A Practical Guide to Gynaecology

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The book is dedicated to my parents—Late Mr Paras Nath Trivedi and Mrs Ramawati Trivedi—and my family—Alka, Ayush, Ayesha, Akash, and Priyanka—for standing by me through thick and thin and making me what I am today.

—Amarendra Nath Trivedi

I would like to heartily thank my wife, Dr Prerna Diksha, my whole family, my close friends, and especially my inspiring coauthor, who continue to guide, nurture, and support me.

—Ashish Pandey

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PREFACE

The medical profession is a lifelong journey of learning. We learn by reading books and journals, by talking to other colleagues, by our own experiences, and, last but not least, by our mistakes, both intended or unintended, and our near misses.

We have been and will remain part of this journey for the rest of our careers. As part of this journey, Dr Trivedi has been fortunate to be involved with the enjoyable responsibility of imparting knowledge, mentoring, assessing, writing questions and setting standards at all levels of examinations in multiple countries. We have been students, examinees, and examiners at all levels.

Experiences gained while perfecting our skills for this craft have enabled us to give a shape to this book. Our endeavour has been to provide to our readers a comprehensive, contemporary, and evidence- based concept of disease processes. The style of expression builds from basics to advanced facets of the principles and practices of gynaecology. The multiple-choice and short-answer questions with their model answers also reflect the same pattern. Students (undergraduate, diploma, and fellowship) can absorb and assimilate depending upon their level, requirements, and aptitude.

Dr Pandey has been the Dux of King's College, Auckland, New Zealand, and excelled in the MBBS examination of Monash University, Melbourne. This was not just by chance. In fact, nothing was left to chance. This was possible because of his ability to understand the processes mentioned above, to introspect, and to reflect. We have endeavoured to dissect and then disseminate this information to the doctors of tomorrow. The doctors of today will find this book fruitful, functional, and factual.

We would like to express our immense gratitude to our students, registrars, and colleagues for their constructive feedback and encouragement. Without that, the contents of the book would not have been as useful to the different levels of readers.

This book is an unparalleled collection containing a description of diseases with levels of supporting evidences, ultrasound appearance of lesions, and over 450 multiple-choice and 170 short-answer questions with their model answers. We are confident that this book will not disappoint those in pursuit of excellence in clinical practice as well as in preparation for examinations.

—Amarendra Nath Trivedi and Ashish Pandey

How to Use This Book

A very unique feature of this book that has intimately shaped how it has been written is the partnership between an experienced clinician with extensive knowledge on the topic and examination setting and a recently graduated doctor who excelled in his medical degree. This has resulted in a book that is relevant for all levels of readers and is appropriate for both examination revision and as a point of reference.

This book has been written with two goals:

- To help different levels of students and examinees (undergraduate, diploma students, and postgraduates) in enriching their knowledge base and to enable them to excel in the examinations.
- To act as an easy resource to doctors practicing gynaecology.

Let us discuss the first goal. The book has a chapter on almost every gynaecological condition. The text is up-to-date with all of the scientific information and level of evidence, where available. Most chapters have short-answer and multiple-choice questions. The text provides a detailed concept of the disease, whereas the questions extend the boundaries of the reader's knowledge even further.

To prevent repetition, the answers to the questions are mostly not in the text. So, to get a wide knowledge of the topic, the reader is encouraged to read both the main text and the questions at the end. The questions have different degrees of difficulty and complexity. Undergraduate students may choose to confine themselves to simple questions such as history, differential diagnosis, management of a condition, or equipment needed to examine a woman with uterovaginal prolapse. For postgraduate students, there are more complex questions, such as whether hysterectomy should be part of all vaginal-prolapse surgery, the current state of use of mesh in gynaecological surgery, whether CIN III should be treated by a hysterectomy, and so on. A large number of questions are based on past examinations of different levels in Australasia, the United Kingdom, and the Indian subcontinent. There is also a section on how to answer short-answer questions; it is largely based on our experience and observations, and it will be very useful to examinees.

This book has over 450 multiple-choice questions and over 170 short-answer questions with model answers, in addition to the main text. This will provide an unparalleled resource to readers, all in one place.

We are confident that this book has all the information required to excel in an examination.

With regard to the second goal of this book, there are plenty of flowcharts and treatment options, with their pros and cons. Doctors practicing in gynaecology will find the book an easy resource and reference.

The evidence classification has been taken from the Royal College of Obstetricians and Gynaecologists. Following are the criteria for different levels of evidence:

- IA: Evidence obtained from meta-analysis of randomised controlled trials
- IB: Evidence obtained from at least one randomised controlled trial
- IIA: Evidence obtained from at least one well-designed controlled study without randomisation
- IIB: Evidence obtained from at least one other type of well-designed quasi-experimental study
- III: Evidence obtained from well-designed nonexperimental descriptive studies, such as comparative studies, correlation studies, and case studies
- IV: Evidence obtained from expert committee reports on opinions and/or clinical experience of respected authorities

CHAPTER 1

HOW TO ANSWER SHORT ANSWER QUESTIONS

A very important part of succeeding in medical school examinations—or any specialty examinations— beyond having an in-depth knowledge of the content, is to be able to apply knowledge to answer multiple-choice questions (MCQs) and short-answer questions (SAQs) to get the full marks.

There is no single way to prepare for examinations. People have different methods of learning and understanding, and so it is not possible to prescribe an exact way to study. However, there are some general rules that are applicable to everyone, regardless of whether you study better alone or in a group, whether you listen to music or draw pictures, or whether you transcribe textbooks to your own notebook in perfectly neat handwriting.

First, you should have a clear plan of what you need to study and by when you would like to have each topic completed. Second, when you sit down to study, you must ensure that all distractions are removed and that your full focus is dedicated to your studies, to ensure that the time you spend reaps the greatest reward. Third, as you go through the year and steadily amass your knowledge and understanding, continually reflect on your strong and weak areas. An excellent way to do this is with practice questions, which can help you quickly identify areas in which you may not be as competent as you might have thought. This also means that you can go back to the weaker areas and study them again, because it is well known that repetition is a highly effective habit to consolidate knowledge.

Many colleges and universities provide model answers to the examiners to remove subjectivity and enhance reproducibility as far as humanly possible during marking. A marking schedule is also provided for the same reason. The candidate is awarded marks only when his or her answers carry the same meaning as the model answer or have the same words as in the model answer. The candidate does not get any mark or gets very few marks if that answer, even though correct, is not in the model answer.

