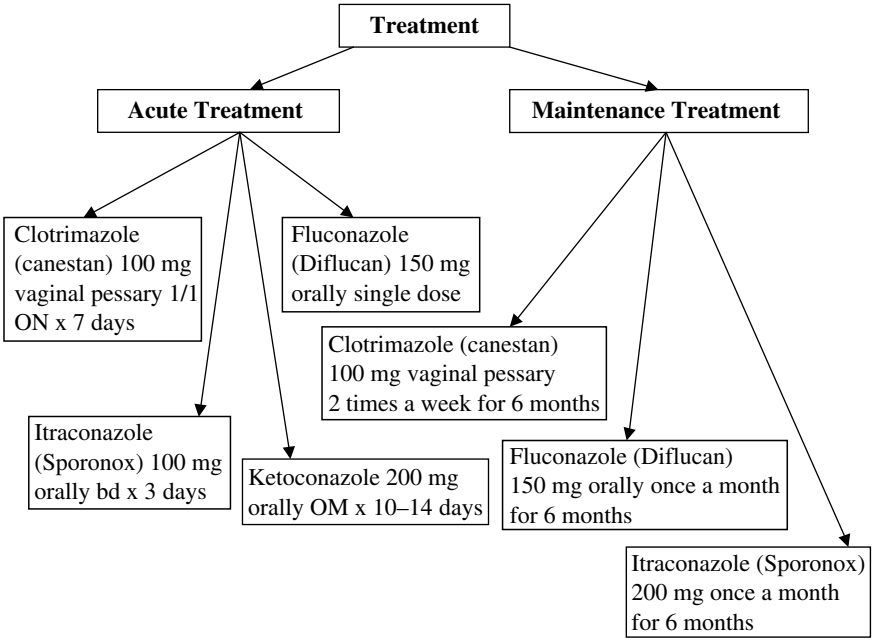
Definition

- $\geq$ 4 specific episodes occurring in one year
- Occurs in $<$ 5% of women
- Majority are due to *Candida albicans* infection
- Distinguished from persistent infection by the presence of a symptom-free interval

Risk Factors

- Antibiotics usage
- Diabetes mellitus
- Immunodeficiency
- Mechanical irritation of vulvovaginal area
- Inadequate treatment

Treatment of Recurrent Vulvovaginal Candidiasis



CHAPTER 34

Oral Contraception

Combined Oral Contraceptive (COC) Pill

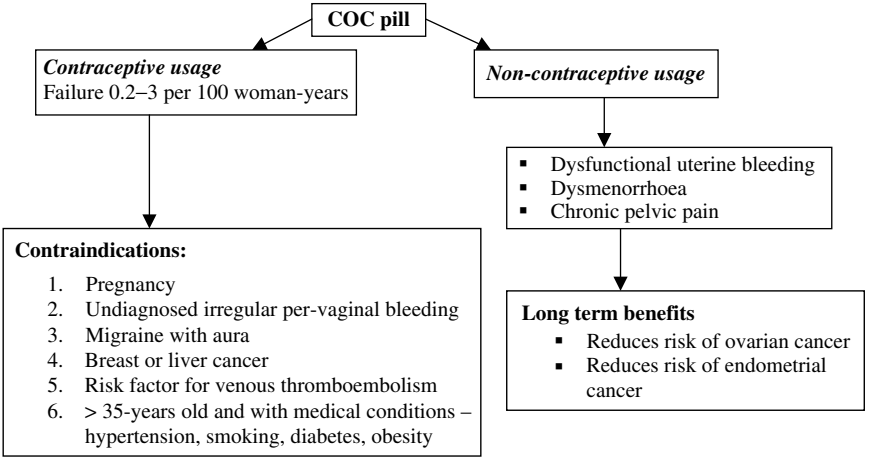


Fig. 1. Various combined oral contraceptive pills.

Mode of Action

- Suppresses ovulation
- Reduces sperm penetrability by thickening the cervical mucus
- Alters endometrium and reduces the likelihood of implantation

Common Side-effects

- Nausea and vomitting
- Dizziness
- Breakthrough bleeding
- Breast tenderness
- Weight gain

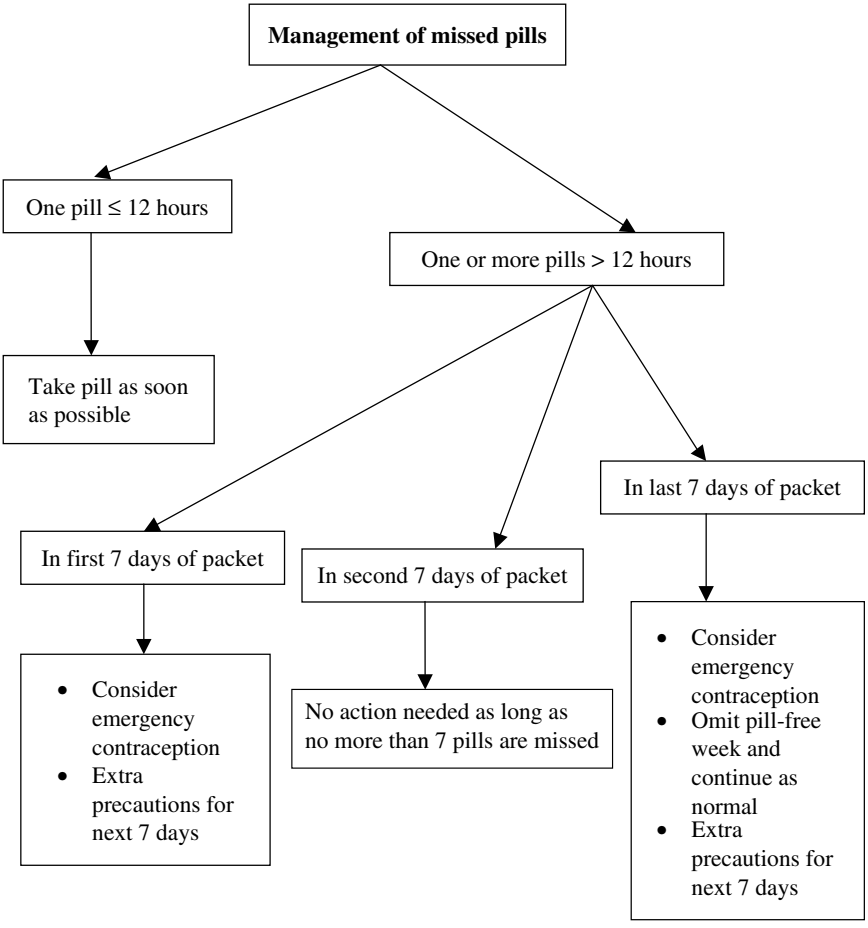
Table 1: Examples of Different Combined Oral Contraceptive Preparations

COC Pills		
Type	**Composition in each Pill**	**Remarks**
2nd generation		
NORDETTE	Ethinyl estradiol 30 µg and levonorgestrel 150 µg	Less thrombogenic side effect
3rd generation		
MELIANE	Ethinyl estradiol 20 µg and 0.075 mg gestodene	Less androgenic side effect Lowest estrogenic content
GYNERA	Ethinyl estradiol 30 µg and 0.075 mg gestodene	Less androgenic side effect
4th generation		
YASMIN	Ethinyl estradiol 30 µg and 3 mg drospirenone	Drospirenone is a novel progestogen with anti-mineralocortioid properties • No reported clinically significant changes in potassium concentration • Counteracts water retention-related weight gain Favourable effect on skin condition Reduces severity of premenstrual symptoms
Others		
DIANE 35	Ethinyl estradiol 35 µg and 2 mg cyproterone acetate	Antiandrogenic properties: • Treatment of acne • Treatment of hirsutism in polycystic ovarian syndrome

Missed Pills

- It takes **SEVEN** consecutive pills to ensure that ovulation has been suppressed
- Follicular activity can resume at the end of 7 days break in some women