Short-answer questions are open-ended questions that ask the candidate to display a firm understanding of the topic as well as the ability to adapt content to a variety of patient vignettes. It is crucial, therefore, that you can answer questions in the most direct and concise way (to save time) possible to ensure you attain all available marks. Because these examinations are often time-pressured, the technique of answering short-answer questions as briefly in words as possible, is very important. At the same time, your answer should be as broad as possible, so that it includes all the areas mentioned in the model answer. Single words, such as “bilateral” (instead of “the tumour is bilateral”) and “Incidence = 60%” (instead of “the incidence of this tumour is 60% in the general population”) will also fetch the full marks. Identifying the key words in a question that will advise the level of detail and type of answer that is required to get the marks cannot be overemphasised. Some of these words are shown in the table in this chapter.

Time permitting, answer the question in an easy-to-read prose style with good grammar and correct spelling. But often the questions are so many and the time so little that this will not be achievable. Incorrect spelling gives a poor impression to the examiner, which may reflect in marking, where the examiner has some discretion.

Where the answers to multiple-choice questions (MCQs) are limited to only a handful of possible selections, the possible answers to short-answer questions (SAQs) are wide-ranging; however, the examiner will only give marks based on one set of correct answers or answers that are in the model answer. To assist a candidate to provide the necessary information in the answer without surplus, examiners use specific words in the question as a guide to the length of answer.

For example, consider the following question: “Compare the levonorgestrel-containing IUCD with endometrial ablation in the treatment of heavy menstrual bleeding.” The key “question word” in this question is *compare*, which means the examiner wants the candidate to discuss the similarities and differences between two or more things. An example of how to answer this would be to create a table in which the two items being compared, *levonorgestrel-containing IUCD* and *endometrial ablation,* would form the two column headings. Each row would then be a different characteristic of treatment of heavy menstrual bleeding—for example, *mode of action*—and then the similarities and differences could be entered in the corresponding parts of the table.

The following is a list of question words that are used in SAQs, with the kind of information that you should provide:

List	Just name the answers; there is no description or explanation needed.
Define	A statement of the exact meaning of the word, without description. Putting only synonyms will not be sufficient.
Outline	A general description or plan showing the essential features of the topic, without the details.
Discuss	Write in detail (within the stipulated time) and cover issues like advantages and disadvantages, with supporting evidence.
Evaluate	Judge the quality, importance, and value of a given treatment or investigation. You must provide the level of evidence if available.
Compare (and contrast)	Write the differences and similarities in a tabular form.
Analyse/critically analyse	Similar to "evaluate." Examine the topic in detail, mentioning its suitability, relevance, pros and cons, merits and demerits, etc.
Assess	Same as "evaluate" and "analyse"
Explain	Write in detail (within the stipulated time), revealing all facts and controversies about the topic.
Identify	To recognise or correctly name what is being asked.
Justify investigation or treatment	Outline the merits and demerits of the given investigation/treatment with supporting level of evidence, showing that the advantages outweigh the disadvantages.
Summarise	A brief restatement showing the main features.

Table 1.1. Terms used in short-answer questions

It is also crucial for the candidate to read the entire question, as sometimes a question about management will ask for treatment options only for postmenopausal women—or only the surgical treatment options. Paying close attention while reading the question can save a great deal of time and help to focus your thinking to provide the most suitable answer.

SAQs may be split into separate parts, and each part may be worth a different number of marks. Identifying the number of marks for a given question also gives an indication of how much information that examiner is seeking for it. It should also guide you to allocate a proportional amount of time to a question, based on how many marks it is worth relative to all of the other questions.

For example, in a sixty-minute SAQ paper that is worth forty marks, you should aim to allocate one minute and thirty seconds for each mark. This means that you should complete an eight-mark question within twelve minutes.

Once you have decided how long to spend on a given question, apportioning that time effectively will ensure that you complete a well-rounded answer. The first thing to do for a couple of minutes initially is to plan your answer, jotting down the key points and structure of the answer. This prevents you from forgetting any important information or remembering something once you have started the answer and so needing to include it in the wrong section of the answer. Occasionally, you will need to leave an answer unfinished during an exam to return to it later (if heavily time-constrained); a plan guarantees that you can immediately pick up where you left off.

An important part unique to SAQs is the requirement for candidates to corroborate their statements with a level of evidence from the literature. A level of evidence corresponds to how well supported a claim is in the medical literature, hence providing an indication of how strong a recommendation one can make based on the claim. Examiners want to assess a candidate's ability to critically analyse the information he or she has learned and to show that the candidate keeps up to date with the latest research and changes to best practices within his or her country of practice. To assist readers in preparing for this part of the examination, this book provides levels of evidence where available so that candidates can use this information directly in their examinations.

CHAPTER 2

MENSTRUATION AND ITS DISORDERS

Chapter 2.1. Clinical Physiology of Menstruation

Definition

Menstruation is the physiological, cyclical shedding of the functional layer of the endometrium between menarche and menopause. The age of menarche in the developed world is between 12 and 13 years. Over the next 3 to 4 years after menarche, the menstrual cycle becomes ovulatory and hence regularised.

Characteristics of a Normal Menstrual Cycle

Length of bleeding:

- Usually 3–4 days and < 7 days.
- Expressed as numerator (see below).

Length of cycle: (number of days between the start of one period to the start of the next)

- Usually 21–35 days.
- Some variation is normal. The major determinant is quality and rate of follicular development.
- Expressed as denominator. For example, if a woman menstruates for 5 days and her cycle length is 30 days, her menstrual cycle will be shown as $\frac{5}{30}$.

Amount of blood loss:

- Around 30 mL per cycle.
- > 80 mL is abnormal.
- In routine clinical practice, it is assessed subjectively, but in research settings, it is assessed more accurately by pictorial diagrams.

Different Phases of the Menstrual Cycle

A normal menstrual cycle has two phases—proliferative (follicular) and secretory (luteal)—separated by ovulation.

Proliferative Phase

This is the phase in which a sequence of chemical changes promotes the development of the primordial follicle (50 μm) to a preovulatory follicle (20 mm diameter). It usually lasts 10–14 days. The endometrium has a characteristic 3-layered appearance on a transvaginal ultrasound and hence can be easily diagnosed.

The proliferative phase starts with the beginning of menstruation and ends with ovulation.

Secretory Phase

This is the phase in which the granulosa cells of the ruptured follicle luteinise to form the corpus luteum. The corpus luteum secretes progestogens that make the endometrial glands tortuous, dilated, and rich in glycogen and mucus. This prepares the endometrium for the implantation of a fertilised egg, in case a pregnancy eventuates. The duration of this phase is always constant, around 14 days. Hence, the timing of ovulation can always be back-calculated. For example, if the menstrual cycle length is 35 days, ovulation would have occurred on day 21 (35 minus 14). A midluteal progesterone level greater than 25 nmol/L suggests ovulation.