Management of Missed Pills



Progestin-only Pill

- Useful for older pre-menopausal women who wish to avoid risks from exogenous estrogen and lactating mothers
- Pre-requisite criteria: motivated woman who can maintain reliable and timely pill-taking
- Can start on day 1–2 of menses or same day after abortion or miscarriage
- Failure 0.4–4 per 100 woman-years
- Example: Micronor (Norethisterone 0.35 mg)

Mode of action

- Decreases sperm permeability by altering the cervical mucus
- Reduces endometrial receptivity to implantation

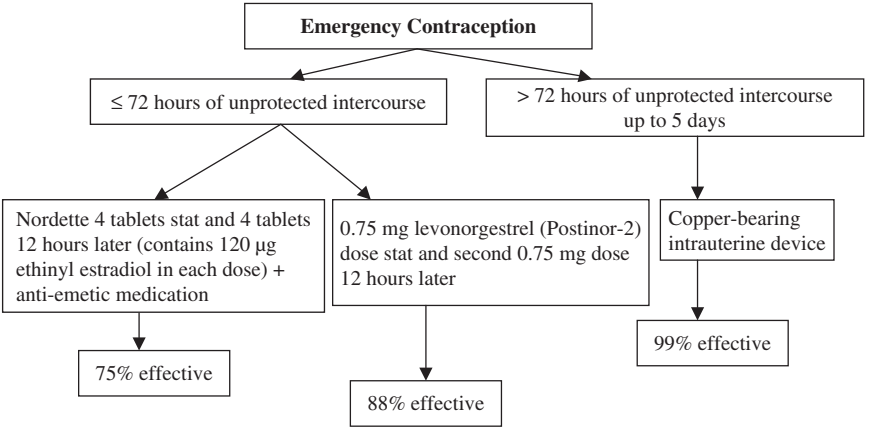
Disadvantages

- Woman may have irregular pattern of bleeding
- Short effect of each pill which lasts only 24 hours
- Requires the woman to take the pill at the same time everyday
- If the pill is delayed by >3 hrs, extra protection is needed for the next 7 days

CHAPTER 35

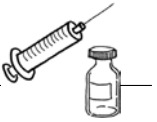
Emergency Contraception

Management of Emergency Contraception



CHAPTER 36

Non-oral Contraception



Intrauterine Contraceptive Device (IUCD)

- Examples are Nova T and Multiload IUCD
- Provides protection of 3 to 5 years depending on the type of IUCD
- Used only in parous women
- Mode of action: prevents fertilization and implantation
- Best inserted during menses or immediately after menses
- Failure 0.1–0.5 per 100 woman-years

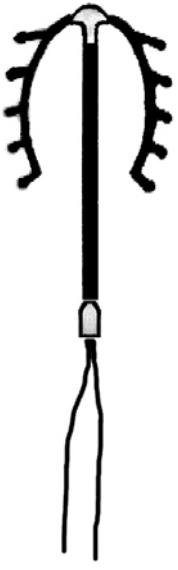


Fig. 1. Multiload copper IUCD.

- Common side effects: pelvic infection (usually occurs within first 3 weeks of insertion), heavy menses and pelvic pain

Levonorgestrel Intrauterine System (Mirena IUS)

- Contains 52 mg reservoir of levonorgestrel (LNG) in Nova T-shaped device; releases 20 µg of LNG daily
- Low local hormonal effect in the endometrium which provides shorter and lighter menses and reduces dysmenorrhea
- Mode of action: contraceptive effect by achieving endometrial glandular and stromal atrophy
- Low systemic circulation of hormone
- Best inserted during menses or immediately after menses
- Provides protection for 5 years
- Approved for breast-feeding mothers; to be inserted after 6 weeks postpartum
- Failure 0.16 per 100 woman-years; risk of ectopic pregnancy 0.02 per 100 woman-years
- Common side effects: 20% of women have intermittent per-vaginal spotting in 1st 6 months and 20% of women are amenorrhoeic after 1 year

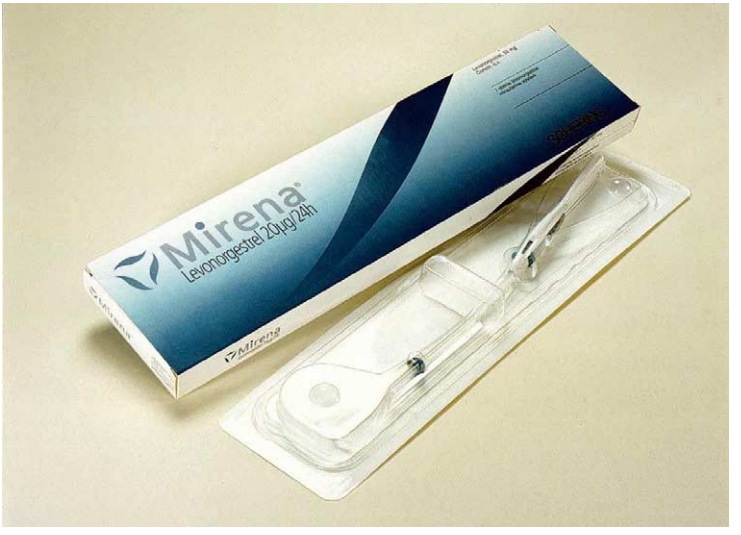


Fig. 2. Mirena intrauterine system.

Depot-Provera (Progestin-only Injectable)

- Depot medroxyprogesterone acetate (DMPA) 150 mg
- Intramuscular injection every 12 weeks
- Mode of action: suppresses hypothalamo-pituitary axis with inhibition of ovulation
- First injection on day 1–5 of menses or on day of last combined oral contraceptive pill or at 6 weeks after childbirth
- Failure 0.4 per 100 woman-years
- Common side effects: irregular menstrual cycles, amenorrhoea, headache, breast tenderness, mood changes and weight gain

Mesigyna/Norigynon (Monthly Combined Injectable)

- Monthly injections containing both a progestin and an estrogen
- Mesigyna/Norigynon contains 50 mg of norethisterone and 5 mg estradiol valerate
- Mode of action: suppresses ovulation
- Compared with progestin-only injectables, combined injectable disturbs vaginal bleeding patterns less and allows earlier return to ovulation after women discontinue use
- Failure 0.1–0.4 per 100 woman-years
- Common side effects: irregular menstrual cycles, headache, breast tenderness and giddiness

Implanon Implants

- Single rod, biodegradable and subdermal
- Contains 68 mg etonorgestrel
- Provides protection for 3 years
- Mode of action: suppresses hypothalamo-pituitary axis with inhibition of ovulation
- Simple insertion subdermally in the medial aspect of arm and easy removal under local anaesthesia
- Highly effective; Failure 0.07 per 100 woman-years

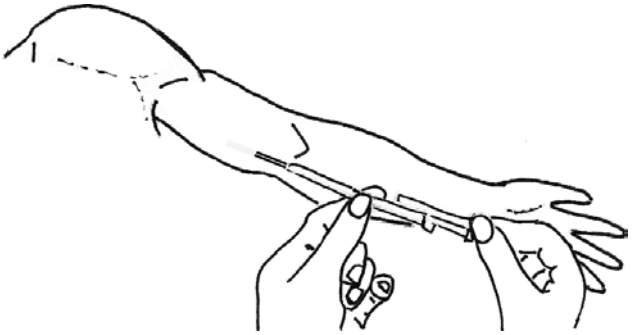


Fig. 3. Implanon insertion.