On transvaginal ultrasound scans, a secretory phase endometrium appears hyperechoic and up to 12–14 mm thick. The 3-layered appearance seen in the proliferative phase is not seen. The corpus luteum appears as a complex adnexal mass with increased peripheral vascularity (“ring of fire” seen on ultrasound scans in 30% of cases).

Chapter 2.2. Dysmenorrhoea

Dysmenorrhoea is the cyclical lower abdominal pain/exacerbation of pain that may start 1–2 days before menses and ends before the menses ends. The pain is midline, crampy, and may radiate to the lower back and upper thighs. Bowel symptoms, such as nausea and vomiting, may coexist. An estimated 20–90% of women in between menarche and menopause suffer from dysmenorrhoea in different degrees. Psychosocial factors, lifestyle and emotional stress all contribute to dysmenorrhoea. Women with family members suffering from dysmenorrhoea have a higher incidence.

Types:

i. Primary
ii. Secondary

Primary Dysmenorrhoea

Primary dysmenorrhoea is defined as pain with menses for which there is no known physical cause to explain the symptoms. It usually starts in adolescence.

Pathogenesis

Arachidonic acid, the precursor of prostaglandin F2α, E2, and leukotrienes, is found in a higher concentration in the uterus. These prostaglandins cause uterine hypercontractility, ischaemia and sensitisation of pain fibres. All these changes cause painful menses. In addition, the prostaglandins F2α and E2 also affect the bowel and cause GIT symptoms.

Diagnosis

The history of relevant symptoms and their cyclical nature will strongly indicate the diagnosis. Any other pelvic pathology should be excluded by a thorough gynaecological examination, including cervical and vaginal swabs to exclude infection. A transvaginal ultrasound scan will help in excluding any uterine pathology such as an endometrial polyp or a leiomyoma, adenomyosis, endometrioma, or any ovarian neoplasm (evidence level III). A hysteroscopy or a laparoscopy may be needed if the transvaginal ultrasound scan shows any pathology.

Management

A minor degree of dysmenorrhoea may not require any pharmacological treatment. A low-fat and vegetarian diet, relaxation exercises, and removal of stress at home and work may help. Pharmacological treatment will depend on contraceptive needs. If contraception is needed, the combined oral contraceptive pill is the starting treatment. It reduces the prevalence and severity of dysmenorrhoea. The low-dose pill (20 μg ethinyl oestradiol) is equally effective. The combined pill acts by suppressing ovulation, endometrial proliferation, and prostaglandin synthesis. Women not requiring contraception should be started on nonsteroidal anti-inflammatory drugs (NSAIDs) before the commencement of the symptoms. Women with known hypersensitivity to NSAIDs, peptic ulcers, nasal polyps, angioedema, or asthma should not be prescribed this drug. NSAIDs act by inhibiting prostaglandin synthesis and reducing intrauterine pressure. Mefenamic acid, which is an aryl carboxylic acid, has a higher concentration in the uterus and hence is more effective in reducing myometrial contractility. Other types of NSAIDs—such as aryl propionic acid (ibuprofen, naproxen, and ketoprofen), indoleacetic acid (indomethacin), and selective cyclooxygenase (COX–2) inhibitors (celecoxib)—are also very effective in treating the symptoms. Any other analgesic (narcotic/nonnarcotic) could also be used as add-on treatment. When the family is complete, endometrial resection or ablation may also help. Levonorgestrel- containing intrauterine devices have also been used to treat this condition. Zinc sulphate, 50 mg daily, reduces the duration and severity of dysmenorrhoea by affecting the metabolism of prostaglandins (Zekavat OR et al., 2015). Transcutaneous nerve stimulations and heat fomentation are more effective than placebos. Laparoscopic uterine nerve ablation and presacral neurectomy are not supported by current evidence to treat this condition (Proctor M et al., 2005; Evidence IA). Vaginal childbirth also helps in reducing the severity of primary dysmenorrhoea, possibly by interfering with the pain conduction mechanisms.

Secondary Dysmenorrhoea

Secondary dysmenorrhoea results when one or more pelvic pathologies are present to account for the painful menses. This usually starts later in the reproductive life.

Pathologies that could cause secondary dysmenorrhoea are the following:

1. Endometriosis
2. Adenomyosis
3. Pelvic infection

4. Cervical stenosis
5. Endometrial polyps/leiomyoma
6. Ovarian neoplasms
7. Müllerian abnormalities
8. Life stressors
9. Pelvic congestion

Endometriosis

Pain increases during menstruation. Infertility and dyspareunia may be present. There may be clues during a clinical examination, such as uterosacral nodularity and tender adnexa. A transvaginal ultrasound scan may show an endometrioma. Endometriosis is dealt with in another chapter.

Adenomyosis

A clinical examination may show an enlarged, nodular, and tender uterus. A transvaginal ultrasound scan has the characteristic appearance of adenomyosis.

Pelvic Infections

Chlamydia, gonorrhoea infections, infections arising from intrauterine devices, or appendicitis may cause painful menses. Pain is aggravated by oedema, the inflammatory response, and later on, scarring and adhesions.

Cervical Stenosis

Pain usually lasts throughout the menstrual bleeding, and bleeding is scant. It usually results from stenosis at the internal os level, which may be congenital or acquired. Acquired cervical stenosis commonly results at the external os level from cervical surgery or hypoestrogenism. This condition is suspected on the basis of a suggestive history, a scarred or very narrow external cervical os, and maybe the presence of a hematometra on a transvaginal ultrasound scan.

Other

Other conditions, such as uterine or ovarian neoplasms and Müllerian abnormalities, could be diagnosed by a transvaginal ultrasound scan with or without a hysteroscopy/laparoscopy. Treatment of secondary dysmenorrhoea will be individualised. Each condition should be treated appropriately.

There is controversy about whether “pelvic congestion syndrome” really exists or contributes to secondary dysmenorrhoea. There is no defined treatment for this condition.

The psychosocial aspects and life stressors should also be addressed by a change in lifestyle, behavioural treatment, relaxation exercises, and, very rarely, by low-dose antidepressants/anxiolytics.

Chapter 2.3. Premenstrual Syndrome (PMS) and Premenstrual Dysphoric Disorder (PMDD)

PMS is defined as a group of cyclical, mild-to-moderate physical (headache, breast tenderness, swelling), emotional (fatigue, depression/anxiety, anorexia) and behavioural (aggression, loss of concentration) symptoms that happen in the secretory phase of the menstrual cycle. There is always a symptom-free interval of 1–2 weeks. The peak prevalence of PMS is in the 35-45 year age group.

PMDD is a more severe form of PMS in which emotional and behavioural symptoms predominate, and there is severe inability to function normally. Although PMS is quite widely prevalent in all cultures, nearly 40% of women with PMDD are incapacitated by this condition.

Risk Factors

- Family history of emotional problems
- Preexisting psychiatric conditions
- Postpartum depression
- Alcohol or substance abuse
- Smoking
- Early menarche
- Obesity

Causes

PMS/PMDD is a multifactorial psychoendocrine disorder. Changes in ovarian hormonal secretions due to ovulation lead to changes in neurotransmitters in the brain, which in turn cause reduction of the serotonergic function in the second half of the menstrual cycle. There is a possible genetic predisposition causing increased sensitivity to hormonal fluctuations.

Diagnosis

PMS is diagnosed by the presence of the relevant symptoms in the second half of the menstrual cycle in a cyclic fashion. Other organic causes of the symptoms must be excluded. Patients are required to maintain a diary of symptoms over successive cycles. The severity of symptoms should be such that it affects quality of life.

PMDD is diagnosed by the presence of at least 5 symptoms of PMS, including at least 1 affective symptom. Examples of affective symptoms are: mood lability, anxiety, feelings of sadness, hopelessness, helplessness, constant anger and aggression, insomnia, lack of concentration, and increased appetite.

Management

- Ovarian suppression: This is achieved by the monophasic combined oral contraceptive pill (COC), especially pills having drospirenone (evidence level IB). These pills could be given with or without sugar pills. Progesterone alone has no effect (Evidence Level IA). In severe cases, GnRH analogues may be used.
- Selective serotonin reuptake inhibitors (e.g., venlafaxine): These drugs are very effective in PMS and are the main treatment for PMDD. They improve the physical and behavioural symptoms (evidence level IA) within 1–2 days. These drugs could be administered either cyclically in the luteal phase or continuously. Side effects include GIT, CNS and sleep disturbance, and sexual dysfunction. Escitalopram 5-20mg daily in the luteal phase is effective and well tolerated.
- Diet and exercise: These include aerobic exercises, rest and relaxation, stress management, behavioural therapy, vegetarian diet, and calcium and vitamin B6 supplementation.
- Bromocriptine and evening primrose oil: These are cyclically used for mastalgia.
- Bilateral oophorectomy: If none of the above treatments have worked and there is cessation of symptoms with GnRH analogues, then bilateral oophorectomy could be considered, with or without a hysterectomy.
- Management should involve a multidisciplinary approach.

Short-Answer Questions

Question 1

Why do prepubertal girls not menstruate?

Answer:

During prepubertal years, the hypothalamic-pituitary-ovarian axis remains suppressed, and hence menstruation does not occur. The gonadotropin-releasing hormone–producing cells (GnRH-producing cells) in the hypothalamus remain supressed. The mechanism of this is uncertain. A gene in the GnRH- producing cell, which is controlled by leptin produced by the adipocyte, may be responsible for this. By about 9–10 years, the GnRH is secreted by the hypothalamic cells. This leads to the production of FSH—initially at night in spikes but after a few years during the daytime as well. The FSH stimulates the development of follicles in the ovaries and hence the hypothalamic-pituitary-ovarian axis becomes activated, leading to the menstrual cycle.

Question 2

Why are menstrual cycles following menarche anovulatory?

Answer:

Menarche (age of first menstruation) occurs after the peak of pubertal growth spurt has been reached. The menses remain anovulatory until the oestrogen starts to exert its positive feedback on the hypothalamus and pituitary. This feedback promotes the midcycle surge of LH, which is essential for ovulation.

Question 3

Briefly discuss the mechanism of the onset of menses.

Answer:

In the absence of a pregnancy, the corpus luteum undergoes luteolysis around 9–11 days after ovulation. The mechanism of luteolysis is unclear. Prostaglandin F2α from the ovary and oestradiol released from the corpus luteum itself play a part in the luteolysis. The luteolysis of the corpus luteum results in the fall of oestrogen, progesterone and inhibin A levels. The fall in progesterone levels leads to endometrial spiral arteriolar constriction and subsequent endometrial ischaemia and shedding of the functional endometrium (stratum compactum and spongiosum) and bleeding. The above mechanism is very similar to the withdrawal bleed from the cessation of a combined oral contraceptive pill.

Question 4

Why is menstrual bleeding self-limiting?

Answer:

Menstrual bleeding is self-limiting due to these reasons:

i. The beginning and end of menses are due to a definite sequence of events and affect the entire endometrium simultaneously.
ii. The endometrial shedding is orderly, progressive, and is due to progressively increasing duration of constriction of spiral arterioles. Hence, random breakdown of endometrium is prevented.
iii. Bleeding vessels are sealed by clotting factors, and oestrogen-mediated regeneration of the endometrium starts. Destruction of the endometrium and regeneration follow simultaneously.
iv. Myometrial contraction contributes very little to the cessation of menstrual bleeding.

Question 5

Why does ovulation occur?

*Answer**:***

The level of LH rises steadily in the second half of the follicular phase of the cycle, as a result of the stimulation from the follicular oestrogen. The LH causes luteinisation of the granulosa cells, which start to secrete an increasing amount of progesterone. This progesterone, through its action on the pituitary, causes marked increase in LH levels, a phenomenon called LH surge. The LH surge stimulates meiosis of the oocyte and synthesis of progesterone and prostaglandins in the developing follicle. Progesterone stimulates the proteolytic enzymes, which cause rupture of the follicular wall. Ovulation occurs nearly 10–12 hours after the peak of the LH surge. Prostaglandin synthetase–inhibiting drugs such as aspirin and ibuprofen will inhibit ovulation by inhibiting the synthesis of prostaglandin.

Question 6

Ovulation occurs more frequently from the right ovary. Discuss.

Answer:

This statement is true. The right ovary is the dominant ovary for most of the reproductive life. Due to the differences in the venous return of the two ovaries, the left ovarian venous return is slower than the right ovary. Because of this, the left-sided corpus luteum takes longer to disappear, which reduces the chance of ovulation from the left ovary in the following month. Nothing of that sort happens on the right side; hence the right ovary ovulates more commonly. As a result of all that, 64% of pregnancies originate from eggs released by the right ovary.