- Common side effects: irregular menstrual cycles, amenorrhoea, headache, breast tenderness, mood changes and weight gain

Barrier Method

- Includes condom, femidom or diaphragm
- Has the added advantage of protection against sexually transmitted infections
- Disadvantage: Highly operator-dependant, disrupts sexual intercourse as condoms have to be put on prior to penetration and has to be removed immediately after ejaculation
- Failure 2–15 per 100 woman-years
- Diaphragm has to be left in place for 8 hours after intercourse
- Spermicides can be used together with a condom or diaphragm to increase the efficacy

Permanent Sterilisation

Tubal ligation

- Irreversibility of fertility
- Timing: post-partum, post-abortion or interval ligation of fallopian tubes

- Includes filshie clips application, the Pomeroy method (ligation and resection of segment of fallopian tubes) done laparoscopically for interval ligation or via mini-laparotomy for post-partum sterilisation
- New technique of Essure procedure (hysteroscopic insertion of micro-insert into each fallopian tube)
- Failure 1 in 200 women with risk of ectopic pregnancy

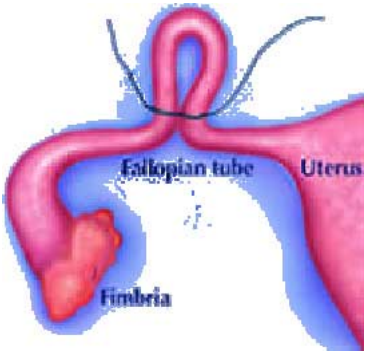


Fig. 4. Diagram illustrating Pomeroy method of fallopian tube ligation.

Vasectomy

- Most reliable of all birth control methods
- Irreversibility of fertility for men
- Involves an operation where the vas deferens are cut or tied so that sperms are not released during ejaculation
- Can be done under local anaesthesia
- No hormonal side-effects
- Failure 1 in 2000 (0.05%)
- Not immediately effective, needs up to 20 ejaculations before 2 negative seminal analysis of spermatozoa

Contraceptive methods suitable for lactating mothers

- Lactational amenorrhoeic method
  - For mothers who are fully breast-feeding and have continuing amenorrhoea in the first 6 months post-partum
  - 1–2% failure rate
- **Progestin-only pills**
- **MIRENA intra-uterine system** (after 6 weeks post-partum)
- **Intra-uterine contraceptive device** (after 6 weeks post-partum)
- **Barrier method**
- **Tubal ligation**
- **Vasectomy** (for male partner)

CHAPTER 37

Missing Intrauterine Contraceptive Device Thread

Causes

1. Pregnancy (Intrauterine/ectopic)
2. IUCD *in situ* with thread in the cervical canal
3. Unrecognised expulsion
4. Unrecognised perforation

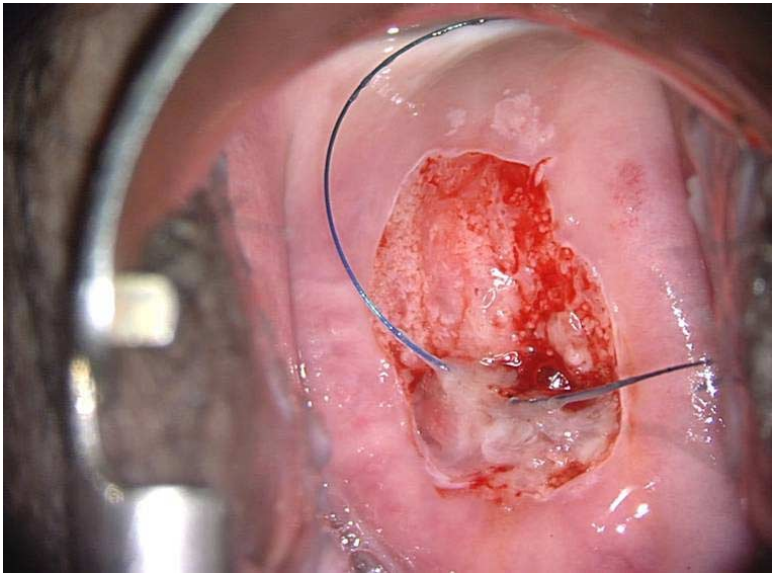
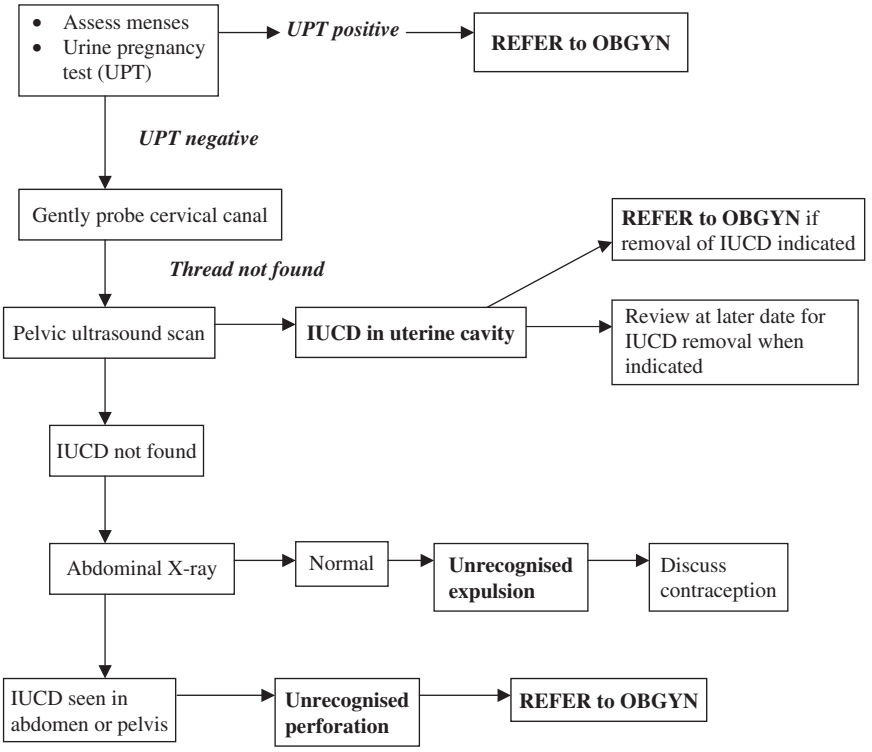


Fig. 1. Ectropion with IUCD thread *in situ*.

Management of Missing IUCD Thread



CHAPTER 38

Hormone Replacement Therapy and Options

Introduction

- Short-term hormone replacement therapy (HRT) is appropriate for peri- and postmenopausal women with moderate to severe climacteric symptoms associated with estrogen deficiency
- Patients have to be counselled carefully of the benefits versus risks of HRT
- Screen for contraindications
  - Undiagnosed vaginal bleeding
  - Pregnancy
  - Breast cancer, endometrial cancer
  - Vascular thrombosis
  - Liver disease.

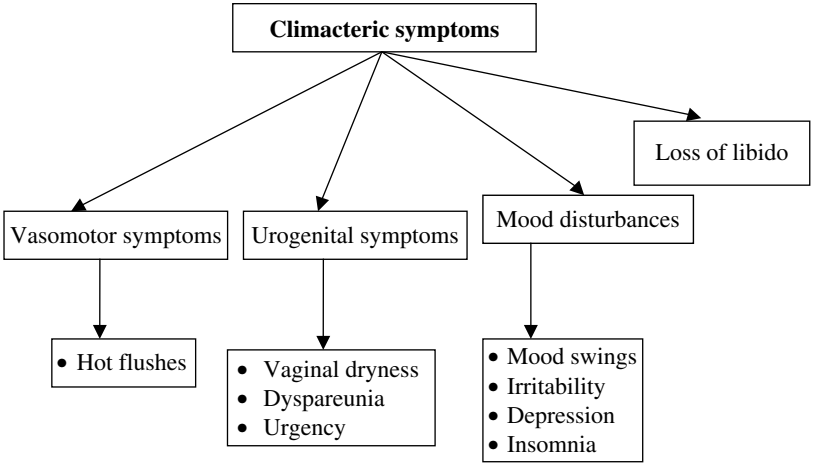
Benefits of HRT

- Most effective option in alleviating menopausal or vasomotor symptoms
- Prevents osteoporotic hip fractures
- Reduces colorectal cancer incidence

Risks of HRT

- **Women's Health Initiative Study** in 2002 showed a small absolute increase in the incidence of coronary heart disease, stroke, venous thromboembolism and breast cancer in postmenopausal women on conjugated equine estrogen/medroxyprogesterone acetate compared to placebo in postmenopausal women, aged 50–79 years over 5 years of follow-up
- Although the absolute risk of HRT to individual woman is small, it is not recommended for prevention of chronic disease
- In April 2004, the estrogen-alone arm of WHI showed a slight absolute increase in risk of stroke in postmenopausal, hysterectomised women aged 50–79 years over 6 years of follow-up. The risk of coronary heart disease and breast cancer was not statistically significant
- Thus, it is important to evaluate individual benefits versus risks ratio and individualise therapy according to one's needs and risk profile

Climacteric Symptoms



HRT Treatment for Climacteric Symptoms

A. Oestrogen replacement therapy (*for women with hysterectomy done i.e. NO uterus)

Examples

- Oral Progynova (estradiol valerate) 1 mg OM
- Oral Premarin (conjugated equine estrogen) 0.625 mg OM
- Estraderm (estradiol patch) 50 µg twice a week
- Estradiol subcutaneous implant 50 mg — usually lasts 4–8 months Re-insert when climacteric symptoms appear

**Note*: For women who had hysterectomy for endometriosis, combined HRT may be preferred to reduce the risk of stimulation of residual endometriosis.

B. Combined HRT (for women with INTACT uterus)

I) "Bleeding" regime

Examples

- Climen 28 (16 tabs of 2 mg estradiol valerate each and 12 tabs of 2 mg estradiol valerate and 1 mg cyproterone acetate)
- Progyluton (11 tabs of 2 mg estradiol valerate each and 10 tabs of 2 mg estradiol valerate and 0.5 mg norgestrel each)
- Prempak-C (28 tablets containing 0.625 mg conjugated equine estrogen and 12 tablets containing 0.15 mg norgestrel)
- Trisequens (12 blue tablets, 10 white tablets and 6 red tablets)

Each blue tablet contains 2 mg oestradiol; each white tablet contains 2 mg oestradiol and 1 mg norethisterone acetate, while each red tablet contains 1 mg oestradiol

II) "Non-bleeding" regime

Examples

- Kliogest (estradiol 2 mg/norethisterone 1 mg)
- Activelle (estradiol 1 mg/norethisterone 0.5 mg)

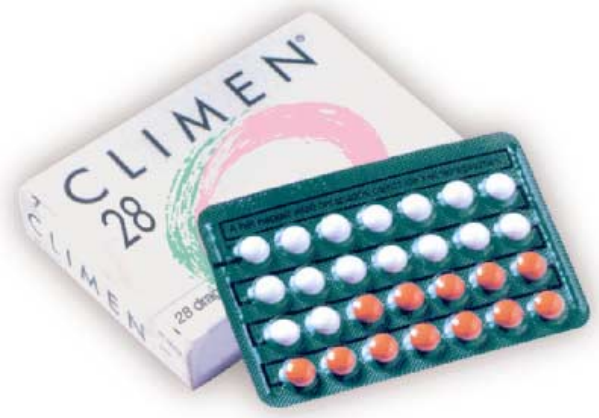


Fig. 1. Climen 28 package.

C. For local urogenital symptoms

Examples

- KY jelly
- Replens vaginal moisturiser
- Vagifem (estradiol) pessary 25 µg ON for 2 weeks and then 25 µg twice a week for 3 months
- Premarin cream 1 g ON for 2 weeks and then 1 g twice a week for 3 months
- Estring (estradiol vaginal ring) — contains 2 mg estradiol; lasts 3 months

D. New modalities in HRT

Angeliq (estradiol 1 mg/drospirenone 2 mg)

- Continuous combined preparation available in 28-day pill pack
- Contains drospirenone, a novel progestogen derived from 17α-spirolactone.

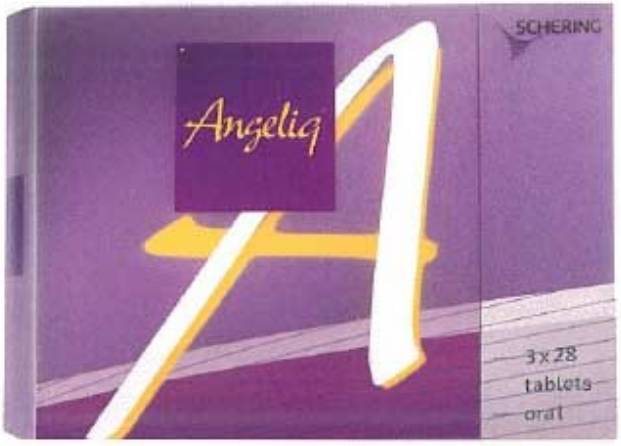


Fig. 2. Angeliq package.

- Drospirenone:
  - First progestogen with aldosterone receptor antagonism (PARA) which reduces sodium and water retention
  - Pharmaco-dynamic profile is more closely related to that of endogenous progesterone than other progestogens
- Provide benefits such as weight stability, effective relief of menopausal symptoms and improving compliance

Options to Hormone Replacement Therapy

Tibolone (Livial)

- Synthetic steroid with tissue-specific effects
- Effective as HRT for relieving menopausal symptoms without stimulating endometrium in multicentre randomised controlled study
- Improvement in mood and libido, especially for those with decreased sexual satisfaction
- Bone protection
- Start only after 12 months of absent menses

Raloxifene (Evista)

- Antiestrogen effect on breast, estrogen effect on bone and no effect on endometrium
- For prevention and treatment of osteoporosis
- Reduces the risk of spine fractures
- Side effect: can worsen hot flushes

Remifemin (*Cimicifuga racemosa*)

- Phytoestrogen
- For milder menopausal symptoms
- Dosage: 1 tab bd for 3–6 months
- Relief of symptoms seen after 6 weeks

Investigations of a Menopausal Patient

1. **Follicle stimulating hormone**
   - Menopause is a clinical diagnosis after a woman has no menses for one year and pathological causes are excluded
   - FSH level is not helpful in the diagnosis of menopause except in a woman with premature ovarian failure (< 40 years of age)
   - If FSH level > 30 IU/L, it suggests menopausal state

2. **PAP Smear** (refer to chapter on PAP Smear Screening)

3. **Mammogram** (refer to chapter on Breast Cancer Screening)

4. **Bone mineral density** (refer to chapter on Osteoporosis Assessment)

Refer to OBGYN if the patient is on > 6 months of HRT for assessment and counselling of suitability of continuing HRT

CHAPTER 39

Assessment of Osteoporosis

Bone mineral density (BMD) assessment is not routinely done in all menopausal patients; a system of risk stratification has to be employed before subjecting them to BMD testing.

Risk Stratification

1. **OSTA** (**Osteoporosis Self-assessment Tool for Asians**) scoring
   Low risk: No need for BMD
   Medium risk: Measure BMD if concomitant risk factors
   High risk: Measure BMD
2. **Additional risk factors**:
   - Personal history of previous fracture as an adult
   - History of osteoporotic fracture in a first degree relative
   - Smoker
   - Long-term medications, e.g. steroids (prednisolone >7.5 mg/day for >6 months), antiepileptic medication
   - Premature menopause before age 40

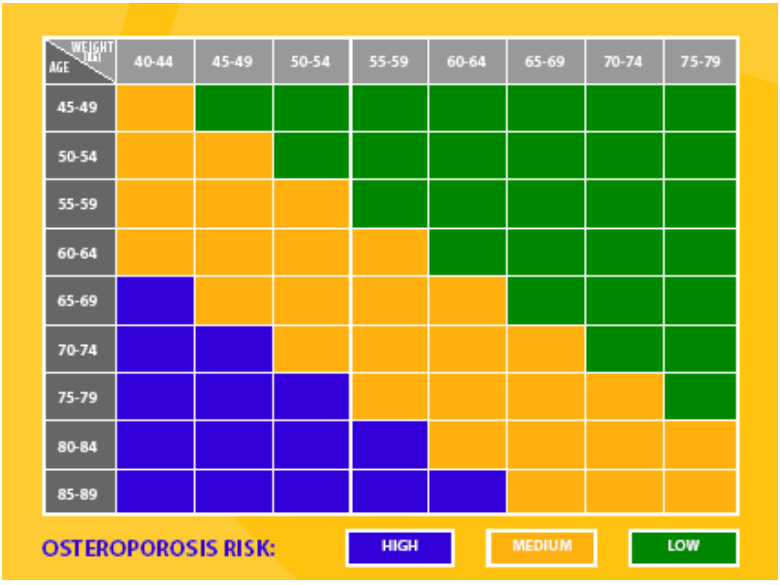


Fig. 1. Osteoporosis Self-assessment Tool for Asians (OSTA) Copyright, MERCK & CO., Inc., Whitehouse Station, NJ, USA.