Question 7

How does conception prevent the onset of menses?

Answer:

Just before implantation, the zona pellucida disintegrates, and the developing blastocyst (hatched) starts to adhere to the decidua. At this stage, the blastocyst also produces hCG, which acts on the corpus luteum to maintain the production of progesterone and oestradiol. This prevents the onset of menstruation and allows the early pregnancy to continue.

Question 8

An 18-year-old year-12 student has severe dysmenorrhoea and is concerned about its adverse effects on her final end-of-year examination preparation. How would you manage this situation?

Answer:

History:

- Age at menarche
- Menstrual cycles: frequency; duration of bleeding; heaviness of bleeding; severity, onset, and duration of any associated pain
- Presence or absence of nausea, vomiting, diarrhoea, dizziness, or headache during menstruation
- Impact of symptoms on daily activities such as school attendance, sports participation, and other social activities
- Medication use: type, dose, timing in relation to the onset of cramps/pain, and perceived effectiveness in terms of relief and ability to engage in all daily activities
- Sexual history: current sexual activity, type of contraception, history of sexually transmitted diseases, and history of pelvic inflammatory disease
- Associated stress factors
- Sexual abuse

Examination:

- Vaginal
  - Only limited to external genital inspection if virgin
  - Bivalve speculum examination: normal anatomy, discharge, bleeding, microbiological swabs, cervical cytology
- Bimanual examination: size, shape, axis, mobility of uterus, nodules in the POD, cervical excitation, any abnormal adnexal mass
- Transvaginal ultrasound scan (translabial or abdominal if virgin)

The above tests will not pick up endometriosis. An ultrasound scan, however, will be able to pick up endometrioma.

Treatment options:

If all the above tests are normal, the diagnosis is primary dysmenorrhoea.

- NSAIDS, paracetamol: start before pain
- Combined oral contraceptive pill with periodic skipping of sugar pills to avoid menses
- Progestins: e.g., norethisterone or medroxyprogesterone acetate cyclic for 2 weeks or continuous
- Etonogestrel (Implanon®), depot medroxyprogesterone acetate injection 150 mg IM every 3 months
- If abnormal scan or if refractory symptoms after 3 months, consider laparoscopy to exclude endometriosis or PID

Multiple-Choice Questions

Q1. Which of the following is the last event in the process of ovulation?

A. LH surge
B. Release of oestrogens from the granulosa cells
C. Luteinisation of the granulosa cells
D. Release of proteolytic enzymes in response to increased progesterone secretion

Answer: D

Q2. Which is the most common cause of regular menses in a 9-year-old with a history of thelarche and adrenarche?

A. Hypothyroidism
B. Gonadal tumours
C. Brain tumours
D. Idiopathic

Answer: D

Q3. In a regular 35-day cycle, when will the serum progesterone level reach its maximum?

A. Day 14
B. Day 17

C. Day 21
D. Day 25

Answer: C

Q4. Subnucleolar vacuolation in the endometrial cells is a sign of which of the following?

A. Menstrual phase endometrium
B. Proliferative phase endometrium
C. Ovulation
D. Decidualisation

Answer: C

Q5. Which of the following statements is true for decidua?

A. Decidual cells are derived from endometrial stromal cells under the influence of progesterone.
B. Decidual cells are derived from endometrial stromal cells under the influence of LH.
C. Decidual cells are derived from endometrial stromal cells under the influence of oestradiol.
D. Decidual cells do not secrete prolactin.

Answer: A

Q6. Which of the following statements is **not** true for the menstrual cycle?

A. Its length is determined by the rate and quality of follicular growth.
B. It is normal for the cycle to vary in individual women.
C. Most anovulatory cycles occur between 20 to 40 years of age.
D. Nearly half of women have a perfect 28-day cycle.

Answer: C

Q7. Which of the following statements is most true for intermenstrual bleeding?

A. Small intermenstrual bleeding can easily be ignored.
B. Intermenstrual bleeding is pathological and should be investigated.
C. Only large, regular intermenstrual bleeding should be investigated.
D. Intermenstrual bleeding indicates a hyper-oestrogenic state of the endometrium.

Answer: B

Q8. Which of the following statements is **not** true for the management of intermenstrual bleeding?

A. STI screen should be done in the management of IMB.
B. Cervical smear should be repeated if the last cervical smear was > 3 months ago.
C. Hysterectomy is the best treatment option.
D. Hysteroscopy and curette have a role.

Answer: C

Q9. Which of the following leads to the resolution of corpus luteum?

A. Increased oestradiol
B. Increased progesterone
C. Decreased LH
D. Decreased FSH

Answer: C

Q10. Which is the most common cause of secondary dysmenorrhoea?

A. Pelvic congestion
B. Ovarian neoplasm
C. Leiomyoma
D. Endometriosis

Answer: D

Q11. Which of the following statements about oestrogen is **not** correct?

A. Oestrogen administration caused vasodilatation.
B. Oestriol synthesis in pregnancy is enhanced by aromatisation in the fetal adrenal gland.
C. Oestrogen increases the effect of nitric oxide on vascular smooth muscle.
D. Oestrogen is a positive inotrope.

Answer: B

Q12. Which of the following drugs is most useful for the treatment of PMS?

A. Progesterone
B. Anxiolytics
C. Vitamin B6
D. Selective serotonin reuptake inhibitors

Answer: D

Q13. Anorexia nervosa:

A. Is associated with anovulation with normal oestrogen level
B. Is associated with increased FSH and LH
C. Can cause severe osteoporosis if prolonged
D. Is not associated with skin collagen changes or wrinkling

Answer: C

Q14. Which one of the following has autosomal recessive inheritance?

A. Marfan's syndrome
B. Huntington's disease
C. Cystic fibrosis
D. Adult onset polycystic kidney disease

Answer: C

Q15. Which of the following is the main factor that causes the onset of menstruation?

A. Progesterone withdrawal
B. Estrogen withdrawal
C. LH withdrawal
D. FSH withdrawal

Answer: A

Q16. An established clinical indication for antiprogestogens is:

A. Routine contraception
B. Postcoital contraception
C. Endometriosis
D. Premenstrual syndrome

Answer: B

Q17. Which of the following is **not** needed for the diagnosis of PMS?

A. A symptom complex consistent with the diagnosis
B. A luteal-phase pattern
C. Severity sufficient to disrupt life
D. Objective physical findings

Answer: D

Q18. Which of the following would **not** enhance contraction of a myometrial cell?