Treatment

Lifestyle modifications

- Stop smoking
- Avoid extreme weight loss
- Encourage weight bearing and muscle-building exercises
- Fall-proof the home

Pharmacotherapy (for T score < -2.0)

Table 1: Pharmacotherapy for osteoporosis/severe osteopenia

Drug	Class	Dosage	Remarks
Raloxifene (Evista)	Selctive estrogen receptor modulator	60 mg OM	Can worsen hot flushes
Alendronate (Fosamax)	Bisphosphonate	70 mg/week	Instruct the patient not to lie down and remain fully upright sitting, standing or walking for at least 30 minutes after taking the tablet Can cause oesophagitis or oesphageal ulcers
Alendronate and cholecalciferol (Fosamax plus D)	Bisphosphonate and vitamin D	70 mg Alendronate and 2800 IU vitamin D3/week	
Risedronate (Actonel)	Bisphosphonate	35 mg/week 5 mg OM	After swallowing the tablet, do not lie down and remain fully upright sitting, standing or walking for at least 30 minutes Can cause oesophagitis or oesphageal ulcers

Management of Osteopenia and Osteoporosis

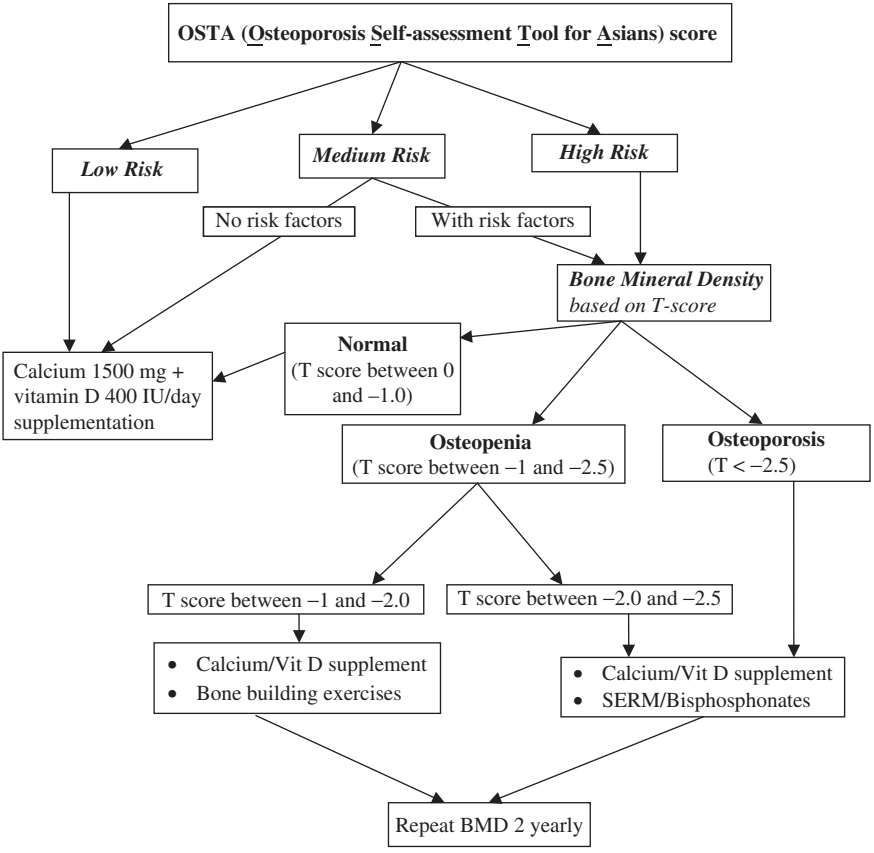


Fig. 2. Flowchart of assessment and treatment of osteopenia and osteoporosis.

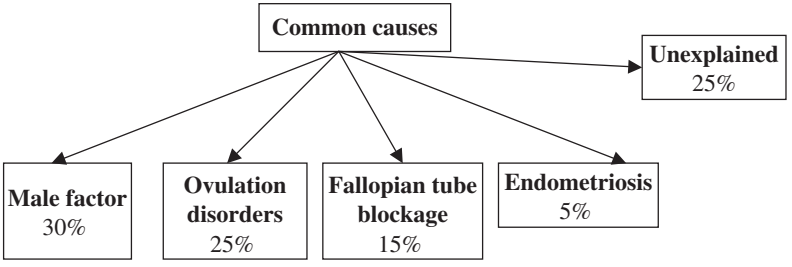
CHAPTER 40

Subfertility

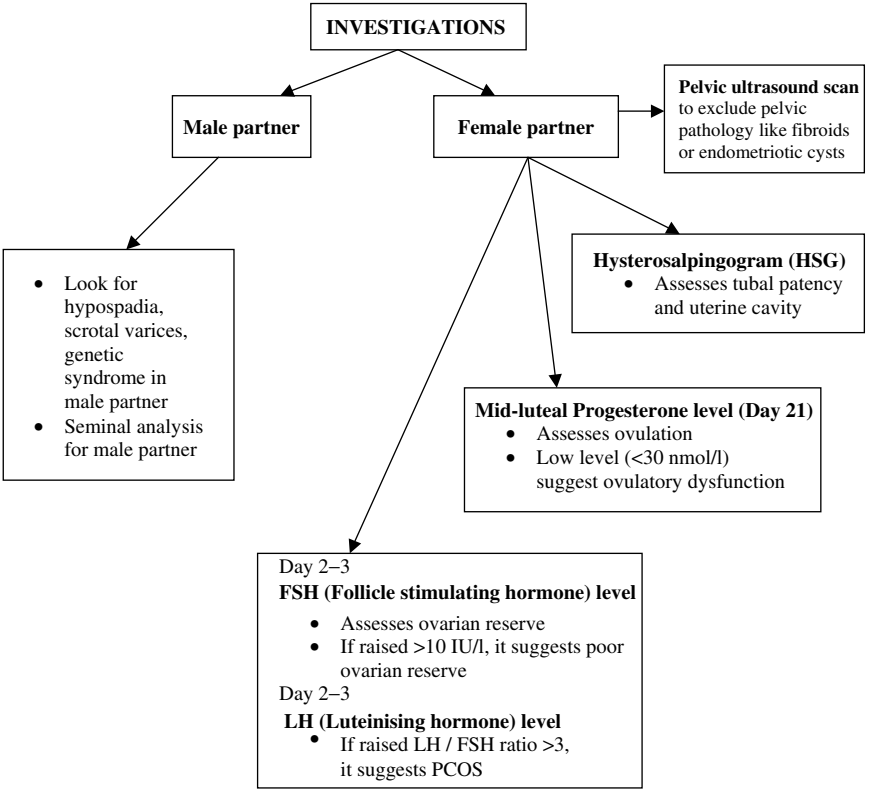
Definition of Subfertility

- A delay of more than 1 year in conceiving after unprotected intercourse
- Affects 10%–15% of couples trying to conceive

Causes of Subfertility



Assessment and Investigations



Management of Subfertility

General advice

- Stop smoking or alcoholic binging
- Reduce weight if body mass index $> 29\,kg/m^2$
- Encourage regular coitus (3 times/week)
- The fertile period is from day 11 to 18 for a woman with a 28-day menstrual cycle
- Preconceptional folic acid supplementation
- Screening for rubella immunity and vaccination if non-immune
- Pap smear

Principles of treatment

Medical management

- Start with clomiphene citrate 50 mg OM on day 2–6 of menses if the patient is anovulatory (after a course of dydrogesterone 10 mg om $\times$ 5 days to induce withdrawal bleeding). Check serum progesterone on day 21 of menses for evidence of ovulation (or 7 days before expected menses for those women with longer menstrual cycles)
- Side-effects of clomiphene: nausea, giddiness, headaches, hot flushes, mood swings, blurred vision and multiple pregnancies (10%). Although there is no known risk of ovarian cancer, it is recommended not to prescribe more than 6 cycles of clomiphene
- Consider adding metformin 500 mg bd to clomiphene if the patient has polycystic ovarian syndrome
- Consider induction of ovulation with gonadotrophins for clomid-resistant polycystic ovarian syndrome

(*Continued*)

(*Continued*)

Surgical options

- Laparoscopy with hydrotubation of dye to assess tubal patency
- Laparoscopic treatment of endometriosis
- Laparoscopic ovarian drilling for clomid-resistant polycystic ovarian syndrome patients
- Laparoscopic or microsurgical surgery for tubal blockage or peritubal adhesions

Assisted Reproductive techniques

- Intrauterine insemination, especially for coital dysfunction
- Superovulation intrauterine insemination (SO-IUI) for mild male factor, minimal or mild endometriosis, unexplained infertility with bilateral patent tubes
- *In vitro* fertilization (IVF) or intracytoplasmic sperm injection (ICSI) for tubal infertility, moderate or severe endometriosis, failed SO-IUI, severe male factor

Refer to OBGYN if

- Woman's age > 35 years old
- Duration of fertility > 3 years
- Follicle stimulating hormone > 10 IU/l
- Sexual dysfunction
- Abnormal seminal fluid analysis

  Sperm count $< 20 \times 10(6)$/ml
  Sperm motility $<50\%$, $<25\%$ progressively motile
  Sperm morphology $<14\%$ normal (Kruger strict criteria)
- Pelvic scan showed pelvic abnormalities like large fibroids or endometriotic cyst
- HSG showed blocked tubes or abnormal uterine cavity

CHAPTER 41

Hyperprolactinaemia

Clinical Presentation

- Oligomenorrhea, amenorrhea or infertility, which results from prolactin suppression of gonadotropin-releasing hormone (GnRH)
- Galactorrhoea due to the direct physiologic effect of prolactin on breast epithelial cells

Causes of hyperprolactinaemia

- Pregnancy and lactation
- Prolactin-secreting adenomas:
  - microadenomas (< 10 mm) or macroadenomas (≥ 10 mm)
- Hypothyroidism
- Drugs e.g.
  1. Dopamine receptor antagonists, e.g. phenothiazines, butyrophenones, thioxanthenes, risperidone or metoclopramide.
  2. Dopamine-depleting agents, e.g. methyldopa or reserpine.
  3. Others, e.g. isoniazid, danazol, tricyclic antidepressants, monoamine antihypertensives, verapamil, oestrogens, antiandrogens, opiates, histamine (H2)-blockers and cocaine.
- Idiopathic (no known cause)

Investigations

- Serum prolactin level: $\geq$ 33 µg/L
- Urine pregnancy test to exclude pregnancy
- Thyroid function test to exclude hypothyroidism
- Magnetic resonance imaging (MRI) of the pituitary fossa to exclude prolactin-secreting adenoma

Management of Hyperprolactinaemia

- Refer to Endocrinologist if the cause is hypothyroidism
- Refer to Neurosurgeon if the cause is due to pituitary macroadenoma for surgical excision
- Medical treatment if hyperprolactinaemia is due to pituitary microadenoma or idiopathic cause
- Consider to stop or change medication if it is drug-related

Medical treatment

1. Bromocriptine

- Dopamine receptor agonist
- 1.25–2.5 mg ON PO initially; increase gradually every few days to approximately 5–10 mg daily in divided doses
- Side-effects: postural hypotension or nausea

2. Cabergoline (Dostinex)

- Ergot alkaloid derivative; strong dopamine receptor agonist
- 0.25–1 mg PO twice/week; start with a low dose and increase every 4 weeks titrating to the prolactin level
- Well tolerated but expensive

CHAPTER 42

Sexual Dysfunction Problems

Introduction

- About 50% of married couples have sexual problems or concerns
- The numbers seen in practice are much lower because:

1. Patients seldom complain of sexual problems
2. Doctors fail to take a sexual history
3. Doctors are too inhibited and see talking of sexual matters as a taboo
4. Doctors are uncomfortable when discussing about sex

Uncovering Sexual Problems

Two ways:

1. Respond to patient's stated complaint about a sexual problem or other problems that may affect activity, e.g. chronic vaginismus.
2. Ask questions routinely as part of psychosocial history taking.
   - If a problem or concern is identified, then taking a sexual history is applicable
   - Embarrassment will be prevented if this is done in a routine and comfortable way
   - Routinely asking questions about sexual life helps to uncover the problems. Many problems might be missed due to a lack of enquiries about sexual difficulties

How to Help Dissatisfied Women with their Sexual Response?

- Be knowledgeable about current information on sexual problems
- Be objective about sexual behaviour
- Be approachable
- Be willing to listen and clarify problems
- As an educator, the doctor can use gynaecological examination to educate the patient on female genital and body functions
- Recommend reading materials
- As a therapist, the doctor can diagnose and treat sexual problems
- Facilitate improved communication between patient and partner
- **Refer to OBGYN** for sexual dysfunction problems where applicable

How to Ask your Patient?

- Are you currently sexually active?
- What is your frequency of sexual intercourse?
- Does your partner encounter any difficulty with erection or ejaculation?
- Do you have difficulty with getting sexually aroused, lubricating or reaching orgasm?
- Do you experience pain during sexual intercourse?
- Are you satisfied with your sex life? If not, why?
- Do you have any questions or concerns related to sex that you wish to discuss?

History of Sexual Problem

- Description of current problem
- Onset and cause of the problem
- Patient's perception of cause and maintenance of the problem
- Past treatment and outcome:
  a) Medical evaluation
  b) Self treatment
  c) Professional help
- Current expectations and goals of treatment

Types of Problems Encountered

Female problems

- Dyspareunia or painful intercourse
- Non-consummation
- Vaginismus
- Anorgasmia
- Low libido

Male problems

- Erectile dysfunction (ED)
- Premature ejaculation
- Retarded or anejaculation
- Low libido

The Psychosexual Dysfunction

- Inhibition in the sexual response cycle (arousal, excitement, orgasm and resolution phases) can occur at one or more of the phases. This causes disturbances in the subjective sense of pleasure and objective performance
- Dysfunction can be lifelong or acquired, generalised or situational and total or partial

Associated features

- Usually no obvious sign of disturbance is seen
- There could be a sense of not living up to ill-defined concept of normality or complaints, e.g. dyspareunia, anxiety, guilt, shame, frustration and somatic symptoms
- There is a fear of failure and development of a "spectator" attitude and sensitivity to the sexual partner's reaction

- This impairs performance and satisfaction further and leads to secondary avoidance of sexual activity as well as impairs communication with the sexual partner
- The cause is variable with lifelong or short-lived episodes. Episodes of sexual dysfunction can recur. The relationship with the partner suffers and marital relationship can be disrupted
- Main predisposing causes are anxiety and negative attitude towards sexuality due to past experience, internal conflicts or rigid cultural values
- The milder forms are extremely common

The Psychosexual Dysfunction

Phase	***Dysfunction***
Desire	Hypoactive sexual desire Inhibited sexual desire
Excitement	Erectile dysfunction (male) Difficulty in arousal or lubrication (female)
Orgasm	Premature ejaculation (male) Retarded ejaculation (male) Anorgasmia (female)
Others	Vaginismus Ejaculating pain Sexual phobia or avoidance