A. Binding of intracellular calcium to calmodulin to activate calcium-dependent myosin light-chain kinase
B. Voltage-operated calcium-channel activation
C. Receptor-operated calcium-channel activation
D. Sarcoplasmic reticulum calcium uptake

Answer: D

Q19. Which of the following statements regarding anticoagulation with warfarin is correct?

A. The effect of warfarin is most rapidly reversed by administering fresh frozen plasma.
B. Paracetamol in normal dosage may cause a drug interaction.
C. Treatment should be monitored by measuring the partial thromboplastin time.
D. Breastfeeding is contraindicated.

Answer: A

Q20. Which of the following is **not** correct?

A. Iron requirement in a menstruating, nonpregnant female is approximately 2 mg/day.
B. Iron requirement in a pregnant female is approximately 9 mg/day.
C. Iron absorption in the nonpregnant adult is approximately 5% of daily intake.
D. Cord-blood serum ferritin is greater than maternal serum ferritin.

Answer: B

Q21. What is the incidence of severe PMS?

A. 1%
B. 5%
C. 10%
D. 15%

Answer: B

Q22. A 25-year-old suffers from emotional lability and depression for 10 days prior to her periods. She has a history of premenstrual fatigue, bloating, and breast tenderness. Her symptoms improve with the start of her periods. Contraceptive pills have helped her partly. Which of the following will best treat her?

A. Spironolactone
B. Evening primrose oil
C. Fluoxetine
D. Vitamin B6

Answer: C

Q23. A 20-year-old has severe pain, nausea, and headache during her periods since menarche. The rest of the history and pelvic examination are normal. What will be her initial treatment?

A. Antiprostaglandins
B. Danazol
C. GnRH analogues
D. Ergot derivatives

Answer: A

Chapter 2.4. Dysfunctional Uterine Bleeding

Definition

Dysfunctional uterine bleeding (DUB) is defined as irregular vaginal bleeding with no demonstrable genital or extragenital organic cause. It is a diagnosis of exclusion.

Clinical Physiology

There are two types of DUB:

- Anovulatory (80% incidence)
- Ovulatory (20% incidence)

Anovulatory DUB

This is a disease of adolescent and premenopausal (> 41 years old) age groups. In both age groups, the pathogenesis revolves around anovulation from any cause in the presence of oestrogen and a lack of progesterone causing decreased PGF2α and other prostaglandins. The bleeding is mostly painless.

Because of insufficient oestrogen, the LH surge, and consequently ovulation, does not occur. In the absence of ovulation, the corpus luteum does not form, and progesterone secretion does not start. However, due to the presence of developing follicles, a prolonged supply of oestrogen is maintained, which leads to endometrial proliferation and hyperplasia. Such an endometrium lacks a stromal support matrix and so becomes fragile and undergoes superficial breakage and bleeding. This leads to endometrial shedding in patches. Due to the lack of progesterone, PGF2α is in short supply, and hence the vasoconstrictive action is missing. This leads to continuation of bleeding.

Ovulatory DUB

This is a disease of 21–40-year-olds. The pathogenesis revolves around an increased synthesis of vasodilatory prostaglandins rather than vasoconstrictive prostaglandins, despite ovulation and a normal level of progesterone. Due to an excess of vasodilatory prostaglandins, bleeding is heavy, and due to the presence of PGF2α, the bleeding is painful (dysmenorrhoea). Histologically, the endometrium is secretory.

History

A detailed history should be obtained, which should include the following:

- Duration and severity of bleeding
- Pattern of bleeding, whether regular or irregular
- Associated pain, postcoital bleeding
- Age of menarche
- Gravida and parity
- Last cervical smear
- Use of contraception
- Any associated medical and surgical history
- Any regular drug use

Examination

- Vital signs
- Pallor
- Thyroid examination for goitre
- Abdominal examination, looking for masses or peritonism
- Vaginal examination with a bivalve speculum
  - Confirm presence of a normal vagina and cervix
  - Look for signs of infection
  - Take high vaginal swabs
- Bimanual examination
  - Uterine size
  - Adnexal masses

Investigations

- FBE, TSH, iron studies.
- Transvaginal (translabial if virgin) ultrasound, including saline sonohysterography. The ultrasound scan should ideally be performed in the proliferative phase of the menstrual cycle.
- Coagulation profile (BT, PT, APTT):
  - 20% of teenagers with this problem will have a coagulation defect.
- Hysteroscopy and endometrial biopsy, if ultrasound is suggestive of endometrial pathology or failed medical

treatment.

With the above history, examination, and investigations, any organic cause of genital or extragenital bleeding can be excluded.

Exact quantification of the blood loss is not essential in clinical practice, beyond the information obtained during clinical assessment. The correlation between the woman's perception of the heaviness of bleeding and the actual blood loss is poor. A woman should be treated if she desires to be treated, on account of her perception of heavy bleeding, or if the bleeding is abnormal based on the clinical assessment.

Management

The treatment of DUB is mostly medical and rarely surgical. Apart from replacing iron or transfusing packed red blood cells, the principles of medical treatment are as follows:

Nonhormonal

Antifibrinolytic Agents

Example: tranexamic acid

This acts by reducing fibrin degradation in the spiral arterioles and their branches. It achieves a 50% reduction in blood loss. In women with ovulatory DUB, increased fibrinolytic activity has been shown in the spiral arterioles and their branches. Hence, this drug is especially useful for this condition.

Dose: 1 g, TDS

Side effects: GIT disturbance, headache, DVT, disturbance to colour vision

Contraindication: active intravascular clotting

Prostaglandin Synthetase Inhibitors

Examples: mefenamic acid, ibuprofen

These drugs inhibit conversion of arachidonic acid to various prostaglandins and also block prostaglandin receptors in the endometrium. They reduce blood loss by 25%. They also relieve menstrual pain.

Dose (mefenamic acid): 500 mg TDS, with food, for the first 3 days of menses

Side effect: gastric irritation

Contraindication: asthma, allergy, peptic ulcer disease

Hormonal

High-Dose Oestrogen

This is only used in an emergency where quick control of bleeding is needed. A dose of 25 mg of conjugated equine oestrogen is administered intravenously every 4 hours until the bleeding is controlled. Oestrogen promotes rapid regeneration of the endometrium, sealing the denuded surface. This treatment controls blood loss in 72% of women. All oestrogen must be followed by progestin coverage and withdrawal bleeding.

Combined Oral Contraceptive Pill

This is the most commonly used drug in the treatment of anovulatory DUB. Bleeding is reduced by 50%. It causes orderly regression of excessive endometrial thickness to normal. It should be discontinued after 3 months to allow the unopposed endogenous oestrogen to reactivate the endometrium.