Assessing Categories of Aetiology

- History details provide the most important diagnostic clues
- Organically induced sexual problems are persistent and progressively worsening
- Psychosexual problems are episodic or situational

Physical Examination

- Only second in importance to history-taking
- Vaginismus is unique. It is the only condition that can be diagnosed at physical examination

Investigations

- When an organic aetiology is suspected (e.g. premature menopause causing vaginal dryness and loss of libido), the biochemical and endocrine parameters need to be assessed
- Vaginal swab and culture to exclude infective causes
- Diagnostic laparoscopy to exclude dyspareunia due to endometriosis if indicated
- Other special tests, e.g. arteriography and penile blood flow studies may be warranted

Management of Sexual Dysfunction Problems

- This may include counselling or medications or both
- The approach depends on:
  1. Knowledge and skill (of therapist)
  2. Time available
  3. Professional interest
- An informed, interested and sensitive physician can contribute significantly to solving the sexual problems of a patient
- The informed non-specialist will frequently be successful in treating patients with dyspareunia, premature ejaculation, secondary erectile failure and sexual problems resulting from illness and drugs or surgery

To Treat or to Refer

- Long-standing sexual dysfunction, marital discord, psychiatric illness and problems with self-image, self-esteem and denial are best referred to an expert

Intervention

- Medical specialist should be able to provide effective treatment for patients with sexual problems in 80% or more of the cases encountered in practice
- Four levels of intervention are possible. Each ascending level of approach requires an increasing degree of knowledge, training and skill

Level 1: Permission

- People want to know or hear that they are normal and they need a professional to tell them this
- Permission involves saying it is okay to be sexual, have sexual thoughts, dreams or fantasies and to talk and discuss about sex
- It is okay to carry on with any sexual activity they are involved in, e.g. masturbation, oral sex

Level 2: Limited information

- Encourage patient education throught discussion, seminars, books, pamphlets, videos, etc.
- Education means talking about normality of this feeling, e.g. sex after hysterectomy or during pregnancy
- Education helps to dispel myths

Level 3: Specific suggestions

- These are attempts to help the patient change his or her behaviour and reach stated goals
- The approach is time- and problem-oriented
- This approach is helpful in problems of arousal, erection, ejaculation, orgasm or painful intercourse

Level 4: Intensive therapy

- Patient may require appropriate treatment if he or she is interested to undertake therapy
- The main objective of treatment is to modify the immediate antecedents or cause of sexual symptoms
- Suggested exercises are conducted within a flexible time frame
- The patient proceeds to the next level when he or she is comfortable with the preceding ones
- Progress is at his or her own pace and progress is dictated by patient's and partner's anxiety level

Vaginismus

Introduction

- Vaginismus is an involuntary contraction of the muscles surrounding the entrance to the vagina, making penetration impossible and/or painful
- The primary muscle group involved is the pubococcygeus (PC)
- There could be deep-seated subconscious negative feelings such as anxiety or fear associated with vaginal penetration. The vaginal PC muscles, as they contract, are in effect often acting as a protective mechanism against penetration
- Primary vaginismus occurs when a woman has never, at any time, been able to have pain-free sexual intercourse due to the PC muscle spasm. The vaginismus condition becomes evident during initial attempts at sexual penetration or gynaecological examination and continues to persist
- Secondary vaginismus occurs when a woman who had previously enjoyed sexual intercourse without pain, develops the vaginismus condition later, possibly following some trauma or surgery. She is no longer able to have intercourse, even though the physical concerns have been resolved

- Women with vaginismus are sexually responsive and have a deep desire to make love. It is extremely frustrating not to be able to engage in pleasurable sexual intercourse

Factors associated with vaginismus

- Past sexual abuse
- Exposure as a child to shocking sexual imagery
- Domestic violence
- Rigid parenting
- Inadequate sex education
- No known experience

Management of vaginismus

- Obtain proper diagnosis
- Educating the patient about the condition and anatomy is important
- Identify the negative events and consciously over-ride them through written and verbal reassurances
- **REFER to sex therapy doctor**
- Retraining the PC muscles through the use of vaginal dilator exercises
- Complete a series of exercises with the partner to educate each other, build sexual trust and progress to full sexual intercourse

CHAPTER 43

Mammogram, Breast Ultrasound Scan and Breast Biopsy

Introduction

- Common benign conditions seen in the breast include fibrocystic change and benign tumours such as fibroadenomas, papillomas and phyllodes tumours
- Common malignant lesions are *in situ* cancers such as ductal carcinoma *in situ* (DCIS) and infiltrative cancers

Mammogram

Mammographic features suspicious for cancer include:

1. Spiculated or ill defined masses
2. Clusters of heterogeneous or pleomorphic microcalcifications with linear, branching or casting configuration
3. Architectural distortion
4. Others — lymph node enlargement, skin thickening, nipple retraction

- Using standard nomenclature and terminology, mammograms are reported using the **BIRADS** scoring system (**Breast Imaging Reporting and Data System**)
- The risk of malignancy can be estimated based on the BIRADS score

Table 1: BIRADS Classification

BIRADS Category	Assessment	Cancer Risk*	Recommendations
0	Needs further imaging evaluation	–	Complete radiological evaluation, e.g. spot views, ultrasound
1	Negative	Nil	Routine screening
2	Benign	Nil	Routine screening
3	Probably benign	<2%	Short term, e.g. 4–6 months mammographic follow-up for interval change
4	Suspicious	30–40%	Biopsy urged
5	Highly suggestive of malignancy	98–99%	Biopsy required

*False negative rates of screening mammography vary with age group screened and can be up to 20%.

Breast Ultrasound Scan

- An ultrasound of the breast is a useful adjunct to distinguish between cystic and solid masses seen on mammograms
- Lesions that are solid, hypoechoic, irregular, taller-than-wide, have shadowing or increased vascularity have an increased risk of malignancy
- If a biopsy is not performed, the lesions should be followed up closely for interval change

Breast Biopsy

- When assessing for biopsy, in addition to radiological features, consider other factors such as the age of the patient, duration of the lesion, family and personal history of breast cancer
- In the presence of a palpable mass, normal radiological imaging should not deter the clinician from performing a biopsy
- For lesions that are seen on mammography and/or ultrasound but not palpable, image guidance (using X-rays or ultrasound) may be necessary to guide the clinician during the biopsy procedure

Types of Breast Biopsy

Fine needle aspiration cytology

- A 21G or 23G needle is inserted into the lesion and several passes are made through the lesion to extract a sample of cells from the lesion
- The aspirate is then smeared onto a slide, stained and viewed under a microscope
- This method allows only a cytological diagnosis and cannot distinguish between an *in situ* and an invasive cancer
- Limitations: cellular adequacy and artifacts due to poor smears

Tissue cores from the lesion

- A special core biopsy needle or automated core biopsy gun is required
- The tissue cores enable a histological diagnosis to be made by allowing the pathologist to examine the architecture of the lesion
- Able to distinguish between *in-situ* and invasive cancers

Mammotome biopsy

- A variation of the core biopsy
- It requires special equipment and employs a larger gauge needle and vacuum suction to obtain bigger cores of tissue from the lesion
- Small lesions may be completely removed using this procedure
- The skin incision required for this procedure is about 2 mm and heals well with minimum scarring