Side effects: nausea, DVT

Progestogens

Examples: norethisterone, medroxyprogesterone acetate, norethynodrel

These are the drugs of choice for anovulatory DUB. Progestins help in the conversion of oestradiol to oestrone sulphate, which is rapidly excreted. Progestins also diminish oestrogen effect on target cells by inhibiting oestrogen receptors, and they suppress oestrogen-mediated transcription of oncogenes. These actions lead to the antimitotic, antigrowth impact on the endometrium, which causes reversal of hyperplasia and limitation of growth postovulation.

Menstrual blood loss is reduced by 30%. It can be used cyclically orally or with an intrauterine device, where it reduces blood loss by 90%. A levonorgestrel-containing IUCD is as effective as endometrial ablation, more effective than cyclical norethisterone, and is the most effective medical treatment for DUB. It is cheap and well tolerated, it does not usually interfere with coitus, and it prevents a hysterectomy in at least 60% of such women.

GnRH Analogues

GnRH analogues cause amenorrhoea by inhibiting pituitary production of gonadotropins. They are expensive, and they cause severe menopausal symptoms and osteoporosis. This group of drugs is primarily used prior to myomectomy for reducing the size of myomas, making surgery easier with less blood loss. It is also used to thin the endometrium prior to endometrial resection/ablation.

Multiple-Choice Questions

Q1. What is the cause of a midcycle bleeding in a 30-year-old?

A. Decrease in oestrogen level immediately before ovulation
B. Increase in oestrogen level immediately before ovulation
C. Decrease in progesterone level immediately before ovulation
D. Increase in progesterone level immediately before ovulation

Answer: A

Q2. Which of the following statements is correct with reference to intermenstrual bleeding (IMB)?

A. A small amount of infrequent IMB could be ignored.
B. IMB is often due to pathology.
C. It is seldom due to chlamydia infection.
D. It is often due to low oestrogen levels.

Answer: B

Q3. Which of the following is **not** a cause of anovulatory DUB?

A. PCOS
B. Obesity
C. Immaturity of HPO axis in postpubertal girls
D. Submucous fibroid

Answer: D

Q4. A 30-year-old who has been on the combined oral contraceptive pill for many years starts to get irregular uterine bleeding with scant or absent periods. Her pregnancy test is negative. How will you treat her?

A. Exclude uterine fibroids
B. Prescribe additional norethisterone for 7 days
C. Prescribe additional oestradiol for 7 days
D. Replace pill with a levonorgestrel IUCD

Answer: C

Q5. A woman on depot medroxyprogesterone acetate injection every 3 months consults you with irregular spotting. How will you treat her?

A. By prescribing additional oral progestin
B. By prescribing additional oral oestrogen
C. By prescribing mefenamic acid
D. By prescribing antifibrinolytic agent

Answer: B

Q6. Which of the following is not important for the control of menstrual bleeding?

A. Thrombin generation at the basal endometrium
B. Deposition of fibrin at the basal endometrium
C. Platelet aggregation at the bleeding site
D. Myometrial contraction

Answer: D

Q7. During a laparoscopic hysterectomy for DUB, a 2x3-cm hole is seen at the dome of the urinary bladder. Which of the following will you do?

A. Repair the hole in 2 layers with ethibond and insert a suprapubic catheter for 5 days
B. Repair the hole in 2 layers with polyglactin suture and insert a urethral catheter for 7 days
C. Repair the hole in 2 layers with PDS, insert urethral catheter for 48 hours, and perform a cystogram prior to removal
D. Repair the hole in 2 layers with PDS and omental patch and insert a urethral catheter for 10 days

Answer: B

Chapter 2.5. Heavy Menstrual Bleeding

This was previously known as menorrhagia.

Definition

Heavy menstrual bleeding (HMB) is bleeding lasting more than seven days during menstruation or a quantity of blood loss exceeding 80 mL during menstruation.

Bleeding may be very heavy and of sudden onset, requiring emergency hospitalisation. Chronic, heavy periods may cause iron deficiency anaemia in 60% of women. 20% of teenaged and 15% of adult women will have coagulation defects, mainly von Willebrand's disease (13%) and factor XI deficiency (4%). The risk of endometrial cancer in women > 40 years of age with HMB is 1%.

Types

- Idiopathic, synonymous with ovulatory DUB.
- Secondary to organic disease, such as:
  - Pelvic pathology: submucous fibroids, endometrial polyps, adenomyosis
    - Intracavitary lesions cause increased bleeding due to increased endometrial and vascular fragility and abnormal prostaglandin levels.
    - Intramural fibroids cause increased bleeding due to topographic endometrial abnormalities, endometrial glandular atrophy overlying the fibroid, venous congestion, and alteration in prostaglandin levels.
  - Coagulation disorders: von Willebrand's disease, idiopathic/thrombotic thrombocytopaenic purpura.
  - Endocrine disorders: hypothyroidism, Cushing's syndrome.

History

The history as described in the chapter on DUB should be applied to HMB also.

The aim of the history should be to ascertain the heaviness of bleeding and presence of any organic diseases. Questions regarding the following points will help in this:

- Number and frequency of sanitary pad/tampon use and change
- Whether tampons and pads are used together
- Presence of large clots
- Soiling of clothes
- Any restriction to activities, such as time off work/school or limitation of movement
- Tiredness, exhaustion

The following symptoms and conditions will indicate the presence of an organic cause:

- IMB/PCB: endometrial or cervical polyps, ectropion, cervical intraepithelial neoplasia (CIN), cervical cancer
- Dyspareunia/dysmenorrhoea: endometriosis, adenomyosis

- Easy bruising, excessive bleeding on dental extraction: bleeding disorder
- Tiredness, listlessness, oedema: hypothyroidism

Examination

The examination will be the same as described in the chapter on DUB.

Investigations

The investigations will partly depend on the information obtained from history and clinical examination. The investigations could be as follows:

- FBE and iron studies to check for anaemia
- TSH, to screen for hypothyroidism.
- Clotting studies (BT, PT, APTT), for von Willebrand's disease (vWF antigen, ristocetin cofactor assay) and platelet count for thrombocytopaenia.
- Transvaginal ultrasound scan in the proliferative phase (ideally between days 5 to 10) of the menstrual cycle to look at:
  - Endometrial thickness.
  - Regularity of endometrium.
  - Endometrial polyps.
  - Submucous or intramural fibroid.
  - Myometrium for features of adenomyosis.
  - Ovaries for neoplasms such as granulosa cell neoplasm.
  - The secretory endometrium may falsely look like endometrial polyp on ultrasound scan. Hence, it is recommended that the scans should be done in the proliferative phase of the menstrual cycle.
- MRI is seldom necessary.
- Hysteroscopy and endometrial biopsy, if ultrasound is inconclusive or suggests pathology, such as endometrial polyps, hyperplasia, or submucous fibroids.