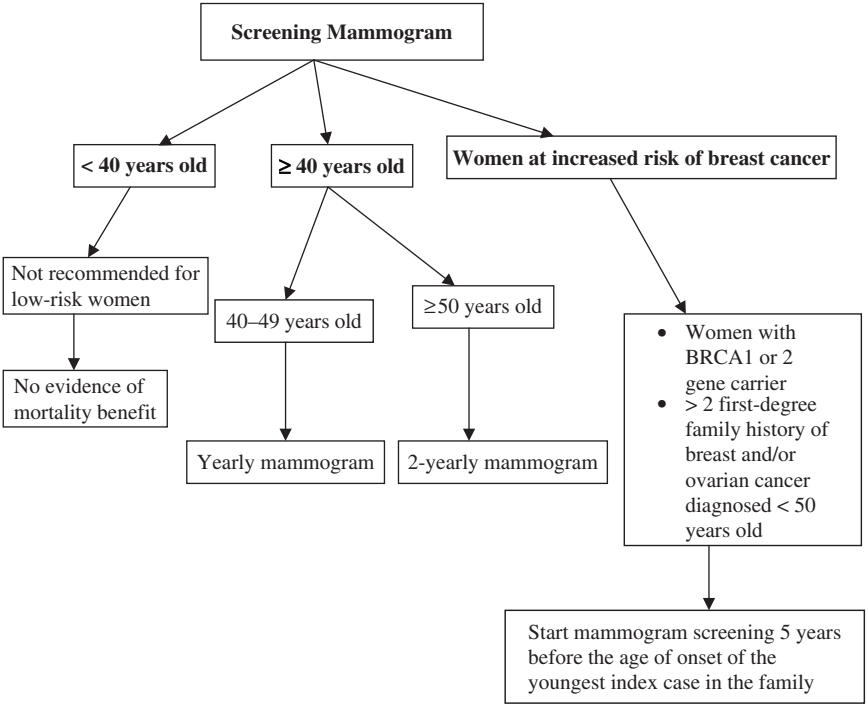
Conventional open surgical biopsy

- Provides the pathologist with the largest amount of tissue for analysis
- It often leaves the patient with an unsightly scar on the breast, depending on the location and size of the lesion

CHAPTER 44

Breast Cancer Screening

Screening Mammogram Schedule



PART IV

INVESTIGATIONS IN GYNAECOLOGY

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CHAPTER 45

Ovarian Tumour Markers

Test	Purpose	Normal Range	Interpretation and Management Guidelines
CA 125	To exclude epithelial ovarian cancer	0–35 u/mL	Can be raised in epithelial ovarian cancer, pelvic inflammatory disease, uterine fibroids, endometriosis, adenomyosis, pregnancy and during menstruation. Perform pelvic ultrasound scan to exclude pelvic pathology. **REFER to OBGYN** if raised.
Carcinoembryonic antigen (CEA)	To exclude primary colorectal cancer	0.5–5 µg/L	Can be rasied in epithelial ovarian cancer
Alpha foeto-protein (AFP)	To exclude liver cancer or yolk sac ovarian tumour	< 13.4 µg/L	

Note: Ovarian tumour markers are not useful in pregnant women as they would be raised in normal pregnancy.

CHAPTER 46

Female Hormonal Profile

Test	Purpose	Normal Range	Interpretation and Management Guidelines
Follicle stimulating hormone (FSH)	To assess ovarian reserve		• Must be done on day 2 or 3 of menses • Poor ovarian function if > 10 IU/L • Impending menopause if > 30 IU/L
Luteinising hormone (LH)	Check for polycystic ovarian syndrome		• Day 3 LH > (3 X FSH) suggests PCOS • **Refer to OBGYN**
Prolactin	Check for hyperpro-lactinaemia	0–32.9 µg/L	• Refer to endocrinologist if persistently high **Common causes of hyperprolactinaemia:** Prolactinoma, hypothyroidism, Medications (tricyclic antidepressants, metoclo-pramide, phenothiazines, methyldopa, H2 blockers), polycystic ovarian syndrome, pregnancy, lactation • See chapter on hyperprolactinaemia for management

(*Continued*)

(***Continued***)

Test	Purpose	Normal Range	Interpretation and Management Guidelines
Dehydroepiandrosterone acetate sulphate	Check for virilisation	0.9–11.2 μmol/L	• Consider MRI scan to exclude adrenal tumour if raised • **Refer to OBGYN**
Testosterone	Check for virilisation	0.7–2.5 nmol/L	• If testosterone > 5 nmol/L, exclude testosterone-secreting tumour • **Refer to OBGYN**
Estradiol (E2)	Fertility investigation	109–1266 pmol/L (premenopausal females)	• Wide range for normality • If FSH high/ E2 normal, denotes poor ovarian reserve, i.e. poor prognosis for fertility • Not useful in perimenopausal women
Progesterone	To assess ovulatory function	Day 21 > 30 nmol/L (if menstrual cycle is regular)	At day 21 denotes ovulatory cycle if > 30 nmol/L

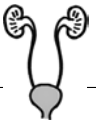
CHAPTER 47

Pregnancy Hormones

Test	Purpose	Normal Range	Interpretation and Management Guidelines
Beta human chorionic gonadotrophin (Beta HCG)	To assess pregnancy status	< 5 IU/L	Not pregnant
			Level should increase at least 66% in a normal viable pregnancy over 48 hours **1500 IU/L** is the threshold level to detect intrauterine gestational sac on transvaginal scan Suboptimal rise in level may indicate failing pregnancy, missed abortion or ectopic pregnancy **Refer to OBGYN** Decreasing level suggests nonviable pregnancy and sometimes tubal abortion. **Refer to OBGYN** Very high level (> 100, 000 Iu/L) without a viable pregnancy may suggest molar pregnancy **Refer to OBGYN**

CHAPTER 48

Urine Tests/Vaginal Swabs



Test	Purpose	Normal Range	Interpretation and Management Guidelines
Urine HCG	To assess pregnancy	Negative	Not pregnant
Urine FEME	To screen for urinary tract infection, renal disease	Negative	Pyuria implies urinary tract infection If casts and crystals are present, consider renal disease
Urine culture	To check for urinary tract infection	Viable count <10, 000 CFU/mL	Treat with antibiotics according to sensitivity
Vaginal swab VP3	To check for Trichomonas, Candida, Gardnerella infection	Negative	Flagystatin pessary 1/1 ON for 7–10 days if culture is positive
Chlamydia DNA	For Chlamydia infection	Negative	Oral doxycycline 100 mg bd for 1 week if culture is positive
Neisseria Gonorrhoea Culture	For Gonorrhea infection	Negative	Intramuscular (I/M) ceftriaxone 250 mg or oral ciprofloxacin 500 mg, followed by oral doxycycline for 7 days if culture is positive. Co-treatment for chlamydia infection

CHAPTER 49

Gynaecological Ultrasound Scan and Cytology/Histology Reports

Gynaecological Ultrasound Scan

Gynaecological ultrasound scan	• Endometrial thickness has wide range in young women but < 5 mm in postmenopausal women • Take note of description of ovaries and uterus, Pouch of Douglas fluid or tumour deposits • **REFER to OBGYN** if results are abnormal

Cytology/Histology Reports

PAP smear	• Adequate smear if both ectocervical and endocervical cells are seen • Presence of blood, infection or atrophy can affect the validity of the test • Treat infection with suitable antibiotics or antifungal medication, e.g. flagystatin pessaries, and then repeat PAP smear • Treat atrophy with vagifem and then repeat test • Atypical squamous cells of undetermined significance (ASCUS) smear: repeat PAP smear 6 months later for first episode. **REFER to OBGYN** if second episode of ASCUS smear occurs • Atypical glandular cells of undetermined significance (AGUS): need thorough investigations to exclude genital tract cancer. **REFER to OBGYN** • Dyskaryosis (mild/moderate/severe): **REFER to OBGYN** for colposcopy to exclude carcinoma or cervical intraepithelial neoplasia • Cancer cells: **URGENT REFERRAL TO OBGYN** to exclude carcinoma
Endometrial sampling	Abnormal results are: hyperplasia (simple/complex, with/ without atypia), carcinoma. **Refer to OBGYN**

CHAPTER 50

Basal Seminal Analysis

	Normal Range (WHO criteria, 1992)
Volume	$\geq$ 2.0 mL
pH	7.2–8.0
Sperm concentration	$\geq 20 \times 10^6$ spermatozoa/mL
Motility	$\geq$ 50% forward progression
Morphology	$\geq$ 15% normal forms (Kruger strict criteria)
White blood cells	$< 1 \times 10^6$/mL

Note:

1) Repeat basal seminal analysis in 3–6 months if first test is abnormal
2) **REFER OBGYN** if second test is still abnormal

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