Management

The management should be individualised depending on the woman's situation, symptoms, and needs. For example, treatment would differ if the woman desired contraception or if she was experiencing concurrent dysmenorrhoea.

Medical

This is the first-line treatment option, unless there is a pelvic organ pathology present. Medical treatment is described in DUB.

Surgical

- Dilatation and curettage:
  - This is primarily done for its diagnostic value, but it can also be therapeutic for a variable length of time.
- Endometrial ablation or resection:
  - Available techniques include diathermy, thermal balloon, microwave, and laser.
  - The entire full-thickness endometrium should be resected/ablated; otherwise the endometrium will regenerate.
  - The following are contraindications for this procedure:
    - Pregnancy
    - Possible or confirmed endometrial hyperplasia or cancer
    - Woman wishing to conceive in the future
    - Active pelvic infection
    - Intrauterine contraceptive device (IUCD) in situ
    - Uterine scar, other than LUSCS scar
    - Congenital uterine anomaly such as bicornuate uterus (only for bipolar and thermal ablation)
- Myomectomy/resection of submucous myoma in women desiring to keep the uterus to maintain fertility. The type of surgery depends upon:
  - The number, size, and location of the fibroids
  - The gynaecologist's skills
- Hysterectomy can be performed when all other treatments have failed and the woman does not desire fertility. The risk of:
  - Damage to the bowel or bladder: 1%
  - Blood transfusion: 6%

- Death: 1 in 10,000 cases

Short-Answer Questions

Question 1

What is the difference between dysfunctional uterine bleeding (DUB) and heavy menstrual bleeding

(HMB), also known as menorrhagia?

Answer:

DUB is irregular bleeding from the genital tract in the absence of an organic cause, largely due to anovulation. It is usually painless.

In contrast, HMB is regular bleeding from the genital tract, with or without an organic cause. It is mostly ovulatory and often painful.

The drug of choice for DUB is either cyclical progestogen or the COC, whereas the levonorgestrel- containing IUCD is the drug of choice for HMB.

Question 2

Compare and contrast with evidence the different techniques for endometrial ablation: bipolar radiofrequency, thermal balloon, and rollerball ablation.

Answer:

The indication for endometrial ablation is the treatment of ovulatory menorrhagia in premenopausal women.

Type of ablation	**Bipolar radiofrequency**	**Thermal balloon**	**Rollerball diathermy**
Method	Hysteroscopy should be performed prior to ablation to rule out malignant conditions and focal pathology that may be causing DUB.		
	An electrode array, protected by a sheath, uses bipolar radiofrequency impedance technology to ablate the uterus. The cavity must be assessed for integrity (with CO2) prior to commencing the procedure, to ensure there is no perforation.	Latex or silicone balloon is placed in the uterine cavity and a preheated liquid (e.g., 5% dextrose in water) is circulated for a set time.	Electrosurgical current passes through an electrode to destroy the basalis layer of the endometrium under hysteroscopic vision. It requires pretreatment with GnRH agonists, danazol to thin the endometrium.
Advantages	Fast procedure. Higher initial rates of amenorrhoea (46–58%) than other procedures (Evidence Level IA). Fewer minor complications than rollerball ablation. Can be performed by less experienced surgeons. Easier to learn the technique.	Can be performed by less experienced surgeons. Fewer minor complications than rollerball ablation. Easier to learn the technique.	Cheaper to perform. Relatively longer learning curve.
Disadvantages	Expensive. Higher risk of equipment failure, postoperative nausea/ vomiting, and uterine cramping (Evidence Level IA).	Expensive. Higher risk of equipment failure, postoperative nausea/vomiting, and uterine cramping (Evidence Level IA).	Higher rates of complications, such as irrigation fluid overload, cervical laceration, and haematometra (Evidence Level IA). Must be performed in an operating theatre. Longer operation time. Greater need for general anaesthesia.

Outcome	Comparable outcomes over long term—as measured by amenorrhoea, patient satisfaction, and subsequent surgery—between all methods of ablation (Evidence Level IA). Same incidence of severe complications, such as uterine perforation, haemorrhage, and endometritis (Evidence Level IA).

Table 2.1. Comparison of different techniques for endometrial ablation

Question 3

Compare the levonorgestrel-containing IUCD with endometrial ablation in the treatment of HMB.

Answer:

	Levonorgestrel-containing IUCD	**Endometrial ablation**
Mode of action	Reduces endometrial proliferation Inhibits ovulation	Ablates endometrium via a variety of methods
Outpatient procedure?	Yes	No
Need for anaesthetic?	Mostly not	Yes
Success rate	90% reduction in blood loss May cause amenorrhoea	90% reduction: Of those, 40% amenorrhoea, 40% reduced bleeding, 40% need another surgery in 5 years
Patient satisfaction rate	70%	70%
Duration of treatment	5 years	Hopefully lifelong
Fertility	Acts as a long-term reversible contraceptive	Does not provide contraception Should not get pregnant after this surgery
Important contraindications	PID Nulliparity	3 or more caesarean sections Large uterus Large myoma
Complications	Irregular bleeding for first 3–4 months	Uterine perforation Electrolyte imbalance if glycine used

Table 2.2. Comparison between levonorgestrel-containing IUCD and endometrial ablation in the treatment of HMB

Question 4

List the differential diagnoses for HMB in a 15-year-old girl.

Answer:

- Uterine abnormality: uterine didelphys; endometrial or cervical polyps and fibroids very uncommon in this age group
- Ovarian neoplasms: granulosa cell tumour
- Bleeding disorder: von Willebrand's disease, idiopathic thrombocytopaenic purpura
- Endocrine disorders: hypothyroidism, Cushing's syndrome, immaturity of HPO axis
- Systemic disorders: chronic liver disease, chronic kidney disease

Question 5

A 24-year-old woman presents to you with HMB, and you diagnose the cause to be von Willebrand's disease. Describe the disorder.

Answer:

Von Willebrand's disease is the most common inherited heterogenous group of bleeding disorders, affecting 1% of the population. In woman with HMB, the prevalence goes up to 13–20%.